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A. History of the Institution

A. A Short History of the Institution

The Max Planck Institute for Research on Collective Goods was founded in 1997 as a temporary project group "Common Goods: Law, Politics and Economics" and transformed into a permanent institute in 2003. Its mission is to study the law, economics, and politics of collective goods, defined to encompass all those goods whose provision and enjoyment are treated as community concerns.

In the early years, the institute had teams of lawyers and political scientists, led by Christoph Engel and Adrienne Héritier. When Adrienne Héritier left in 2003 to accept a joint chair at the European University Institute and the Schuman Centre in Florence, the Max Planck Society appointed the economist Martin Hellwig to replace her. At this point, therefore, the institute consists mainly of lawyers and economists.

In addition, there is a small group of psychologists. Initially brought in by Christoph Engel to support his *behavioral law-and-economics* approach to institutional analysis, in 2007 this turned into an independent Junior Research Group *Intuitive Experts* led by Andreas Glöckner.

From the beginning, the work of the institute had three main goals: It aimed to better understand collective-goods problems, to find better solutions, and to understand the political and legal processes of defining problems and choosing solutions. In the years of the project group, major research efforts concerned

- the law and politics of waste avoidance, recycling, and disposal,
- the governance of the internet, and
- the transformation of the nation state into a multi-level system of governance.

Today, the major research efforts of the institute are concerned with

- the analysis of incentive problems in public-good provision,
- the behaviorally informed design of institutions for the provision of collective goods,
- the organization and regulation of network industries: sector-specific regulation and antitrust
- the regulation of financial markets and financial institutions in order to safeguard financial stability.

The first two lines of research are intended to enlarge our understanding of foundations at a fairly general level. The last two lines of research are concerned with applications. Research objectives and strategies are laid out in this report.

B. The Overarching Framework

B. The Overarching Framework

Air, atmosphere, the ozone layer, climate, water, the world's oceans, land, quiet, normal radiation, landscape, fauna and flora, genetic diversity: the policy challenge of providing and distributing such natural resources was the impetus for the Max Planck Society's deliberations to establish a new research facility in the humanities section. However, even in the process of establishing the facility, it became clear that man-made goods also pose structurally related challenges. The protection of our cultural heritage, language, streets, energy networks, the liquidity of markets, the reliability of finance institutions, the stability of the finance system: all these pose very similar problems. This was the reason that the Max Planck Society did not establish an institute for environmental law or environmental policy, but deliberately founded a project group for research on collective goods.

The document on the founding of a research facility describes the problem that needs to be solved as follows: "While, on the one hand, these goods need protection, on the other hand, it is necessary for human life that they remain accessible and are used. This gives rise to a multilayered governance problem: of no slight significance here is an elementary distribution problem, indeed one both between groups or individuals and between states. The common – judicial – characteristic of the natural resources is that they can be placed under the power of disposition of individual legal subjects only to a limited extent. Even when property rights are established, the larger community has the responsibility to suitably proportion the maintenance and use of these goods and to suitably distribute the related costs and benefits. […] The research task of the project group will thus have a public policy orientation."

The multilayered governance problem mentioned in that document arises because collective goods always concern numerous people simultaneously, sometimes the community as a whole, including future generations. Were the dealings with collective goods, their provision and financing, left solely to the decentralized decisions of individuals, it is to be feared that the common dimension would be neglected; insofar, collective decision-making mechanisms are necessary. Paradigmatic for this view is the economic concept of non-excludable public goods. The individual who merely attends to his own use of the public good neglects the use that others draw from it, insofar contributing less to the cost of providing this good than is socially desirable. To take one example, according to this argumentation schema, the dangers to the natural environment because of human activity, including the well-known "tragedy of the commons", arise because individuals give their own use of the environment priority over the maintenance of the environment, which, as a public good, benefits everyone.

The concept of collective goods is, however, more encompassing than the economic concept of public goods. It is in principle possible to make the use of the services of law, schooling, or even streets, excludable, but because open access to these goods is thought superior, it is viewed as a constitutive element of the community. The use of other goods,

such as the services of the large networks of telecommunications and the post, the energy industry and the railways, is tied to the payment of user fees; here too, however, regulations on non-discriminatory access and the universality of services are to ensure that the communal dimension is accounted for. Finally, in a further class of cases, the concern is with the quality of the services and relations, which are in principle left to the decentralized decision-making of individuals in the markets; here, the communal interest, for example in the reliability of financial transactions, can aim to protect both the parties involved and the system, which can hardly function without reciprocal trust in one another.

The negative assertion that the community dimension will be neglected if the dealings with collective goods, their provision and financing remain solely in the hands of decentralized decision-makers still gives us no positive content: It provides no indication of how the community dimension is to be properly dealt with, or which advantages and disadvantages are implicit in the various institutions and rules for dealing with collective goods. In principle, every system for dealing with collective goods faces the difficulty that the required information is not readily available. Insofar as the assessment of the involved parties is relied upon, a dilemma arises: the individual has an incentive to downplay the value that the common good has for him if he expects that he will be required to pay for it, while he has an incentive to exaggerate the value that it has for him if he expects that it will not cost him anything. This dilemma also occurs for purely private goods, but it plays a subordinate role there if the good is provided in a competitive market, in which the individual has no power to influence prices. This mechanism is not available for common goods; the greater and more anonymous the involved community is, the greater the magnitude of the described dilemma.

There are no one-size-fits-all solutions for this dilemma. It is rather necessary to determine in detail which advantages and disadvantages the rules and institutions under discussion have for each of the various collective goods. Under consideration are governmental activities, i.e., political or administrative decision-making, market-based, contractual solutions, or arrangements based on individuals' decisions, yet under the influence of state-determined norms about minimal standards, liability laws, etc. The relative advantages and disadvantages of the various alternatives depend on which characteristics the collective goods under discussion possess and what precisely determines the communal dimension of the good in question.

The institute combines basic research and practical applications, for one, by dealing with the theory of collective goods and their provision under diverse abstractly formulated general conditions, and, for another, by developing concrete proposals for the design of (legal and extra-legal) institutions for the provision of individual collective goods. This is of necessity an interdisciplinary endeavour. Economists are needed to understand and structure the allocation and incentive problems that arise. Political scientists are needed to understand the mechanisms of political decision-making used for these goods. And lawyers are needed to develop proposals for the design of rules and institutions in light of concrete legal norms, so that they fit the legal order. The selective reception of results of

the neighbouring disciplines is not enough. Especially in the analysis of concrete problems, it is important that all three disciplines are intensively engaged with one another. For example, the interplay between decentral market mechanisms and political decision-making mechanisms needs to be studied jointly by economists and political scientists. To judge the allocation effects of certain decisions of substantive law or procedural law, economists and legal scholars must work in collaboration.

C. Research Program

C. Research Program

C.I Public Goods and Welfare Economics: Incentive Mechanisms, Finance and Governance

C.I.1 Introduction

A major part of our research effort is devoted to the development of an appropriate conceptual framework for the normative analysis of public-goods provision when the value that any one person attaches to the public good is known only to that very person. Whereas most of the literature considers the problem of public-good provision with private information in a small economy, we focus on large economies, in which any one individual is too insignificant to affect the level of public-good provision. We have several reasons for choosing this focus:

- Whereas the small-economy models studied in the literature are useful, e.g., for thinking about how the inhabitants of a village can co-ordinate on the installation of an irrigation system, we believe that it is not so useful for thinking about how a country with more than a million inhabitants should choose the level of resources that are devoted to national defense or to the legal system.
- Most models of taxation are models of large economies, as are most models of market equilibrium for private goods. If there is to be any hope of integrating public-goods provision theory with the rest of welfare economics, we need to have a convincing account of public-good provision in a large economy.
- The differences between private and public goods, more precisely, between goods that exhibit rivalry in consumption and goods that do not, emerges most clearly when the number of participants is large.
- As yet, we do not have a good conceptual and formal apparatus for thinking about public-good provision in a large economy. If individual valuations are independent and we treat the large economy as a limit of finite economies, a law of large numbers implies that the cross-section distribution of valuations and therefore the efficient level of public-good provision is common knowledge. To even talk about an information problem involved in the determination of efficient public-goods provision levels in large economies, one must have correlated values. Our understanding of incentive mechanisms with correlated values, however, is unsatisfactory.

Mention of the problem of how a country with millions of inhabitants should decide on spending levels for national defense or for the judicial system undoubtedly raises the question why we are studying this as a problem of normative economics rather than political science. We do so because we want to have a measuring rod by which to assess the strengths and weaknesses of decision procedures that are actually used.

Over the past thirty or so years, normative economics has learnt that simple a simple efficiency standard that abstracts from issues of information and incentives is not very useful. The theory of mechanism design has taught us to take account of information and incentive constraints and to ask what measure of efficiency can be achieved when these constraints are taken into account. This is the very type of question that we are asking about the provision and financing of public goods in large economies.

The importance of the question is readily seen if one goes back to the typical economist's critique that political decision making gives rise to inefficient outcomes because it fails to take account of preference intensities. A majority of people who care just slightly about an issue can impose its will on a minority who care intensely about it. If the disparity between the two groups is sufficiently large, the result is inefficient in the sense that everybody would be better off if the minority was able to "bribe" the majority to vote differently. In this critique of collective decision making by voting, no account is taken of possible information asymmetries. One result of our research shows that, once these information asymmetries are taken into account, it may not even be possible to rely on anything else than a voting mechanism.

The research covered by this report under the general heading of *Public Goods and Welfare Economics* falls into three broad areas:

- Development of a conceptual and formal framework that is suitable for dealing with the revelation, communication and use of private information in a large economy.
- Development of an overarching conceptual and formal framework that can be used to integrate the theory of public-goods provision with the rest of normative economics, in particular, the theories of public-sector pricing and of taxation.
- Development of a conceptual and formal framework that is suitable to address issues concerning incentives and governance on the supply side of public-good provision and that can also be used to integrate the analysis of such issues with the more conventional analyses of demand and funding.

The following Sections C.I.2 – C.I.4 of this report will take up each of these areas in turn.

C.I.2 The Mechanism Design Approach to Public-Good Provision

C.I.2.1 Public Goods versus Private Goods: What is the Difference?

To fix semantics, we define a public good to be one that exhibits *nonrivalry* in the sense that one person's "consumption" of this good does not preclude another person from "consuming" it as well. When several people "consume" the public good, there may be external effects, e.g. negative externalities from crowding or positive externalities from

mutual entertainment, but there is not the kind of rivalry in consumption that one has with private goods where one person's eating a piece of bread precludes another person's eating it as well.

We focus on nonrivalry as the key characteristic because this property is at the core of the allocation problem of public-good provision. Because of nonrivalry, it it efficient for people to get together and to coordinate activities so as to exploit the benefits from doing things jointly. Other characteristics, such as nonexcludability, affect the set of procedures that a community can use to implement a scheme for public-good provision and finance, but such considerations seem secondary to the main issue that nonrivalry is the reason why public-good provision is a collective, rather than individual concern.

The mechanism design approach to public-goods provision asks how a community of n people can decide how much of a public good should be provided and how this should be paid for. If each person's tastes were publicly known, it would be easy to implement an efficient level of public-good provision. If tastes are private information, the question is whether and how "the system" can obtain the information that is needed for this purpose. Because this information must come from the individuals who hold it, the question is whether and how these individuals can be given incentives to properly reveal this information to "the system".

The bottom line of the literature is that it is always possible to provide individuals with the incentive to reveal their preferences in such a way that an efficient level of public-good provision can be implemented. For this purpose, financial contributions must be calibrated to individuals' expressions of preferences for the public good in such a way that there are neither incentives to overstate preferences for the public good in the hope that this raises the likelihood of provision at the expense of others nor incentives to understate preferences for the public good in the hope that this reduces one's payment obligations without too much of an effect on the likelihood of provision. The mechanism design literature shows that one can always find payment schemes which satisfy this condition.[1]

However, there may be a conflict between incentive compatibility, feasibility, i.e., the ability to raise sufficient funds for provision of the public good, and voluntariness of participation. In some instances, it is impossible to have a public good provided efficiently on the basis of voluntary contracting. Some coercion may be needed. The original idea of Lindahl (1919) that the notion of a public good may provide the basis for a contractarian theory of the state is then moot. Samuelson's (1954) conjecture that private, spontaneous arrangements are inappropriate for efficient public good provision is vindicated.

Samuelson (1954) stressed the difference between public and private goods. However, the mechanism design literature is not so clear on the matter. Indeed, if we consider an

[1] This is shown by Clarke (1971) and Groves (1973) for implementation in dominant strategies and by d'Aspremont and Gérard-Varet (1979) for Bayes-Nash implementation.

economy with n participants with independent private values,[2] we get the same kinds of impossibility theorems for private and for public goods: On the basis of voluntary participation and in the absence of a third party providing a subsidy to "the system", it is impossible to have a decision rule that induces an efficient allocation under all circumstances, unless the information that is available ex ante is sufficient to determine what the allocation should be.[3] If coercion is allowed, there is no problem in achieving efficiency for either kind of good.

To find a difference between public and private goods, one must look at the behaviour of such systems as the number of participants becomes large. For private goods, a larger number of participants means that there is more competition. This reduces the scope for dissembling, i.e., acting as if one cared less for a good than one actually does, in order to get a better price. With competition from others, attempts to dissemble are likely to be punished by someone else getting the good in question. Hence, there are approximation theorems showing that, for private goods, there are incentive mechanisms that induce approximately efficient allocations, even with a requirement of voluntary participation, if the number of participants is large.[4]

For public goods, there is no such competition effect. An increase in the number of participants has two different effects. On the one hand, there are more people to share the costs. On the other hand, the probability that an individual's expression of preferences affects the aggregate decision is smaller; this reduces the scope for getting a person to contribute financially, e.g., by having an increase in financial contribution commensurate to the increase in the probability that the public good will be provided. The second effect dominates if individual valuations are mutually independent and if the cost of providing the public good is commensurate to the number of participants, e.g., if the public good is a legal system whose costs are proportional, or even more than proportional, to the number of parties who may give rise to legal disputes. In this case, the expected level of public-good provision under *any* incentive mechanism that relies on voluntary participation must be close to zero.[5]

Samuelson's view about public goods versus private goods, the latter being efficiently provided by a market system, the former not being efficiently provided at all by a "spontaneous decentralized" solution, thus seem to find its proper place in a setting with many participants where, one the one hand, the forces of competition eliminate incentive and information problems in the allocation of private goods, and, on the other hand, incentive and information problems in the articulation of preferences for a public good make it impossible to get the public good financed.

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2 Independent private values: If one person is known to have a high preference for the good in question, this contains no information about any other person's preference for this good. Preferences of different people are stochastically independent.

3 For private goods, see Myerson and Satterthwaite (1983), for public goods, Güth and Hellwig (1986), Mailath and Postlewaite (1990).

4 Wilson (1985).

5 See Mailath and Postlewaite (1990), Hellwig (2003).

However, in the transition from a finite economy to a large economy, the question of what is the proper amount of resources to be devoted to public-goods provision is lost, at least in the independent private values framework that has been used by this literature. In this framework, a version of the law of large numbers implies that cross-section distributions of public-goods valuations are commonly known. Given this information, the efficient amount of public-goods provision, first-best, second-best, or fifty-sixth-best, is also known. The only information problem that remains is the assignment problem of who has a high valuation and who has a low valuation for the public good. This assignment problem matters for the distribution of financing contributions but *not* for the decision on how much of the public good to provide.

C.I.2.2 Do Correlations Make Incentive Problems Disappear?

If one wants to avoid the conclusion that the proper amount of resources to be devoted to public-goods provision is known *a priori* because the cross-section distribution of valuations for the public good is pinned down by the law of large numbers, one must assume that the public-goods valuations of different people are correlated so that the law of large numbers does not apply. However, for models with correlated valuations, the impossibility theorems mentioned above are no longer valid. Indeed, for models with private goods, Crémer and McLean (1988) and McAfee and Reny (1992) have shown that one can use the correlations in order to prevent people from obtaining "information rents", i.e., benefits that they must be given if they are to be induced to properly reveal their information. For public goods, Johnson, Pratt, and Zeckhauser (1990) and d'Aspremont, Crémer, and Gérard-Varet (2004) show that, generically, incentive schemes that use correlations to harshly penalize deviations when communications from different people are too much in disagreement, can be used to implement first-best outcomes – with voluntary participation and without a third party providing a subsidy, at least in expected-value terms. The incentive schemes that these analyses involve are not very convincing. They look more like artefacts of the mathematics than anything that might be used in reality. But then the question is what precisely is deemed to be implausible about them.

One answer to this question has been proposed by Neeman (2004) and Heifetz and Neeman (2006). In their view, the results of Crémer and McLean (1988), as well as the other literature, rest on an implicit assumption, which they deem to be unpalatable, namely, that agents' preferences for a good can be inferred from their beliefs about the rest of the world. Crémer and McLean (1988) do not actually specify people's beliefs. They assume that people's preference parameters are the only source of information asymmetry and heterogeneity. Beliefs about the rest of world are implicitly defined as conditional expectations given their own characteristics and given the overall structure of correlations of characteristics across agents. Generically, preference parameters can be inferred from these beliefs. Moreover, because differences in beliefs induce differences in attitudes towards bets, i.e., state-contingent payment schemes, these differences in atti-

tudes towards bets can be used to extract all rents. According to Heifetz and Neeman (2006), the logic of the Crémer-McLean argument breaks down if people have sources of information other than their preference parameters. In this case, it is quite possible for a given belief about the rest of the world to be compatible with two distinct values of preferences, say a value of zero and a value of ten for the good in question. Because the person with a value of ten for the good in question has the same beliefs as the person with a value of zero, it is then not possible to make the person with a value of ten reveal his high valuation and at the same time surrender the benefit that he obtains if he is actually given the enjoyment of the good; after all, this person could always act as if his value was zero. Neeman (2004) uses a version of this argument in order to prove a version of the Mailath-Postlewaite (1990) theorem on the impossibility of public-good provision in a large economy with voluntary participation, this one with correlated values and under an assumption that, uniformly across economies with varying numbers of participants, there always is a probability that a person holding a certain set of beliefs might assign zero value to the public good. Heifetz and Neeman (2006) argue that, in the set of relevant incomplete information models, the "Beliefs Determine Preferences" (BDP) property of Crémer and McLean is in fact negligible.

Gizatulina and Hellwig (2009a, 2009b) throw some doubts on these results. Gizatulina and Hellwig (2009a) show that the uniformity of violation of BDP which Neeman (2004) assumes, regardless of how many people there are in the economy, is incompatible with the notion that agents might be *informationally small*. The concept of informational smallness has been introduced by Palfrey and Srivastava (1986) and McLean and Postlewaite (2002) in order to articulate the idea that a person's ability to exploit information advantages might be limited if the information held by other agents (collectively) comes close to making this person's information redundant. In Gizatulina and Hellwig (2009a), each person has private information about his preferences, but other people have noisy signals about these preferences. If there are many such people, and they can be induced to reveal these signals, an average of the signals can be used to induce truthful preference revelation at practically no cost. Thus, if the number of participants is large, an approximately efficient allocation rule can be implemented although participation is voluntary, the cost of public-good provision is proportional to the number of participants, and the BDP property is violated.

Gizatulina and Hellwig (2009b) start from the observation that neither Neeman (2004) nor Heifetz and Neeman (2006) make any use of the notion of beliefs as conditional expectations. They do require that there should be a common prior from which the beliefs of different agents in the economy are derived by conditioning on some intervening information, but this requirement does not enter the formal analysis. In particular, no attention is paid to the fact that information about one's preferences is part of the information on which beliefs are conditioned. Gizatulina and Hellwig (2009b) study the genericity of the BDP property under the assumption that each agent observes a certain set of information variables, among them his own preferences. Using methods from differential topology (Whitney's Embedding Theorem), they show that priors exhibiting the

BDP property are in fact topologically generic in the set of all priors with continuously differentiable densities if the set of objects about which agents form their beliefs are sufficiently rich relative to their own information variables, formally if the dimension of the set of objects about which people form their beliefs is more than twice the dimension of their own information variables. This condition is automatically satisfied if the information variables of all participants have the same dimension and there are more than three participants.

We believe, but have not yet been able to show, that this genericity result can be extended to the conclusion that, with correlated values, generically, it is possible to prevent people from earning information rents, and, therefore, generically, it is possible to implement efficient allocations even with voluntary participation. Because BDP has only been shown to be necessary and has not been shown to be sufficient for the elimination of information rents, this is an open question.

In thinking about the relation between beliefs and preferences in models with correlations, we have observed that the standard foundational model for studying strategic interaction when people have incomplete information, the so-called universal type space of Mertens and Zamir (1985), is somewhat less general than has been thought. The Mertens-Zamir formulation does not provide a proper framework for studying the role of information signals that people receive and the impact of these signals on their beliefs, beliefs about beliefs, etc. Gizatulina (2009) has examples to this effect. At this point, the question is what deeper principles or insights may be gained from these examples.

The work discussed in the preceding paragraphs should not be interpreted as saying that we regard Crémer-McLean type mechanisms as plausible, or that we consider the mechanisms of Johnson, Pratt, and Zeckhauser (1990) and d'Aspremont, Crémer, and Gérard-Varet (2004) as an appropriate basis for tackling social choice problems involving public goods. The problem is to understand precisely why these approaches should be considered unsatisfactory. Gizatulina and Hellwig (2009a, 2009b) should be interpreted as saying that the reliance of Crémer-McLean type mechanisms on the BDP property is less problematic than has been suggested and, perhaps, a criticism of such mechanisms must dig deeper.

C.I.2.3 Robustness

The ability to exploit correlations between valuations requires precise information not just about the joint distribution of the different participants' public-good valuations, but also about the different participants' beliefs about the other agents' valuations, the other agents' beliefs about the other agents' valuations, etc. It seems implausible that a mechanism designer should have this information. Ledyard (1979) and Bergemann and Morris (2005) have proposed a *robustness requirement* that would eliminate the dependence of an incentive scheme on this kind of information. According to Bergemann and

Morris, an social choice function, e.g. in the public-good provision problem a function mapping cross-section distributions of valuations into public-good provision levels and payment schemes, is *robustly implementable* if, for each specification of "type spaces", in particular, for each specification of beliefs that agents hold about each other, one can find an incentive mechanism that implements the outcome function in question.

In public-good provision problems with quasi-linear preferences, robust implementability is, in fact, equivalent to *ex post* implementability and to implementability in dominant strategies. This eliminates all social choice functions whose implementation would involve an exploitation of correlations and agents' beliefs about correlations. In particular, social choice functions with first-best outcomes are not robustly implementable. The mechanisms for first-best implementation in Johnson et al. or d'Aspremont et al. make essential use of information about beliefs, beliefs about beliefs, etc.

Given these findings, Bierbrauer and Hellwig (forthcoming) argue that the robustness criterion of Ledyard (1979) and Bergemann and Morris (2005) provides the proper setting for understanding the essence of the difference between public and private goods. All the findings from the independent-private-values case carry over to robust implementation with correlated values. In particular, (i) for private goods, approximately efficient implementation is possible with voluntary participation if the number of participants is large, and (ii) for public goods with provision costs commensurate to the number of participants, hardly any provision at all is possible with voluntary participation if the number of participants is large. These results hold regardless of what is being assumed about correlation structures. In particular, they leave room for an analysis of large economies without a law of large numbers, in which the question of how much of the public good should be provided is not moot.

C.I.2.4 Voluntariness of Participation versus Coercion

As mentioned above, the various theorems concerning the impossibility of implementing efficient allocations under conditions of incomplete information all involve a requirement that participation be voluntary. As such, these theorems provide an insight into why a contractarian approach to public good provision is unsatisfactory. At the same time, they raise the normative question whether it is appropriate to allow for voluntary participation or whether it wouldn't be preferable to coerce people into participating, asking them to contribute even if they do not draw any benefits from the public good in question. Though formulated in the narrow context of allocation theory for the provision of public goods, this question touches the core of the relation between the community (the state) and the individual.

Bierbrauer (2009c, 2009d) develops a framework for posing this question in a nontrivial way. The idea is to endogenize the mechanism designer, introducing a prior stage at which the participants assign to someone the right to propose and to implement a

mechanism for solving the given allocation problem. The question is in what circumstances people at this prior stage would wish to impose a condition requiring the mechanism designer to respect participation constraints or, equivalently, in what circumstances they would wish to retain a right of vetoing the mechanism that will be subsequently proposed and implemented.

Bierbrauer (2009c) shows that a right of veto, i.e., an imposition of participation constraints is undesirable if the mechanism designer is known to be a Pigouvian welfare maximizer. Put differently, a necessary condition for the desirability of participation constraints is that there is an agency conflict between the consumers of the public good and the institution in charge of organizing its supply. This questions the relevance of models that simultaneously assume that the mechanism designer is benevolent and at the same time has to obeye participation constraints. Indeed, the agency conflict must be sufficiently intense to justify the imposition of participation constraints. Participation constraints are desirable if the mechanism designer is known to be a malevolent Leviathan, out to maximize resources that he can extract from the economy, or simply a profit-maximizing firm.

Bierbrauer (2009d) studies the scope for using regulation to reduce or eliminate abuses by a profit-maximizing firm when the regulator is uninformed about the underlying state of the economy, i.e., the distribution of participants' preferences and the production costs. In this setting, too, it may be desirable to have participation constraints, i.e., to give each participant the right to veto the proposed mechanism. This right implies that people who do not benefit from the public good cannot be made to pay for it, and payments must come from distortionary sources of finance, e.g., entry fees when exclusion is possible, but the inefficiency that is thereby induced is less important than the constraint that the veto imposes on the provider.

C.I.2.5 Coalition Proofness

Even if one is not concerned about problems of power abuse, one may be less than convinced by the proposition that, in the absence of participation constraints, it is always possible to implement first-best allocations. Following Bierbrauer (2009a), Bierbrauer and Hellwig (2009) consider the implications of imposing an additional requirement of *coalition proofness*.

The additional requirement is motivated by the observation that robust implementation of first-best allocation rules may have to rely on people giving information that they would be unwilling to give if they appreciated the way it is being used. In a large economy, where no one individual has a significant impact on the level of public-good provision, individual incentive compatibility conditions are trivially met if payments are insensitive to people's communications about their preferences. One can thus use a scheme with equal cost sharing to find out the aggregate valuation for a public good and to implement a

first-best provision rule; this kind of implementation is actually robust in the sense of Bergemann and Morris (2005).

However, this kind of implementation is abusing the notion that, if a person's communication about his or her preferences does not make a difference to either the level of public-goods provision or the payment that the person has to make, then the person is indifferent between all messages and therefore may as well communicate the truth. If there was just the slightest chance that a person's communication would make a difference, at least some people would strictly prefer *not* to communicate the truth.

To see why this might happen, observe that first-best implementation relies on information concerning the intensities of people's preferences. If there is a large number of people whose benefits from the public good are just barely less than their share of the cost, first-best implementation may require that the public good be provided because the large benefits that the public good provides to a few other people are more than enough to outweigh this small shortfall. If, instead, the people who oppose the public good have no benefit at all from it, first-best implementation may require that the public good should not be provided because the shortfall of their benefits relative to their costs is not compensated by the net benefits that are available to others. In this constellation, the overall outcome depends on the information that can only be obtained from people who don't want the public good to be provided at all, namely whether their opposition is mild or strong. Truthtelling is individually incentive compatible because nobody believes the information that he provides to make a difference. However, truthtelling is not coalition-proof: If someone was to organize a coalition of opponents so as to coordinate on a manipulation of the information they provide, the overall incentive mechanism would no longer be able to implement first-best outcomes.

Bierbrauer and Hellwig (2009) provide an abstract formulation of the requirement of coalition proofness and its implications for robust implementability in the public-good provision problem. Following Laffont and Martimort (1997, 2000), in addition to robust incentive compatibility, they require that the incentive mechanism for public-good provision be immune to the introduction of a "manipulation mechanism" whereby a coalition organizer collects information from coalition members and uses this information to distort the information that is provided to the overall mechanism. The introduction of a manipulation mechanism is itself modelled as a mechanism design problem with its own set of incetive and participation constraints. Coalition proofness fails if there exist a manipulation mechanism and a set of agents such that, if all agents in this set subscribe to the manipulation mechanism, and all other agents do not, then all agents in the set are strictly better off than they would be without the manipulation mechanism.

For the simplest version of the public-good provision problem, with a non-excludable public good coming as a single, indivisible unit that costs k, Bierbrauer and Hellwig (2009) show that robust implementability and coalition proofness jointly imply that (i) people's payments must be the same in all states in which the public good is provided and the same in all states in which the public good is not provided, and that (ii) the

decision to provide the public good must be a non-decreasing function of the number of participants for whom the benefits of the public good exceeds the difference between provision-state payments and non-provision-state payments. Information about the intensities of likes and dislikes cannot be used because reports about this information are subject to manipulation by the coalitions concerned. Whereas conditions (i) and (ii) are only shown to be necessary for robust implementability and coalition proofness, they are in fact necessary and sufficient if the requirement of coalition proofness is weakened to the effect that immunity is only required against manipulations by coalitions that are themselves immune to manipulations by further subcoalitions.

Bierbrauer and Hellwig (2009) also show that robustly implementable and (weakly) coalition-proof social choice functions can in fact be implemented by *voting mechanisms*, i.e., by mechanisms where people are simply asked to vote for or against provision of the public good, and the outcome is made to depend on the number of "yes" votes. The standard economist's criticism that voting abstracts from intensities of likes and dislikes and therefore leads to inefficient outcomes is therefore moot, at least if one allows for the formation of coalitions that distort information about the intensities of likes and dislikes.

C.I.2.6 Informative Voting

An alternative approach to articulating what precisely is problematic about first-best implementation in large economies has been pursued by Bierbrauer and Sahm (2006, 2008).

Bierbrauer and Sahm (2006) start from the observation that, in the large economy, with public-good provision decisions and payments unaffected by any one agent's behaviour, people are indifferent as to what they communicate to "the system". Given this observation, they impose the additional requirement that the chosen actions should still be considered optimal if there was even the slightest chance of their affecting aggregate outcomes. This corresponds to the assumption of *informative voting* in political economy, whereby people vote their preferences even though, as individuals, they do not expect their votes to have an effect on aggregate outcomes. In a large economy, this assumption imposes additional constraints on mechanism design. These constraints typically preclude the implementation of first-best allocations. The reasons are roughly the same as for the constraints imposed by coalition proofness.

For a better understanding of their approach, Bierbrauer and Sahm also study incentive mechanisms for public-good provision that condition only on information received from people belonging to a finite sample of the population. Such mechanisms have previously been studied by Green and Laffont (1979) under the assumption that people in the sample are subject to a different payment scheme from the rest of the population. Bierbrauer and Sahm (2008) show that this condition is actually necessary for first-best implementation in this approach. If people in the sample are subject to the same pay-

ment rule as the rest of the population, first-best allocations cannot in general be implemented. In this case, if the sample is large, the optimal mechanism conditioning on information from people in the sample actually yields approximately the same outcomes as the optimal mechanism in the large economy with the informative-voting condition as an additional constraint. Bierbrauer and Sahm (2008) discuss the implications of these findings for a welfare assessment of democratic voting.

C.I.3 Public-Goods Provision, Public-Sector Pricing and Taxation

C.I.3.1 Public-Goods Finance under Participation Constraints

Textbook treatments of public economics are usually split into treatments of mechanism design and public-goods provision, public-sector pricing under a government budget constraint, and redistributive taxation. Relations between these three locks are rarely discussed. Our work over the past few years has attempted to overcome this separation and to provide an integrated framework for public economics within which relations of the different parts to each other can be discussed and potential conflicts and contradictions assessed. As a step in this direction, Hellwig (2004/2009, 2007a) has shown that the traditional three-way split between the theory of mechanism design and public-goods provision, the Ramsey-Boiteux theory of public-sector pricing under a government budget constraint, and the theory of redistributive taxation should be replaced by a two-way split between models with and models without participation constraints. Hellwig (2007a) has integrated the Ramsey-Boiteux theory of public-sector pricing under a government budget constraint with the mechanism design approach to public-goods provision, showing that, if participation constraints are imposed and if, in addition, there is no way to prevent agents from retrading goods among themselves, then Ramsey-Boiteux pricing emerges as a second-best mechanism under incomplete information. Access prices for excludable public goods (or indirect taxes) are needed to finance the public sector when participation constraints preclude the levying of lump sum taxes for this purpose.

The Ramsey-Boiteux approach itself has been criticized by Atkinson and Stiglitz (1976) for not paying sufficient attention to the role of direct taxation as a source of government funds.

The use of income taxes as a source of public-goods finance is studied in Hellwig (2004/2009). This paper allows for endogenous production and for income taxation as a way of extracting some of the surplus from production without violating participation constraints. However, as in Mirrlees (1971), levels of labour productivity differ across people, individual productivity levels are private information, and the scope for income taxation is limited by incentive considerations. Again under the additional assumption that people are free to retrade private goods and unbundled public-goods admission tickets, Hellwig (2004/2009) shows that the Atkinson-Stiglitz critique of the Ramsey-

Boiteux theory is valid in the sense that it is desirable to use nonlinear income taxes as a source of funds for financing public goods and public services. However, Hellwig (2004/2009) also shows that, contrary to the claims of Atkinson and Stiglitz, positive admission fees for excludable public goods as well as nonuniform indirect taxes are desirable, in addition to income taxation, if participation constraints are imposed. Optimal public sector prices and indirect taxes and optimal income tax schedules must satisfy a version of the Ramsey-Boiteux inverse-elasticities rule and a version of the Mirrlees formula for the optimal marginal income tax. This paper is now in its third round with *Econometrica*.

Bierbrauer (2009 d) criticizes Hellwig's (2004/2009) dichotomy between models with and models without participation constraints on the grounds that, if participation constraints are to be taken seriously, they must be derived rather than imposed. For a model of the provision of a single excludable public good, he shows that this can actually be done if the provision is delegated to a profit-maximizing entrepreneur. If the entrepreneur's cost is his own private information, the imposition of participation constraints, i.e., giving each agent a veto right may be the only viable way of limiting the monopoly profits that the entrepreneur might otherwise extract.

C.I.3.2 Public Goods Provision, Income Taxation, and Redistribution Without Participation Constraints

If no participation constraints are imposed, public-good provision can in principle be financed by nondistortionary, lump sum taxation. The Atkinson-Stiglitz (1976) critique of the Ramsey-Boiteux approach to public-sector pricing and indirect taxation is therefore applicable. There remains the question of what can be said about distributive concerns and, in particular, the relation between public-good provision and utilitarian redistribution à la Mirrlees (1971). If differences in earning abilities were the only source of heterogeneity and, hence, the only source of distributive concerns, the Atkinson-Stiglitz theorem would imply that, even with distributive concerns, it is undesirable to charge public-sector prices in excess of marginal costs or to levy distortionary indirect taxes unless, due to complementarities in consumption, these measures help to reduce distortions in redistributive income taxation.[6] As discussed in Hellwig (2004/2009, 2005, 2010 a), however, one must also take account of differences in public-goods preferences as a source of heterogeneity and of distributive concerns. For a single excludable public good, Hellwig (2005) has shown that such distributive concerns can make it desirable to charge access prices above marginal costs in order to facilitate redistribution from people who gain a lot of utility from the enjoyment of the public good to people who do not draw such benefits from it. Hellwig (2010 a) shows that, in this setting, simple pricing mechanisms may actually be dominated by mechanisms with nondegenerate admission lotteries, with higher prices charged for admission lotteries with higher admission probabilities.

[6] Minor extensions of this theorem are given in Hellwig (2009, 2010 b).

Hellwig (2010 a) also provides a sufficient condition for randomization to be undesirable; remarkably, this condition is the same that ensures undesirability of randomization in the literature on price discrimination by a multi-product monopolist.

Whereas Hellwig (2005, 2010 a) deal with the case of a single excludable public good, without any concern for the production side of the economy, Hellwig (2004/2009) studies an integrated model with multiple public goods and endogenous production, with heterogeneity in productivities (earning abilities) as well as public-goods preferences. In this model, each source of heterogeneity gives rise to distributive concerns of its own. If the different sources of heterogeneity are independent, each one of them calls for distortions in pricing or taxation as a basis for redistribution, in admission fees for excludable public goods as well as income taxes. If the different sources of heterogeneity are positively affiliated, the distributive concerns are even stronger. The resulting formulae for optimal public-sector prices and income taxes can be interpreted as a combination of a Ramsey-Boiteux weighted inverse-elasticities and the Mirrlees rule for the optimal marginal income tax. Because of the multiple sources of heterogeneity and distributive concerns, the Atkinson-Stiglitz theorem does not apply.

As an offshoot from Hellwig (2004/2009), Hellwig (2007 b, c) has taken a new look at the standard model of optimal utilitarian income taxation. Hellwig (2007 b) provides a new formulation of the Mirrlees-Seade characterization of the optimal income tax schedule – in a more general model, under weaker assumptions, and with a proof that clarifies the structure of the argument, relating the mathematics to the economics and showing what exactly is the role of each assumption that is imposed. Relying on the analysis of Hellwig (2007 b), Hellwig (2007 c) shows that randomization in income taxation is undesirable if preferences exhibit a property of nondecreasing risk aversion/inequality aversion; examples in the literature, in which randomization is desirable, are thereby put into perspective.

As a further offshoot from Hellwig (2007 b), Hellwig (2006/2009) and Hellwig (2008) develop new techniques for dealing with incentive problems that involve unidimensional hidden characteristics. Hellwig (2008) extends Pontryagin's maximum principle to problems of optimum control with monotonicity constraints on the control variables. Incentive problems with unidimensional hidden characteristics naturally give rise to such constraints as second-order conditions for incentive compatibility. Relying on this mathematical theorem, Hellwig (2006/2009) develops a technique for studying incentive problems with unidimensional hidden characteristics in a unified way, without making any assumption about the presence or absence of bunching or about the continuity of solution functions. The analysis encompasses mixed distributions that involve mass points as well as a continuous part. Interior mass points are shown to be a natural source of bunching as well as discontinuities in solution functions. Otherwise, the standard properties of solutions to such incentive problems are shown to generalize.

Whereas Hellwig (2004/2009, 2005, 2010 a) studies models of large economies with cross-section distributions of taste and productivity parameters satisfying a law of large

numbers (and therefore being common knowledge). In contrast, Bierbrauer (2008, 2009 a, 2009 b) and Bierbrauer and Sahm (2008) study the interdependence of public-good provision and income taxation when there is aggregate uncertainty about public-good preferences, i.e., there is a genuine problem of finding out what level of public-good provision is desirable. Bierbrauer (2009 a) shows that, if a robustness condition is imposed, the standard procedure of having separate analyses of public-good provision and income taxation, effectively neglecting the information problems in public-good provision,[7] is vindicated, at least if preferences are additively separable between consumption and leisure. In this case, the arguments given in Section C.I.2.3 imply that, in a large economy, it is always possible to induce truthtelling about public-good preferences by having payments be independent of reported preferences; moreover, implementation is independent of people's beliefs about each other, i.e., robust. Given the financing needs that arise from efficient public-goods provision, there remains the Mirrlees problem of determining an optimal income tax schedule with a view to these financing needs and redistribution.

The analysis in Bierbrauer (2009 a) is subject to the criticisms that Bierbrauer and Hellwig (2009)[8] raise against the notion that, in a large economy, first-best implementation is trivial because people feel that they are insignificant and therefore may as well tell the truth. Taking account of this criticism, Bierbrauer (2008) takes another look at the model of Bierbrauer (2009 a), imposing requirements of coalition proofness as well as individual incentive compatibility. Coalition proofness typically precludes first-best implementation. The additional constraints that coalition proofness imposes bear a certain formal similarity to incentive requirements for Clarke-Groves dominant-strategy implementation, here, however, applied to coalitions of people with the same types. These requirements destroy the separability of the public-good provision and income tax problems in Bierbrauer (2009 a). Bierbrauer (2009 b) provides a concrete example with two income classes and public-goods preferences that are class-specific, at least from an *ex ante* perspective. In this example, the class-specificity public-good preferences has the consequence that, for some parameter constellations, one must either forego efficient public-good provision or reduce the redistributive scope of income taxation.

The interdependence of public-good provision and income taxation is also central to Traxler (2009 b, 2009 c). These papers study a political-economy model of public-good provision financed by a linear income tax when people can engage in activities that permit them to avoid taxation. The median-voter theorem applies. However, the median voter is defined in terms of after-tax incomes, rather than pre-tax incomes or wage rates. Depending on what one assumes about people's avoidance costs, rankings in terms of after-tax and pre-tax incomes need not be the same. In this case, there can be redistribution from the middle to the top and the bottom of the income distribution. There can be under-provision as well as over-provision the public good, even though the median

7 See, e.g., Boadway and Keen (1993).

8 See Section C.I.2.4 above.

income level is less than the mean. When there is over-provision, the inefficiency is the lower, the higher the average level of tax avoidance in the economy.

C.I.3.3 Enforcement and Compliance

In the past, we have abstracted from issues of enforcement. However, when millions of people are involved, enforcement of payments is a nontrivial matter. With the arrival of Christian Traxler at the institute, we have also begun to develop a competence in this direction. Even before coming to the institute, Christian Traxler had initiated a large-scale project investigating enforcement and compliance with respect to the payment of fees for radio and television in Austria. Results of this project are presented in Traxler and Winter (2009), Rincke and Traxler (2009), and Fellner, Sausgruber and Traxler (2009).

Traxler and Winter (2009) report on the results of a survey that was conducted concerning compliance with respect to the obligation to pay fees for radio and television in Austria. Econometric analysis of the evidence from the survey suggests that compliance behaviour is very much influenced by people's beliefs on the frequency of compliance by others. This finding cannot be explained by sanctions varying with the frequency of compliance; actual sanctions are independent of this frequency and depend mainly on the severity of the delinquency.

Traxler (2009 a) provides a theoretical analysis of the implications of this finding for equilibrium compliance behaviour and for tax and enforcement policies. If compliance behaviour depends on beliefs about the compliance of others, in equilibrium, this norm itself is determined endogenously. A major policy implication suggests that tax and enforcement policies should be targeted towards influencing people's beliefs about the compliance behaviours of others because these beliefs have an immediate effect on their own compliance.

Fellner, Sausgruber, and Traxler (2009) report on a field experiment involving mailings to suspected evaders of television fees in Austria. Some mailings just reminded people of their obligation to pay these fees, some were accompanied by a threat of legal sanctions, some by an appeal to moral norms, and some by information about the compliance behaviour of others. Relative to a control group, there was a strong effect of these mailings on all people receiving such mailings. Mailings threatening legal sanctions had a strong additional effect, mailings appealing to moral norms or containing information about the behaviour of others did not have such an additional effect. For the addressees of the mailings, the findings confirm the economic model of delinquent behaviour as a result of a consideration of costs and benefits, with little regard for moral or social norms. However, the addressees consist of a selected group of the population, namely people who were known to live at a given address and had not previously registered to pay their television fees. Attitudes and behaviours of people in this select group are probably not typical for the population at large, of which more than 90 % are in compliance anyway.

However, when thinking about enforcement policies, the attitudes and behaviours of the potential delinquents may be the thing to focus on, even if these attitudes and behaviours cannot be generalized to the population at large.

Rincke and Traxler (2009) study the effects of enforcement activities on compliance behaviours. Econometrically, the problem is to avoid spurious correlations and simultaneity bias, due to the fact that enforcement officers' choices of where to go and look for potential evaders are endogenous, perhaps driven by information on where suspected evasion rates are high or by the consideration that it is more comfortable to do this job in a densely settled area, e.g., a city, than in a distant mountain valley. To deal with the identification problem, Rincke and Traxler make use of a natural experiment that was provided by extraordinary snow fall in the winter of 2005/2006. The snow fall had a differential impact on enforcement officers' costs of getting to different parts of the country, e.g., more severe effects in remote mountain valleys or in places at higher altitudes. Using such weather-related variables as instruments, Rincke and Traxler find that compliance behaviour is positively affected by enforcement activities, not just directly, because offenders are caught, but also indirectly, because, presumably through word of mouth, information about such activities spreads in the local community and people who have failed to comply so far begin to have second thoughts. To be more precise: Rincke and Traxler find that, following enforcement activities in a given area, registration for television fees in that are goes up, i.e., some non-compliers begin to register even though they have not been directly affected by the enforcement as such.

C.I.4 Governance, Finance, and Efficiency in Public-Goods Production

C.I.4.1 The Research Problem

Most of normative public economic theory, including the work on which we have reported in Sections C.I.2 and C.I.3 does not pay any attention to the supply side of the economy, in particular to the production of public goods. The focus is exclusively on the demand side and on the implications of nonrivalry for preference revelations and finance under conditions of incomplete information. The nature and properties of the public goods are taken as given; the production side is represented by an exogenously given cost function.

The significance of this lacuna is obvious if one considers the financing of production. According to Atkinson and Stiglitz (1976), the government budget constraint is just what the term says, a constraint, whose impact should be minimized. Therefore any need for funds to finance production should be covered from direct taxes, preferably lump sum taxes. According to Hellwig (2004/2009, 2007 a), the scope for direct taxation may be limited by participation constraints, and therefore one may need entry fees as well as direct taxes to finance production. Even so, a subsidization of public-goods provision from direct taxation is desirable, as is some cross-subsidization between the different

public goods.[9] There is no notion that any one public good or any one subset of public goods ought to be self-supporting. Any notion that the production sector should be divided up into separate units, with a proviso that each unit finance itself, is rejected because this would entail replacing the single, integrated budget constraint for the entire production sector by a multiplicity of separate constraints for the different subunits. This would further restrict the set of admissible allocations and would presumably reduce welfare.

However, this line of argument neglects information and incentive problems on the production side of the economy. The notion that welfare is increased by having an integrated production sector with a single, consolidated budget constraint stems from the Pigouvian tradition of welfare economics, in which the planner has complete information about preferences and technologies. The modern theory of normative public economics has done away with the complete-information assumption, but it has done so in a piecemeal fashion, with mechanism design models of the demand for public goods and screening models for the supply,[10] without integrating the two.

Taking account of information and incentive problems in production, one expects subsidization and cross-subsidization schemes to have negative effects on producers' efforts. If a producer knows that any deficit is going to be covered by funds from another source, he may be less concerned about cost efficiency or about tailoring his product to the needs of his customers.[11] The same holds for a producer who knows that any surplus he earns is going to be siphoned off for use in some other part of the system. This should lead to a more critical view of subsidization and cross-subsidization schemes in the financing of production.

However, the insights concerning the benefits of such schemes that have been developed in normative public economics so far do not automatically become obsolete. The mere fact that incentive effects in production matter does not by itself invalidate the arguments underlying the inverse-elasticities rule, e.g., arguments in favour of cross-subsidizing local public transport from profits in electricity distribution. What we need is a framework for comparing such benefits of cross-subsidization with the costs of negative incentive effects. As yet, we do not have a conceptual framework for assessing the trade-offs that are involved.

The problem has been around for a long time. Remarkably, though, hardly any work has been done on it. Laffont and Tirole (1993, Ch. 15) provide an example in which it is better to have average cost pricing, i.e. to have the activity in question finance itself, rather than marginal-cost pricing with a public subsidy covering fixed costs. In the exam-

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9 Fang and Norman (2005) argue that, in addition, the cross-subsidization scheme should encompass all private goods.

10 For the latter, see Baron and Myerson (1982), Laffont and Tirole (1993).

11 This insight is at least as old as the Ramsey-Boiteux theory itself. Indeed, Boiteux (1956) considered a single public enterprise subject to a stand-alone budget constraint precisely because he was aware of the incentive implications of a requirement of cost recovery for this enterprise, without any prospect for cross-subsidization from other parts of the public sector.

ple, the firm has private information about the level of fixed costs, i.e. about the size of the subsidy it can claim under marginal-cost pricing. The supervisory authority has this information as well, but this authority is captured and tends to go along with the firm's demands unless it is under pressure from consumers. Average-cost pricing is a device to make consumers be interested in and to exert pressure with respect to the level of fixed costs that the supervisory authority certifies.

However, this model cannot be regarded as a basis for the development of a more general normative analysis. The analysis and its conclusion are highly dependent on the details of the specification of information and of political interdependence. A general conceptual framework for studying the tradeoffs between negative incentive effects and positive Ramsey-Boiteux effects of subsidization and cross-subsidization schemes has not yet been developed.

Bierbrauer (2009d) also obtains the conclusion that the imposition of a self-financing requirement may be desirable if a regulated firm with private information about costs produces and sells access to an excludable public good. The key assumption is that the relation between the policy maker and the regulated firm is incomplete, i.e., not fully contingent on all possible configurations of technologies and public goods preferences. While access to public funds certainly is in the firm's interest and, moreover, is conducive to achieving undistorted first-best outcomes, as opposed to distorted second-best outcomes, the consumers may prefer the imposition of a self-financing requirement for the firm because this limits the fraction of the surplus that the firm can extract and therefore leads to a higher level of consumer surplus. This analysis, however, involves a single excludable public good and as such is not suitable for studying cross-subsidization.

C.I.4.2 Ingredients of the Analysis: An Overview

It seems appropriate to start by looking at the problem in terms of standard incentive theory. Any one activity requires the effort of a manager as an input, this effort is unobservable, and must be called forth by appropriate incentives. Providing the activity with a separate budget, which is taken out of the general public budget, provides a basis for using profit as a basis for rewarding managerial effort. The incentive effects of subsidization and cross-subsidization schemes will then be similar to the incentive effects of a profit tax or subsidy, which are well known from the literature on moral hazard in insurance and in finance.[12] The problem would be to compare the efficiency losses associated with these incentive effects to the efficiency gains from the allocative effects considered in Ramsey-Boiteux theory.

However, there are a few difficulties that must be dealt with. Most importantly, the notion that *every* activity should self-finance is unrealistic. For some activities, self-financing seems impossible, for others, it is undesirable. An example where self-financing is impos-

[12] E.g. Holmström (1982), Jensen and Meckling (1976).

sible is provided by the railway system in Germany; most experts believe that this system is unable to finance the costs of the railway track network. An example where self-financing is undesirable is provided by the judicial system. Even though the services that the judicial system provides are, in principle, excludable, overriding social and political concerns in a democratic society militate against the use of user fees as a basis for financing this system.

Even in the private sector, private parties' limited ability to pay and limited liability cause problems for incentive provision based on profits. The impossibility of making the manager or entrepreneur participate in large losses tends to weaken incentives for effort and to induce excessive risk taking.[13] The treatment of insolvency therefore figures among the central issues in the theory of financial contracting.[14] Going beyond the discussion of incentive effects *ex ante*, this theory also focuses on the implications of insolvency for governance, e.g. the specification of intervention and control rights of the different claimants to the firm's assets. A major issue concerns the credibility – and the incentive effects – of contractual arrangements *ex ante* when these arrangements are subject to renegotiation, or to breach, *ex post*.

Credibility is likely to be even more difficult to establish when the activities in question serve the public interest. For a company or a person producing a purely private good, especially when in competition with others, insolvency poses a serious threat. New money is unlikely to be forthcoming unless the financiers can expect to recover the opportunity costs of their funds. For a company of person producing a public service, the prospect of insolvency is less threatening, especially if there are no other companies or persons producing the same service. The public at large has some interest in having the provision of the service continued, and the politicians in charge do not want to be blamed for its being discontinued. This makes it likely that, even if, *ex ante*, a self-financing requirement was imposed, in the event of insolvency *ex post*, the public purse would be used to provide continued finance.

The research problem of studying tradeoffs between incentive effects and allocative (Ramsey-Boiteux) effects of subsidization and cross-subsidization in public production must therefore be widened so as to encompass the problem of how to establish the credibility of arrangements that are intended to limit the scope for subsidization and cross-subsidization of individual activities. The scope for subsidization and cross-subsidization in public production must not be regarded as a policy parameter, but must be treated as a consequence of institutions and contracts that govern subsidization procedures and that provide for greater or lesser credibility of budget constraints.

In pursuing these questions, we want to draw on the large literature on soft versus hard budget constraints,[15] as well as the literature on cross-subsidization in private corpora-

13 Jensen and Meckling (1976), Stiglitz and Weiss (1981), Hellwig (2009).
14 Gale and Hellwig (1985), Aghion and Bolton (1992), Hart and Moore (1990, 1998)
15 For a survey, see Kornai, Maskin, Roland (2003).

tions.[16] Combining ideas from financial contracting and governance theory, these literatures investigate how the "hardness" of a budget constraint affects behaviours in different settings with different specifications of information asymmetries, moral hazard, and control rights assignments. Cross-subsidizations arising from soft budget constraints are sometimes treated as desirable and sometimes as the unavoidable consequences of a lack of arrangements that would make *ex ante* commitments credible. Some indications of the different possibilities are given in the analyses that Schmidt und Schnitzer (1993) and Schmidt (1996) provided of the effects of hardening budget constraints by privatization. For private corporations, Inderst and Müller (2003) and Inderst and Laux (2006) have indicated some incentive and governance implications of intra-firm cross-subsidization through internal capital markets. The task will be to adapt and extend the insights from this research so as to provide a basis for the more general welfare theoretic analysis of incentives, governance, and allocative (Ramsey-Boiteux) effects that we are interested in.

C.I.4.3 Some Research Questions

Along the lines suggested above, the first task would be to study the tradeoff between incentive effects and allocative effects of cross-subsidization mechanisms in a model of incentive contracting. The question is how the consideration of allocative effects changes optimal incentive schemes, in particular, how the effects of different degrees of hardness of budget constraints on output prices are to be taken into account.

In a second step, the analysis should take in the problem of making budget constraints credible.[17] This must be treated as a problem of institutional design. The problem is likely to be most difficult for those activities where hard budget constraints are in principle problematic because (i) the community is dependent on these activities and (ii) these activities cannot or should not be self-financing in the market. Of particular interest will be quasi-market arrangements under which subsidies are not paid to producers directly, but subsidies are paid to users who can then use them to pay for the goods or services in question. Examples would be voucher schemes for subsidizing education or, in the case of Germany, the subsidies which the Länder use to pay in order to maintain railway traffic on certain lines, relying on competition among railway transportation companies to keep the costs down.

In this context, it will be necessary to extend the theory of hard versus soft budget constraints and of privatization. Apart from taking account of the impact that alternative arrangements have on output prices, it will be also important to consider the difficulties of contracting on matters of public interest. "Incomplete-contracts" theory gives many arguments for why the specification and subsequent enforcement of contractual obligations give rise to incentive problems of their own. These arguments apply to obligations

[16] For a survey, see Hellwig, Laux, Müller (2002).

[17] For an analysis of this problem in the context of a federal state, see Crivelli and Staal (2008).

concerning the public interest at least as much as to obligations concerning the delivery of goods of services to another private party. The theory would therefore suggest that control rights are needed as a substitute for effective contractual rules. But then, something like the privatization of a production activity involves a tradeoff between the hardening of budget constraints and the loss of control that are thereby induced. We should develop a framework for studying the determinants of this tradeoff.

An example of these issues is provided by the projected privatization of Deutsche Bahn AG. As mentioned, there seems to be a consensus that the network of railway tracks is not viable on its own, but needs a public subsidy of some 3 billion euro per year. Political discussion of the projected privatization has focussed on whether the company should be privatized as a whole, including the network of railway tracks, or whether the privatization should be limited to the transportation companies, which, in principle, should be economically viable on their own, without direct public subsidies. Underlying this question is the conflict between different concerns about control rights assignments in a world in which contracts are incomplete. Deutsche Bahn AG prefers to retain the integrated structure of railway track and transportation in one company, in combination with a contract determining the Federal Government's yearly subsidies, as well as the track investments that are to be made. The alternative solution of having the railway track continue to be run by a public company, with contracts governing relations between the public railway track company and the privatized transportation company is rejected because the incompleteness of contracting is seen as an impediment to efficiency in relations between the public railway track company and the privatized transportation company. However, the very reasons for being sceptical about a reliance on contracts in relations between the railway track company and the transportation company are also reasons for being sceptical about a reliance on contracts between the Federal Government as a financier and the integrated railway company as a manager of the railway tracks.[18]

Underlying this conflict is the theoretically interesting question how one might balance conflicting concerns about control rights assignments when the vertical chain of relations involves more than two parties (here, the Federal Government, the railway track company, and the railway transportation company), and an overall vertical integration of all three parties is ruled out. What factors determine which control rights assignment is to be preferred? To what extent is it possible to use contractual arrangements in order to implement flexible control rights assignments that provide for a compromise between the two alternatives mentioned above? As a matter of pure contract theory, these questions are of interest and shall be pursued in their own right. In addition, it will be of interest to investigate how the treatment of conflicting control rights concerns affects the tradeoff between the incentive effects of hardening budget constraints and the disadvantages from control loss by privatization.

Apart from contractual arrangements, the analysis must also take account of the possibility of using sector-specific regulation in order to govern conduct so as to take account of

[18] Hellwig (2006 a, 2006 b)

the public interest even after privatization. In practice, sector-specific regulation is used to enforce the provision of network access to other companies so that they can compete in downstream markets. Sector-specific regulation is also used to implement *universal-service* regulations by which an industry is obliged to provide a certain minimum of services at uniform and low prices to everybody. However, the insights of contract theory concerning the limits of "complete contracting" for incentive provision apply to such regulation as well; the assignment of intervention rights to the regulator himself raises new questions about incentives and accountability.

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C.II The Behaviorally Informed Design of Institutions for the Provision of Collective Goods

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C.II.1 General Outline

I. Motivation

Since the last report to the Advisory Council, our work has changed quite profoundly. But the change has almost exclusively been methodological. Now, almost all of us, including many of the lawyers, are running our own experiments. Perhaps in two years' time, we might even reflect the methodological focus by changing the mission of the group into "Experimental Law and Economics". For the time being, however, we have kept the original mission statement: "The Behaviorally Informed Design of Institutions for the Provision of Collective Goods", since our area of interest has not changed. We also see no reason to exclude other empirical methods, or theory, or doctrine, by the very definition of our task. Consequently, the following paragraphs motivate our work as well as they did two years ago.

All research on collective goods asks one of the following three questions: is there a collective-goods problem in the first place? If so, is an existing or a proposed institution able to solve the problem, or at least to improve the situation? Finally, do the normatively appropriate problem definition and the normatively preferable institutional response stand a chance of being implemented?

It is natural to address all these three questions by way of rational-choice analysis. Collective-goods problems are then defined as pure public goods, club goods, or common pool resources. In each case, the analysis focuses on incentives and information, and on the way in which institutions shape incentives and channel the information which is required to address the collective-goods problem. Normative analysis deals with the optimal design of incentives, positive analysis with the actual incentives that are generated in a given institutional context. The mechanism design

approach summarized above does the former kind of analysis, public choice theory the latter. Here the rational-choice paradigm helps us understand why the political process often fails to harness sovereign powers in the interest of changing incentives such that collective-goods problems disappear.

While evidently fruitful, the rational-choice perspective is also limited. This is due to the very same factor that has made the rational-choice model so visibly successful. The model rests on the strict distinction between objectives and constraints. The object of study are utility-maximising individuals reacting to changes in opportunity structures. For methodological reasons, the individual is modeled as Homo Oeconomicus. For sure, these are only assumptions, not claims about reality. They are imposed in order to capture the essence of social phenomena and institutions, and to make predictions for the effect of changing circumstances. However, the scope of this analysis is inherently limited.

An alternative research strategy, which starts with what is known about human behavior, is likely to develop a fairly different depiction of collective goods. Some phenomena that are made visible by behavioral analysis can hardly even be translated back into the world of rational choice. This project focuses on the alternative approach. The behavioral analysis of collective goods is not virgin territory. Suffice it to recall a few of the well-known findings: where (simple) rational-choice models would predict the "tragedy of the commons", in practice it is often conspicuously absent. There are various reasons for this, but the fact that they have a more realistic picture of human motivation is part of the explanation. "Public-goods games" are one of the workhorses of experimental economics. Again, contribution rates found in the laboratory by far exceed the prediction of zero contributions made by rational-choice models. If all beneficiaries of a public good agree on a contribution level, in rational-choice terms this is just "cheap talk". At the level of implementing the agreement, the original social dilemma is repeated. However, psychologists have traced a powerful cheater-detection mechanism, effectively exploiting subtle signals. It has bite, since punishing sentiments kick in when cheating seems patent. Emotions thus trump rationality and help solve the social dilemma. It is in this context that our work on the behavioral analysis of collective-goods problems is situated. We are adding new dimensions, exploring new fields of application, and translating the findings into institutional analysis and design.

Likewise, we are not the first to be interested in the behavioral analysis of institutions. Behavioral effects have never been fully absent from institutional analysis. An obvious illustration is "moral suasion". But the most prominent force in the area is the growing behavioral law and economics movement. It mainly piggybacks on the Kahneman/ Tversky critique of the rational-choice approach. It either interprets legal institutions as remedies to individually or socially detrimental "biases". Or it criticises the legal community for overlooking that biases prevent the law from being effective. Both have obvious value. Suffice it again to recall two well-known findings. It is much easier to get an appropriate understanding of consumer-protection legislation if one understands the psychological underpinnings of strategies like the "foot-in-the-door technique of

salesmen". Environmental policy has long been tempted by torts as a tool for "ex-post regulation", in light of the experiences from concrete cases. This is, however, dubious advice, given the strong "hindsight bias". Once one has seen the evidence of a risk materialising, it is next to impossible to form a proper assessment of its ex-ante likelihood. Consequently, regulation by torts finds itself on a slippery slope towards ever stricter rules.

Some of our work is exactly in this tradition, where it seems helpful to assess the potential of institutions, and of the law in particular, in order to solve collective-goods problems. But in two ways we are going beyond this earlier work. We make a point of not exclusively looking at biases. Related to this, the Kahneman/Tversky literature and experimental economics literature are not the only sources we are tapping. Rather, we try to purchase directly from psychology. And we are particularly interested in the law as a governance tool. We are convinced that, in a behavioral perspective, one is able to gain a much richer understanding of the law's potential. In these ways, we also hope to bridge the gap between (new) behavioral law and economics and (old) law and psychology. While there has for decades been direct interaction between lawyers and psychologists on issues like lie detection or eyewitness testimony, this strand of research has not thus far been very interested in the law as a governance tool.

Interdisciplinarity is never easy. However, in major US law schools, law and economics has almost become a standard approach. Behavioral law and economics is seen as one of the major strands of this approach, and is itself making headway. The situation in Germany is significantly different. Here, antitrust law notwithstanding, economic analysis is still rare, if not actively combated. The behavioral analysis of law is only just tentatively starting. Against this backdrop, it is inevitable that the widespread scepticism about a closer interaction between law and the social sciences be taken seriously. We are trying to respond at two levels. At one level, we are attempting to determine the proper role of input from the social sciences in both legal doctrine and legal science. At the other level, we are comparing alternative paradigms, starting with rational-choice and behavioral analysis, but not confining ourselves to these.

In principle, the third fundamental question regarding collective goods would lend itself to behavioral analysis no less than the first two. The processes leading to the selection of issues, problem definition, the choice of a solution, its implementation, and ultimately its evaluation are all rife with behavioral effects. Suffice it again to recall but one prominent finding. Scandal-driven politics is not surprising, given the power of what has been called the "availability heuristic". It can strategically be exploited by "availability entrepreneurs". Since the political scientists have left the Institute, however, this third question is currently not among our main areas of interest. Nonetheless, we plan to do some work in this area in the future.

II. Summary Report

On this agenda, over the last two years, we have made progress in the following respects.

1. Problem Definition

a) Public Goods

In line with the overall mission of the Institute, the primary focus of our work has been the deepening of our understanding of public goods. A first finding resulted from our inability to replicate a result that, independently of each other, two labs in London (Nikiforakis 2008) and in Rennes (Denant-Boement, Masclet et al. 2007) had established. It is well-known in the experimental literature that contributions to public goods quickly decay if the game is repeated (for a survey, see Ledyard 1995). The trend is reversed, though, if group members have a chance to spend some extra money on punishing each other (Fehr and Gächter 2000). The two labs had shown that the beneficial effect of punishment is dampened, if not muted, if punishees are given a chance to strike back. We initially intended to test various safeguards that are standard in criminal law practice, expecting that such safeguards might get the pernicious effect of counterpunishment under control. However, to our surprise, in Bonn the counterpunishment option almost had no effect. Despite the threat of countersanctions, punishment still stabilized cooperation at a fairly high level.

Our different result turned out very robust. Neither a change in instructions, which made counterpunishment more salient, nor random matching were able to stifle cooperation. Cooperation even survived if we made counterpunishment very powerful. In this treatment, one of 20 points of the endowment destroyed a quarter of the punishee's period income. We could explain the surprising difference between labs by the crucial role of first impressions. If average and/or minimum contributions in the first round are high, this stabilizes contributions, even if there is a risk of counterpunishment. Subsequently, in a reanalysis of data from all over the world, we extended the finding to public goods without institutional backing, and to public goods with punishment only. We related this finding to a metaphor that has been powerful in US criminal policy: "Beware of broken windows!" (Beckenkamp et al. 2009). While first impressions very effectively organise a data set of some 20.000 data points, regression analysis cannot rigorously prove the effect. To that end, in a companion paper we induced the effect by giving subjects, before they started playing the game on their own, graphs from groups where contributions started low and decayed quickly. This manipulation was sufficient to destroy cooperation, even in Bonn (Engel Kube Kurschilgen 2009).

Simple theoretical models of public goods reduce the problem to one of simultaneously choosing a contribution level. In such a setting, all players are fully informed about the composition of the group, and of their own as well as all other players' payoff functions. In the field, people often do know much less. Frequently, all they observe is their own

payoffs; they do not know whether a high individual payoff is detrimental to other players. In other settings, they do not even know that they are engaged in strategic interaction. If one tests experimental subjects in two-person prisoner's dilemmas, the less they know, the less they cooperate. This has a straightforward policy implication: making the game explicit improves welfare (Beckenkamp 2009). Reduced feedback is equally detrimental. If information about other players' contributions is noisy, punishment does a much poorer job in increasing contributions (Grechenig Nicklisch Thöni 2009).

Many socially relevant decisions are not taken by isolated individuals. This also holds for the provision of public goods. Take industrial production contributing to climate change as proof. Despite a substantial amount of research (it is surveyed in Engel 2008), it still is far from clear in which contexts scaling up decision-making to the group or firm level eases the provision of public goods, and when it is counter-productive. In a series of multilateral coordination problems, teams of three outperformed individuals (Feri Irlenbusch Sutter 2009).

In the field, those who could contribute to a collective good are rarely all equal. If agents with heterogeneous (low and high) endowments in a public-goods game are given the possibility to commit to a specific contribution level behind a veil of ignorance, this significantly raises contributions. Contributions increase even more if agents know their type (low or high endowment) before they commit (Tontrup 2009). In the experimental literature, heterogeneity has mostly been studied in the context of team production, which is why many of us have also chosen this context for our contributions. If there are increasing returns to scale, the highest efficiency is obtained if contributors do not receive equal payoffs (Kube Goerg Zultan 2009). However, if some contributors have a direct relation with the principal, while others are only indirectly related by virtue of an intermediary, this reduces contributions of both classes of agents (Alewell Nicklisch 2009); this design is meant to capture the effect of temporary employment. Moreover, the social status of the principal matters. If the principal has low social status, agents are much less likely to exploit the information asymmetry to their advantage than if the principal has high social status (Nicklisch Salz 2008).

In reality, collective goods are often nested. We tested the following setting. Contributions to the public project are worth nothing as long as the threshold is not met. If the threshold is reached, contributions to the public project have a higher group payoff than contributions to the private project. In the first treatment, there is only one such good. In the second treatment, there are two such goods with different threshold levels. Of course, contributions to the public project with the higher threshold are dominated. The presence of the second good had a detrimental effect. It made it more difficult for participants to coordinate on the first project, and there was less over-contribution than in the treatment with only one public project. This led to a decrease in overall contributions (von Heusinger Kube 2009).

Frequently, one man's meat is another man's poison, as the saying goes. If one group successfully provides what for them is a public good, outsiders are harmed. Take a country building a dam on a transnational river to secure irrigation water for its farmers. In other contexts, outsiders receive a windfall profit if insiders provide the public good. For instance, if one country fights a joint enemy, neighboring countries benefit as well. We have shown that knowing about the positive externality does not increase contributions in the lab, while knowing about the negative externality does. If, in the light of these experiences, insiders and outsiders are rematched and have a chance to create a norm endogenously before future roles are revealed, negative externalities are internalised to a remarkable degree, whereas positive externalities are not (Engel Rockenbach 2009).

One way of saying why the provision of public goods is hard relies on property rights theory. If the public good is not excludable, property rights in the good are attenuated. In a colloquial way, one may say that there is a social problem because property rights are "too weak". This formulation of the problem invites the question whether property rights could also be "too strong". This is indeed what the theory of anticommons posits (Heller 1998). A standard illustration is a collection of patents that are cumulatively necessary for the next step of invention. We tested whether the problem is aggravated by the endowment effect. It turned out that the strategic interest in appropriating most of the collective gains from trade dominates the endowment effect for goods with uncertain value (Bechtold Glöckner Kleber Tontrup 2009).

If no institutional framework is provided, it is typical for repeated public-goods experiments that average contributions start relatively high, but decay quickly. It has been shown that this result is driven by the fact that most participants are neither unswerving altruists nor hard-nosed egoists. Most of them are happy to contribute to the public project as long as a sufficient fraction of the remaining group members contributes as well (Fischbacher, Gächter et al. 2001). More specifically, they target what they perceive to be the standard in this group, but try to stay slightly below (Fischbacher and Gächter 2009). We have tested a related situation. The group was composed of one strong and a number of weak players. In one treatment, contributing to the public project was a dominant strategy for the strong player. In the other treatment, it implied a sacrifice. If the strong player was faithful, in the second situation the weak players contributed more (Glöckner Irlenbusch Kube Nicklisch Normann 2009). Leadership research suggests that self-sacrifice might be a crucial mediating factor to generate increased cooperation and reciprocity. In hypothetical public-goods scenarios, it has been shown that leaders' nonmonetary sacrifices increase cooperation (De Cremer and van Knippenberg 2002; see also Choi and Mai-Dalton 1998) and particularly if distributive justice is low (De Cremer and van Knippenberg 2004). Elaborating on these findings we are the first to show that, in a public-goods situation with different MPCRs, a privileged player's sacrifice considerably supports the emergence of reciprocating behavior in other players.

In repeated public-goods experiments, behavior is usually not stable. Absent any institutional framework, contributions decay over time. With appropriate institutional

intervention, like the quintessential punishment option, they increase over time. Such changes over time can only be explained if subjects learn. Standard theory would expect Bayesian learning. We could show that behavioral stationary concepts, resulting from impulse balance learning and payoff-sampling learning, do better at explaining the data (Goerg 2008).

In essence, a public good is a prisoner's dilemma. In a prisoner's dilemma, cooperation is dominated. If they observe or believe that the other player cooperates, this gives players a chance to exploit their partner. In this case, defection is driven by greed. If they observe or believe that the other player defects, cooperation would expose them to exploitation. In this case, defection is driven by fear. To disentangle the two motives, we sequentially tested our subjects on a prisoner's dilemma; on a dictator game variant, where gains were uncertain, but no losses were involved; and on a test for loss aversion. All three tests used the strategy method to increase the outside option or the loss, respectively, step by step. The measure for greed from the dictator game explained choices in the prisoner's dilemma well. The measure for the loss aversion explained why subjects who had been benevolent in the dictator game defected in the prisoner's dilemma (Engel Normann 2009).

In Western cultures, experimental subjects are highly sensitive to perceived intentions. Take the finding from the game with the strong player as proof. The weak players were induced to reciprocate their good intentions, which they learned from the sacrifice. We were able to show that intentions are close to irrelevant in China. Chinese participants punish as severely if another subject has caused harm, although it is crystal clear that the harm was not intended (Ding Tontrup 2009).

b) Oligopoly

It is possible to model oligopoly as a linear public good. Oligopoly, however, is a fairly unusual public good. Gains from the public project (the cartel, that is) are conditional on *all* members making a contribution. The contribution is very different from giving part of the endowment. It has two components. Each member who is loyal to the cartel runs the risk of being exploited by others. This can be interpreted as an out-of-pocket cost. Simultaneously, a loyal member foregoes the chance to exploit the remaining members. This can be interpreted as an opportunity cost. All three differences are likely to matter behaviorally (Engel 2009).

For the future, it is an interesting task to explore if and how these differences play themselves out in the lab. That way, one could investigate how driving forces that are well understood in the context of public goods, like conditional cooperation, influence the stability of cartels. For the time being, though, we have preferred to contribute directly to the experimental literature on antitrust. The meta-study on oligopoly experiments, reported in greater detail in the previous report to the Advisory Council, was meant to make the large body of evidence available to the research community. Although that

paper is not exactly short, it is fairly condensed, and it does not at all contextualise results (Engel 2007). This is done in two later papers. The first one addresses the legal community. It shows how this evidence can be used to test and improve the merger guidelines on both sides of the Atlantic. It also explores to which degree this evidence can help decide cases in court. To that end, further statistical tests are added (Engel 2008). The second paper tries to be even less technical, and to tell the story to German antitrust lawyers (Engel 2009). The reader on Experiments and Competition Policy is written in the same spirit (Normann Hinloopen 2009).

An oddity in the meta-study on oligopoly triggered the already reported experiment on greed and fear in a prisoner's dilemma. Common sense will not be surprised that one finds more collusion the more it pays. Of course, gains from collusion result from the difference between the producer rent if the market clears, compared to the monopoly case. One factor contributing to the size of this difference is the slope of the supply curve. In the meta-study, we had measured both: the ratio between consumer rent and producer rent when the market clears, and the slope of the supply curve. Surprisingly, the effect size of the second, indirect measure was much stronger than the effect size of the former. Inspecting the raw data triggered a hypothesis. Experimenters had not changed the slope of the supply curve gradually. It either had a pronounced positive slope, or it was horizontal, i.e., marginal cost was constant. Moreover, many more experiments had participants compete in price rather than in quantity. Finally, in the majority of oligopoly experiments, products were homogeneous. That is, participants were quite frequently in the situation of a textbook Bertrand paradox. Collusion was the only way towards a positive profit. Initially we planned to test the hypothesis directly. Starting from constant marginal cost, we would have gradually increased the slope of the supply curve. However, we would then have confounded two causes. Along with the slope, we would have changed the absolute gains from collusion. To maintain full experimental control, we opted for the context-free setting of the prisoner's dilemma. In this setting, we established a monotonous relationship between the size of the outside option and the degree of collusion (Engel Normann 2009).

Checking whether the risk of "coordinated effects" substantially increases through a merger is high on the agenda of antitrust authorities on both sides of the Atlantic. In one paper, we demonstrate how the evidence from the meta-study on oligopoly experiments can be used for the purpose (Engel 2008). A second paper provides fresh evidence for a market where, pre-merger, three firms either have symmetric or asymmetric capacity. If two firms merge, prices increase due to the reduction in the number of suppliers, but less so if one of the merging firms was already larger than its competitors before the merger. The first is a static effect, the latter a dynamic one. It results from the fact that the more pronounced the asymmetry, the higher the discount factor required for collusion in the repeated game with uncertain end (Fonseca Normann 2008).

Over the last two years, the European Commission has been engaged in a major exercise on redefining its policy with respect to Art. 82 ECT, i.e., the prohibition to abuse a dominant position. Rebates have come under particularly close scrutiny in this exercise.

According to the European Court of Justice, "rollback rebates" are essentially forbidden per se, whereas they are basically admissible in the US. Under this scheme, the buyer receives a discount on all units bought if and only if, within the stated reference period, she surpasses the threshold set by the seller. European antitrust authorities are concerned that this threshold might have a "suction effect" and that buyers might be placed in a "psychologically weak position". In the lab it turns out that rebates are indeed sticky beyond what rational choice would predict (Glöckner Morell Towfigh 2009).

A natural correlate of oligopoly theory is bargaining theory. We showed that (market) feedback only reduces, but does not erase, the gamblers' fallacy, i.e., the erroneous belief that random events are mean-reversing (Fischer 2009). If, in an ultimatum game setting, the proposer is able to exclude one of two potential responders, this polarizes acceptance by the remaining responder: some decrease, some increase their threshold for acceptance (Fischer Güth Köhler 2009).

c) Other Social Problems

While behavioral law and economics is gaining momentum, the number of labs generating fresh experimental evidence on legal issues is still very limited. This makes it attractive to put our tools to good use on other legal issues as well, even if they do not directly originate from the experimental literature on public goods or oligopoly. One illustration is what, on first reading, might appear a strange whim of German legislation. The statute on copyright gives authors a right to claim additional remuneration if, ex post, their work turns out a huge commercial success. As all market participants know, success and failure are distributed very unevenly in media markets. Why then do authors and publishers not negotiate on the basis of the known expected values? Or why do they not make the licence fee conditional on the later success of the work in the market? The latter seems to be rare because publishing houses have more bargaining power, and because authors do not want to bear market risks. Therefore, the German rule might respond to the fact that fairness perceptions change before the work has been marketed and after. We hypothesized that authors would be happy to sell the copyright substantially below its expected value, but that this outcome would seem patently unfair in the unlikely, but possible, event of a big success. We tested the hypothesis in an ultimatum game with uncertain payoffs and an ex-post punishment option. We compared a setting without to an alternative setting with third party intervention in the case of the big success. The intervention unequivocally increased welfare. The beneficial effect mainly came through lower initial offers, which were accepted with a higher frequency. Third-party interventions almost exclusively considered ex-post fairness and split gains from trade equally (Engel Kurschilgen 2009).

Most legal orders consider betting a dubious activity. In the German case, there is suspicion that the purported paternalistic goals of the legal ban on betting might in fact be motivated by the desire of the prime ministers of the *Länder* to protect a source of

income that they can use without Parliamentary control. But at least officially, the ban is justified by the addiction potential inherent in this activity. Currently, the law draws the borderline between luck and skill. If the skill component is predominant, the activity may be offered by private suppliers. This invites a classic doctrinal conflict: are sports bets more on the luck or more on the skill side? In our experiment, it turned out that the luck component dominates (Glöckner Towfigh 2009).

Equal pay is an old slogan of the unions. Many firms do not follow this policy and make remuneration contingent on relative performance. This creates a risk of sabotage. In the lab, we show that both effort and sabotage increase in the wage spread. However, even in such a setting, agents react reciprocally to higher wages, which mitigates the sabotage problem. It is further reduced if it is called by its name: sabotage, and if the principal and the agents are allowed to communicate (Harbring Irlenbusch 2009).

2. Institutional Intervention

a) Punishment

As mentioned, without institutional intervention, in repeated public-goods experiments contributions decay relatively quickly. The trend reverses if participants are allowed to punish each other, at a cost. Surprisingly, the large criminology literature has not yet drawn the parallel. In a whole line of research, we have seized the opportunity. The criminology literature distinguishes deterrence from prevention. The former explanation of the effect of punishment is exclusively individualistic. A would-be criminal dreads the experience of punishment, and aligns her behavior with legal expectations. The latter explanation supplements this with a genuinely social perspective. It stresses the cognitive effect of punishment. It impacts on citizens' normative orientation, and on their expectations of the behavior of their co-citizens (Magen 2009a). Moreover, if they see that others are punished, they are less afraid of being the sucker if they abide by the law. To test these ideas experimentally, we supplemented the standard four-player public-goods game with a fifth experimental subject. The latter could not contribute to the public project, but could use her endowment for punishing active players. That way, we implemented centralised punishment. We varied feedback. In the baseline, active players were only informed about aggregate contributions. In the first treatment, they also learned about aggregate punishment. In the second treatment, they received full information about individual contributions and individual received punishment. In the last treatment, contributions were much lower, while there was practically no difference between the first two treatments. This shows that those not punished themselves do not care about punishment for its own sake. If they have no chance to express their own anger, punishment only matters indirectly. It helps to stabilize the contribution level, and thereby supports conditional cooperation (Engel Irlenbusch 2009).

Not (fully) informing potential punishees about sanctions is a different matter. In another experiment, we varied feedback about received punishment. In the baseline, punishment

was directly revealed to the recipient. In the first treatment, all punishment remained undisclosed until the end of the group interaction. In the second treatment, punishers were able to choose between disclosed and undisclosed punishment. It turned out that even undisclosed punishment stabilizes cooperation. However, by far the most powerful institution is a combination of disclosed and undisclosed punishment. Apparently, punishees read disclosed punishment as a signal of more severe sanctions looming large (Glöckner Kube Nicklisch 2009).

Another type of uncertainty turns out to be very detrimental. If group members get noisy feedback about other members' contributions, their willingness to punish is not reduced. However, punishment is much less effective in stabilizing cooperation. Therefore efficiency is severely reduced. This is troublesome news for policymakers. For in the field, the degree of pro-social behavior of others is hardly ever fully observable (Grechenig Nicklisch Thöni 2009).

In principle, contributions in a public good monotonically increase in punishment effectiveness. However, if effectiveness is too low, the punishment opportunity even becomes counterproductive (Nikiforakis Normann 2008).

Punishment is not an appealing social institution. If given a choice, experimental subjects predominantly self-select into a group without punishment. Some participants, however, chose the community with the punishment possibility right from the start. In general, they make high contributions and also heavily punish free-riders, thereby succeeding in establishing a cooperative culture in this community. The high contribution rates are observed by the members of the sanction-free community, in which contributions go down over time. In the end, virtually all participants migrate to the community with the sanctioning possibility, and the sanction-free community becomes completely depopulated. We compare this voting with feet setting (in which participants can endogenously choose the institution) with an experiment in which the same migration pattern is exogenously imposed. In such a setting, contributions are significantly lower. Contributions are even lower in a third experiment, in which the population under each institution is fixed (Gürerk Irlenbusch Rockenbach 2009). One finds a similar pattern if a leader can choose between punishment and reward to motivate team members (Gürerk Irlenbusch Rockenbach 2009).

In Western countries, participants are punished for perceived bad intentions. This turns out not to be true in China. Here, punishers are only interested in who caused harm, and they punish with equal severity if it is clear that the harm was not intended (Ding 2009).

We have already reported that, in our lab, counterpunishment did not have the same, strong negative effect on contributions as in London and Rennes. As pointed out, we have shown that the detrimental effect of counterpunishment is conditional on sufficiently poor first impressions in the group in which the participants happen to be (Beckenkamp et al. 2009) (Engel Kube Kurschilgen 2009).

The work of our group on punishment nicely ties into Christian Traxler's interest in sanctions. Using data from the field, he could show that law-abiding behavior increases if people observe enforcement activities in their neighborhood (Rincke Traxler 2009). In a field experiment, he showed that legal threats have much more power than moral appeals or mere social information (Fellner Sausgruber Traxler 2009). He also organised a workshop on the economics of crime and sanctions. Through all these channels, we closely collaborate with the other group at the Institute.

b) Governance by Law

In simple law and economics models, law only matters since it threatens addressees with punishment (Becker 1968). We could show that law has a strong effect even if there is no inside or outside enforcement at all. In a dilemma game, in one treatment participants were allowed to make promises before the interaction started. In the other treatment, they got excerpts from the German Civil Code, informing them that contracts are binding. They then had a chance to conclude a contract, of course without lifting the veil of anonymity. It was made clear that they could not go to court. They were not given the opportunity to punish each other either. Nonetheless, even in the absence of any enforcement, there was much more cooperation in the contract treatment than in the promise treatment (Kurschilgen Tontrup 2009).

With the independent research group *Intuitive Experts*, we mainly cooperate on legal decision-making. We have started a series of experiments to cast light on decision-making in court. Doctrinal problems are hardly ever well-defined. The simplest situation for studying how judges and jury members are nonetheless able to make decisions is a pure problem of facts. In such cases, the law is undisputed, but it is unclear whether the facts match the pertinent provision. In terms of judgement and decision making, this is a problem of inference. Since neither the judge nor the jury have been at the site of the crime, they must infer what really happened from the evidence they hear. In principle, intuition is well-equipped to solve such ill-defined problems. As the psychologists at the Institute have shown, intuition does not only reason in a uni-directional manner from evidence to the judgment. In a series of positive and negative feedback loops of bi-directional reasoning, it constructs consistent mental representations by progressively radicalizing the evidence. This invites a troublesome concern: is intuition so good at forcing the decision that it overrides standards of proof? Procedural law imposes such standards since, depending on the character of the conflict, it weighs false positives very differently to false negatives. If the standard is guilt "beyond a reasonable doubt", the law accepts quite a few false negatives if only wrong convictions are very unlikely. In our experiment, using vignettes that have been repeatedly employed by Dan Simon and colleagues (Simon 2004), we were able to show that, happily, standards of proof are not muted. One way to demonstrate how intuition works is by testing subjects twice. Before they know the problem they will have to solve, one asks them to rate the probative value of the evidence. After they have decided, one asks them to rerate the same evidence.

One typically finds pronounced "coherence shifts". Subjects give supporting evidence slightly more weight, while they strongly decrease the weight they put on conflicting evidence. Interestingly, if the standard was beyond a reasonable doubt, and if participants acquitted the defendant, they downgraded inculpating evidence significantly less. This shows that the standard of proof instruction works as intended. If the evidence was not clear enough, participants did not force the decision, but acquitted the defendant "for want of evidence" (Engel Glöckner 2008).

While the main paper is written as a standard experimental paper, a companion paper tells a much richer story to a legal audience. US law makes a difference between criminal and private law disputes. In criminal law, the standard of proof is "beyond a reasonable doubt". In private law, the much less stringent "preponderance of the evidence" standard is applied. The difference is motivated by the desire of the legal order to remain neutral. In the abstract, the legal order has no reason to side with one of the parties. Many interpret the standard in probabilistic terms. It is met if the jury is convinced that, in the light of the evidence, the probability of the claimant being right is above 50%. Continental European law takes a fundamentally different perspective. Irrespective of the character of the dispute, the court may only hold for the claimant if, to the judge's *intime conviction*, the claim is true. The paper explains why, in the light of the fact that legal disputes are almost always ill-defined, the Continental position is adequate (Engel 2009).

Most people have never read the statutes that are to govern their lives. Even if, occasionally, they get access to the text, they lack the expertise to interpret it properly. How come that, nonetheless, the law is able to guide behavior? Based on the (admittedly still largely incomplete) evidence, we sketch an explanation based on developmental psychology. From the very beginning of their lives, humans are sensitive to normative expectations. This is the main root for culture to shape people's lives. In essence, the law can capitalize on this much more general mental mechanism. All the law has to make sure of is that individual normative expectations reach people in a format that makes it easy to see what the law expects them to do in the situation in which they happen to be. This is done through heavily contextualised social mirror rules. People either learn them by observation, or intermediaries like the press or social organisations make them explicit (Engel 2008).

Our work on governance by law obviously benefits from close collaboration with the independent research group. The closest link is, of course, their work on legal experts, like the study on the role of emotions (Dickert Gansen Glöckner Herbig Portack 2009), or the work on affective information about the defendant (Dickert Horstmann 2009). For more detail, the interested reader is referred to the section of this report on the independent research group.

c) Other Institutions

It is well-known that the willingness to contribute to a public project is sensitive to framing. It is less well-known to which degree these framing effects are contingent on culture. We tested subjects in the West Bank, China, Finland and Israel on a two-person prisoner's dilemma where the effect on the other player was either framed as a positive or as a negative externality. In the West Bank and in China, participants significantly contributed more in the positive externality frame, while in the other two locations framing did not have a significant effect (Goerg Walkowitz 2009).

From a perspective of expected utility, it should not make a difference whether people are asked to contribute a large amount to one public project, or smaller amounts to a number of public projects, if these amounts add up to the same overall contribution. We were, however, able to show that, in the lab, contributions are substantially higher in the second case (Corazzini Kube Maréchal 2009). We turned this finding into a piece of policy advice. The organisation "Doctors for Developing Countries" agreed to send out two different solicitation letters. In the baseline, they simply requested donations for the organisation. In the treatment, donors were given the opportunity to indicate the developing country in which they wanted the organisation to become active. Those donors who seized the opportunity made substantially larger contributions (Aretz Kube 2009).

If participants are given a chance to vote on a desired contribution level, in Germany this increases contributions, while in China it does not (Gaissmaier Tontrup 2009). Apparently, German participants appreciate participation, while Chinese participants are solely interested in outcomes. Chinese and Germans do also differ in their sensitivity to procedural fairness. We explored this difference in a setting where an agent first has to perform a real-effort task. The agent is informed about her performance. There is a publicly-known norm for mapping performance to expected payment. The actual payment, however, is not determined by the experimenter, but by a second experimental subject. This subject only knows a randomly selected sample of the first subject's actions in the real-effort task. If the first subject is discontent with the allotted payment, in the last step of the game she is entitled to appeal against the second subject's decision. Appeal is costly, and it is only effective with a probability of 1/3. In the treatment, first subjects know that the second subject only knows a quarter of the evidence, while in the baseline they do not. In Germany, if the information of the second subject is transparent, appeal is much rarer, while there is no effect in China (Dittrich Tontrup 2009).

3. Tools

a) Experimental Tools

Most of our experiments are in the tradition of experimental economics. To maintain experimental control, the situation is decontextualised. Interaction is anonymous. All

critical action is through the computer. Subjects make choices that are incentivised. Since this apparatus has only been used on a very small number of legal issues, in the near future, this will remain our workhorse.

We have explored a seemingly innocent difference in experimental protocol. In the standard protocol, subjects are invited to choose between two differently risky options. In the alternative protocol, they have to indicate at which point they are indifferent between a risky and a safe option. It turned out that, with the latter protocol subjects are more risk-averse. Likewise, if the benefit from one option is delayed, time preferences change with protocol (Ding 2009).

We have gained experience with a whole series of post-experimental tests. In many experiments, we have elicited social value orientations by the ring value measure test (Liebrand and McClintock 1988). Depending on the research question, we have measured risk aversion (Holt and Laury 2002) or loss aversion (Gächter, Johnson et al. 2007), or both. In the already mentioned experiment on the driving forces of behavior in a prisoner's dilemma, we have added a dictator game variant as a tool for measuring greed (Engel Normann 2009).

We have benefitted from the collaboration with the psychologists to enrich the experimental toolbox. We have started to trace information acquisition by a mouse lab like tool. On their decision screens, participants are offered buttons that lead them to background information and to information about the history of the game. We record which information they consult when, and how much time they spend on it (for a first study, see Engel Glöckner 2009). In the future, we plan to capitalise on the hands-on experience of the psychologists with eye-tracking (Ahlgrimm, Horstmann) as an even more sophisticated technology for tracing information acquisition. We also use tests for the big five personality measures (Rammstedt and John 2007), and questions from the German Socio Economic Panel as a proxy for trust.

Most behavioral experiments start from the assumption that motivational and cognitive forces are human universals. Capitalising on the good international relations across experimental economics labs, and on the fact that two doctoral students from China have joined the Research School, we have explored the remarkable differences between Western and Eastern cultures (Ding Tontrup 2009, Gaissmaier Tontrup 2009, Goerg Walkowitz 2009).

Triggered by the fact that we could not replicate the counterpunishment results from London and Rennes, we have collected a large dataset of some 20.000 data points on cooperation in four-person public goods with marginal per capita rate.4. Experiments were run all over the world, and partly had no institutions at all, partly provided for decentralised punishment, and partly gave punishees a counterpunishment option. We used this dataset to show that first impressions determine contributions to a very large extent (Beckenkamp et al. 2009). That way we also gained experience with the reanalysis of experimental data.

While, at least for the near future, lab experiments will remain our primary approach, in appropriate cases we also run field experiments. We have already reported the experiment with "Doctors for Developing Countries" (Aretz Kube 2009) and the experiment in the virtual "World of Warcraft" (Nicklisch Salz 2008).

b) Analytic Tools

Traditionally, experimental economists have deliberately only used very straightforward statistical tests. If the experimental manipulation has worked out, one ideally should be able to show this in a Mann-Whitney or in a Wilcoxon test, depending on whether the manipulation is between or within subjects. Maybe, if there is more than one treatment, one may also run a Kruskal Wallis test or, if there are a good theoretical reasons to rank treatments, a Jonckhere Terpstra test. We follow this custom. Actually, we have even developed a tool to implement the Epps Singleton non-parametric test in Stata, allowing us to compare differences in distributions induced by an experimental manipulation (Goerg Kaiser 2009). But we do not believe that nothing else but non-parametric tests should ever be done.

More elaborate parametric statistics have two advantages: one is that they are able to trace determining factors, and another one is that they have much more statistical power. Yet a public-goods experiment generates a challenging dataset. The game is repeated, which is why observations per subject over time are not independent. Moreover, subjects interact in (usually fixed) groups of four, which is why we have panel data. If there are no further qualifications, a random effects model which clusters standard errors at the group level does handle this data structure. We must, however, check, by way of a Hausman test, whether the subject-specific error term is indeed uncorrelated with the explanatory variables. If not, we could, in principle, use the fixed-effects estimator. However, it is less efficient. More importantly even, since this is a mean-differences model, time-invariant regressors drop out. This, above all, affects the variables we are most interested in, our treatments. A way out is a Hausman Taylor model (Hausman and Taylor 1981). By another Hausman test we can check whether we have successfully instrumented those variables that initially caused the Hausman test to be significant (Baltagi, Bresson et al. 2003).

Quite often, the data structure is even more complicated. A typical example is punishment. In each period, each group member must decide whether to punish any of the three other group members. Therefore we have punishment decisions nested in periods, nested in subjects, nested in groups. In principle, mixed effects models handle this data structure, but they do not always converge. Another complication is also illustrated by punishment. Most of the time, most subjects do not punish at all. One may be tempted to interpret this as left-censoring and run a (random-effects) Tobit model. This, however, assumes that, were they not hindered by design, many participants would have assigned negative punishment to some group members. In less technical words:

they would have rewarded group members for high contributions. This seems a fairly strong assumption. It is certainly more realistic to assume that the zeros are "real". Then, the cleanest approach would be a two-part model. A first equation estimates the determinants of the decision to punish at all. A second equation estimates what causes the size of punishment, conditional on punishment being positive. Unfortunately, if the error terms of both equations are correlated, for the second equation one may not simply run a random-effects model on the reduced sample. An imperfect solution is a Heckman selection model. It elegantly takes care of the correlation problem. Yet it assumes that negative decisions are unobserved, whereas we do observe if one subject does not punish another.

A final challenge is serial correlation. Happily, the main causes of serial correlation are the fact that the game is repeated, and that we usually have fixed partner matching. These causes are controlled for anyhow. Yet occasionally there are further reasons for serial correlation. Then the technically correct approach is statistics for dynamic panels, i.e., the Arellano Bond estimator (Arellano and Bond 1991). In the original version, timeinvariant regressors would again drop out. But this can be circumvented by the system GMM version (Roodman 2006). Yet unfortunately, the estimator is made for small T, but large N. We usually only have mid-sized N. Therefore one must heavily restrict the number of instruments to make sure that neither the Sargan test nor the Arellano Bond test for AR(2) in differences are significant.

4. Law and Economics Theory

While the focus of the group is clearly experimental, the proximity of Martin Hellwig's group naturally means that some of us are also interested in law and economics theory. The most frequent application is explicit, formal hypotheses to be tested experimentally (for instance, Engel Rockenbach 2009). But some papers are exclusively theoretical. One fine example has been triggered by a court case. A firm had made it its business to meter interferences resulting from electric current going out of power plants. That way, the firm had near-perfect, timely information on the degree to which these plants worked up to their capacity limits. Buyers of electricity could use this information to appropriate most of the producer rent. In a joint paper that was accepted by the Journal of Law, Economics and Organisation, a member of our group and a member of Martin Hellwig's group modelled the situation (Bechtold Höffler 2009).

Another theory paper explains the absence of shareholder suits in Europe. The stylised fact is traced to the prevalence of the thresholds that shareholders must meet to have standing. In the model, this provides an incentive for larger shareholders to collude with management, to the detriment of small shareholders (Grechenig Stremitzer 2009). Anne van Aaken is also pursuing her work on the economic analysis of public international law. The interested reader is referred to the previous report for a more extensive treatment of the issue.

In response to a model developed by Ben Hermalin, the situations are explored in which the parties should be concerned about poor judicial performance (Engel 2008). In response to an informal paper by Eric Posner, a game-theoretic model for *erga omnes* treaties in public international law is developed (Engel 2009). Further game-theoretic models concern innovation incentives (Engel 2008, 2008a) and the willingness of developing countries to conclude bilateral investment treaties (Engel 2008).

5. Translation into Doctrine

In the US, doctrine is no longer center-stage in the work of most legal scholars. In Germany, the situation is less clear. If one checks habilitation theses, they are hardly ever exclusively doctrinal. However, most of them have a prominent doctrinal part. Young legal scholars thereby try to demonstrate that they are firmly rooted in legal practice, without being intellectually confined to collecting and systematizing the output of courts and administration. This state of affairs explains that there is a lively interest in our work among German legal academics. Take invitations to talk about the principles underlying patent law (Engel 2007, 2008), antitrust law (Engel 2008, 2009), and copyright law (Engel Kurschilgen 2009) for proof. A growing number of German lawyers are particularly interested in behavioral effects. However, the typical German legal scholar, not to mention the legal practitioner, lacks any technical training. To reach this audience, we must therefore write texts that look very different from what is expected in peer-reviewed international journals.

In a quintessential way, this task is taken on by a habilitation thesis. Over the last two years, two of these books have been completed. From the angle of private law, the first book deals with the legislator's choice between mandatory and optional law. On this issue, behavioral assumptions are of particular relevance. If both parties to a contract are fully prevoyant, penalty defaults can lead the way to a separating equilibrium. In this spirit, the legislator would choose defaults such that those whose private information is socially most valuable are induced to reveal it. However, from a behavioral perspective, that much prevoyance is unlikely, the most straightforward explanation being that those favoured by the legislator might consider themselves endowed. Then, in line with the more traditional approach, it might be preferable to design defaults such that they fit the standard case (Bechtold 2009).

The second book is a contribution to public law. Which sounds like a truism: law is about justice, is intellectually highly elusive. This explains why practising lawyers, and legal scholars for that matter, try to avoid talking about justice. While understandable, this reaction deprives legal discourse of a proper language for its very essence. Capitalising on game theory, on experimental work on fairness, and on cognitive theory, this book provides the language. It uses the example of legislation aiming at curbing climate change to demonstrate in doctrinal terms how this language can be put to good use by practising lawyers (Magen 2009a). The third book on state action in the face of risk and

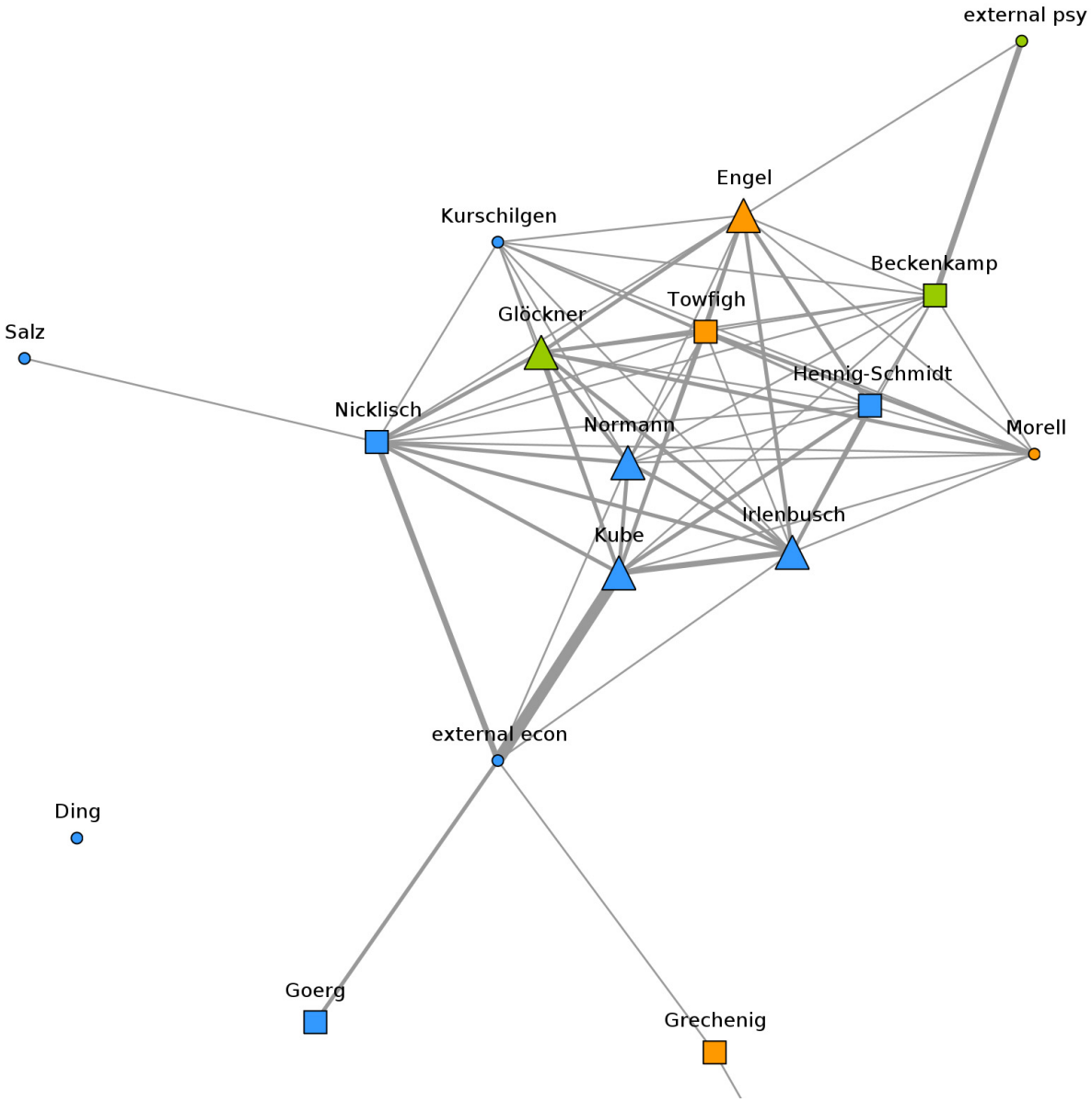
uncertainty has already been covered at some length in the previous report to the council, to which the interested reader is referred (Spiecker 2009).

Further contributions in the same spirit address legal complexity (Towfigh 2008), telecommunications regulation (Lüdemann 2008, Engel 2008), the plans to give the German antitrust authority power to dissolve firms (Engel 2008), leasing by public authorities (Lüdemann 2008), emissions trading (Magen 2009b), state intervention into the information flow (Spiecker 2008, 2009), consumer protection (Lüdemann 2009) and a host of questions in public international law (Petersen 2008, 2009).

III. Research Agenda

Over the last two years, the institute in general, and the group in particular, have continued to develop very positively. The economics group is fully established. Quite a few of its members have research interests that lend themselves to fruitful exchange, if not to collaborative ventures. The research school helps us attract graduate students, gives them additional supervisors from different disciplines and locations, makes it natural for them to start joint work with researchers from the partner institutes, and, most importantly, gives us a platform for formal training. We are sending all newly-arrived legal researchers to that school, whatever their status. The independent research group not only brings stimulating new research to the institute. It first and foremost gives us a chance to conduct truly in-depth research on legal decision-making. Along with this, it helps us advance more appropriate definitions of collective goods. For the academic year 2007/08, two eminent experimental economists joined the group. With their support, the group has made a major step forward into being a recognized center for experimental work on collective goods. The institute has joined the Europe-wide network on antitrust law and economics, started from Tilburg. Together with colleagues from the law and economics faculty of Bonn University, the institute has founded a regular exchange on questions of law and economics. Finally, Urs Schweizer and Christoph Engel continue to organise the yearly seminars on new institutional economics. All of these are fora for getting deeper into classic and behavioral law and economics.

The major change of the last two years is best visible in the following graph. It summarises the collaborative ventures of which the group is part and parcel. The graph is confined to those publications that have either already come out in peer-reviewed journals, or that have been submitted to them. Unsurprisingly, seniority matters. Yet it is particularly remarkable that two PhD students also feature prominently in the core of the network. The graph further shows that indeed all three disciplines have their fair share in the collective enterprise.



What is not yet fully reflected in completed projects is the degree to which the lawyers are engaged in interdisciplinary work. All of them, in some way or other, capitalize on the specific opportunities provided by the institute. Markus Englerth, Jörn Lüdemann, Stefan Magen, Alexander Morell, Emanuel Towfigh and Gaoneng Yu are preparing experiments. Nadine Bläser, Kristoffel Grechenig and Alexander Morell are writing models. Niels Petersen is going to New York to receive hands-on training in econometrics, which he plans to apply to legal issues. Monia Manâa is undertaking a field study. Jörn Lüdemann, Stefan Magen, Niels Petersen and Emanuel Towfigh are working on habilitation projects that translate findings from economics or psychology into law.

In the following, we point to some of the planned or started projects, to illustrate future directions.

1. Problem Definition

Capitalizing on a design originally developed by Gary Bornstein, we intend to study a Bertrand duopoly where each firm is composed of three experimental participants who individually bid asking prices, the sum of which constitutes the team asking price. The lowest pricing team wins the bidding competition. There are two different schemes for the internal sharing of profits: either the equal split, or each group member is rewarded according to the individual asking price. In this setting, we intend to explore three questions: which internal organisation is best for winning the external contest? Which pricing scheme yields higher profits for team members? Is there tacit collusion over the choice of internal organisation, in the interest of safeguarding higher profits for both firms (Kurschilgen Morell Weisel)?

The experiment on greed and fear in a two-person prisoner's dilemma lends itself to an extension that captures how the dilemma of cartelists is embedded in a larger social framework. By bringing a third person into the lab who is negatively affected by internal cooperation, we capture the fact that successful collusion inflicts harm on the opposite market side. By a positive probability of being sanctioned in case of coordination, we capture the fact that antitrust authorities have power to intervene, but are quite often not in a position to exercise their prerogatives. We will again run the dictator game variant and the test for loss aversion to learn more about motivation. We will also elicit beliefs (Engel Zhurakhovska).

Another project explores what different types of discrimination can be observed in labour-market settings. In the experiment, employers receive short CVs of 12 potential employees with different combinations of characteristics. The CVs differ by the applicant's gender, her/his country of origin and the applicant's result in the A-levels. Employers decide about a rank order of the applicants, a wage for each applicant and whether the work of an applicant is controlled (i.e., whether a minimum effort level is imposed). This introduces three dimensions of discrimination and we are interested in the relation between these dimensions. While an employer might have a clear order of preference about the applicants, it is not clear whether this is also reflected in the paid wages. We analyze which dimension of discrimination is activated by which characteristic of an applicant. In addition we investigate the reaction of the employees for a given dimension of discrimination depending on the subject pool affiliation (i.e., the country of origin) (Goerg Hennig-Schmidt Walkowitz).

A psychology project aims at casting light on how people construct prices in consumer decisions. The project will consider endowment effects, social value orientations, and forecasts of affective experiences (Beckenkamp Dickert). We also want to deepen our understanding of conditional cooperation. We expect that cooperation not only depends on beliefs about the intended contribution level of others, but also on beliefs about their preferences (Fischer).

2. Institutional Intervention

In public-goods experiments, punishment is implemented as a reduction of period income by anonymous intervention. This is, of course, very different from punishment through the criminal law system. In an experiment, we wish to test sanctions in the field where their effect is strongest (capital punishment notwithstanding). Using the design from the greed and fear experiment, we want to compare prisoners with a matched non-prison population (Chmura Engel Englerth Pitz).

Sadly, with complete information, sanctions are a more powerful tool for stabilizing cooperation in a public good than rewards. We suspect that the comparison might be tilted by the cleanliness of the test. In the field, occasional mistakes are hard to avoid. Being punished unjustly is likely to trigger strong emotions. Being rewarded unjustly is not likely to unleash equally powerful feelings. We therefore want to compare sanctions and rewards if feedback about other players' contributions is noisy (Goerg Nicklisch). Another experiment will test rewards that increase over time. The more a subject has been faithful to the social goal, the quicker the size of the reward grows (von Heusinger).

Some institutions that are influential in the field are hard to test in the lab. A good illustration is decorations. If there is no context, if nobody observes, decorations are almost pointless. Using the access to the virtual "World of Warcraft", we plan to implement decorations under fully controlled conditions (Frey Neckermann Nicklisch).

Customary law is the most enigmatic source of law. Doctrine requires consistent practice and *opinio iuris*. Public international law, where this source is most important, has added the option to be a "persistent objector". If a state persistently objects to the emerging rule of international law, this state is not bound by it. However, persistent objection does not hinder the formation of the rule for the remaining states. We plan to test these institutions in a public-goods game with punishment and counterpunishment. In the first treatment, we will instruct all subjects that punishment is legitimate only if a justified normative expectation has been violated. We also will instruct them that counterpunishment is legitimate only if punishment has not been justified. That way we intend to capture reprisals and counter-reprisals. Norm formation shall be implemented by requesting participants every period to indicate whether they believe that there is a contribution norm and, if so, at which level. In the second treatment, participants additionally are able to object to the norm (Engel Kurschilgen).

(The following list of references only covers material that is not part of this report. For the latter, please see the bibliography of the report.)

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C.II.2 Independent Research Group: Intuitive Experts

Head: Dr. Andreas Glöckner

PostDoc

Dr. Stephan Dickert (Psychology)

Doctoral Candidates

Andrea Ahlgrimm (Psychology)
Nina Horstmann (Psychology)
Tanja Ostermann (Psychology)
Janet Kleber (Psychology) (joined the group as doctoral candidate in 10/2009)
Stephan Tontrup (Law) (left the group 12/2008)
Milan Djordjevic (Law) (left the group 12/2008)

Visiting Scholars

Dr. Britta Herbig (Psychology) (02/2008-06/2008)
Dr. Benjamin Hilbig (Psychology) (09/2009-)
Daniel Hawes (Economics) (06/2009-09/2009)

Student Research Assistants

Kristina Schönfeldt (Law)
Marie Landsberg (Law)
Maria Gladigau (Psychology)
Esther Kordecki (Psychology)
Susann Fiedler (Psychology)
Selina Scholz (Psychology)
Sebastian Schier (Computer Sciences)

Introduction

We started the group *Intuitive Experts* in summer 2007 to tackle two major challenges of psychological decision research, namely to improve the understanding of the complex interplay between intuitive and deliberate processes and to enhance research in Law and Psychology by providing computationally specified and plausible models of decision making in complex environments which capture processes of judges as well as lay people. We progressed in both issues using a model driven approach to investigate empirically (legal) decision making and behavior in public-goods situations. We used synergetic effects of interdisciplinary research both to test and enhance the psychological model by collecting evidence in complex environments and to provide tailored empirical answers to important legal issues.

According to Herbert A. Simon's classic argument of bounded rationality, until recently the focus of psychological decision research has been on investigating deviations from rationality based on the view that humans' cognitive capacity is limited. We have challenged this view on theoretical and empirical grounds and have shown that individuals draw upon intuitive processes to overcome the obvious limitations of mere deliberate reasoning.

We develop and use advanced empirical methods such as physiological measures and eye-tracking to look deeper into the mechanisms of the mind, and we were able to unravel some fascinating aspects of the complex interplay between automatic and deliberate processes, which is computationally powerful, highly efficient and adaptive. As we expected, personally perceived "intuitions" (i.e., instantly emerging feelings or insights in decisions) are only one observable signal from this complex system; they are just the tip of the iceberg. The same mechanisms seem to be the core operational processes of many – if not all – decisions although individuals become aware of them in only these very few situations. The better understanding of these mechanisms allowed us to derive predictions concerning the efficient design of legal institutions and to identify factors influencing cooperation in public goods.

In specifying the research plan and implementing our investigation, we figured that there is a dire need for empirical investigation in both cognitive decision research on automatic-intuitive processes as well as in legal and economic topics. We had to concentrate on a few of them and to postpone many to the future. In cooperation with lawyers and economists from the institute, we investigated several of the model's predictions empirically. This effort was fruitful and led to initial truly interdisciplinary publications (on top of classic publications). We experienced that interdisciplinary work was particularly time-consuming at the beginning. It starts paying back by an enrichment of methodological tools (particularly between economists and psychologists), a tremendously widened scientific perspective, and by providing a wealth of interesting research questions (particularly by lawyers).

We progressed along four lines of research: 1) model development and testing, 2) methodological developments, 3) behavioral legal studies, and 4) investigating the factors influencing cooperation in public goods. One of our major achievements concerning the first issue lies in having established and improved a process model of the complex interplay between intuitive and deliberate decision making processes. The model is based on a computationally specified neural network and follows the parallel constraint satisfaction approach. It is being successfully applied to a variety of decision-based research questions. Of course, intuition is generally difficult to measure because it operates without conscious awareness. Therefore, concerning the second issue, we had to develop several new methods. To make our acquired knowledge publicly available we edited a book providing "Foundations for tracing intuition". Concerning the third issue, we tackled quite different topics ranging from investigating the consequences of jurors relying on intuition to the question whether rebate schemes might induce stickiness in customers and potentially lead to market foreclosure. Concerning the fourth issue, we investigated, for exam-

ple, the influence of a perceived leaders' sacrifice in public-goods games. In our efforts, we contribute significantly to the institutes' overall agenda and particularly the goals and aims of the group by Prof. Engel for adopting a stronger empirical perspective in investigating collective goods and legal questions.

The following sections outline the developments in the four areas in more detail.

Model Development and Testing

The Parallel Constraint Satisfaction Model

Elaborating on previous work, Andreas Glöckner and Tilmann Betsch were able to establish the parallel constraint satisfaction (PCS) model as a general framework for decision making research that specifies the complex interplay between intuitive and deliberate processes (Glöckner & Betsch, 2008b). According to the PCS model, decision making is an inherently constructivist process. Individuals do not perceive information objectively, but construct interpretations or stories from given information. Based on automatic-intuitive processes, initial tendencies for one or another interpretation are accentuated and contradicting information is devalued. The decision maker becomes aware of the resulting (consistent) mental representations of the decision task, but not of the underlying automatic processes. Additionally, deliberate processes are activated for cases in which the consistency of the resulting mental representation fails to reach a certain threshold. Deliberate constructions are used to generate new information, restructure the mental representation and to consider alternatives. Thereby the overall likelihood of making a globally optimal decision instead of a locally optimal one is increased.

The general model has been specified and applied to decision making tasks involving probabilistic inference (e.g., which product is of higher quality?; Ahlgrimm, forthcoming; Glöckner, 2008a; Glöckner & Betsch, 2008b; Glöckner, Betsch, & Schindler, in press; Glöckner & Hodges, 2009; Glöckner & Moritz, in press; Ostermann, forthcoming), risky choices (see also Glöckner & Betsch, 2008a; e.g., which of two lotteries do you prefer?; Glöckner & Herbold, in press), trade involving personal endowment (e.g., whether to buy or sell a mug for a certain price; Glöckner, Kleber, Tontrup & Bechtold, 2009; Glöckner, Tontrup, & Kleber, under review; Kleber, 2009), base-rate tasks (e.g., how likely was an accident caused by a yellow cab given a certain base-rate and eye-witness reports; Glöckner & Dickert, 2008), as well as for decisions in complex legal cases by lay persons (Ahlgrimm, forthcoming; Glöckner & Engel, 2008; Horstmann, forthcoming) and legal experts (Herbig, Dickert, Glöckner, Gansen, & Portack, under review; Herbig & Glöckner, 2009).

Contributions to the General Developments of Intuition Research

Towards a differentiated view on intuition. The majority of previous research on intuition may be claimed to suffer from loose theorizing and a reliance on underspecified models. The larger body of this literature appears to present an accumulation of partially over-

lapping theories, which seem mainly concerned with distinguishing and describing two decision making processes (i.e., intuition and deliberation). Description of these processes has so far remained superficial, and the strict distinction within the dual-process approach might be criticized for being somewhat artificial. To overcome the dual-process framework popularized by Daniel Kahneman and others, and to provide a theoretical background for empirical investigation of intuition we propose a more differentiated framework for intuition research (Glöckner & Witteman, in press-a, in press-c). We argue that intuition is just a label for many different kinds of automatic processes and suggest a differentiation according to the underlying processes into Associative intuition, Matching intuition, Accumulative intuition, and Constructive intuition.

Intuition and deliberation are less distinct than usually assumed. In an important recent work, we used advanced eye-movement recording technology and showed that intuitive and deliberate decision modes are less distinct than assumed by most dual-process models (Horstmann, Ahlgrimm, & Glöckner, 2009). In line with the PCS model, it seems that there is a common automatic process that underlies both decision modes.

Cognition modulates feelings. Some models of intuition (i.e., associative intuition) assume intuition to be a result of feelings which reflect previous learning experiences, and behavior to follow somewhat mechanistically from these feelings. In contrast, PCS suggests that previous experiences are quickly integrated with currently provided cognitive cues. In support of PCS our recent study using physiological measures (i.e., peripheral arterial tonus) finds that previous experiences factor importantly in decision tasks, but that the resulting feeling (i.e., anticipatory arousal) is modulated by currently available cognitive cues (Glöckner & Hochman, under review). Specifically, anticipatory arousal increases (vs. decreases) if previous learning experiences and cognitive cues are inconsistent (vs. jointly point towards selecting the same option). Hence, our findings indicate that the relation between feelings and cognition is more complex than assumed by some simple intuition models. In another research project that investigates experience-based decision making, Stephan Dickert and Ellen Peters (forthcoming) show that affective reactivity towards positive and negative events is only helpful for decision performance when information is processed intuitively. In contrast, a more deliberative (cognitive) approach to information processing both decreases the relationship between feelings and choices as well as overall decision performance.

Experts have more complex mental representations but rely on the same decision processes as lay persons. One big challenge for the group has been to theoretically connect the concepts of intuition and expertise. To support this, Britta Herbig, a renowned expertise researcher, was temporarily invited to join the group. Resulting from this cooperation, we were able successfully to apply the PCS model to decision making tasks involving different levels of expertise (Herbig & Glöckner, 2009). We argue that the main differences of how experts and novices make decisions result from the different ways in which they construct mental representations of a decision task. We find first evidence for this claim in a study on premeditation judgments in legal cases comparing lay persons and experienced law students (Herbig et al., under review).

People are lightning calculators – at least sort of. There is a long-standing debate whether and how people might be able to approximately maximize their utility. According to a classic critique by Veblen (1898), neo-classic economics has assumed the rational man to be "a lightning calculator of pleasures and pains". Although this comment was, of course, meant sardonically, we have now collected considerable support for the claim that intuitive-automatic processes enable people to resemble at least partially such lightning calculators. In a study recording eye-movements, we find evidence that people make risky decisions (i.e., selection between gambles with monetary outcomes) based neither on deliberate calculations nor on simplified heuristics. Instead, they show mostly short eye-fixations (thereby indicating the use of automatic-intuitive processes), while still exhibiting quick choices akin to a weighted integration of probabilities and outcomes (see also next section). In line with the predictions of PCS, people shift their attention towards the favoured gamble and the most attractive outcomes to highlight the advantages of the favoured gamble (Glöckner & Herbold, in press).

Shifting the Bounds of Rationality: Intuition enables people to integrate large amounts of information quickly and to approximate rational solutions

Automatic-intuitive processes are operative in a variety of decision making tasks. Elaborating on earlier findings, we find that these automatic-intuitive processes enable people quickly to understand even complex decision tasks and to integrate large amounts of information. Furthermore, we find that information is integrated under consideration of importance as well as its predictive power (Glöckner & Betsch, 2008a, 2008c; Glöckner & Dickert, 2008; Glöckner & Herbold, in press; Glöckner & Hodges, 2009; Hilbig & Pohl, 2009). For example, Andreas Glöckner and Stephan Dickert show that participants are well able to take into account base-rate probabilities and three probabilistic cues. More specifically, in an incentivized environment with repeated feedback, participants showed choices that were in line with the normative solution according to Bayes' theorem in 86% of the cases and made these decisions in less than 3 seconds (on average). It is noteworthy that literally none of our participants could calculate the Bayes' solution deliberately in a highly incentivized post-test which clearly speaks for the usage of well-calibrated intuitive processes.

Andrea Ahlgrimm aimed to find the upper limits for this information integration capacity and could show that even in rather complex decisions between two options with up to 12 cues (e.g., alibi available, DNA trace), people integrated information in a weighted compensatory manner within less than 5 seconds, which also speaks for the usage of partially automatic processes (Ahlgrimm, forthcoming).

Coherence Shifts: Systematic predecisional information distortions

Furthermore, we have extended previous findings concerning systematic predecisional information distortions, which occur automatically in support of the favoured option (*coherence shifts*). We found that the PCS model can predict these coherence shifts quite well not only in the aggregate but also on an individual level (Glöckner, Betsch and Schindler, in press; Glöckner & Betsch, in press; Ostermann, forthcoming). Tanja Oster-

mann additionally showed that the size of coherence shifts differs systematically depended on personality and situational factors: persons with a high decision-related action orientation show larger coherence shifts than state-oriented participants, and coherence shifts increase with an increasing general preference for consistency (Ostermann, forthcoming).

Coherence shifts are potentially problematic in legal decision making contexts, in that contrary facts are devalued, which may lead to overconfidence and an increased number of wrong convictions. Two empirical projects on coherence shifts in juror decision making are reported in more detail below (Fiedler & Glöckner, forthcoming; Glöckner & Engel, 2008).

Methodological Developments

We have shown that classic methods of behavioral decision research (e.g., recording individuals' information search in a hidden information matrix) sometimes hinder the application of intuitive-automatic processes and that these methods might even not be capable to capture them at all (Glöckner & Betsch, 2008c). We edited a book that provides foundations for tracing intuition (Glöckner & Witteman, in press-b). The members of the group contributed several chapters to this book. In the introduction chapter, Andreas Glöckner and Cilia Witteman critically review intuition research (Glöckner & Witteman, in press-a). Additionally the members of the group have succeeded in suggesting a multiple-measure approach to investigate decision processes (Glöckner, in press); describing the use of self-report tools for measuring affective and emotional reactions (Dickert, in press); discussing the application of different physiological measures in intuition research (Hochman, Glöckner, & Yechiam, in press); describing different methods to induce intuitive and deliberate decision modes (Horstmann, Hausmann, & Ryf, in press); and presenting exemplified method applications (Witteman & Glöckner, in press).

Based on the ideas presented in the book, Andreas Glöckner has developed a Multiple-Measure Maximum-Likelihood strategy classification method to test process models for intuitive and deliberate decision making based on a simultaneous investigation of choices, response latencies, and reported confidence (Glöckner, 2009a). In Monte-Carlo simulations, it is shown that the method allows for an unbiased strategy classification for process models and is more efficient than previously used methods.

Furthermore, we suggest several directions for an extended usage of eye-tracking data to investigate cognitive processes in decision making (Glöckner & Herbold, in press; Horstmann, Ahlgrimm & Glöckner, 2009). Elaborating on findings from cognitive psychology, we have shown, for instance, that the length of individual fixations is a good indicator for depth of processing in decisions. Calculation strategies result in many long fixations (>500 ms), whereas people show mainly short fixations (<250 ms) when deciding on the basis of automatic-intuitive processes.

Following a somewhat different approach, Benjamin Hilbig and coworkers (Hilbig, Erdfelder, & Pohl, in press) developed a multinomial model for testing the prevalence of simple heuristics that might rely on automatically activated recognition information only. Finally, it is noteworthy that, inspired by an econometrics workshop at the institute and the joint work with economists, members of the group now use more efficient regression approaches to analyze their empirical data (e.g., multi-level analysis / fixed- and random-effects models, clustering). Additionally, members of the group regularly hold methodological and statistical workshops and seminars with legal scholars at the institute, both to exchange and create ideas for experimental research.

Behavioral Legal Studies

In several cooperation projects, we have applied the PCS view to legal issues. We will sketch some of these studies in the following:

PCS and legal procedure. Taking a very general perspective, Andreas Glöckner has derived predictions of the PCS approach for the design of efficient legal institutions and exemplarily investigated in how far German criminal procedure is in line with these predictions (Glöckner, 2008b, 2008c; see also Glöckner, 2009b). A preliminary analysis finds that core aspects of German criminal procedure adhere closely to the principles suggested by PCS. Predictions are, for instance, that institutions should allow judges to utilize holistic overall evaluations of the case (i.e., PCS-based construction of overall mental representations / "*Judiz*") in order to handle complex cases. However, judges should additionally be obliged a) to use deliberate processes to check thoroughly the components of the mental representation these evaluations are based on, b) to make sure that alternative interpretations are considered, and c) to reveal and document the final mental representations on which they base their judgment. The principles of free evidence judgment (*Freie Beweiswürdigung*), the obligations to take into account holistic impressions that arise during the trial (*Gesamteindruck der Hauptverhandlung*), and the obligation to consider all plausible alternative interpretations of evidence are nicely in line with the predictions of PCS to use the advantages and to circumvent the downside of intuition at the same time.

Intuitive jurors: Investigating the downside of intuition. In an experimental project, we tested possible negative effects of the fact that jurors partially rely on automatic-intuitive processes in their judgments (Glöckner & Engel, 2008). We found that U.S. model jury instructions for preponderance of the evidence and beyond a reasonable doubt influence conviction rates in the intended direction and are not undermined by coherence shifts, although probabilistic estimations of these standards are inappropriate. However, even massive changes in explicitly stated probabilities, while holding the overall constellation of facts constant, do not influence conviction rates and the estimated probability for conviction. We argue that improvements for legal procedure should focus on measures that circumvent the negative side-effects of coherence based reasoning in general and

specifically to make probabilistic information better evaluable for decision makers in the law.

In a related study using the same complex case materials, we investigated whether jury deliberation in groups influences information distortion (Fiedler & Glöckner, forthcoming). Our study finds no general increase or decrease in coherence shifts, but some interesting differential effects: people who changed their opinion in the group deliberation were least biased and showed particularly low coherence shifts.

Sticky rebates and market foreclosure. In another experimental project, we investigated whether and how targeted rebates impede rational switching of consumers from an incumbent to an outside option (e.g., market entrant) (Morell, Glöckner, & Towfigh, 2009). In a real trading problem, participants repeatedly bought tokens and could enter a target rebate scheme. Buying in a rebate scheme considerably reduced the likelihood that they switched to an outside option with higher payoff later. The observed stickiness increased with the increasing length of buying in the rebate scheme. We conclude that targeted rebates might have an underestimated potential to foreclose consumer markets.

Overconfidence and illusion of control in sports bets. The regulation of sports bets is highly debated in German law. Two crucial questions that can only be answered empirically are a) whether winning in sports bets depends more on luck or on skill and b) whether persons correctly estimate their influence on winning probabilities or show illusion of control which might contribute to addictive gambling behavior. In a comprehensive incentivized online study, we investigated peoples' ability to predict real sports bets (1. Bundesliga, the German First League in Soccer) in relation to their self-assessment of skill/expertise (Glöckner & Towfigh, forthcoming). We found clear evidence that speaks for regulating sports bets according to the current legal standards. There was no influence of self-assessed skill on accuracy; indicating that success in sports bets depends highly on luck. Furthermore, we found overconfidence and illusion of control, particularly in people who thought to possess a high skill level. This indicates that sports bets have the potential to lead to addictive gambling.

Anti-commons and endowment effects. In cooperation with Stefan Bechtold and Stephan Tontrup, we investigated the relative influence of endowment effects, social group effects, and strategic incentives in anti-commons situations (Glöckner, Kleber et al., 2009). We show that endowment effects are reduced by 50% in groups and completely disappear in situations with additional strategic incentives to overprice. We argue that it is therefore not sufficient to design transaction rules such that owners of goods do not have strategic incentives to overprice, but that intervention needs to focus on reducing the endowment effect as well.

Decisions by lay-jurors. Although German law does not contain juries, it does not exclusively rely on professional judges either. In some courts, judges decide together with lay jurors (*Schöffen*), who are appointed by the court for relatively long time periods. In an ongoing project by Milan Djordjevic, Stephan Dickert, Andreas Glöckner, and Kristina Schönfeldt, we investigate decision behavior of lay judges (cf. Glöckner & Schönfeldt,

2009). An important legal and political question that we investigate empirically is whether lay jurors should receive access to the whole case file or only to a summary of it (as is currently the case).

Factors Influencing Cooperation in Public Goods and Charitable Behavior

In public-goods problems, individuals have to make decisions in a strategic environment. In cooperation with behavioral economists from the institute, we have investigated several psychological factors that influence individual decisions to cooperate: perceived sacrifice by a privileged group member, the possibility for latent payback, and first impressions. In the first project, we analyzed two team settings, in which one member in a team had stronger incentives to contribute than the others (Glöckner, Irlenbusch, Kube, Nicklisch, & Normann, in press). If contributions constitute a sacrifice for the privileged player, the other team members are more inclined to cooperate than if contributions are strictly dominant for the privileged player. In a second project, we analyzed the effect of immediate and latent feedback on punishment in repeated public-goods games (Glöckner, Kube, & Nicklisch, in preparation). Contributions and efficiency increase significantly when both mechanisms are used simultaneously. The sanctioning efficiency per immediate punishment point, that is, the increase in contribution by punished players in consecutive periods, increases drastically if latent punishment is at hand. This effect enhances within group cooperation significantly. In a third project we could show that first impressions play an important role in contributions (Beckenkamp et al., 2009).

In a fourth project that aimed at investigating the relationship between the underlying pro-self vs. pro-social value structure with cooperation rates in a prisoner's dilemma game, we were able to show that a more pro-social value orientation leads to increased cooperation (Dickert & Beckenkamp, forthcoming). We found that the psychological costs of inequity aversion can be measured and conceptualized by anticipated emotions (happiness and regret). People with a pro-social value orientation exhibit sensitivity to inequity and anticipate greatest happiness and least regret for mutual cooperation; people with a pro-self value orientation base their anticipated emotions solely on the payoffs.

Finally, in work closely related to public goods, Stephan Dickert investigated the affective determinants of charitable giving (Dickert, 2008). Based on a series of experiments, we propose a two-stage processing model where the decision to donate money for a charitable cause depends initially on emotions related to mood management, while the amount of the donation depends on empathy-related emotions (Dickert, Sagara, & Slovic, in press). Additionally, we carefully examined the role that attentional mechanisms play in the generation of such emotions in charitable contexts and found evidence that visual attentional focus is needed to generate empathy related to the willingness to donate money (Dickert & Slovic, 2009).

Research Agenda

In the next two years, we plan to continue and extend our successful research along similar lines: we will continue working according to a model-based approach, concentrating on experimental work with a strong interdisciplinary focus. We will further improve the PCS model and use innovative measurement methods to tackle experimental issues.

Some of the projects described above are still in progress and follow-up studies are planned or have already been conducted. Some other projects are planned or already in preparation. A few of them are worth listing:

- We will extend the work on endowment effects and anti-commons. Persons seem to behave differently if they are endowed with uncertain goods (e.g., lottery tickets, patents) or concrete goods (e.g., mugs, houses). We aim to differentiate our model and to do more empirical testing on that issue. Furthermore, we will investigate how mental representations of the endowed goods change based on endowment status, time constraints, and visual working memory. (Kleber, Glöckner, Bechtold, Tontrup, Dickert, Ashby)
- Currently cooperation in public goods is mainly analyzed relying on persons' contributions only. To understand the underlying processes better, we aim to do an in-depth analysis of cooperative behavior in public goods, using eye-tracking technology and measuring physiological arousal. (Fiedler, Glöckner, Nicklisch)
- Several findings indicate that personality factors (e.g., intelligence, risk aversion, neuroticism) have a time-stable influence on cooperation. We aim to investigate this influence further in repeated prisoner-dilemma games. Additionally, we will expand on our research on social value orientations and the affective side of inequity aversion in economic games. (Hilbig, Ulshöfer, Glöckner, Dickert, Beckenkamp)
- We aim to extend our studies on the decision behavior of lay jurors and legal experts (judges, state attorneys). We will further test our assumption that differences in decision making mainly depend on differences in mental representations of the task and investigate the consequences for legal institutions. (Dickert, Glöckner, Herbig, Landsberg)
- The PCS model for risky choices should be further improved, refined, and tested against expected utility models and cumulative prospect theory. As a crucial distinct prediction, we will test whether the PCS model can successfully predict intransitivities. (Hawes, Glöckner)
- One specific feature of PCS is that unconscious influences play an important role in decisions. We will empirically investigate how unconscious and conscious cues are integrated. (Glöckner, Unkelbach, Bröder)
- A PCS approach to coherence shifts in preferences related to charitable giving will give an insight into the mechanisms that drive donation decisions in situations that

create moral dilemmas (e.g., when only one charitable contribution can be made, but several potential recipients of this donation exist). We will further investigate the facilitating effects of attention on the generation of feelings in charitable behavior, making use of eye-tracking technology to separate the effects of focal and peripheral attention (Dickert, Slovic).

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C.II.3 International Max Planck Research School: Adapting Behavior to a Fundamentally Uncertain World

Partners: Max Planck Institute for Economics, Jena (Güth)
Max Planck Institute for Human Development, Berlin (Gigerenzer)
Faculty of Economics, University of Jena (Cantner)
Faculty of Psychology, University of Jena (Mummendey)
Rationality Center, Jerusalem (Kareev)
Workshop in Political Theory and Policy Analysis, Bloomington (Ostrom)
Psychology Department, Bloomington (Todd)

1. Decision-making in a (Sufficiently) Certain World

How should one make a decision? The answer seems obvious: figure out what you want, check your options, and choose the option that comes closest to your desires. Neoclassical economics has developed this program to near perfection. It is the program of optimisation under constraints (Feldman 1980). From this starting point, it is natural to see uncertainty as a problem of information. If more information is available, rational decision-makers use it. If full information is not to be had, rational actors replace it by the best available proxy. In the most comfortable case, the set of possible events is finite and known. Both the range and the distribution of each possible event within the range of possible realizations may be estimated. There is, for instance, reason to believe that the unknown event is taken from a well-defined class of events, and that there is data from a representative sample. If so, the present value of the option may be calculated. If there is no hard data, decision-makers may still be able to come up with educated guesses. The rational choice program still works if they rely on merely subjective probabilities, and on a merely subjective definition of the action space.

The program takes into account information cost. If the acquisition of additional information is costly, decision-makers make an investment decision. They estimate the expected value of improving decision quality, and compare it to the cost. If, ex ante, it is uncertain whether costly search will lead to success, the benefit is multiplied by the (if necessary only subjective) probability of success. By the same token, the solution space for the meta-decision about search may be extended. First, the decision-maker constructs the space of potential outcomes of search. Each outcome is the product of two factors: the probability finding the solution, and its value. Summing up over all weighed outcomes gives the expected value of engaging in search.

The same way, one may introduce decision cost. This is easiest to see if the decision-maker relies on the services of an intermediary. The cost of entrusting the actual decision-making to an outsider is justified in either of two cases. In the first case, the decision-maker could have made the decision herself. But decision-making effort saved on this task may be invested in other, more profitable tasks. In the second case, bringing in the

third party is a way to overcome the decision-maker's own limitations. Either meta-decision rests on comparing expected benefit to cost.

In this (neoclassical) program, decision-making under certainty is the conceptual starting point. Decision cost, complexity, and uncertainty are added as complications. By the steps sketched above, these complications become tractable, provided computational capacity is not bounded. Once the necessary estimations have been made, the actual decision is a mere matter of calculus. Given the right estimates, the right decision is unquestionable. If outsiders accept the estimates, one may prove that one has taken the correct decision.

These features of the neoclassical program have made it attractive to psychologists and lawyers as well. In psychology, the anomalies and biases program has turned what is a mere analytic tool in economics into norms. In experiments, subjects have been tested against the predictions of rational choice theory. Systematic deviations have been dubbed as biases. Indeed, long lists of such biases have been found. Legal scholars have bought into this program from two angles. In law and economics, legal institutions are reconstructed from the perspective of actors who follow the rational choice program. In most of behavioral law and economics, legal institutions are reconstructed as decision aids, helping individuals overcome the empirical deviations from rational choice norms, i.e., biases.

2. Decision-Making in a Fundamentally Uncertain World

There is a radically different way of construing decision-making. It starts from the assumption that the problem is either ill-defined, or complexity transcends decision-making abilities. Of course, not all problems fall into one of these categories. Actually, one of the main purposes of institutions is to narrow down problems such that they become tractable in rational choice terms. Take decision-making in Parliament. At the outset, the factors potentially relevant for making political decisions are overwhelmingly rich. But all that is needed to make a decision on behalf of the entire country is sufficient votes in Parliament. This institutional intervention is already a response to the fact that complexity had been extensive in the first place.

The domain of the alternative approach is extended by the fact that not all decision-makers dispose of perfect cognitive abilities. Yet nonetheless they have to take decisions. Others have to divide their limited cognitive resources among multiple tasks, or to decide in limited time. Yet others cannot afford training or the help of decision-making intermediaries with larger cognitive resources. For all of these reasons, decision-makers might want to content themselves with a more parsimonious method of decision-making under uncertainty, provided the expected results are at least satisfactory.

Once one introduces human interaction into the definition of the situation, further reasons for fundamental uncertainty become visible. People possess the power of

creativity. They can use it for mere technical or institutional innovation. But they may also creatively circumvent what would be a restriction for a mere utility maximiser.

Finally, if the situation is not exceptionally simple, actors must engage in sense making. To that end, they construct mental models. Uncertainty can also be said to be fundamental if actors lose confidence in their mental models.

If uncertainty is fundamental for one of these reasons, decision-making is no longer a matter of calculus. Search must be stopped at some point, and often early on. The decision-maker must take on personal responsibility. It is clear at the outset that the decision may turn out to be suboptimal, after the fact. It does not make sense to strive for the perfect decision. A good illustration is what is known as the secretary problem, i.e., a search problem where former options are foregone. Here one may learn after the fact that a former option would have been preferable. But one has no chance to revert on one's earlier decision not to seize the opportunity. In such situations, the normative goal shifts to coming up with an appropriate move, given the limited abilities of the decision-maker. Depending on the situation, avoiding bad mistakes (e.g., hiring the worst secretary) may be more important than missing theoretical opportunities (e.g., hiring the theoretically optimal secretary). In other situations, taking the risk of small mistakes may be conducive to gradually improving decision quality, and to preparing for situations where decision quality matters more. In the same vein, it may be preferable to split an important decision into small steps, thereby gaining an opportunity to redirect one's course in light of intermediate experiences. It always pays to remain open to surprise. Making good use of feedback becomes paramount.

The hallmark of rational choice theorising is strategic interaction. Many real life problems fall into this category, the two main exceptions being the direct interaction between man and nature, and behavior in markets if competition is workable. The tool for analysing problems of strategic interaction is game theory. If some actors have a chance to design rules for future interaction, game theory takes the form of principle-agent theory and of mechanism design. If the uncertainty is fundamental, this does not make the strategic element and anticipation disappear. Yet if neither actor optimises, strategic interaction takes on a different flavour. Generating predictability is a precondition for gains from cooperation. Complex cascades of mutual anticipation become unlikely. Simple interaction heuristics are more likely to be employed by one's interaction partner. On the other hand, too much predictability is dangerous when "predators" are on the loose. In such situations, a decision-rule must help the individual choose between the prospect for gains from cooperation and the ensuing risk of being exploited.

The best machinery for implementing the traditional rational choice program is formal logic. Logic has its role in the alternative program. But it must be supplemented by different cognitive and motivational tools. On the cognitive side, the decision-maker must be able to comparatively assess the desirability of options on a thin factual basis. Most likely, there is not one all-purpose tool for this. In some contexts, simply repeating past success and avoiding past failure may be enough. In other contexts, it may be more

promising to build a rough mental model of the situation, and to rank the options that come to mind along simple criteria. In yet other contexts, tracing patterns and matching their probabilities may be best policy, and so forth. On the motivational side, two elements are crucial. Decision-makers must be willing to take risks; otherwise they would be immobilised in the face of patent uncertainty. Conversely, decision-makers must feel pressed to change a course of action if there are sufficiently strong signals that they got it wrong. The relatively high willingness to trust others, coupled with fairly strong punishing sentiments, fit this picture well.

IMPRS Summer School 2008, Schedule

1st week	Monday July 28		Tuesday July 29		Wednesday July 30		Thursday July 31		Friday Aug 01		Saturday Aug 02	Sunday Aug 03
8:00	GK	IMPRS	IMPRS	8:00	IMPRS	8:00	IMPRS	8:00	IMPRS	8:00	IMPRS	IMPRS
8:15	Registration			8:15		8:15		8:15		8:15		
8:30	Welcome Session		Anthony Ziegelmeyer Networks	8:30	Eberhard Feess, Law and Economics	8:30	Robin Cowan Network Structures	8:30	Anthony Ziegelmeyer Networks	8:30		
8:45				8:45		8:45		8:45		8:45		
9:00				9:00		9:00		9:00		9:00	E a x m	
9:15	Anthony Ziegelmeyer Networks			9:15		9:15		9:15		9:15		
9:30				9:30		9:30		9:30		9:30	E a x m	
9:45				9:45		9:45		9:45		9:45		
10:00			Christoph Engel, Competition Law and Economics	10:00	Christoph Engel, Competition Law and Economics	10:00	Robin Cowan Network Structures	10:00	Christoph Engel, Competition Law and Economics	10:00		
10:15				10:15		10:15		10:15		10:15		
10:30				10:30		10:30		10:30		10:30	E a x m	
10:45				10:45		10:45		10:45		10:45		
11:00	Christoph Engel, Competition Law and Economics			11:00		11:00		11:00		11:00		
11:15				11:15		11:15		11:15		11:15		
11:30				11:30		11:30		11:30		11:30		
11:45			Exercise	11:45	Exercise	11:45	Exercise	11:45	Exercise	11:45	Group Assignment Presentation	
12:00				12:00		12:00		12:00		12:00		
12:15				12:15		12:15		12:15		12:15		
12:30	Lunch		Lunch	12:30	Lunch	12:30	Lunch	12:30	Lunch	12:30		
12:45				12:45		12:45		12:45		12:45	Lunch	
13:00				13:00		13:00		13:00		13:00		
13:15				13:15		13:15		13:15		13:15		
13:30				13:30		13:30		13:30		13:30		
13:45				13:45		13:45		13:45		13:45		
14:00	Eberhard Feess, Law and Economics		Eberhard Feess, Law and Economics	14:00	Joint Seminar John Hey	14:00	Christoph Engel, Competition Law and Economics	14:00	Eberhard Feess, Law and Economics	14:00		
14:15				14:15		14:15		14:15		14:15		
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14:45				14:45		14:45		14:45		14:45		
15:00				15:00		15:00		15:00		15:00		
15:15				15:15	Robin Cowan Network Structures	15:15		15:15		15:15		
15:30	Coffee		Coffee	15:30		15:30	Coffee	15:30	Coffee	15:30		
15:45				15:45		15:45		15:45		15:45		
16:00	Selection of Groups for the Group Assignment		Joint Seminar John Hey	16:00		16:00	Eberhard Feess, Law and Economics	16:00	Exercises & Group Assignment Presentation	16:00		
16:15				16:15		16:15		16:15		16:15		
16:30				16:30		16:30		16:30		16:30		
16:45				16:45	Coffee	16:45		16:45		16:45		
17:00			Joint Seminar Govanni Dosi	17:00		17:00		17:00		17:00		
17:15	Exercises			17:15	Robin Cowan Network Structures	17:15		17:15		17:15		
17:30				17:30		17:30	Exercise	17:30		17:30		
17:45				17:45		17:45		17:45		17:45		
18:00				18:00		18:00		18:00		18:00		
18:15			Exercise	18:15		18:15		18:15		18:15		
18:30				18:30		18:30		18:30		18:30		
18:45	Dinner			18:45	Dinner	18:45	Dinner	18:45	Dinner	18:45		
19:00			Dinner	19:00		19:00		19:00		19:00		
19:15				19:15		19:15		19:15		19:15		
19:30				19:30		19:30		19:30		19:30		
19:45	Group Assignment		Group Assignment	19:45	Group Assignment	19:45	Group Assignment	19:45	Group Assignment	19:45		
20:00				20:00		20:00		20:00		20:00		
20:15				20:15		20:15		20:15		20:15		

2nd week	Monday Aug 04		Tuesday Aug 05		Wednesday Aug 06		Thursday Aug 07		Friday Aug 8		Sat Aug 09		Sun Aug 10
8:00	IMPRS	8:00	IMPRS	8:00	IMPRS	8:00	IMPRS	8:00	IMPRS	8:00	IMPRS	8:00	IMPRS
8:15	Peter Wakker	8:15	Peter Wakker	8:15	Armin Falk	8:15	Armin Falk	8:15	Excercises	8:15		8:15	
8:30		8:30		8:30		8:30		8:30		8:30		8:30	
8:45		8:45		8:45		8:45		8:45		8:45		8:45	
9:00		9:00		9:00		9:00		9:00		9:00	Exam	9:00	
9:15		9:15		9:15		9:15		9:15		9:15		9:15	
9:30		9:30		9:30		9:30		9:30		9:30	Exam	9:30	
9:45		9:45		9:45		9:45		9:45		9:45		9:45	
10:00	Peter Wakker	10:00	Peter Wakker	10:00	Peter Wakker	10:00	Armin Falk	10:00	Excercises	10:00		10:00	
10:15		10:15		10:15		10:15		10:15		10:15		10:15	
10:30		10:30		10:30		10:30		10:30		10:30	Exam	10:30	
10:45		10:45		10:45		10:45		10:45		10:45		10:45	
11:00		11:00		11:00		11:00		11:00		11:00		11:00	
11:15		11:15		11:15		11:15		11:15		11:15		11:15	
11:30		11:30		11:30		11:30		11:30		11:30		11:30	
11:45	Exercise	11:45	Exercise	11:45	Exercise	11:45	Exercise	11:45	Exercise	11:45		11:45	
12:00		12:00		12:00		12:00		12:00		12:00		12:00	
12:15		12:15		12:15		12:15		12:15		12:15		12:15	
12:30	Lunch	12:30	Lunch	12:30	Lunch	12:30	Lunch	12:30	Lunch	12:30		12:30	
12:45		12:45		12:45		12:45		12:45		12:45		12:45	
13:00		13:00		13:00		13:00		13:00		13:00	Lunch	13:00	
13:15		13:15		13:15		13:15		13:15		13:15		13:15	
13:30		13:30		13:30		13:30		13:30		13:30		13:30	
13:45		13:45		13:45		13:45		13:45		13:45		13:45	
14:00	Robert Goldstone	14:00	Armin Falk	14:00	Armin Falk	14:00	Robert Goldstone	14:00	Robert Goldstone	14:00		14:00	
14:15		14:15		14:15		14:15		14:15		14:15		14:15	
14:30		14:30		14:30		14:30		14:30		14:30		14:30	
14:45		14:45		14:45		14:45		14:45		14:45		14:45	
15:00		15:00		15:00		15:00		15:00		15:00		15:00	
15:15		15:15		15:15		15:15		15:15		15:15		15:15	
15:30	Coffee	15:30	Coffee	15:30	Coffee	15:30	Coffee	15:30	Coffee	15:30		15:30	
15:45		15:45		15:45		15:45		15:45		15:45		15:45	
16:00	Exercises and Group Assignmement	16:00	Robert Goldstone	16:00	Robert Goldstone	16:00	Stefan Stürmer	16:00	Exercises and Group Assignmement Presentation	16:00		16:00	
16:15		16:15		16:15		16:15		16:15		16:15		16:15	
16:30		16:30		16:30		16:30		16:30		16:30		16:30	
16:45		16:45		16:45		16:45		16:45		16:45		16:45	
17:00		17:00		17:00		17:00		17:00		17:00		17:00	
17:15		17:15		17:15		17:15		17:15		17:15		17:15	
17:30		17:30	Exercises and Group Assignmement	17:30	Exercises and Group Assignmement	17:30	Exercises and Group Assignmement	17:30		17:30	GK Farewell Event	17:30	
17:45		17:45		17:45		17:45		17:45		17:45		17:45	
18:00		18:00		18:00		18:00		18:00		18:00		18:00	
18:15	Dinner	18:15	Dinner	18:15	Dinner	18:15	Dinner	18:15	Dinner	18:15		18:15	
18:30		18:30		18:30		18:30		18:30		18:30		18:30	
18:45		18:45		18:45		18:45		18:45		18:45		18:45	
19:00		19:00		19:00		19:00		19:00		19:00		19:00	
19:15	Group Assignment	19:15	Group Assignment	19:15	Group Assignment	19:15	Group Assignment	19:15	Group Assignment	19:15		19:15	
19:30		19:30		19:30		19:30		19:30		19:30		19:30	
19:45		19:45		19:45		19:45		19:45		19:45		19:45	
20:00		20:00		20:00		20:00		20:00		20:00		20:00	
20:15		20:15		20:15		20:15		20:15		20:15		20:15	

3rd week	Monday 08/11	Tuesday Aug 12	Wednesday Aug 13	Thursday Aug 14	Friday Aug 15	Saturday Aug 16	Sunday Aug 17
8:00							
8:15	Andreas Niklisch Advanced Theory of Institutions	Andreas Niklisch Advanced Theory of Institutions	Andreas Niklisch Advanced Theory of Institutions	Andreas Niklisch Advanced Theory of Institutions	Andreas Niklisch Advanced Theory of Institutions		
8:30						Exam	
8:45							
9:00							
9:15							
9:30						Exam	
9:45							
10:00	Joachim Winter Econometric Analysis of Experimental Data	Joachim Winter Econometric Analysis of Experimental Data	Joachim Winter Econometric Analysis of Experimental Data	Joachim Winter Econometric Analysis of Experimental Data	Joachim Winter Econometric Analysis of Experimental Data		
10:15							
10:30						Exam	
10:45							
11:00							
11:15						Free time	
11:30							
11:45	Rene Levinsky Cooperative Game Theory	Rene Levinsky Cooperative Game Theory	Rene Levinsky Cooperative Game Theory	Rene Levinsky Cooperative Game Theory	Rene Levinsky Cooperative Game Theory		
12:00							
12:15							
12:30							
12:45							
13:00						Lunch	
13:15	Lunch	Lunch	Lunch	Lunch	Lunch		
13:30							
13:45							
14:00							
14:15							
14:30	Wolfgang Miltner Introduction and Presentation of fMRT Scanner Rosensääle	Wolfgang Miltner Introduction and Presentation of fMRT Scanner	Exercises + possible talk	Exercises + possible talk	Exercises + possible talk Group assignment presenation		
14:45						Keynote Lecture Max Bazerman Ariel Rubinstein	
15:00							
15:15							
15:30							
15:45							
16:00							
16:15							
16:30							
16:45							
17:00	Demonstration 3 Tesla Scanner Philosophenweg	Luigi Mittone Inter-temporal Decision making					
17:15							
17:30							
17:45							
18:00							
18:15							
18:30			Dinner	Dinner	Dinner		
18:45		Dinner					
19:00	Dinner extern						
19:15							
19:30			Group Assignment	Group Assignment	Group Assignment		
19:45		Group Assignment					
20:00	Group Assignment						
20:15							

4th week	Monday 18/08		Tuesday Aug 19		Wednesday Aug 20		Thursday Aug 21		Friday Aug 22
8:00		8:00		8:00		8:00		8:00	
8:15	Uwe Cantner Advanced Innovation Ecnomics	8:15	Uwe Cantner Advanced Innovation Ecnomics	8:15	Uwe Cantner Advanced Innovation Ecnomics	8:15	Uwe Cantner Advanced Innovation Ecnomics	8:15	Uwe Cantner Advanced Innovation Ecnomics
8:30		8:30		8:30		8:30		8:30	
8:45		8:45		8:45		8:45		8:45	
9:00		9:00		9:00		9:00		9:00	
9:15		9:15		9:15		9:15		9:15	
9:30		9:30		9:30		9:30		9:30	
9:45		9:45		9:45		9:45		9:45	
10:00	Gary Bornstein Intergroup Conflicts	10:00	Gary Bornstein Intergroup Conflicts	10:00	Gary Bornstein Intergroup Conflicts	10:00	Gary Bornstein Intergroup Conflicts	10:00	Gary Bornstein Intergroup Conflicts
10:15		10:15		10:15		10:15		10:15	
10:30		10:30		10:30		10:30		10:30	
10:45		10:45		10:45		10:45		10:45	
11:00		11:00		11:00		11:00		11:00	
11:15		11:15		11:15		11:15		11:15	
11:30		11:30		11:30		11:30		11:30	
11:45	Exercise	11:45	Exercise	11:45	Exercise	11:45	Exercise	11:45	ABC Group Berlin The Psychologists' Toolbox: Statistics and Methodology
12:00		12:00		12:00		12:00		12:00	
12:15		12:15		12:15		12:15		12:15	
12:30	Lunch	12:30	Lunch	12:30	Lunch	12:30	Lunch	12:30	
12:45		12:45		12:45		12:45		12:45	
13:00		13:00		13:00		13:00		13:00	
13:15		13:15		13:15		13:15		13:15	Lunch
13:30		13:30		13:30		13:30		13:30	
13:45		13:45		13:45		13:45		13:45	
14:00	ABC Group Berlin The Psychologists' Toolbox: Statistics and Methodology	14:00	ABC Group Berlin The Psychologists' Toolbox: Statistics and Methodology	14:00	ABC Group Berlin The Psychologists' Toolbox: Statistics and Methodology	14:00	ABC Group Berlin The Psychologists' Toolbox: Statistics and Methodology	14:00	
14:15		14:15		14:15		14:15		14:15	Exam
14:30		14:30		14:30		14:30		14:30	
14:45		14:45		14:45		14:45		14:45	
15:00		15:00		15:00		15:00		15:00	
15:15		15:15		15:15		15:15		15:15	Exam
15:30		15:30		15:30		15:30		15:30	
15:45		15:45		15:45		15:45		15:45	
16:00	Matthias Mahlmann tba	16:00	Exercises + possible talk	16:00	Laura Martignon The Mathematics of fast and frugal heuristics: first steps	16:00	Exercises + possible talk	16:00	
16:15		16:15		16:15		16:15		16:15	Exam
16:30		16:30		16:30		16:30		16:30	
16:45		16:45		16:45		16:45		16:45	
17:00		17:00		17:00		17:00		17:00	
17:15		17:15		17:15		17:15		17:15	
17:30		17:30		17:30		17:30		17:30	
17:45	Exercises	17:45		17:45	Exercises	17:45		17:45	
18:00		18:00		18:00		18:00		18:00	
18:15		18:15		18:15		18:15		18:15	
18:30	Dinner	18:30	Dinner	18:30	Dinner	18:30	Dinner	18:30	Graduation Ceremony
18:45		18:45		18:45		18:45		18:45	
19:00		19:00		19:00		19:00		19:00	
19:15		19:15		19:15		19:15		19:15	
19:30	Group Assignment	19:30	Group Assignment	19:30	Group Assignment	19:30	Group Assignment	19:30	
19:45		19:45		19:45		19:45		19:45	Dinner and Farewell Party
20:00		20:00		20:00		20:00		20:00	
20:15		20:15		20:15		20:15		20:15	

IMPRS Summer School 2009, Schedule

1st week	Sunday July 26		Monday July 27			Tuesday July 28			Wednesday July 29			Thursday July 30			Friday July 31			Saturday Aug 01	Sunday Aug 02
			GK		IMPRS	GK		IMPRS	GK		IMPRS	GK		IMPRS	GK		IMPRS	IMPRS	IMPRS
	GK+IMPRS	8.00	Welcome Address Uwe Cantner and Oliver Kirchkamp																
8:15		8:15	An Introduction to Experimental Economics			An Introduction to Experimental Economics			An Introduction to Experimental Economics			An Introduction to Experimental Economics			An Introduction to Experimental Economics				
8:30		8:30																	
8:45		8:45																	
9:00		9:00	Bachstr. 18, Building K, MKG Hörsaal			Bachstr. 18, Building K, MKG Hörsaal			Bachstr. 18, Building K, MKG Hörsaal			Bachstr. 18, Building K, MKG Hörsaal			Bachstr. 18, Building K, MKG Hörsaal				
9:15		9:15																	
9:30		9:30																	
9:45		9:45	Coffee			Coffee			Coffee			Coffee			Coffee			Exam	
10:00		10:00	Innovative Change in Historical Perspective	Workflow of Statistical Data Analysis		Joint seminar: Investing in Capabilities under Knightian Uncertainty			Joint seminar: Group Membership, Team Preferences, and Expectations			Joint seminar: Deliberative and Nondeliberative Processes in Human Behavior			Student Presentation	Workflow of Statistical Data Analysis			
10:15		10:15																	
10:30		10:30	Bachstr. 18, Building K, MKG Hörsaal												Bachstr. 18, Building K, MKG Hörsaal			Exam	
10:45		10:45																	
11:00		11:00		Bachstr. 18, Building K, Room 102		Bachstr. 18, Building K, MKG Hörsaal			Bachstr. 18, Building K, MKG Hörsaal			Bachstr. 18, Building K, MKG Hörsaal				Bachstr. 18, Building K, Room 102			
11:15		11:15													Group Work Experimental Economics				
11:30		11:30	Innovative Change in Historical Perspective															Exam	
11:45		11:45		Experiments Exercise		Student Presentation	Experiments Exercise		Entrepreneurship	Workflow Exercise,		Student Presentation	Experiments Exercise			Workflow Exercise,			
12:00		12:00	Bachstr. 18, Building K, MKG Hörsaal	Bachstr. 18, Building K, Room 102		Bachstr. 18, Building K, MKG Hörsaal	Bachstr. 18, Building K, Room 102		MPI V14	Bachstr. 18, Building K, Room 102		Bachstr. 18, Building K, MKG Hörsaal	Bachstr. 18, Building K, Room 102		Bachstr. 18, Building K, MKG Hörsaal	Bachstr. 18, Building K, MKG Hörsaal			
12:15		12:15																	
12:30		12:30		Lunch			Lunch			Lunch			Lunch			Lunch			
12:45		12:45	Lunch			Lunch			Lunch			Lunch			Lunch				
13:00		13:00																	
13:15		13:15																	
13:30		13:30																	
13:45		13:45																	
14:00		14:00	Innovative Change in Historical Perspective	Legal Decisionmaking		Student Presentation	Legal Decisionmaking		The Globalization Process	Legal Decisionmaking		Student Presentation	Legal Decisionmaking		Group Work Experimental Economics	Legal Decisionmaking			
14:15		14:15																	
14:30		14:30				MPI V14			MPI V14	MPI V03		MPI V14	MPI V03						
14:45		14:45	MPI V14												MPI V14	MPI V03			
15:00	Registration	15:00		MPI V03			MPI V03					Coffee							
15:15		15:15	Coffee																
15:30		15:30		Coffee		Entrepreneurship	Coffee		Coffee	Coffee		Variety and Growth	Coffee		Coffee	Coffee			
15:45		15:45	The dynamics of environmental innovation																
16:00		16:00		Theme Presentation		MPI V14			The Globalization Process	Workflow of Statistical Data Analysis		MPI V14	Workflow of Statistical Data Analysis		Group Assignment Presentation, MPI V14				
16:15		16:15	MPI V03				Workflow of Statistical Data Analysis												
16:30		16:30		MPI V14		Coffee			MPI V14	MPI V03			MPI V03					Welcome Tournament: football, volleyball, basketball	
16:45	Grand Opening; Keynote lecture Max Bazerman	16:45					MPI V03												
17:00		17:00				Entrepreneurship						Variety and Growth							
17:15		17:15	The dynamics of environmental innovation	Theme Discussion and Group formation					Variety and Growth										
17:30		17:30				MPI V14						MPI V14							
17:45		17:45								Law Exercise, MPI V03			Group Assignment						
18:00		18:00	MPI V03	MPI V14			Selection of Groups for the Group Assignment		MPI V14										
18:15	Opening Barbecue	18:15																	
18:30		18:30																	
18:45		18:45	Dinner			Dinner			Dinner, BBQ			Dinner			Dinner				
19:00		19:00																	
19:15		19:15																	
19:30		19:30																	
19:45		19:45				Poster Session				Group Assignment			Group Assignment			Group Assignment			
20:00		20:00				Cafeteria													
20:15		20:15																	
20:30		20:30																	

2nd week	Monday Aug 03		Tuesday Aug 04		Wednesday Aug 05		Thursday Aug 06		Friday Aug 07		Sat Aug 08	Sun Aug 09
	GK		GK	IMPRS	GK	IMPRS	GK	IMPRS	GK	IMPRS	IMPRS	IMPRS
8:15		Leadership		Leadership		Leadership		Leadership		Leadership		Visit of the Museum of Technology, Berlin
8:30												
8:45												
9:00												
9:15	Student Presentation	MPI V 14	Student Presentation	MPI V 14	Student Presentation	MPI V 14	Experiments	MPI V 14	Experiments	MPI V 14		
9:30											Exam: Structural Equation Modelling (SEM)	
9:45	MPI V 03	Coffee	MPI V 03	Coffee	MPI V 03	Coffee	MPI V 03	Coffee	MPI V 03	Coffee		
10:00		Biological, Psychological, and Economic Aspects of Law		Biological, Psychological, and Economic Aspects of Law		Biological, Psychological, and Economic Aspects of Law		Biological, Psychological, and Economic Aspects of Law		Biological, Psychological, and Economic Aspects of Law		
10:15	Coffee											
10:30	Persistence of Innovation		Student Presentation		Introduction the Community Innovation Surveys'						Exam	
10:45							Experiments		Experiments			
11:00	MPI V 03	MPI V 14	MPI V 03	MPI V 14	MPI V 03	MPI V 14		MPI V 14		MPI V 14		
11:15							MPI V 03		MPI V 03			
11:30		Coffee		Coffee		Coffee		Coffee		Coffee		
11:45	Coffee	**Law** Exercise, MPI V14	Persistence of Innovation	**Leadership** Exercise, MPI V14		**Law** Exercise, MPI V03		**SEM**, Exercise, MPI V14		**SEM**, Exercise, MPI V14	Exam, **Law**	Visit of the Museum of Technology, Berlin
12:00	Persistence of Innovation				The Role of Intangible Assets for Productivity		Group Work Experimental Economics		Innovation Policy			
12:15											Free time	
12:30	MPI V 03	Lunch	MPI V 03	Lunch	MPI V 14	Lunch	MPI V 03	Lunch	MPI V 03	Lunch		
12:45												
13:00	Lunch		Lunch		Lunch		Lunch		Lunch			
13:15												
13:30												
13:45												
14:00			Effects of innovation on employment and productivity	Structural Equation Modeling		Structural Equation Modeling		Structural Equation Modeling		Structural Equation Modeling		
14:15	Joint seminar: The Origin and Growth of Industry Clusters: The Making of Silicon Valley and Detroit				The Role of Intangible Assets for Productivity		Group Work Experimental Economics		Group Work Experimental Economics			
14:30			MPI V 03	MPI V 14		MPI V03	MPI V 03	MPI V14	MPI V 03			
14:45												
15:00	Bachstr. 18, Building K, MKG Hörsaal				MPI V 14					MPI V03		
15:15												
15:30			Effects of innovation on employment and productivity	Coffee	Coffee	Coffee	Innovation Policy	Coffee	Coffee	Coffee		
15:45	Coffee	Coffee										
16:00				Commitment, Asymmetries and Conflict in Bilateral Bargaining – Static and Dynamic Models		Structural Equation Modeling						
16:15	t.b.a.	Group Assignmement, Bachstraße	MPI V 03		The Role of Intangible Assets for Productivity		MPI V 03	Group Assignmement	Group Assignmement Presentation, MPI V14			
16:30												
16:45			Coffee				Coffee					
17:00	Bachstr. 18, Building K, MKG Hörsaal			MPI V 14	MPI V 14	MPI V03						
17:15			Effects of innovation on employment and productivity				Innovation Policy					
17:30												
17:45	Dinner			Leadership Exercise, MPI V14	Joint seminar: Economics of Science: Old and New							
18:00											GK Farewell Party	
18:15							MPI V 03					
18:30		Dinner, Bachstraße	Dinner		MPI V 14		Dinner		Dinner			
18:45	Group Work Experimental Economics											
19:00												
19:15					Dinner, BBQ							
19:30		Group Assignmement		Group Assignmement				Group Assignmement		Group Assignmement		
19:45												
20:00												
20:15						Group Assignmement						
20:30												

3rd week	Monday Aug 10		Tuesday Aug 11		Wednesday Aug 12		Thursday Aug 13		Friday Aug 14		Saturday Aug 15		Sunday Aug 16
8:15		8:15		8:15		8:15		8:15		8:15		8:15	
8:30	Working with Experimental Data - Mixed Effects Models	8:30	Working with Experimental Data - Mixed Effects Models	8:30	Working with Experimental Data - Mixed Effects Models	8:30	Working with Experimental Data - Mixed Effects Models	8:30	Working with Experimental Data - Mixed Effects Models	8:30		8:30	
8:45		8:45		8:45		8:45		8:45		8:45	Exam	8:45	
9:00		9:00		9:00		9:00		9:00		9:00		9:00	
9:15	MPI V 14	9:15	MPI V 14	9:15	MPI V 14	9:15	MPI V 14	9:15	MPI V 14	9:15		9:15	
9:30		9:30		9:30		9:30		9:30		9:30		9:30	
9:45	Coffee	9:45	Coffee	9:45	Coffee	9:45	Coffee	9:45	Coffee	9:45	Exam **Law**	9:45	
10:00		10:00		10:00		10:00		10:00		10:00		10:00	
10:15	Law from a Functional Perspective	10:15	Law from a Functional Perspective	10:15	Law from a Functional Perspective	10:15	Law from a Functional Perspective	10:15	Law from a Functional Perspective	10:15		10:15	
10:30		10:30		10:30		10:30		10:30		10:30	Exam	10:30	
10:45		10:45		10:45		10:45		10:45		10:45		10:45	
11:00	MPI V 14	11:00	MPI V 14	11:00	MPI V 14	11:00	MPI V 14	11:00	MPI V 14	11:00		11:00	
11:15		11:15		11:15		11:15		11:15		11:15		11:15	
11:30		11:30		11:30		11:30		11:30		11:30		11:30	
11:45	**Psychology** Exercise, MPI V14	11:45	**Law** Exercise, MPI V14	11:45	**Experimental Data** Exercise, MPI V14	11:45	**Law** Exercise, MPI V14	11:45	**Experimental Data** Exercise, MPI V14	11:45	Departure: Trip to Leipzig	11:45	
12:00		12:00		12:00		12:00		12:00		12:00		12:00	
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12:30	Lunch	12:30	Lunch	12:30	Lunch	12:30	Lunch	12:30	Lunch	12:30		12:30	
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13:45		13:45		13:45		13:45		13:45		13:45		13:45	
14:00	The Psychology of Judgment and Decision Making	14:00	The Psychology of Judgment and Decision Making	14:00	The Psychology of Judgment and Decision Making	14:00	The Psychology of Judgment and Decision Making	14:00	The Psychology of Judgment and Decision Making	14:00		14:00	
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14:45	MPI V 14	14:45	MPI V 14	14:45	MPI V 14	14:45	MPI V 14	14:45	MPI V 14	14:45		14:45	
15:00		15:00		15:00		15:00		15:00		15:00		15:00	
15:15	Coffee	15:15	Coffee	15:15	Coffee	15:15	Coffee	15:15	Coffee	15:15		15:15	
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15:45		15:45		15:45		15:45		15:45		15:45		15:45	
16:00	Group Assignment	16:00	**Psychology** Exercise, MPI V14	16:00	Homo Heuristicus: Why Biased Minds Make Better Predictions	16:00	Context Dependency of Justice	16:00		16:00		16:00	
16:15		16:15		16:15		16:15		16:15		16:15		16:15	
16:30		16:30		16:30		16:30		16:30		16:30	Visiting the Primate Research Center & Zoo Leipzig	16:30	
16:45		16:45		16:45	MPI V 14	16:45	MPI V 14	16:45	Group Assignmement Presentation	16:45		16:45	
17:00	Motivational regulation of automatic affective processing and action: Counter-regulation and control-dependency	17:00		17:00		17:00		17:00		17:00		17:00	
17:15		17:15	Group Assignment	17:15	Group Assignment	17:15	Group Assignment	17:15		17:15		17:15	
17:30		17:30		17:30		17:30		17:30		17:30		17:30	
17:45		17:45		17:45		17:45		17:45		17:45		17:45	
18:00	MPI V 14	18:00		18:00		18:00		18:00		18:00		18:00	
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18:30	Dinner	18:30	Dinner	18:30	Dinner	18:30	Dinner	18:30	Dinner	18:30		18:30	
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19:30	Group Assignment	19:30	Group Assignment	19:30	Group Assignment	19:30	Group Assignment	19:30	Group Assignment	19:30		19:30	
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4th week	Monday August 17		Tuesday Aug 18		Wednesday Aug 19		Thursday Aug 20		Friday Aug 21
8:15	Introduction to the Theory and Application of Fast and Frugal Heuristics MPI V 14	8:15	Introduction to the Theory and Application of Fast and Frugal Heuristics MPI V 14	8:15	Introduction to the Theory and Application of Fast and Frugal Heuristics MPI V 14	8:15	Introduction to the Theory and Application of Fast and Frugal Heuristics MPI V 14	8:15	Introduction to the Theory and Application of Fast and Frugal Heuristics MPI V 14
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9:30		9:30		9:30		9:30		9:30	
9:45	Coffee	9:45	Coffee	9:45	Coffee	9:45	Coffee	9:45	Coffee
10:00	Basic Microeconomics MPI V 14	10:00	Basic Microeconomics MPI V 14	10:00	Basic Microeconomics MPI V 14	10:00	Basic Microeconomics MPI V 14	10:00	Basic Microeconomics MPI V 14
10:15		10:15		10:15		10:15		10:15	
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11:15		11:15		11:15		11:15		11:15	
11:30		11:30		11:30		11:30		11:30	
11:45	**Micro,** Exercise, MPI V14	11:45	**Micro,** Exercise, MPI V14	11:45	**Estimating Preferences,** Exercise, MPI V14	11:45	**Estimating Preferences,** Exercise, MPI V14	11:45	Estimating Preferences for Prediction MPI V 14
12:00		12:00		12:00		12:00		12:00	
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12:45		12:45		12:45		12:45		12:45	
13:00		13:00		13:00		13:00		13:00	
13:15		13:15		13:15		13:15		13:15	Lunch
13:30		13:30		13:30		13:30		13:30	
13:45	Estimating Preferences for Prediction MPI V 14	13:45	Estimating Preferences for Prediction MPI V 14	13:45	Estimating Preferences for Prediction MPI V 14	13:45	Estimating Preferences for Prediction MPI V 14	13:45	
14:00		14:00		14:00		14:00		14:00	Exam
14:15		14:15		14:15		14:15		14:15	
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14:45		14:45		14:45		14:45		14:45	
15:00		15:00		15:00		15:00		15:00	Exam
15:15	Coffee	15:15	Coffee	15:15	Coffee	15:15	Coffee	15:15	
15:30		15:30		15:30		15:30		15:30	
15:45	**Heuristics,** Exercise, MPI V14	15:45	**Heuristics,** Exercise, MPI V14	15:45	Damages for Losses of Chances MPI V 14	15:45	Group Assignmement Presentation	15:45	
16:00		16:00		16:00		16:00		16:00	Exam
16:15		16:15		16:15		16:15		16:15	
16:30		16:30		16:30		16:30		16:30	
16:45	Social Psychological Processes in Social Conflict MPI V 14	16:45	Motivational and Cognitive Processes MPI V 14	16:45		16:45		16:45	Free time
17:00		17:00		17:00		17:00		17:00	
17:15		17:15		17:15		17:15		17:15	
17:30		17:30		17:30	Dinner	17:30		17:30	
17:45		17:45		17:45		17:45		17:45	
18:00		18:00		18:00		18:00		18:00	
18:15	Dinner	18:15	Dinner	18:15		18:15	Dinner BBQ	18:15	Graduation Ceremony
18:30		18:30		18:30	Group Assignment	18:30		18:30	
18:45		18:45		18:45		18:45		18:45	
19:00		19:00		19:00		19:00		19:00	
19:15	Group Assignment	19:15	Group Assignment	19:15		19:15		19:15	
19:30		19:30		19:30		19:30		19:30	Dinner and Farewell Party Ricarda Huch Haus
19:45		19:45		19:45		19:45		19:45	
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C.III Applied Topics: Network Industries and Financial Stability

The Institute also continues its tradition of investigating applied topics concerning collective goods. This research is complementary to the more fundamental research summarized in Sections C.I and C.II: On the one hand, the principles that emerge from the more fundamental research provide guidance for the analysis of applied issues; this guidance is needed to avoid the danger of provincialism in studying special applications. On the other hand, the applied issues themselves serve as a proving ground for abstract ideas, also as a source of new ideas. The latter is particularly likely when different applications turn out to involve common themes.

As applied topics we have up to now chosen:

- The organization and regulation of network industries, and
- Financial stability and the regulation of financial markets and financial institutions.

Our choice of these topics was to some extent motivated by considerations of comparative advantage, based on past research expertise, as well as the scope for interdisciplinary research by jurists and economists. Apart from making progress on these topics in their own right, we are also keen to explore the parallels and links between them.

The choice of these topics was and is not meant to be exclusionary. Indeed, in some of the work on which we report under the heading of network industries, we have crossed boundaries and studied questions that properly "belong" to other topics, in particular, competition law and competition policy and the law and economics of innovations and intellectual property rights.

At this point, we are considering the addition of a research focus on

- The law and economics of research, innovations and intellectual property rights

as a full-fledged applied topic with a more focussed research program. Certain aspects of the area have already been studied as part of our theoretical research on competition.[1] The arrival of Susanne Prantl at the institute provides a prospect of addressing the subject more systematically, with an econometric as well as a theoretical capacity.

From a historical perspective, the subject has already been addressed in a research project on "The Market for Patents and Innovations in Imperial Germany 1877 – 1913" that was carried out by Carsten Burhop, a Heisenberg Fellow of Deutsche Forschungsgemeinschaft (DFG), who has been at the institute since 2007, under the auspices of an additional DFG grant. Relevant publications are Burhop (2009) as well as Burhop and Lübbers (2008 a, 2009). Burhop (2009) discusses the respective roles of research by in-house scientists and by outside researchers, in particular at universities, for the pharma-

[1] Note also the participation of Martin Hellwig in Spengel et al. (2009).

ceutical company of E. Merck in the two decades after 1890. The major finding shows that, whereas outside researchers were used to generate new products, in-house researchers were used to improve productive efficiency for given products. Burhop and Lübbers (2008 a) study incentive contracting at seven leading chemical, pharmaceutical and electrical engineering companies in Germany in the late 19th and early 20th century. They find that incentive devices were used, but no significant impact of incentives on innovations can be identified. For the same period, Burhop and Lübbers (2009) study the contracts by which these same companies obtained licenses to use the innovations of outsiders. Three quarters of these contracts involved individuals, one quarter other firms as licensors. Besides fixed payment components, contracts did involve significant variable payment components, most importantly profit sharing agreements.

C.III.1 Network Industries: Sector-Specific Regulation and Competition Policy

C.III.1.1 Introduction

"Network industries" such as telecommunications, electricity, gas, rail transportation and postal sectors have the common feature that the provision of services to customers presupposes the use of a fixed network infrastructure, the costs of which are by and large sunk. Traditionally, these industries have been organized as vertically integrated monopolies under state ownership and/or subject to sector-specific regulation. However, the past two or three decades have seen a paradigm shift concerning the organization and regulation of such industries.

The paradigm shift was due to the recognition that not all parts of the vertically integrated monopolies are "natural" and that, for example, long-distance telecommunication services or electricity generation exhibit no technological features which would preclude workable competition. Developments in telecommunications have also given rise to the notion that some natural monopolies may be transient as technical progress makes room for the establishment of competing networks.

The change in views of network industries has induced a change in views concerning the role of regulation. Whereas in the past, regulation was mainly seen as a constraint on the exploitation of monopoly power, under the new paradigm, it has come to be seen as a promoter of competition – competition in downstream markets, as well as competition among networks themselves, where such competition is feasible and economically sensible. A key tool for this purpose is *access regulation*, the government imposed requirement that the network owner open his network for use by other firms. Such access regulation provides other firms with a basis for offering their services in downstream markets, even against the wishes of the incumbent. It also provides other firms with a basis for building competing infrastructures piecemeal, using their own pieces of infrastructure

where they have already built them and relying on the incumbent's infrastructure where they do not yet have their own.

The organization and regulation of network industries under the new paradigm raise important economic and legal questions. Important *economic questions* are:

- What is an appropriate system for determining access prices?
- What is an appropriate governance system for the relation between the network infrastructure and the various activities in downstream markets?

The first question is closely connected to the issues discussed in C.I concerning the tension between efficiency in access and the need to cover the costs of the network infrastructures. (In principle, we can think of a network infrastructure as an excludable public good, the use of which serves as an input into the provision of final outputs, which themselves are private goods.) Access prices above the marginal costs of use would entail some inefficiencies of exclusion; access prices equal to marginal costs would preclude the recovery of fixed and common costs. In this case, there would be insufficient incentives to invest in the network infrastructures at all. By contrast, if access prices contained a very generous allowance for fixed and common costs, especially one that is based on a cost-plus calculation, investment incentives could well be excessive.

The second question concerns the organization of the industry as well as the organization of statutory oversight over upstream and downstream activities. For the organization of the industry, the key question is what degree of vertical integration is desirable. In the electricity and gas industries, we have for some time had a requirement of legal unbundling of networks from production and sales. Given the lack of competition in these industries, the European Commission has proposed to go further and to require ownership unbundling of the transmission grids. This proposal raises the question how the presumed pro-competitive effects of unbundling compare to the efficiency gains (lower transactions costs, reduced holdup problems) that are usually associated with vertical integration. Because of vehement opposition from Member State Governments, as well as the industry itself, the Commission's proposal was not enacted, but, remarkably, at least some firms in the industry decided to sell their transmission grids anyway. The reasons for these decisions are as yet unclear.

For the organization of statutory oversight, the key question is how the relation between sector-specific regulation and antitrust law should be organized. Which activities should be subject to sector-specific regulation and which activities should be subject to antitrust law? How should one deal with the tradeoff that arises between competition downstream and competition upstream because the attempt to promote competition in downstream markets by imposing access requirements upstream reduces incentives for competing companies to build their own upstream facilities? Should submission to sector-specific regulation pre-empt the application of antitrust law? If not, should antitrust law be applied by the sector regulator, or should the two systems of law be applied by separate

authorities? The latter would make for some competition between authorities, but there might be a loss of coherence in the policy that is applied to the industry.

On the legal side, the new paradigm for the organization and regulation of network industries raises the following questions:

- What are appropriate provisions for administrative and legal procedures?
- What is an appropriate system of governance for the firms in question?
- What is an appropriate system of governance for the regulatory authorities?
- What is the relation between European law and national law in the regulation of network industries?

Most substantive issues in regulation involve an important dose of judgment, rather than the straightforward application of a predetermined rule. Thus, it is well known that the allocation of fixed and common costs to the various services that are being provided and charged for is to some extent arbitrary. From the perspective of welfare economics, as well as management science, the different costs of allocation systems have their advantages and disadvantages, but there is no way of saying *a priori* that one system is best. Given the importance of judgment, one can ask whether the choice should be taken by the political institutions, parliament and the government, whose powers are derived from democratic elections, or whether it should be taken by the regulatory institution, which presumably has greater expertise in assessing the industry in question. If it is taken by the regulatory institution, what recourse to the courts is available to the parties concerned? If the incumbent network owner contests an access pricing decision of the regulatory institution, to what extent does the court procedure focus on the specific price that is being contested? To what extent does it consider the place of this one price in the overall system of prices, which together should permit the recovery of common costs? Which side bears the burden of proof for the appropriateness or inappropriateness of the individual access price or the pricing system? What kind of evidence is accepted as proof in court? Given the need to rely on judgment, rather than predetermined principles, in regulatory decisions, the effective scope of regulation can depend on such procedural issues. Given that hard evidence in either direction may not even exist, in a court proceeding, the side that has the burden of proof is likely to be in a hopeless position from the very beginning.

At this point, the economist is likely to recommend that the regulator be given a significant amount of discretion to exert his judgment where this is necessary and that he bear the burden of proof in legal proceedings only when he can reasonably be expected to do so, e.g., when the question is whether a given rule for allocating common costs has been correctly applied. For the lawyer, this recommendation raises fundamental questions of constitutional legitimacy. From the perspective of constitutional law, it seems problematic that important substantive choices should be taken by an administrative authority, rather than the democratically elected legislature and government. It also seems problematic that legal protection of network owners against abuses by the regulatory institutions

should be undermined by the institutions' having a great deal of discretion, without much of a burden of proof for the appropriateness of their decisions.

Some of these issues are well known from discussions about competition law and competition policy. For close to a decade now, the European Commission has been promoting "a more economic approach". For the implementation of abuse-of-dominance control under Article 82 EC, this reform has been more difficult and more controversial than for other areas of competition law and policy, and is by no means complete. The reason is precisely that a more economic approach to the assessment of a given practice requires the authority to have more discretion in assessing the practice; such discretion is subject to the objection that it exposes the parties to the risk of wilful intervention without sufficient protection by the legal system.

The discussion about abuse-of-dominance control in the European Union is not only paradigmatic for the more general issue of how to deal with the tradeoff between the need to provide the authority with a measure of discretion and the need to provide the private parties with legal protection. This discussion is also directly relevant to the organization of statutory oversight over network industries in Europe. The reason is that sector-specific regulation is implemented under national law, which can void the application of national antitrust law but is itself overruled by EU law, in particular, the antitrust rules of the Treaty. Thus, a few years ago, the Commission ruled – and the European Court of Justice confirmed the ruling – that a certain price that had been charged by Deutsche Telekom – and that had been approved by the national regulator – was in fact predatory and therefore in conflict with the Treaty. At this point, the technical legal question of how to assess the relation between European law and national law in the regulation of network industries is joined with the substantive economic and political question of what is the proper relation between sector-specific regulation and competition law and policy.

C.III.1.2 Completed Research

Topics in Sector-Specific Regulation

The relation between sector-specific regulation and competition policy for network industries is discussed in Hellwig (2009 a). The paper provides first an abstract discussion of the comparative advantages and disadvantages of the two policy regimes, with competition policy as a system of prohibitions, with policy interventions taking place *ex post*, in a piecemeal, somewhat *ad hoc* fashion and sector-specific regulation as a regime which focuses on an industry as a whole, in systematic fashion *ex ante*, but with material choices taken by the regulator, rather than market participants. The basic reasoning is applied in discussions of how to determine which parts of an industry should be subject to sector-specific regulation and which ones should not, as well as questions of how to deal with issues of policy consistency when the same industry is subject to both, sector-specific regulation and competition policy, and to both, European law and national law.

The rationale and appropriate principles for regulation are also discussed by Höffler (2008). Bechtold and Lüdemann (2007) discuss the issue of policy coherence in the European Union. Lüdemann (2008) discusses the relation between European and national competences in telecommunications regulation, beginning with an account of the regulation (or exemption from regulation) for new markets and of the dispute about the new § 9a TKG by which the German government proposed to exempt Deutsche Telekom from sector-specific regulation for new fibre glass infrastructures.

In the energy sector, discussions about network regulation and access pricing have been overlaid by discussions about electricity and gas prices. Drastic increases in these prices have led to interventions by the German competition authority, to various initiatives for changing the Law against Restraint of Competition, and to the European Commission's proposal for ownership unbundling of transmission networks. Engel (2008 c) studies the constitutionality of forced ownership unbundling or forced divestiture of assets under the German constitution. Relying on the observation that the Constitution's protection of private property is not unlimited, he comes to the conclusion that such a possibility could be implemented in ways that are compatible with the Constitution.

Höffler and Kranz (2007) analyse the economic implications of legal as opposed to ownership unbundling of networks and other operations. Whereas, so far, the discussion on vertical integration versus unbundling has mainly focused on technical synergies and exclusionary abuses, Höffler and Kranz focus on the incentives that are driving the incumbent's activities in downstream markets. In their analysis, legal unbundling dominates ownership unbundling because, under legal unbundling, the incumbent retains a financial interest in the network. Because of this interest, the incumbent's subsidiary in downstream markets takes account of the fact that, from the perspective of the mother company, the marginal costs of network use to make additional sales are given by true marginal costs rather than the access price per unit: whereas the downstream subsidiary is paying the access price per unit, the margin of the access price over true marginal cost accrues to the network owner and therefore, under legal as opposed to ownership unbundling, to the mother company as well. In this analysis, legal unbundling appears as a device to overcome the well-known problem of double-marginalization in vertically separated industries.

Issues of vertical integration versus separation are also studied in Jansen et al. (2008). They consider the implications of correlations of efficiency shocks for the desirability of either regime in a regulated industry in which individual firms are protected by *ex post* break-even constraints. *Ceteris paribus,* in such an industry, vertical integration is to be preferred if shocks are negatively correlated across firms, vertical separation, if shocks are positively correlated.

Höffler (2009) studies the role of call termination fees as a basis for collusion in primary markets in mobile telecommunications. The path-breaking papers of Laffont, Rey and Tirole (*Rand Journal of Economics* 1998) on this subject had asserted that termination fees provide a basis for collusion in primary markets if and only if mobile phone compa-

nies are unable to use two-part tariffs (fixed fee plus service-dependent component) in the primary markets. By contrast, Höffler finds that termination fees can always be used to support collusion. Whereas Laffont et al. did not actually model collusion, Höffler does so, studying the implementability of collusive outcomes as non-cooperative equilibria in a repeated game. The key observation is that termination fees can be used to make a short-run deviation from the collusive outcome less attractive. The acquisition of additional customers through such a deviation is less profitable if this acquisition reduces termination fee revenues that one gets from the other firms.

Höffler and Schmidt (2008) investigate the implications of resale requirements that are imposed by the European directives and national legislation for the telecommunications industry. Under these requirements, competitors must be given the possibility to buy the end products of dominant companies so that they can resell them under their own names. This requirement was introduced with the idea of enhancing competition in the markets for these end products. However, Höffler and Schmidt show that, under the regulated regime with resale, final customers' prices are higher and consumer welfare is lower than they would be without such a regime. The reason is that the dominant company may target its wholesale business as its main source of profits, charging high retail prices downstream as a basis for also charging high wholesale prices upstream, which the reseller then passes through to his own customers. By the same argument, imposition of the so-called *retail-minus* rule for the wholesale price, which is imposed under current regulation, can also raise retail prices and lower consumer welfare.

High electricity prices are at least partly ascribed to the carbon emission permits trading system that was introduced in 2005. Under this system, firms are required to have permits for whatever carbon they emit. Permits are tradable, but the total amount of permits that is available has been fixed by political fiat. Electricity producers that burn coal or gas are treating the market values of these permits as a part of their generation costs. Because at peak times, marginal power plants tend to use coal or gas, these costs have been reflected in wholesale market prices for peak-time electricity. Newbery (2008) has suggested that the induced electricity price increases have been enhanced because the fixity of the quantity of available permits effectively increased the market power of gas producers, e.g. Gazprom.

Starting from this suggestion, Hahmeier (2009) shows that considerations of market power can have an important effect on whether it is preferable to use prices or quantities as instruments to regulate an activity. Ever since this question had been originally raised by Weitzman (1974), it had been formulated in terms of costs and benefits of flexibility in dealing with new information: Whereas a regime that relies on quantity regulation leaves no room for such flexibility, a regime that relies on prices leaves too much room for it. Hahmeier neglects uncertainty altogether. For a model without uncertainty, he studies the influence of the choice of instrument on the market power of upstream suppliers and considers the implications of this influence for optimal instrument values and for the choice between instruments. The analysis is based on the assumption that coal, which is very CO_2-intensive, is supplied competitively, and gas, which is much less CO_2-intensive,

is supplied by a monopolist. This assumption should be understood as a simplified representation of the fact that, in the real world, gas production is highly concentrated, with a few significant suppliers, and coal production is very competitive. Hahmeier's formal analysis confirms Newbery's suggestion that a quantity regime for regulating carbon emissions effectively reduces the elasticity of the demand for gas: If the gas price is increased, electricity generators try to substitute gas by coal but, in the attempt, they raise the price of carbon emission permits; this limits the extent to which the substitution is successful, i.e., as a result of the price increase, the demand for gas goes down less than it would in the absence of carbon emissions regulation. By contrast, a price regime for regulating carbon emissions, e.g., a carbon tax, has no effect on the elasticity of the demand for gas. If the gas producer takes these effects into account, he will charge higher prices under a quantity regime than under a price regime for regulating carbon emissions. Hahmeier (2009) then goes on to show that this effect has consequences for the tradeoff between environmental concerns and the costs of inputs into electricity production, at least if one thinks of gas producers as being foreigner who do not count for national welfare considerations. In this case, environmental policy under a quantity regime has an added cost from increased gas prices. This added cost means that (i) an optimal environmental policy is more ambitious under a regime of price regulation and (ii) under certainty, a regime of price regulation is preferred to a regime of quantity regulation. The policy conclusion would be that the European Union should replace the current regime of tradable permits by a carbon tax.

Magen (2009) analyses the relation of legal and economic logic in the emission permits trading system. He observes, first, that, for from replacing administrative regulation by "the market", the introduction of the emission permits trading system itself is a piece of administrative regulation. This corresponds to the observation underlying Newbery (2008) and Hahmeier(2009) that the emission permits trading system is in fact a quantity regulation regime. Markets merely provide for an efficient allocation of the administratively determined quantities. Magen next studies the incentive effects of alternative allocation regimes for emission permits. He questions positive incentive effects of a costless allocation as well as the argument that a costless allocation of such permits must imply that their opportunity cost should be neglected in the production and pricing of electricity.

Topics in Competition Policy: Cartels and Innovations

Cartels are an important object of antitrust analysis. Their study is not directly related to network industries (but see Höffler 2009). However, it provides an important application of the theory of collective goods. For the cartel members, the lack of competition which results from the cartel agreement has the features of a collective good. Compliance with the agreement is the analogue of a contribution made to the provision of this collective good. It is therefore of some interest to ask what implications can be drawn for the study of cartels from recent developments in our understanding of collective goods, in particular, from the experimental evidence showing that free-rider problems in collective-goods

provision may be less prevalent than neoclassical economic theory would seem to suggest. This question is treated by Engel (2007 a) with a comprehensive and systematic meta-study of oligopoly experiments, asking what factors are most responsible for the sustainability of collusion in such experiments, characteristics of products (e.g., homogeneity versus heterogeneity), markets (e.g., market size), properties of demand and supply functions, specifics of the strategic interaction (e.g., simultaneous versus sequential moves) and the information environment. Engel (2007 b) discusses the implications of this meta-study for antitrust policy, in particular, the cross-industry allocation of resources and the evidence to be considered in cartel investigations. Engel (2009) provides a systematic assessment of theory and experimental evidence and their implications for the practice of competition law and competition policy.

In a case study of cartelization, Burhop and Lübbers (2008 b) and Lübbers (2009) analyse the Rhenish-Westfalian Coal Syndicate in the late 19th and early 20th century. Burhop and Lübbers consider the implications of cartelization for productive efficiency. Contrary to Hicks's well known dictum that the nicest monopoly rent is a quite life, they find no effects of cartelization on production costs. They do however find strong effects of managerial incentives. Lübbers studies the profitability of the cartel as seen by stock market participants and reflected in stock prices. He finds that announcement of the formation of the cartel had a significant positive effect on stock prices; however, this effect was not large enough to outweigh the negative effect of a previous announcement that cartel negotiations had foundered and were broken up. He also finds that stock market reactions did not make a difference between firms even though clauses concerning the right to put down new shafts did discriminate so that some firms were in a better position than others to profit from the cartel.

Innovations and intellectual property rights are the subject of Engel (2008 a, 2007 c). Engel (2008 a) draws attention to the possibility that excessive intellectual property rights may cause excessive innovative activities. Engel (2007 c) studies the impact of collusion on incentives for process innovation in a duopoly model. Whereas, in the absence of collusion, innovation incentives arise from the prospect of becoming a monopolist, with collusion, they arise from the fact that the innovation affects outside options and, therefore, bargaining strengths, of the cartel participants. The main finding shows that, because quantities are smaller under a cartel than under competition, and the value of the process innovation depends on the quantity to which it is applied, innovation incentives are in fact lower in the regime with collusion than under competition.

The extent of the right to a trade secret is a focus of Bechtold and Höffler (2007). This paper was motivated by a case in the electricity industry where one company sued against outsiders installing devices underneath its transmission lines in order to find out which power plants were working and which were not, with a view to using this information by taking actions in the wholesale market. From this case, Bechtold and Höffler distil the problem of how to deal with the tradeoff between the supplier's investment and production incentives on the one hand and the efficiency implications of information asymmetry between the supplier and the demanders on the other hand. A simple result

asserts that, unless the supplier is actually willing to spend resources in order to safeguard his trade secret, the efficiency implications of information asymmetry dominate concerns about the supplier's investment and production incentives. From this result, the paper infers that the right to a trade secret should not be accepted without question, but should at the very least be subjected to the test how much the supplier himself would be willing to invest to safeguard his secret.

In a series of papers, Jansen (2008, 2009 a, 2009 b, 2009c, 2009 d) analyses under what conditions firms actually have an incentive to maintain secrecy and under what conditions they are willing to disclose information; disclosure is of course a precondition for patenting. The key issue is that disclosure affects competing firms' beliefs about a firm's technology and thereby their behaviours. Disclosure may enable competing firms to acquire the same technology cheaply, but it may also signal the innovating firm's advantages and discourage them from even trying to compete (Jansen 2009 a). Depending on parameter constellations, voluntary disclosure can therefore be part of an equilibrium even if there is no patent protection (Jansen 2009 d). However, with sufficient asymmetry across firms, it is also possible that concealment is preferred because it has a greater discouragement effect on competitors (Jansen 2009 c). The choice between patenting (disclosure) and secrecy also depends on competitive pressures. Interestingly, incentives to patent go up when competitive pressure takes the form of greater substitutability of products and down when competitive pressure takes the form of a greater number of competitors (Jansen 2009 b). As a rule, however, firms would like to be selective on whether they disclose or not, concealing in particular unfavourable information (Jansen 2008).

Private Interests, Public Interests, and the Governance of Large Corporations

Privatization of network industries has meant that governments had to give up control. In many cases, however, governments have tried to have their cake and eat it to, selling their network industries to private investors without really abandoning control. Thus, in the process of privatization, some governments have retained "golden shares", i.e., rights to exert control over certain kinds of decisions that were incommensurate with the shares they retained. Others have tried to reduce the scope for outsiders gaining control by imposing restrictions on shareholder voting rights. Within the European Union, the European Commission has consistently regarded such clauses as restrictions of the freedom of capital movements and, hence, as violations of the Treaty. With one exception, the European Court of Justice (ECJ) has confirmed the Commission's view. While affirming the right of Member States to invoke certain public interests in order to impose restrictions on the autonomy of private firms, it has asked that the public interests in question must be specified very precisely, that restrictions imposed must be suitable and necessary for achieving the public purpose, and that procedures must be such that the shareholders of the companies can have recourse to the courts. On these grounds, all golden-share provisions that provide the government with wholesale rights to interfere with a wide set

of strategic decisions of a private company have been outlawed. Only the rules that Belgium had imposed on the *Société Nationale de Transports par Canalisation* and on *Distrigaz* were upheld. In contrast to other countries, the Belgian law gave the government a right to veto certain decisions of the company within a specified delay, these decisions concerned only certain transactions involving the network infrastructure, not the companies' strategies as a whole, and the companies could appeal the government's veto in a court of law.

Golden-share legislation and jurisdiction raise fundamental questions about the governance implications of privatizations. Golden-share legislation is based on the notion that public interest warrants the government exerting control rights even in a private company. The Court's jurisdiction is based on the notion that, as long as they respect legal rules, private companies are autonomous, and the government has no business interfering with their choices. More precisely, any restriction on the ability of investors to acquire a block of shares in order to exert influence on the company's choice is held to discourage foreigners from pursuing such a strategy.[2] In principle, it is therefore an infringement of the freedom of capital movements that is guaranteed in Art. 56 of the EC Treaty; as such, it is only acceptable if it needed for public safety and order in the sense of Art. 58 EC.

Hellwig (2007,[3] 2008 c) points out the conflict about golden shares in privatized companies is part of a wider conflict about the governance of large private corporations. The Court's view of the role of investors buying shares with a view to exerting control affirms the Anglo-Saxon notion of the shareholder as owner and the stock market as a market for corporate control. On the Continent, this view has never been fully accepted; instead, there has always the notion that firms, in particular large firms, bear some sort of responsibility to society as a whole, and that, therefore, the ownership rights of shareholders must be restricted. This notion has been the reason why the European Takeover Directive was put on ice throughout the nineties and why in the past decade, a first version was blocked in the European Parliament and the final version still leaves Member States with a lot of leeway for national legislation providing firms with string defences against hostile takeovers. It has also been a major factor in Member State attempts to put constraints on foreign investors, in particular, sovereign wealth funds acquiring shares in domestic companies.[4]

With respect to this conflict, Hellwig (2007, 2008 c) points out that a wholesale notion of economic and social responsibility fails to take account of the need to consider tradeoffs between conflicting social goals. Assessments of such tradeoffs require judgement, taking account of the available information. Such judgement can be exercised and imposed if the company in question belongs to the state. For a private company, however, one

2 As discussed in Hellwig (2008 c), this claim is problematic because it neglects the fact that the restrictions tend to lower share prices. This counteracts the direct discouragement effect.

3 Written as an expertise for the German Sachverständigenrat (Council of Economic Experts), Hellwig (2007 has largely been incorporated into Chapter 7 of the Sachverständigenrat's Annual Report 2007/2008 and has therefore not been circulated.

4 Political discussion about such restrictions was the primary subject of Hellwig (2007) and Chapter 7 in Sachverständigenrat (2007).

needs regulatory rules to impose a consideration of the public interest even when it conflicts with the company owners' own goals. Such rules need to be administered by proper procedures. This leaves little room for exercising judgement about the proper assessment of tradeoffs. From a theoretical perspective, the distinction between the government's role in a public company and in a private company subject to regulation corresponds to the distinction between incomplete contracts that assign the authority to take decisions when the situation arises (to the owner) and complete contracts that try to predetermine future decisions by explicit rules. The ECJ's jurisdiction conforms to this logic, in particular, when it requires the rights of interference that the government reserves to itself to satisfy standards of specificity, appropriateness and procedure that would also be applied in other areas of administrative law.

At the same time, Hellwig (2007, 2008 c) criticizes the Court for apparently accepting the Anglo-Saxon view of the shareholder as owner, without paying attention to the fact that the joint-stock corporation was in fact created in order to restrict the rights of shareholders to interfere with the company's assets and activities. As an institutional innovation, relative to a private partnership, the joint-stock corporation enjoyed a certain protection from the whims of its shareholders; this protection provided the new institution with a certain degree of permanence and therefore off credibility for creditors, suppliers, and, not least, the other partners (Blair 2004). Given this permanence of the institution, rules for the co-existence of the different stakeholders are part of the *ordre public*, to be shaped by the polity, without prejudgment by any simple understanding of the assertion that the shareholders "own" the company.

From a historical perspective, Bayer and Burhop (2008, 2009) have looked at corporate governance mechanisms for private joint-stock corporations and studied the effects of the 1884 German law that introduced the two-tier structure with an executive board and a supervisory board that still exists today. Their major finding shows that, prior to this law, remuneration of top managers involved significant incentive components; after the enactment of this law, these incentive components were much reduced, presumably because monitoring by supervisory boards provided a substitute. Bayer and Burhop (2010) consider tenure and turnover of top management in banking before and after the 1884 law. Here the major finding is that turnover rates did not change much, but, after 1884, turnover was much more closely related to business results.

C.III.1.3 Research Questions

To make progress in thinking about the general issues discussed above, we intend to work on the following specific questions:

- To what extent is there a conflict between the requirements for regulation set forward in European law and in German Constitutional Law? Tension arises not only from concerns about the democratic legitimacy of regulatory decisions and about

the scope of legal protection for the addressees, but also from concerns about the role of foreign institutions, in this case the regulatory authorities of other member states, in national regulatory decisions.

- Are there modes of procedure that satisfy the economist's concern for efficiency as well as the lawyer's concern for due process in regulation? In 2002, the Monopolies Commission proposed a two-stage procedure whereby, at one stage, the authority determines, e.g., a system for allocating fixed and common costs, and at the second stage, the authority determines the individual price, the idea being that, at stage 1, the addressee can question the appropriateness of the chosen system, and, at stage 2, he can question the way the system is being applied, without, however, questioning the appropriateness of the individual price on substantive grounds.

- In some network industries access regulation is complicated by the fact that access can be provided at several stages of the value creation chain. This raises a question of the consistency of different access prices. If one believes that it is unrealistic to suppose that regulation can get the system of access prices right, one must ask which types of error are more important: errors that hurt entrants further upstream, who partly build their own infrastructures; or errors that hurt entrants further downstream, who don't build much of an infrastructure at all.

- What is an appropriate procedure for calculating capital costs? The 2003 report of the Monopolies Commission shows that currently applied rules involve inappropriate measures for risk premia and an inappropriate treatment of corporate and personal income taxes. The implications of this critique need to be developed formally. To the extent that an appropriate treatment of risk premia imposes unrealistic information requirements on the regulator, suitable proxies must be proposed.

- Is it really appropriate to saddle the incumbent with the risks that, under a regime of regulation according to the costs of efficient service provision, technical change may alter the access prices that the regulator imposes? What about the risks of changes in interest rates and similar market parameters that affect the costs of efficient service provision?

- Why are electricity producers willing to shed their transmission grids? One explanation that is sometimes given is that grids are too boring. More precisely, under sector-specific regulation, they do not earn high rates of return. For managers of giant corporations, eager to conquer the world or merely to earn the high bonuses that go along with high rates of return on equity, tying up company resources in these assets is undesirable. If such grapevine explanations are correct, they raise serious questions about governance and remuneration schemes. Could it be that certain incentive structures create biases against assets like network infrastructures that are boring?

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C.III.2 Financial Stability and the Regulation of Financial Institutions and Financial Markets

The current financial crisis has induced us to devote yet more effort to the area of financial stability as a collective. The general overview that follows is unchanged from the previous report. The relation of these ideas to our analysis of the crisis will subsequently be discussed in the section on completed research.

C.III.2.1 General Overview

Discussions of collective goods do not usually refer to the financial sector. However, collective-goods aspects play an important role in arguments about statutory regulation in this sector. In most countries, financial-sector regulation is more stringent than the regulation of other sectors. A first line of argument justifies this regulation by referring to problems of asymmetric information and moral hazard in financial relations, but that raises the question why the regulator should be able to handle these problems better than the parties themselves. A second, more solid line of argument then refers to the systemic, collective-goods aspects that arise because the handling of asymmetric-information and moral-hazard problems by the contracting parties has repercussions for the rest of the system.

Such collective-goods aspects can be due to *domino effects* or to *confidence effects,* acting alone or in combination.[1] *Domino effects* arise when outcomes in one set of financial relations or financial transactions have implications for the participants' relations with third parties. In a simple case, the insolvency of a firm or a set of firms brings the firms' banks into difficulties, and this has repercussions for the banks' depositors and other financiers. A recent example was provided by the 1997 crisis in Thailand, when the devaluation of the Baht induced defaults by many Thai firms that had borrowed in dollars. These defaults in turn compromised the solvency of the Thai banks that had lent to these firms and caused problems for the international banks that had lent to the Thai banks.

Domino effects can also arise through markets. A financial institution that gets into difficulties may be forced to sell its assets. By putting the assets on the market, it may depress asset prices. The decrease in asset prices in turn may put pressure on other financial institutions that have also invested in them. A domino effect arises even though there may be no contractual relation at all between the first institution and the others. Thus, as this report is written, financial actors worldwide are apprehensive about the possibility that difficulties of financial institutions engaged in mortgages and in mortgage-backed securities may force fire sales of such securities, with serious consequences for asset prices and for all other institutions that hold such assets. Similarly, in 1998, the Federal Reserve Bank's organization of an operation to rescue Long Term Capital Man-

[1] For a systematic discussion, see Staub (1998), Hellwig (1998 b).

agement (LTCM), at least for the time being, was motivated by fear that an immediate closure and liquidation of LTCM's assets would have a drastic effect on the prices of long-term bonds to the detriment of all financial institutions that were holding these bonds. A historical example of such domino effects resulting from the interdependence of insolvencies, asset liquidations and asset prices is provided by the 1763 financial crisis studied in Schnabel and Shin (2004).

A final domino effect concerns the macroeconomy. A financial institution that gets into difficulties is usually unable to continue its financing operations on the same level as before. Its clients may find it expensive or difficult to get funds elsewhere because nobody else knows them as well as their previous partner. If many financial institutions get into difficulties at the same time, there may then be a "credit crunch", leading to an overall decline in external investment finance and in aggregate investment activity, with further repercussions on aggregate demand and employment in the economy. These kinds of "multiplier effects" of financial crises on macroeconomic investment played a major role in the Great Depression, as well as the banking crises and macroeconomic recessions of the early nineties in the Scandinavian countries. Remarkably, such effects have been much weaker for stock market downturns (1987, 2001) than for real-estate and banking crises.

Confidence effects are important because the willingness to participate in financial relations depends on confidence, which in turn depends on what one sees happening in the financial system. If one bank goes under, another bank's depositors may become apprehensive and start to withdraw their funds, putting pressure on that bank's liquidity. With deposit insurance, nowadays, depositors may be less fidgety. However, events of the past summer show that the effect is still very relevant for other short-term financiers, in this case, the lenders in commercial-paper markets who had provided leverage to hedge funds investing in asset-backed securities. After a few hedge funds had begun to write down the values of their asset-backed securities, short-term lenders to these funds became apprehensive, and financing through the commercial-paper market dried up. If the different banks' or hedge funds' asset positions are correlated, such a reaction is fully rational, taking account of the information provided by the first institution's difficulties.

By exactly the same kind of argument, somebody's wanting to sell an asset may contain information about the asset. If people are thereby induced to be apprehensive, market liquidity is greatly reduced. In the LTCM crisis, the price effects of immediate closure and liquidation were deemed to be incalculable because market participants were apprehensive about the prospect of a crisis, and the closure itself might have provided a bad signal, making people unwilling to buy the assets that LTCM would have had to liquidate, except at greatly depressed prices. In the current crisis situation, similar fears are attached to the possibility of fire sales by some institution(s) having significant effects on asset prices.

In these considerations, the collective-goods aspects cannot be identified with any one good that is bought or sold. Both domino effects and confidence effects concern the

functioning of the overall system of institutions, contracts, and markets. The actions that individuals take and the contracts that groups of individuals write have repercussions for the functioning of the system, but people rarely consider these repercussions. Actions are taken from the perspective of the individual in question, contracts are written from the perspective of the participants – how they affect the system is of little interest to them.

This is where statutory regulation and supervision of financial institutions and financial markets come in. In principle, this regulation is intended to induce participants to adjust their behaviours so that collective-good aspects are duly taken into account. Thus, traditional asset allocation rules and capital adequacy requirements are meant to protect the solvency of financial institutions and to eliminate the possibility of domino effects even before they have a chance to get started. Publicity rules for listed securities, as well as rules against insider trading regulations of market microstructure, are meant to protect the orderly functioning and the liquidity of markets by eliminating the worst instances of asymmetric information leading to market breakdown.

However, the incidence of statutory regulation is not always clear. Poorly designed rules may well be counterproductive. Thus, statutory deposit insurance seems to have played a role in exacerbating the crisis of the savings and loans industry in the United States in the nineteen-eighties. The enhancement of depositor confidence by deposit insurance may avert destabilizing bank runs. However, it also worsens the incentives of depositors to monitor the institutions in which they deposit their money and, by implication, the incentives of these institutions' managers to avoid exposing their institutions to excessive risk. In the eighties, this latter effect prevailed when institutions close to insolvency were "gambling for resurrection", using advertisements of high interest rates on "federally insured deposits" to expand their deposit base and thereby the funds they had available for such gambling.

Capital adequacy requirements, which, over the past two decades, have become a mainstay of banking regulation, have also been questioned. Initially, in the early nineties, discussion focussed on incentive distortions due to inappropriately chosen "risk weights" in capital requirements. In the late nineties, discussion has turned to the procyclical macroeconomic implications of more finely tuned capital requirements, as well as the actual implications of such requirements on the actual risk exposure of the financial system. Recent events suggest that one must also question the systemic implications of a regulatory approach that focuses entirely on banks, providing banks with strong incentives to shift risks out of their balance sheets, into special-purpose vehicles selling asset-backed securities to institutions such as hedge funds that are not subject to any regulation.

For the lawyer, financial regulation raises even more questions than the regulation of network industries. The concerns about democratic legitimacy and the rule of law that were discussed above for the regulation of network industries must also be raised here. Democratic legitimacy is in doubt because the "Basel process" for developing rules for capital regulation has not really been controlled by any institutions whose legitimacy was

based on democratic elections. While the individual members of the Basel Committee on Banking have been appointed by their respective national governments, the Basel Committee as such has worked as a committee of experts with little outside interference and has presented its accords for individual countries to adopt on a take-it-or-leave-it basis. Until small entrepreneurs came to fear that "Basel II" would make it more difficult or more expensive for them to get bank loans, there was hardly any discussion of this regulation in the political arena. However, there was a lot of discussion with certain interested parties, mostly from the large, internationally active banking institutions and their lobbies. This discussion was to some extent driven by the notion that the more sophisticated large, internationally active banking institutions are more competent in advanced risk management than the bank regulators themselves; less attention was paid to the notion that the risk management of a private institution on its own account might be driven by different concerns than the risk management that a regulator wants to impose in order to avoid systemic risk.

At the level of the implementation of rules, i.e. of banking supervision, concerns about the rule of law arise with respect to the handling of the models-based approach to determining required capital and with respect to the valuation of a bank's assets and the assessment that the bank is in difficulties. Within the models-based approach, the assessment of the model used by a bank involves an important element of arbitrariness. Backtesting of such models could be helpful if the underlying data exhibited sufficient stationarity. In practice, however, they do not; this is a problem for the banks themselves and even more so for the bank supervisors. Important elements of arbitrariness are also involved in the valuation of loans that the bank has made and in the supervisory assessment that a bank is in such trouble that it ought to be closed. If loans are not traded in open markets, there is no extraneous measure of borrower solvency and, hence, no "objective" valuation standard.

All of these assessments require judgment and can hardly be codified so as to lend themselves to sensible court proceedings. Even if a court review of such administrative decisions was feasible, it would hardly be effective. By the time the courts rescind an unjustified regulatory intervention, the damage may be beyond repair. The major damage is likely to involve reputation and depositor confidence. These are difficult and sometimes even impossible to restore once they have been impaired. Given the role of discretionary judgement and given the substantive importance of supervisory intervention for a bank, the question how such decisions can fit into the framework of German constitutional and administrative law is even more puzzling than for the regulation of network industries.

C.III.2.2 Completed Research

Securitization and the Crisis

Hellwig (2009) provides a thorough analysis of the different elements that have driven the financial crisis. Initially presented as the 6th Jelle Zijlstra Lecture in Amsterdam in May 2008, the actual text was written – and greatly expanded – over the subsequent months and was by and large finished when the Lehman insolvency caused an all out panic. The paper comes in two parts. The first part explains what went wrong in subprime mortgage securitization. The argument starts from the observation that risks associated with real-estate investment and finance are always a problem simply because the amounts involved are large, some shocks (interest rates, macroeconomy) affect all real estate at the same time, and there are hardly any investors willing to commit their funds for the entire economic lifetime of a building. Previous crises have shown that neither the originating intermediary nor the real-estate owner (the borrower) are in a position to really bear the interest rate risk associated with the investment. Using some kind of securitization to transfer this risk to a third party is socially desirable, but should be done in such a way that there are no adverse incentive effects on the originating bank. Having the originating bank issue debt of congruent maturity while retaining liability for the property-specific risks would be appropriate, the German Pfandbrief provides an example.[2]

Mortgage securitization in the United States deviated from this ideal by shifting *all* the risks away from the originating bank. Adverse incentive effects initially were limited because Fannie Mae and Freddie Mac, the government sponsored enterprises that were responsible for the growth of these markets, gave guarantees for the debt service on the underlying securities and imposed minimum quality standards for the mortgages that they would securitize, hence the term "prime" mortgages. These safeguards were, however, abolished when, in the early 2000s, private investment banks moved into these markets, using special purpose vehicles to perform the securitization, without providing any guarantees and with a focus on "subprime" mortgages where there was no competition from the government-sponsored enterprises.

When minimum quality standards and debt services guarantees were abolished, the discipline that they had imposed was *not* replaced by external discipline, be it from rating agencies or from the buyers of securities. Rating agencies as well as buyers seem to have believed that credit risk on the underlying mortgages was irrelevant because real estate prices were always going; there seems to have been no understanding of the fact that some of the causes of the observed real estate price increases were one-time events, not to be repeated, e.g. the interest rate decrease from 2000 to 2003. There also seems to have been no understanding of the role of correlations, or the dependence on interest rate and real-estate price movements as a common factor. Buyers of securities were eager to obtain high yields and seem to have paid little attention to risks; thus investment banks and hedge funds hungry for yields bought equity tranches of mortgage packages,

[2] Diamond (1984), Hellwig (1994, 1998 a).

European banks concerned about their market shares bought mezzanine tranches in order to securitize them in turn through MBS CDO's.

In all these institutions, there seems to have been a breakdown of internal as well as external mechanisms of risk control. The paper places this breakdown of internal and external mechanisms of risk control into the context of internal and external discourse driven by the objective of "shareholder value" and focussed on yield at the expense of risk. The focus of internal and external discourse on yield is explained by the influence of bonus systems that tie remuneration to short-term profits and stock-price movements, by the much greater ease which corporate executives, analysts, journalists, and institutional investors have in communicating about yield than about risk, and by the fact that some risks concerned creditors and taxpayers rather than shareholders.[3] On the side of at least some investors, e.g. the German Landesbanken, yield hunger probably was also due to the difficulty of finding viable business alternatives in a world with low interest rate and low intermediation margins.

In summary, the subprime problem is ascribed to a breakdown of incentives in creditworthiness assessments that in turn is due to the fragmentation of liability in the chain of transactions induced by the securitization and to the yield mania of the different participants, including the final buyers.

The second part of the paper begins with the observation that the estimate of 500 bn. $ of losses on subprime-mortgage-backed securities that is given in the International Monetary Fund's Global Financial Stability Report of October 2008 is too large to be explained by declines in expected present values of debt service on the underlying mortgages and, when taken by itself, too small to unsettle a global financial system with more than 80000 bn. $ of bank assets prior to the crisis. To solve the riddle, the paper points to the role of systemic repercussions. Two are particularly important. First, there had been a significant amount of maturity transformation. Long-term mortgage-backed securities had been held by special investment vehicles that were themselves financed by commercial paper, short-term, with no equity of their own, but promises of liquidity assistance from sponsoring banks. When, in August 2007, the subprime problem broke out into the open, refinancing of the special investment vehicles broke down, the sponsoring banks had to step in – and found that thereby they were themselves insolvent or at least in violation of their capital requirements. From one day to the next, market participants learned that there were some 1000 bn. $ worth of mortgage-backed securities and derivatives looking for new financing. Even in the absence of concerns about quality, this would have induced a significant increase of maturity and liquidity premia or, equivalent, a significant downward adjustment of market prices. Coming on top of quality concerns – many mortgage-backed securities had just been downgraded by three grades at once by the rating agencies – the breakdown of maturity transformation affected markets all the more strongly.

[3] This analysis expands the analysis of "market discipline" as a matter of discourse rather than intervention rights that was given in Hellwig (2005).

Second, the shocks of August 2007 set in motion a downward spiral that went unchecked until the Lehman insolvency induced a panic that caused governments of major countries to step in, making the taxpayer foot the final bill. The downward spiral arose from the interaction of price declines in malfunctioning markets, the rules of fair value accounting requiring banks with assets whose prices declined to immediately acknowledge the losses in their books, thus eroding their equity positions, a lack of "free" equity, i.e. equity above regulatory requirements, forcing banks to take corrective actions, usually in the form of "deleveraging", i.e., sales of assets, which in turn put pressure on market prices, with negative repercussions on other banks. Under the model-based approach to determining capital requirements for market risks, banks had run down their equity to around 1 – 3 percent of their balance sheets.[4] This meant that deleveraging involved multipliers of 30 – 100, i.e., for every dollar, euro, or Swiss franc of losses, they had to sell 30 – 100 dollars, euros, or Swiss francs worth of assets in order to get in line with capital requirements again.[5] It also meant that very soon, there was a question of solvency. Suspicions of insolvency hampered banks' positions in interbank markets. The generalization of such suspicions in September 2008 made these markets break down altogether.

With a view to discussions about reforms, Hellwig (2008) makes a distinction between individual misbehaviour and flaws in the system. Reform discussion should focus on the latter. Moreover, it should address not only those flaws in the system that arise from flawed assignments of liability and control, but also those flaws that arise from systemic interdependence created by general-equilibrium repercussions.

Financial Regulation and Supervision

Hellwig (2009) concludes with an extensive analysis and critique of the regulatory framework which set the stage for this systemic implosion.[6] Major points of critique are: (a) The objectives of capital regulation are unclear; to the extent that different objectives are involved, conflicts and tradeoffs have not been articulated. (b) The effects of capital regulation, in particular, the precise channels by which it is supposed to reach the given objectives, have never been laid out theoretically, let alone confirmed empirically. (c) No account has ever been given of the dynamics of regulatory intervention in a multi-period setting where the bank has inherited assets and liabilities with different maturities and different degrees of marketability from the past. (d) No account has ever been given of the systemic implications of regulation-induced deleveraging. (e) The model-based approach is based on the illusion that all risks can be measured when in fact correlations of counterparty credit risks and underlying risks in hedge contracts are changing all the time and, hence, unmeasurable, and there is hardly any information available to assess

4 The usual press release that the bank has 10 percent „core capital" relates equity to "risk weighted" assets only and is meaningless if the risk weights are inappropriate, e.g., because the bank's risk model failed to take account of some risks or some correlations.

5 On the procyclical effects of regulation-induced deleveraging, see Blum and Hellwig (1995, 1996).

6 See also Hellwig (1995, 1996).

an institution's exposure to risk from the overall system's responses to other institution's problems, e.g., the breakdown of refinancing of special investment vehicles in August 2007. (f) Because of systemic interdependence, the regulatory community's view that the safety and soundness of banks can be assessed by looking at each institution individually is invalid. Exposure to systemic risk is typically hidden in correlations, which are effectively unmeasurable. The view that banking regulation and supervision need to go beyond looking at individual institutions and to think about systemic interdependence has also been the subject of one of the main recommendations of the report that Hüther et al. (2009) prepared for the Federal Ministry of Finance on the practice of financial supervision in Germany.

Moral Hazard in Financial Institutions

The problem of moral hazard in financial institutions has been the subject of several papers. Most recently, Hakenes and Schnabel (2009) have taken up the impact of credit risk transfers on moral hazard in loan origination. Starting from the observation that there is, in principle, an economic rationale for credit risk transfers as a means of sharing risks, they study the tradeoff between risk sharing motives and moral hazard. The paper first develops the welfare gains from risk sharing through credit risk transfers in a world in which loan quality is observable. It then goes on to show that, if loan quality is not observable, the existence of credit risk transfer markets will induce excessive lending and a deterioration in the quality of loans. However, the net welfare effect of having such markets is still positive, provided the counterparties appreciate that there is moral hazard and adjust their return expectations accordingly so that prices will reflect the actual average loan quality in the market.

Boyd and Hakenes (2009) discuss the interaction between moral hazard in risk taking and looting. If there is scope for bank managers to appropriate resources from the bank on their own account and if such looting is particularly attractive in the wake of a crisis, this can in itself enhance risk taking incentives. In this case, the most effective regulation is not one that tries to rein in risk taking, but one that addresses the problem of looting outright. The paper shows that measures that try to rein in risk taking may actually backfire, inducing managers to compensate a reduction in the volume of risky projects by an increase in the riskiness of the ventures in which they invest. The analysis was motivated by certain features of the Savings and Loans crisis of the nineteen eighties in the United States. However, it seems that, if "looting" is replaced by certain kinds of bonus payments, the analysis is also relevant to some features of the current crisis.

Hakenes and Schnabel (forthcoming)[7] study the role of government bailout promises on competition among banks, showing that, if such promises apply to some banks but not to others, the latter face more intense competition and may be induced to incur greater risks, with a possibility that system stability as a whole is less than it would be without the

[7] Originally Preprint 2004/12.

government bailout promises. The importance of this effect is confirmed in the empirical analysis of Gropp, Hakenes, and Schnabel (2007). Schnabel (2009)[8] discusses the effects that the Reichsbank's implicit liquidity assistance promises to the so-called "Great Banks" in Germany had on these banks' liquidity management practices in the twenties and on the role of these policies and practices in the banking crisis of 1931.

C.III.2.3 Research Questions

Like the organization and regulation of network industries, the financial sector provides research questions for both lawyers and economists:

- How does the governance of financial regulation fit into the German legal system? A similar question has already been raised for network industries. Here, some key issues would be: What is to be made of the fact that the financial supervisory authority has extensive discretion and extensive legal powers, to the point that he can threaten the very existence of institutions in his domain? Why did they not use their powers prior to the crisis or in the crisis?

- How are we to assess the relation between different institutions, nationally and internationally, as a matter of law and as a matter of economics and politics? Internationally, banking regulation is harmonized under the auspices of the Basel Accords and the corresponding regulations of the European Union. What can be said about institutional reform in the wake of the crisis, the role of the new European institutions vis à vis the national authorities, relations between finance ministries, bank supervisors and central banks at the national level and in the interplay with the European Central Bank?

- Financial regulation is motivated by a desire to protect the financial system. However, the addressees of financial regulation are the individual institutions. How do these things go together? Banking regulation and supervision is intended to eliminate systemic risks. For the economist, this raises the question by what mechanisms the regulation of individuals safeguards the functioning of the system. For the lawyer, this raises the question as to what precisely is being protected and how the desire for protection supports the rules that are imposed on individual institutions. Current discussion about the role of macroprudential concerns highlights some of the issues. Whereas some see such concerns as a matter of analysis and information provision rather than regulations, others, in particular, at the Bank for International Settlements, are proposing to make such concerns an integral part of capital regulation of the individual institutions.

- What tradeoffs have to be considered in financial regulation? Relevant tradeoffs concern risk sharing and moral hazard through securitization, effectiveness of

[8] Originally Preprint 2005/05.

"market discipline" and vulnerability of institutions to market vagaries, efficiency gains and contagion risks from having more extensive markets.

- What are appropriate governance mechanisms for financial institutions? What scope is there for counteracting the yield bias of prevailing incentive systems, in particular those that are based on "market discipline"? Is the kind of formula-driven system of capital regulation that we have the best way to counteract excessive risk-taking incentives? Are there mechanisms by which one can give effective "voice" to the concerns of creditors and tax payers in banking governance?

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D. Researchers at the Max Planck Institute

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D.I List of Researchers in Alphabetical Order

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Christian Traxler
Philipp Weinschenk
Carl Christian von Weizsäcker
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D.II Individual Research Portraits

Anne van Aaken (Affiliate)

Summary Report

Over the last two years – in addition to ongoing projects (see below) – my research has focused on three areas that are partially connected. The first is public international law, with a focus 1) on international investment law, 2) on economic analysis of public international law, and 3) on interpretational methods in international law. The second area is more theoretical, in that it is focused on law and economics more generally with diverse topics.

Whereas some writings on international investment law have been purely legal within the last years, like, e.g., the question of fragmentation of public international law in the sphere of investment law and the problem of intra-EU Bilateral Investment Treaties as well as the problem of interaction between international economic law and the principle of social state in the German constitution, others have been applying economic analysis, in that case, contract theory, to international investment law. Furthermore, the application of economic analysis to international law, including behavioral economics as well as its limits, was the subject of some articles. One dealt with the question whether, under certain conditions, market mechanisms are a way of effectuating public international law. The third focus dealt with interpretational methods in public international law, focusing on the discussion of constitutionalization and fragmentation of international law more generally and suggesting methods of defragmentation by constitutional interpretation (using Art. 31 (3) (c) of the Vienna Convention of the Law of Treaties).

The second area was more closely connected to economic analysis of law, be it theoretical or by conducting empirical studies. Some articles focused on the use of rational choice (and its developments in behavioral economics) in administrative law, in constitutional law and also more generally as legal science as a behavioral model. Furthermore, some cross-country empirical studies were conducted on first, the question whether transparency provisions for parliamentarians (de iure and de facto) reduce corruption (co-authored, submitted to journal), and second on the question whether the legal/constitutional set-up of the procuracy has an impact on the level of corruption (co-authored).

Research Agenda

There are a few articles connected to the research of the past years which I am currently finishing before focusing exclusively on the habilitation.

Since international economic law is thoroughly challenged through the emergency measures taken by the states during the financial and economic crisis, but a legal analysis of potential violations is largely missing, the challenge of conducting this analysis was too tempting not to take it up. I co-authored a paper as an advisor for the World Bank (joint publication with CEPR) on those questions. Since the World Bank prepared this publication of the G20 and G8 Summits of 2009 (that is, for a non-academic audience), we decided to keep working on two academic publications of this topic, one on trade and investment law, the other purely on investment law. Another paper for a World Bank Publication deals with the significance (legal and economic) of the Most-Favored Nation Clause in trade law and in investment law.

The question of transparency provisions for parliamentarians was the topic of a German Constitutional Court decision. I am currently writing an article on this question from a public law point of view, although incorporating the empirical insights we found in the above mentioned article.

My agenda for the next 2 years is concerned with state liability law and state responsibility (Gewährleistung) in a privatizing and cooperative state – the topic of my habilitation. It is concerned with liability for supervision (e.g., in financial services) as well as with risk allocation between private actors and the state in Private-Public-Partnerships. The book considers those issues from a perspective of state theory as well as an economic perspective of risk allocation and incentives more generally. The book focuses on German state liability law but uses comparative law (and economics) to highlight different ways of dealing with this problem.

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van Aaken A., A Functional Approach to International Constitutionalism: The Value Added of a Social Science Contribution, *ARSP Beiheft*, In Press.

van Aaken A., The European Union and Bilateral Investment Treaties, *Final Report of the Committee on International Law of Foreign Investment (International Law Association)*, pp. 6-7, In Press.

van Aaken A., Fragmentation of International Law: The Case of International Investment Protection, *Finnish Yearbook of International Law*, vol. XVII, pp. 91-130, 2008.

van Aaken A., Voigt S., Der "gläserne" Abgeordnete? Transparenzregeln für Parlamentarier und ihre Folge, *Journal für Rechtspolitik*, vol. 16, no. 3, pp. 169-176, 2008.

van Aaken A., Voigt S., Verhaltensregeln für Parlamentarier und ihre Folgen, *Mitteilungen des Instituts für Deutsches und Europäisches Parteienrecht und Parteienforschung (MIP)*, vol. 14, pp. 5-13, 2007.

Reviews

van Aaken A., Gerrit Fey, Banken zwischen Wettbewerb, Selbstkontrolle und staatlicher Regulierung. Eine ordnungsökonomische Analyse. Lucius & Lucius, Stuttgart 2006., *FAZ*, pp. 12-12, 2007.

Web Article

van Aaken A., Kurtz J., The Global Financial Crisis: Will State Emergency Measures Trigger International Investment Disputes?, *Columbia FDI Perspectives*, 3, access date: 2009: Vale Columbia Center on Sustainable International Investment, Columbia University, 2009.

Conference Proceedings

van Aaken A., Democracy in Times of Transnational Administrative Law: The Case of Financial Markets, *Perspectives and Limits of Democracy: Preceedings of the 3rd Vienna Workshop on International Constitutional Law*, Eberhard H., Lachmayer K., Ribarov G., Thallinger G., (Eds.), Wien/Baden-Baden, facultas.wuv/Nomos, pp. 41-61, 2008.

Lectures and Seminar Presentations (since 2007)

2007

Behördenkooperation im Finanzverwaltungsrecht
[Public Authority Cooperation in Financial Administration]
Conference "Internationales Verwaltungsrecht" at the Institute of Advanced Studies (Wissenschaftskolleg zu Berlin) (organized by C. Möllers, A. Voßkuhle, C. Walter)
Berlin, Germany
January 2007

Comment on Christian Kirchner "Constitutionalism and the European Constitution, Konferenz"
Legal Cultures and the Atlantic Divide", Bucerius Law School, Hamburg, Germany
February 2007

Perils of Success? The Case of International Investment Law
Faculty of Law, Paper presented at Amsterdam Center for Law and Economics
Amsterdam, Netherlands
February 2007

Is Fragmentation of International Law always problematic? The Case of International Investment Protection
Conference "Post-ILC Debate on Fragmentation of International Law", Helsinki, Finland
February 2007

Perils of Success? The Case of International Investment Law
Faculty Workshop Vanderbilt University, Law School, Tennessee, U.S.A.
March 2007

Democracy in Times of Transnational Administrative Law: The Case of Financial Markets
3rd Vienna Workshop on International Constitutional Law "Perspectives and Limits of Democracy", Faculty of Law, Vienna, Austria
May 2007

Democracy in the Epoch of Transnational Administrative Law
International Conference "Democracy and Legitimation of Law in the World Society, Flensburg, Germany
June 2007

A Functional Approach to Constitutionalism: How to Make Sense of Interdisciplinarity of Law and Social Science
XXIII World Congress of Philosophy of Law and Social Philosophy, Cracow, Poland
August 2007

Better Politics qua stricter Transparency Provisions for Parliamentarians? A Cross Country Assessment
Annual conference of the European Association of Law and Economics
Copenhagen, Denmark
September 2007

Comment on Razeen Sally: Ordnungsökonomik und Globalisierung
Workshop Ordnungsökonomik, Marburg, Germany
October 2007

Josef Kohler: Wesen und Ziele von Rechts- und Wirtschaftsphilosophie
[Essence and Aims of Legal and Economic Philosophie]
Conference "Rechtsphilosophie im Wandel der Gesellschaft"
Zentrum für Interdisziplinäre Forschung (ZiF), Bielefeld, Germany
October 2007

Rechtlicher Schutz Schweizerischer Auslandinvestitionen
[Legal Protection of Swiss Foreign Investments]
Festtagung 25 Jahre juristische Abschlüsse an der Universität St.Gallen, St. Gallen, Switzerland
November 2007

Legal Methodology in Investment Law & Human Rights Law
"Comparative Legal Methods", University St. Gallen, Switzerland
November 2007

Keynote Speech International Investment Law: Overview and Special European Issues
Executive Master of Business Law, University St. Gallen, Switzerland
December 2007

Comment Conception of the Rule of Law on Daniel Kaufman (World Bank) Misrule of Law in Numbers, Conference "Measuring Law and Institutions"
MACIE (University of Marburg) and EconomiX (University Paris X), Paris, France
December 2007

Systems of Elections and Their Supervision by Election Commissions – Any Impact on the Observed Level of Democracy?
Conference "Separation of Powers: New Doctrinal Perspectives and Empirical Findings", Haifa, Israel
December 2007

2008

Defragmentation of International Law through Constitutional Interpretation: A Methodological Proposal
Conference "Global Constitutionalism: Process and Substance"
Kandersteg, Switzerland
January 2008

International Investment Law
DFG-Graduiertenkolleg "Informationswirtschaft und Market Engineering"
Karlsruhe, Germany
January 2008

Better Politics qua stricter Transparency Provisions for Parliamentarians? A Cross Country Assessment
Josef von Sonnenfels Center for Law and Economics, University of Vienna, Austria
March 2008

Effectuating Public International Law Through Market Mechanisms?
New Institutional Economics (JITE) "Coordination in the Absence of Sovereignty"
Lübbenau, Germany
June 2008

Legal Instruments against Corruption: An International and German Perspective
Viadrina Summer University "The Use and Abuse of Power: Cultures of Corruption in a Modern World", Frankfurt/Oder, Germany
June 2008

Primary and Secondary Remedies in Investment Arbitration and State Liability: A Functional and Comparative View
Inaugural Conference Society of International Economic Law
Geneva, Switzerland
July 2008

The Most Favored Nation Clause in Investment Arbitration: Is it taking an unfavorable development?
Paper presented at the Investment Committee of the International Law Association
Rio de Janeiro, Brazil
August 2008

Systems of Elections and Their Supervision by Election Commissions – Any Impact on the Observed Level of Democracy?
Paper presented at the Annual Conference European Association of Law and Economics, Haifa, Israel
September 2008

Balancing of Human Rights – Constitutional Interpretation in International Law
Conference on 60 Years of the UN Charter, University of Belgrade, Serbia
September 2008

2009

International Investment Law and Rationalist Contract Theory
IILJ International Legal Theory Colloquium (Benedict Kingsbury and Joseph H.H. Weiler organizing), NYU Law School, U.S.A.
January 2009

Rechtswissenschaft als Sozialwissenschaft
[Legal Studies as Social Science]
Conference Interdisziplinarität in den Rechtswissenschaften – Innen- und Außenperspektiven, Zentrum für Interdisziplinäre Forschung Bielefeld, Germany
March 2009

Accountability of International Election Observers
Global Administrative Law conference (NYU Law School/University of Geneva): Practical Legal Problems of International Organizations: A Global Administrative Law (GAL) Perspective on Public Private Partnerships (PPPs), Accountability, and Human Rights, Geneva, Switzerland
March 2009

The Global Financial Crisis and International Economic Law
Trade Implications of Policy Responses to the Crisis; World Bank – CEPR Conference; Brussels, Belgium
26-27 May 2009

International Trade and Supply Chains
MLE Foundation, Annual Meeting and Conference "Financial Crisis and Risks of Supply Chains: Law and Economics", St. Gallen, Switzerland
June 2009

The Changing Fortunes of MFN: Rising in Investment, Declining in Trade
Conference Valuing Trade Rules, Pfäffikon, Switzerland
June 2009

Are the Emergency Measures of the Economic Crisis Violating International Economic Law?
Israeli-German-Palestinian Conference for Law Students, Wiesbaden, Germany
August 2009

Internationale und supranationale Verflechtungen der Finanzmarktregulierung
[International and Supranational Interdependences in Financial Market Regulation]
Walter-Hallstein-Kolloquium 2009, 60 Jahre Integration in Europa, Variable Geometrien und politische Verflechtungen jenseits der EU, Frankfurt/Main, Germany
November 2009

Andrea Ahlgrimm

Summary Report

I joined the Max Planck Institute in August 2007 as a member of the Research Group Intuitive Experts. In my dissertation project, I investigate the bounds of rationality with regard to intuitive-automatic processes. Specifically, I focus on people's ability to integrate a multitude of information in increasingly complex decision tasks.

Within the framework of the parallel constraint satisfaction (PCS) model by Glöckner and Betsch (2008), my research addresses the role of quick automatic information processing in decision making. Following Herbert Simon's (1955) notion of bounded rationality, it has been repeatedly argued that natural limits of cognitive capacity might lead to the fact that people solve complex problems by taking into account only part of the available information and by relying on simple decision rules. My work however ties in with recent findings that point to a high capacity for fast compensatory information integration in probabilistic inferences (e.g., which city has more inhabitants or which product has the better quality?). Accordingly, my research objective has been to pinpoint the bounds of rationality and to provide further empirical evidence for one of the core predictions of the PCS model: through parallel processing the intuitive-automatic system is capable of processing high amounts of information in a short time. The model builds on the basic of idea of gestalt psychology, namely holistic information processing, and thus contravenes the frugality principle of the classic heuristics approach (e.g., Gigerenzer & Selten, 2002).

To test this crucial assumption, I started out by extending the decision paradigm used by Glöckner and Betsch (2008) to more complex environments. Complexity was increased by providing more pieces of information, on the one hand, and by using content-rich legal material as compared to tasks with neutral probabilistic cues, on the other hand. Furthermore, the information constellation in the decision tasks was manipulated. Taken together, the results of my experiments indicate that even in complex decisions between two options based on up to 12 binary cues multiple pieces of information are quickly integrated in a weighted compensatory manner, as predicted by the PCS model. Additionally, in the content-rich legal material, people are also able to consider interactions between the different pieces of information (e.g., a DNA trace at the crime scene and blood stains on the shoes of a suspect).

Furthermore, eye-tracking data concerning the amount of information that is taken into account point to mediating factors such as the presentation format of the task and indicate a tendency towards confirmatory information search. Positive information is sampled more frequently than negative information. In addition, information acquisition seems to be highly dependent on the information display. Therefore, in a current study, I analyze the effects of information encoding on standard outcome measures as decision time and choices in more detail.

Besides this line of research, I worked on a joined project with Nina Horstmann and Andreas Glöckner, in which we employed eye-tracking technology to take a closer look

at the cognitive processes underlying different decision modes (Horstmann, Ahlgrimm, & Glöckner, in press). In line with the prediction of the PCS model, we were able to show that instruction-induced deliberation and intuition seem to be not totally distinct, but rather rely on similar basic processes.

Publications (since 2007)

Articles in Peer-reviewed Journals

Horstmann N., Ahlgrimm A., Glöckner A., How Distinct are Intuition and Deliberation? An Eye-Tracking Analysis of Instruction-Induced Decision Modes, *Judgment and Decision Making*, vol. 4, pp. 335-354, 2009.

Preprints

Horstmann N., Ahlgrimm A., Glöckner A., *How Distinct are Intuition and Deliberation? An Eye-Tracking Analysis of Instruction-Induced Decision Modes*, issue 2009/10, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Lectures and Seminar Presentations (since 2007)

Complex decision making
Workshop Decision Research for Junior Scientists, MPI for Research on Collective Goods, Bonn, Germany
September 2008

Schnelle kompensatorische Informationsintegration und Cue-Interaktionseffekte bei komplexen Entscheidungen
[Quick compensatory information integration and cue interaction effects in complex tasks]
51. Tagung experimentell arbeitender Psychologen, Jena, Germany
March 2009

Confirmation Bias in Automatic Information Processing in Complex Legal Tasks
Second Workshop Decision Research for Junior Scientists, University of Mannheim, Germany
July 2009

Quick compensatory information integration and cue interaction effects in complex legal tasks
ECP, Oslo, Norway
July 2009

An Eye-Tracking Analysis of Automatic Information Processing in Complex Legal Tasks

22nd Subjective Probability, Utility and Decision Making Conference, Rovereto, Italy
August 2009

Sophie Bade

Summary Report

1. Information Aggregation in Elections

Currently, my main interest in political economy is information aggregation through elections. Together with Andrew Rice, a student at Penn State, I have written a paper that integrates a persuasion game into a standard model of a Condorcetian election to explain the stylized fact that citizens with more extreme world-views are usually better-informed about candidates. The main intuition behind our result is that independents face a certain implicit cost of information acquisition that does not matter for extremists. In the equilibrium of our model, independents share all information they have about the candidates; conversely, extremists only share information in favor of their preferred candidate. An independent whose information sways the vote might later on regret having passed on that information since his preference for one candidate or the other depends on the state of the world. An independent might regret having shared his information if he was pivotal in convincing the electorate to vote for a candidate who turns out to be unsuited for the task at hand. Such regret will never occur for an extremist: if his preferred candidate wins the election, the extremist is always happy – no matter what the state of the world is. Extremists are therefore more willing to acquire information. In a sense, our model can be viewed as a model of endogenous activism: citizens with more extreme preferences decide in equilibrium to become activists. After some mixed referee reports, we are currently working on a reevaluation of all the assumptions in the model.

In addition, Steve Callander (Kellogg) and I are working on the argument that, from the viewpoint of information aggregation, the Electoral College was superior to majority rule in the early years of the United States. In this model, we modify a standard Condorcetian model so as to allow for information correlations within states. This implies that very large majorities for a candidate might be attributed simply to correlated signals. The Electoral College provides a corrective insofar as large and small majorities in different states do receive the same weight in the vote for president. This argument in favor of the Electoral College applies to the time of the creation of the Electoral College when information did not travel fast across the boundaries of states. This argument does not apply to the current situation of the United States.

2. Ambiguity in Interactive Decision Making

Part of my research focuses on the incorporation of decision-theoretic models of ambiguity aversion into models of strategic interaction. I hope that my work will make some of these decision-theoretic models more accessible to research in the applied

fields of economics. My approach to this topic is a multi-layered one. My work on stochastic independence without probabilistic sophistication is rather theoretical. In my paper "Stochastic Independence with Maximin Expected Utilities", I apply various behavioral definitions of stochastic independence to Gilboa and Schmeidler's seminal representation of ambiguity-averse preferences through expected utilities with sets of priors.

I use this work to define a notion of strategic independence, which underpins my work on games with ambiguity-averse agents. My paper "Ambiguous Act Equilibria" has been accepted, subject to minor revisions, by Games and Economic Behavior. In this paper I argue that the introduction of ambiguous strategies and ambiguity aversion into game theory can only generate observationally different outcomes if one looks at games with 3 or more players. Even then, the theory of ambiguity aversion does not add much by way of novelty: all equlibria with ambiguity-averse players are observationally equivalent to some equilibria with non-common priors.

I also plan to test my theory on stochastic independence experimentally. Preliminary work on this experimental test indicates that it might be impossible to incentivize the study properly: to test my axiom of stochastic independence, certainty equivalents need to be elicited. It turns out though that the most common elicitation mechanisms (like the one by Becker, Marschak and de Groot) presuppose the validity of the strongest of my axioms of stochastic independence.

Finally an older paper which studies electoral competition between uncertainty-averse parties recently received the invitation to be revised and resubmitted a Games and Economic Behavior.

3. Mechanism Design Without Rationalizability

Motivated by a discussion with Utku Unver, a specialist on matching mechanisms for kidney exchanges, who argued that doctors' choices often do not seem rationalizable, I wrote a paper on matching models with agents whose behavior is not rationalizable. The paper "Housing Problems with Non-Rationalizable Behavior", which is currently submitted at JET, drops the assumption of rationalizability and shows that many of the celebrated results on matching fail without this assumption.

In a second project, I assume that the (non-rationalizable) choices of agents (doctors) can be derived from their endogenous learning about the available objects, i.e., organs (kidneys). In this project I do assume that from the point of view of every patient the kidneys can be ranked clearly. Different from the standard literature I assume that it is costly for doctors and their patients to learn what this ranking is. The goal of this work is to (Pareto- and welfare-) rank different allocation mechanisms when information acquisition about the objects to be distributed is endogenous.

4. Other projects

I conducted some game-theoretical work on bilateral commitments (together with Guillaume Haeringer and Ludovic Renou). A note was published in JET under the title "More Strategies, more Nash Equilibria" in 2007. A short article with the title "Bilateral Commitment" is forthcoming at JET. In this project, we concerned ourselves with the question of the equilibrium outcomes of a game change if players are given the chance to restrict their strategy spaces in a pre-play phase. In the latter paper, we provide conditions such that all points on the best responses between the Nash equilibrium of the original game and the equilibrium outcomes of the sequentially played game represent equilibrium outcomes of the game that allows for strategy space reductions in the first stage.

Finally, together with Andrei Karavaev I have a working paper on the calculation of epsilon equilibria. Formally, epsilon equilibria are limits of fixed points for epsilon-best replies with epsilon converging to 0. In practice, epsilon equilibria can be hard to calculate due to the excessive task to calculate sequences of fixed points. We therefore ask the question under which conditions it is justified simply to invert this process and to calculate epsilon equilibria as fixed points of limits of epsilon-best replies.

I was employed at Pennsylvania State University as an assistant professor until 30 April 2009. In the time right before my departure I was on leave to take care of my children and to find a new job in Europe.

Lectures and Seminar Presentations (since 2007)

2007

Ambiguous Act Equilibra
Fuqua School of Business, Duke University, U.S.A.
February 2007

Political Advocation with Collective Decision Making
(joint with Andrew Rice) MEDS (Northwestern), U.S.A.
May 2007

Ambiguous Act Equilibra
Conference on Risk Uncertainty Decision, Tel Aviv, Israel
June 2007

Ambiguous Act Equilibra
18th Game Theory Festival, Stony Brook, U.S.A.
July 2007

Ambiguous Act Equilibra
Collegio Alberto, Torino, Italy
September 2007

Ambiguous Act Equilibra
University of Leicester, U.K.
October 2007

Ambiguous Act Equilibra
Oxford University, U.K.
November 2007

Stochastic Independence with Maximin Expected Utilities
Sorbonne, Paris, France
November 2007

Ambiguous Act Equilibra
Parisian Seminar in Game Theory, France
November 2007

Ambiguous Act Equilibra
University of Munich, Germany
December 2007

Stochastic Independence with Maximin Expected Utilities
University of Heidelberg, Germany
December 2007

Ambiguous Act Equilibra
LUISS, Rome, Italy
December 2007

2008

Political Advocation with Collective Decision Making
(joint with Andrew Rice) Frontiers in Political Economy, UQAM/CIRPEE
Montreal, Canada
February 2008

Stochastic Independence with Maximin Expected Utilities
Cornell University, U.S.A.
March 2008

Ambiguous Act Equilibra
Queen's University, Canada
April 2008

Stochastic Independence with Maximin Expected Utilities
Conference on Risk Uncertainty Decision, Oxford, U.K.
June 2008

Political Advocation with Collective Decision Making
(joint with Andrew Rice) Conference of the Society of Economic Design
Maastricht, Netherlands
June 2009

Ambiguous Act Equilibra
University of Bielefeld, Germany
July 2008

Stochastic Independence with Maximin Expected Utilities
University of Bonn, Germany
July 2008

Housing Problems with Non-Rationalizable Behavior
Université Cergy-Pontoise, France
October 2008

Stochastic Independence with Maximin Expected Utilities
Koc University, Istanbul, Turkey
November 2008

2009

Stochastic Independence with Maximin Expected Utilities
University of Mannheim, Germany
January 2009

Stochastic Independence with Maximin Expected Utilities
Paris School of Economics, France
January 2009

Stochastic Independence with Maximin Expected Utilities
HEC, Paris, France
January 2009

Political Advocation with Collective Decision Making
(joint with Andrew Rice) MPI Collective Goods, Bonn, Germany
February 2009

Stochastic Independence with Maximin Expected Utilities
Toulouse School of Economics, France
March 2009

Stefan Bechtold (Affiliate)

Summary Report

From 2005 until May 2008, I was a Senior Research Fellow at the Max Planck Institute. In June 2008, I moved to ETH Zurich as a (tenured) Associate Professor for intellectual property. I have remained a Research Affiliate at the Max Planck Institute.

Over the last two years, my work has focused primarily on finishing my "Habilitation" project at the Max Planck Institute and building up my research group at ETH Zurich. In my habilitation project, I analyze the relationship between mandatory and default provisions in contract law. Starting from an analysis which incorporates insights from law and economics, behavioral law and economics, and fairness research, the project analyzes what limitations exist to the attempts by the legislator to enact mandatory contract provisions. At least four categories of limitations can be identified. First, a mandatory contract provision may defeat its regulatory purpose if this approach is not well-suited for this purpose – as an example, consider the problem of information overload in relationship to mandatory information disclosure in consumer protection law. Second, a mandatory contract provision may not be in line with the regulatory purpose if it leads to unintended consequences – as an example, consider the varying perception of mandatory and default provisions from the perspective of the expressive function of law. Third, a regulatory purpose may not only be achieved by mandatory contract provisions, but by other regulatory approaches as well – as examples, consider the psychological research on defaults and the legal implementation in contract and corporate law, as well as the game-theoretic discussions on unraveling. Fourth, mandatory contract provisions may not be well-suited to achieve a certain regulatory goal if they ignore the heterogeneity of the parties subject to the mandatory provisions. Based on these and further categories, the project analyzes the boundaries of mandatory contract law, as applied to particular examples in contract, corporate, and securities law. The Habilitation was accepted by the University of Tübingen Law School in June 2009. It will be published as a book by Mohr Siebeck in late 2009.

In addition, I finished working on a law-and-economics paper together with Felix Höffler (a former Senior Research Fellow and current Research Affiliate at the Institute) entitled "An Economic Analysis of Trade Secret Protection in Buyer-Seller Relationships". Traditionally, the economic analysis of trade secret protection has focused on the interests of companies to conceal information from competitors. By contrast, we investigate the social efficiency effects in cases in which the interest is not in concealing information from competitors, but from trading partners. We develop a contract-theory-based model of trade secret protection and relate the model to current legal practice,

both in Germany and the United States. The paper has been accepted for publication in the Journal of Law, Economics, and Organization, where it will appear in spring 2011.

Research Agenda

I am currently working on a behavioral/experimental law and economics paper together with Andreas Glöckner (head of a research group at the Institute) and Stephan Tontrup (a Ph.D. student at the Max Planck Institute of Economics in Jena) on "The Endowment Effect in Strategic Groups". In this psychology-oriented paper, we experimentally test whether anticommons situations do not only emerge due to high transaction costs or strategic behavior, but also due to the endowment effect. We can show that, in strategic group situations, the endowment effect disappears. This is not only of interest to group decision making research, but also has legal implications.

In a copyright-related paper entitled "Copyright Order without Law? The Global Trade With TV Formats", I investigate the vibrant global market for the licensing of TV formats. Formats such as "Who Wants to Be a Millionaire?" are being licensed in over 100 countries worldwide. While the IP protection for TV formats is uncertain, to say the least, a global post-broadcast licensing market for TV show formats has emerged over the last few years. This paper addresses the puzzle what exactly firms are licensing in such a low-IP environment. Also, firms have developed alternative dispute resolution mechanisms and TV format rights registries. The paper relates such developments to the discussions about privately-created and privately-maintained IP protection mechanisms and to the discussion of what role social norms play in protecting immaterial goods in a relatively small, homogeneous group of people who interact frequently, thereby opening up the possibility for reciprocity.

Finally, together with the research group I am building up at ETH Zurich, I am starting to work on various behavioral and empirical law and economics of intellectual property projects.

Publications (since 2007)

Articles in Peer-reviewed Journals

Bechtold S., Höffler F., An Economic Analysis of Trade-Secret Protection in Buyer-Seller Relationships, *Journal of Law, Economics & Organization*, In Press.

Books

Bechtold S., *Die Grenzen zwingenden Vertragsrechts – ein rechtsökonomischer Beitrag zu einer Rechtsetzungslehre des Privatrechts*, Tübingen, Mohr Siebeck, In Press.

Bechtold S., Die Kontrolle von Sekundärmärkten – eine juristische und ökonomische Untersuchung im Kartell- und Immaterialgüterrecht, *Wirtschaftsrecht und Wirtschaftspolitik*, Baden-Baden, Nomos, pp. 147, 2007.

Book Chapters

Bechtold S., Schutz und Identifizierung durch technische Maßnahmen, *Handbuch Multimedia-Recht, looseleaf*, Hoeren T., Sieber U., (Eds.), München, C. H. Beck, 2008.

Bechtold S., Urheberrecht als Instrument zur Organisation von Märkten, *Von der Lochkarte zum globalen Netzwerk*, Büchner W., Dreier T., (Eds.), K, Otto Schmidt KG, pp. 51-56, 2007.

Bechtold S., Oberender P., Immaterialgüterrechte und die technische Kontrolle von Sekundärmärkten, *Wettbewerb und geistiges Eigentum*, Oberender P., (Ed.), Berlin, Duncker & Humblot, pp. 77-92, 2007.

Bechtold S., Lüdemann J., Europäisches Telekommunikationsrecht zwischen Dezentralisierung und Kohärenzsicherung, *Aktuelle Fragen zu politischer und rechtlicher Steuerung im Kontext der Globalisierung*, Stolleis M., Streeck W., (Eds.), vol. 17, Baden-Baden, Nomos, pp. 167-184, 2007.

Articles (not peer-reviewed)

Bechtold S., Zur rechtsökonomischen Analyse im Immaterialgüterrecht, *Gewerblicher Rechtsschutz und Urheberrecht – Internationaler Teil*, vol. 57, no. 6, pp. 484-488, 2008.

Preprints

Glöckner A., Kleber J., Tontrup S., Bechtold S., *The Endowment Effect in Groups with and without Strategic Incentives*, issue 2009/35, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Bechtold S., Höffler F., *An economic analysis of trade-secret protection in buyer-seller relationships*, issue 2007/18, Bonn, Max Planck Institute for Research on Collective Goods, pp. 26, 2007.

Lectures and Seminar Presentations (since 2007)

2007

Trusted Computing and Public Policy
Expert meeting, European Commission, Brussels, Belgium
15 January 2007

Platforms and Interoperability
Conference "Copyright, Digital Rights Management Technology, and Consumer Protection", Berkeley Center for Law & Technology, University of California at Berkeley School of Law, CA, U.S.A.
10 March 2007

Controlling Secondary Markets – From Planing Machines to T-GURTS
Center for Internet and Society, Stanford Law School, Stanford, CA, U.S.A.
12 March 2007

The Law and Economics Analysis of Intellectual Property Law
Max Planck Institute for Intellectual Property, Competition, and Tax Law
Munich, Germany
14 June 2007

2008

Property vs. Contract to Govern Online Behavior under European Law
Transatlantic Information Law Symposium, Stanford Law School, Stanford, CA, U.S.A.
14 June 2008

The Future of Regulating Cyberspace
Transatlantic Information Law Symposium, Stanford Law School, Stanford, CA, U.S.A.
14 June 2008

Panel on Interdisciplinary Research in Platform Security
Workshop on Interdisciplinary Studies in Security and Privacy
Polytechnic Institute of New York University, New York, NY, U.S.A.
26 September 2008

Web 2.0 and Intellectual Property Law
Web 2.0 Workshop, Center for European Economic Research (ZEW)
Mannheim, Germany
12 December 2008

2009

Current Developments in European Copyright Law
Ingres Workshop on European Intellectual Property Law, Zurich, Switzerland
21 January 2009

Determinants of IP Compliance
Enforcement Framework and Civil Enforcement Symposium, European Intellectual Property Institutes Network, Gerzensee, Switzerland
23 January 2009

Behavioral Law and Economics of Intellectual Property Law
University of St. Gallen Law School, St. Gallen, Switzerland
25 February 2009

Controlling Secondary Markets: Economic Aspects
Colloquium Competition and Innovation, Law School University of Tübingen, Germany
14 March 2009

Regulating IT Security at the Intersection of Law, Economics, and Psychology
ETH Zurich, Switzerland
6 May 2009

TV Show Formats: A Global Licensing Market Outside IP?
Workshop on Impacts of Open and User Innovation on Intellectual Property Law
MIT, Cambridge, MA, U.S.A.
18 May 2009

The "more economic approach" in Intellectual Property Law
Seminar on 50 years of Antitrust Legislation in Germany and Europe, Law School University of Tübingen, Germany
19 June 2009

Law and Economics Research of IP: A Lawyer's Perspective
Inno-tec Institute, School of Management, University of Munich, Germany
29 June 2009

Martin Beckenkamp

Summary Report

My main interest lies in environmental dilemmas. My recent work focuses on biodiversity from the view of a social dilemma. That research is funded by the Krekeler foundation. Besides that, I am also interested in social dilemmas in organizations and had two pilot projects where I made use of strategic games for the diagnosis and the intervention in intra-company conflicts.

Many political, institutional and environmental problems have the structure of a social dilemma, i.e., they are situations where the self-interest of individuals is at odds with collective interests. Because of this, there is a broad interest in social dilemmas from many different disciplines. My work mainly integrates approaches from cognitive science, social psychology, behavioral economics, and institutional design. In my work and in contrast to many current approaches in environmental psychology, I separate analytically structural aspects from temporal aspects of the dilemma, because mixing these aspects often leads to wrong conclusions. In my work, I concentrate mainly on the structural aspects of the dilemma and the resulting grades of complexity.

Dilemmas with sufficient complexity are extremely vulnerable to individual defections. Therefore, institutions are necessary for the solution of the dilemma. Consequently, my research, in contrast to the mainstream in environmental psychology, not only targets the individuals, but focuses on institutional design with respect to (1) the structural diagnosis of environmental dilemmas; (2) psychological methods that give addressees an insight into the structural problem; (3) the impact of institutions on internalizing norms; and (4) the impact of structural knowledge on accepting institutions that help to solve the environmental dilemma. In many environmental dilemmas, the stakeholders are myopic in the sense that they can only observe changes in their own incomes and, therefore, they are not really aware of being in a social dilemma. In a recent experiment I was able to demonstrate that such blindness reduces cooperation rates in an iterated prisoners' dilemma. My current work is embedded in the EU-research network of excellence ALTERNET. There is a close cooperation with the Helmholtz Center for Environmental Research in Leipzig and the departments of environmental psychology in Magdeburg and in Bochum.

Important questions resulting from my approach that have not been answered so far are (1) The policy implication of reduced co-operations in blind environmental dilemmas. The results so far – both from my experiments and from other experiments about sanctioning institutions as a 2nd-order dilemma – suggest that information about the dilemma is a necessary precondition for the implementation of institutions that help to solve the dilemma. (2) Based on this assumption, the question arises how strategic

experimental games are used in order (a) to diagnose the underlying conflict structure, (b) to ameliorate the stakeholders' insight of being in an environmental dilemma (given a respective diagnosis), (c) to make use of such a diagnosis to enter into a dialogue with the stakeholders that helps to ameliorate the situation. This approach is also new because it contains both the aspect of self-governance and of governance from outside.

Research Agenda

Currently, I am preparing new experiments that try to give some more insights into the role that information plays in order to introduce institutions that help to solve the dilemma, and about the role of strategic knowledge in complex environmental dilemmas in order to come to de-escalation and higher cooperation rates. I also continue to make use of experimental games, not only in order to raise experimental data, but also to "translate" social dilemmas from the field into social dilemma games, which are given back to the addressees, and where the addressees can then decide whether the abstract game is a relevant and valid interpretation of their situation. In collaboration with the department of environmental psychology in Magdeburg, we intend to develop new diagnostic tools that are validated within a test-theoretical framework. Also in collaboration with the same department, we are preparing a DFG-proposal (German Research Foundation): a environmental-psychological network that allows us to organize workshops with European environmental psychologists and integrates junior researchers. Therefore, in a first step, such games are used as a tool to diagnose social-dilemma conflicts and the awareness of the addressees.

Publications (since 2007)

Articles in Peer-reviewed Journals

Quirin M., Beckenkamp M., Kuhl J., Giving or Taking: The Role of Dispositional Power Motivation and Positive Affect in Profit Maximization?, *Mind & Society*, Berlin/ Heidelberg, Springer, In Press.

Ohl C., Johst K., Meyerhoff J., Beckenkamp M., Grüsgen V., Drechsler M., Long Term Socio-Ecological Research (LTSER) in the context of biodiversity protection – A Complex systems approach for the study of dynamic human-nature interactions, *Ecological Complexity, Special Issue "Eco Summit 2007"*, 2008.

Beckenkamp M., Zur Kompatibilität von Konfliktstruktur und Konfliktmanagement am Beispiel eines Fischereikonflikts, *Umweltpsychologie*, vol. 12, no. 2, pp. 123-139, 2008.

Beckenkamp M., Quirin M., They love free-riding but don't know why: How the implicit power motive influences selfish behavior, *Mind & Society*, 2008.

Book Chapters

Beckenkamp M., Eine spieltheoretische Sicht auf Umwelt- und Fehlermanagementprobleme, *Kooperation konkret!*, Clases C., Schulze H., (Eds.), Lengerich, Pabst Science, pp. 38-48, 2008.

Beckenkamp M., Eigenstetter M., Diagnostik kooperativer Fertigkeiten in der Personalauswahl, *Kooperation konkret!*, Clases C., Schulze H., (Eds.), Lengerich, Pabst Science, pp. 74-84, 2008.

Beckenkamp M., Change happens – Kommunikationsmanagement im sozialen Dilemma, *Kommunikationsmanagement, Loseblattsammlung*, Bentele G., Piwinger M., Schönborn G., (Eds.), issue 3.47: Hermann Luchterhand Verlag, pp. 1-24, 2007.

Preprints

Beckenkamp M., Engel C., Glöckner A., Irlenbusch B., Hennig-Schmidt H., Kube S., Kurschilgen M., Morell A., Nicklisch A., Normann H., Towfigh E., *Beware of Broken Windows! First Impressions in Public-good Experiments*, issue 2009/21, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Beckenkamp M., *Environmental dilemmas revisited: structural consequences from the angle of institutional ergonomics*, issue 2009/01, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Beckenkamp M., *Playing strategically against nature? – Decisions viewed from a game-theoretic frame*, issue 2008/34, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Quirin M., Beckenkamp M., Kuhl J., *Giving or Taking: The Role of Dispositional Power Motivation and Positive Affect in Profit Maximization?*, issue 2008/15, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Maier-Rigaud F. P., Beckenkamp M., *Purchase Decisions with Non-linear Pricing Options under Risk – Experimental Evidence,* issue 2007/10, Bonn, Max Planck Institute for Research on Collective Goods, 2007.

Conference Papers

Ohl C., Lexer W., Stickler T., Risnoveanu G., Geamana N., Beckenkamp M., et al., Governing biodiversity: Procedural and distributional justice in social dilemmas, IASC 12th Biennial Conference, Gloucestershire, 2008.

Work in Progress

The social dilemma of climate change: Socio-economic implications. Submitted to peer review for The Climate 2009 conference.

Preparation of a symposium on Environmental Dilemmas within the 8th Biennial Conference of the Environmental Psychology Division of the German Association of Psychology.

Participation with submitted proposal at a German conference "Impulskonferenz: Nachhaltigkeit trotz(t) Krise".

Submitted papers (in review) on "Environmental dilemmas revisited", "Playing strategically against nature?", "Self-organization in collaborative networks with intentional actors?".

Lectures and Seminar Presentations (since 2007)

2007

Institutionelle Ergonomie
[Institutional Ergonomics]
Interdisciplinary Colloquium on Complexity and Cooperation, Olten, Switzerland
2 July 2007

Cooperation in symmetric and asymmetric prisoner's dilemma games
(with H. Hennig-Schmidt and F. Maier-Rigaud) International conference "Reciprocity: Theories and Facts", University of Milan-Bicocca, Milan, Italy
22–24 February 2007

Some issues about self-organization from an institutional designer's view
Interdisciplinary Colloquium on Self-Organization, Passau, Germany
20 June 2007

Monitoring and Sanctioning in Environment Dilemmas: Experimental contributions to environmental law
Tagung "Umweltregulierung – Gesetzlicher Anspruch und Wirklichkeit", Lehrstuhl für Umweltökonomik, Heidelberg, Germany
November, 2007

2008

Zwischen Desaster und Prosperität: Management aus spieltheoretisch-psychologischer Perspektive
[Beneath disaster and prosperity: management from a game-theoretic-psychological view]
German Society for economic psychology
2008

2009

Environmental dilemmas: Information matters!
Information Management and Market Engineering, University of Karlsruhe, Germany
2009

How do people behave in blind environmental dilemmas?
– An experimental study
13th International Conference On Social Dilemmas, Kyoto, Japan
August, 2009

Symposium and talk on environmental dilemmas.
8th Biennal Conference on environmental psychology, Zurich, Switzerland
November, 2009

Vertrauen, Sanktionen und Anreize in Unternehmen aus spieltheoretisch-psychologischer Perspektive
Conference "Das Unternehmen und seine Akteure in juristischer, humanwissenschaftlicher und wirtschaftswissenschaftlicher Perspektive", University of Jena, Germany
October, 2009

Felix Bierbrauer

Summary Report

My research field is public economic theory, in particular the theory of optimal taxation and the theory of public goods provision. Emphasis lies on information and incentive problems that arise if individuals have private information on their preferences for public goods and/or their productive abilities.

In the theory of public goods under incomplete information on public goods preferences, the key problem is to arrive at an efficient allocation even though individuals may behave strategically in order to reduce their own contribution to the costs of providing a public good.

The theory of optimal taxation assumes that there is desire for redistribution so that it is welfare-improving to transfer resources from highly productive individuals who earn a high income to less productive, or comparatively poor, individuals. The analysis is complicated by the assumption that individuals are privately informed about their productive abilities. The combination of private information on productive abilities and a welfare function that makes redistribution desirable implies that redistribution that leads to first-best efficient outcomes is considered to be insufficient. Put differently, an optimal redistributive policy requires trade-off departures from first best efficiency and the desire to have a more equitable distribution of resources.

The method that is used to characterize solutions to the public goods problem or the problem of optimal taxation is provided by the theory of mechanism design. According to the well-known revelation principle, any allocation that satisfies a given set of resource constraints and the constraints that arise because individuals can make strategic use of their private information can be characterized by assuming that individuals must have an incentive to report their privately-held information truthfully to a mechanism designer who then chooses an allocation on the basis of the reports that he receives from all individuals.

My research in the last two years was, to a large extent, based on methodological contributions to this field, which then made it possible to generate various new results. The methodological issues involved (i) the sensitivity of allocations that can be reached under incomplete information with respect to assumptions about the individuals' probabilistic beliefs regarding the a priori unknown outcome of a mechanism (in the mechanism design literature, this is known as a debate about *Robust Mechanism Design*), (ii) the difficulty to characterize the set of implementable allocations if the individuals' private information is multi-dimensional, e.g., consists of private information on public goods preferences and productive abilities (this branch of the literature comes under the heading *Multi-dimensional Mechanism Design*), and (iii) the

difficulty that a mechanism that achieves some desirable allocation may give rise to alternative undesirable equilibria, e.g., even though no individual may have a reason to deviate from truth-telling, if all other individuals also tell the truth, there may be reasons to deviate on the assumption that other individuals deviate, too. Moreover, such a joint deviation by several individuals may lead to a new equilibrium that is more attractive to the deviators, which raises a concern of *coalition-proofness*. (In the mechanism design literature, this is known as the problem of *Unique Implementation*.)

I explain in more detail below how these rather abstract difficulties are of relevance to the theory of public goods and the theory of optimal taxation, how my research makes progress on some of these difficulties and how this progress then makes it possible to generate some new results on the design of optimal tax systems and the design of mechanisms for the provision of public goods.

In addition, one paper with the title *On the legitimacy of coercion for the financing of public goods*, uses a conventional methodology to answer a question that has been left open by the existing literature on public goods, namely whether or not it is desirable that participation constraints are respected, which ensure that the provision of a public good makes no individual worse off, compared to a status quo situation in which the public good is not provided.

Finally, the paper *Winners and Losers of Early Elections: On the Welfare Implications of Political Blockades and Early Elections* (with Lydia Mechtenberg) does not belong to the research agenda sketched above. Instead, motivated by Germany's early elections in the year 2005, this paper develops a model of political competition in which one can undertake the following thought experiment: How does the possibility to have early elections affect the outcomes of political competition, and moreover, who gains and who suffers from this possibility?

The three papers discussed subsequently have in common that they study the multi-dimensional mechanism design problem that arises if individuals have private information both on their productive abilities and their public goods preferences. In all papers, it is assumed that the economy is large, so that a single individual has no immediate influence on how much of a public good is provided, and that the distribution of public goods preferences is a priori unknown. This gives rise to a problem of information aggregation, since an optimal decision on public goods provision depends on whether many or only few individuals have a high valuation of the public good.

1. Optimal Democratic Mechanism for Income Taxation and Public Goods Provision (with Marco Sahm)

This paper makes two main contributions: first, it uses the idea that information aggregation can be based on a sampling procedure, so that only a subset of the whole population is of relevance for the decision on public goods provision. Second, it compares the outcomes that can be achieved with an optimal mechanism in this

framework, to those that can be reached in a democratic system where individuals are tax payers and a voting procedure is used to decide on public spending. The main result is that, the optimal mechanism allows reaching efficient outcomes that are unattainable in a democratic system. Moreover, in a democratic system wage inequality is shown to have detrimental consequences for public goods provision.

2. A Note on Optimal Income Taxation, Public Goods Provision and Robust Mechanism Design

This paper takes an alternative approach to the mechanism design problem. It insists on a property of anonymity so that all individuals have to be treated equally by the allocation mechanism and have to be given the same influence on public goods provision. It is shown that insisting on robust mechanism design has the implication that tax and expenditure policies have to be designed as if there was no problem of information aggregation. This observation implies that a widely-used approach in public finance, which is to assume that individuals make their private decisions subject to a predetermined and commonly known policy, is equivalent to a mechanism design approach that imposes a requirement of robustness.

3. Optimal Income Taxation and Public Goods Provision in a Large Economy with Aggregate Uncertainty

As in the previous paper, I study allocations that can be implemented by means of an anonymous mechanism in a large economy. In addition to the requirement of robustness with respect to individuals' beliefs, a requirement of coalition-proofness is imposed. Consequently, like-minded individuals may coordinate their behavior so as to manipulate tax and expenditure policies. The main contribution of the paper is to provide a tractable and intuitive characterization of robust and coalition-proof allocations in models with aggregate uncertainty and heterogeneity in public goods preferences and productive abilities.

4. Public Goods Provision in a Large Economy (with Martin Hellwig)

We study the implications of insisting on coalition-proofness and robustness in a large economy version of the model that is typically used in the theory of public goods: there is a private and a public good, and individuals have private information on their public goods preferences. The main result is that an admissible mechanism for the provision of public goods can no longer condition on the preference intensities of individuals, but only on the number of individuals who benefit or who are harmed by public goods provision. An implication of this result is that robust and coalition-proof mechanisms, on the one hand, and voting mechanisms, on the other, are equivalent.

5. On the Legitimacy of Coercion for the Financing of Public Goods

The existing literature has shown that efficient outcomes can be achieved in models in which individuals have private information on their preferences. It has also shown that if participation constraints have to be respected, efficiency is impossible. This paper

studies the question whether, from a normative perspective, participation constraints should be imposed. Put differently, under which conditions does the objective to achieve efficient outcomes justify the use of coercion? The main result of the paper is as follows: it depends on the intensity of a distributive conflict between the mechanism designer and the consumers of the public good whether or not participation constraints should be imposed. While the ideal case of public goods provision by a benevolent planner justifies the use of coercion, the delegation of public goods provision to a profit-maximizing firm implies that participation constraints should be imposed, even though this makes efficiency impossible.

6. Winners and Losers of Early Elections: On the Welfare Implications of Political Blockades and Early Elections (with Lydia Mechtenberg)

In this paper, we develop a dynamic model of political competition. Political blockades in particular, defined as a situation where a conflict between parliament and government makes it impossible to reach political decisions, arise endogenously in this model. We analyze whether it is desirable that politicians can respond to a political blockade by calling for an early election. We show that a major disadvantage of a constitution with early elections is that it gives unsuccessful governments incentives to gamble for additional time in office.

Research Agenda

Some of my current projects belong to the broader research program of studying taxation and public goods provision under conditions of incomplete information. For some of those projects, I work on enriching the institution-free mechanism design approach. In particular, the plan is to include political economy constraints into the analysis and see how they affect the design of optimal policy. Finally, a research question that I am currently interested in is how the various insights from experimental and behavioral economics could be incorporated into mechanism design approaches to social insurance, redistributive taxation or public goods provision.

Honours

Otto Hahn Medaille der Max Planck Gesellschaft
[Otto Hahn Medal of the Max Planck Society] for the Dissertation Thesis "Essays on Income Taxation and Public Good Provision" at the University of Mannheim 2007.

Publications (since 2007)

Articles in Peer-reviewed Journals

Bierbrauer F., A Note on Optimal Income Taxation, Public Goods Provision and Robust Mechanism Design, *Journal of Public Economics*, vol. 93, pp. 667-670, 2009.

Bierbrauer F., Optimal Income Taxation and Public Good Provision with Endogenous Interest Groups, *Journal of Public Economic Theory*, vol. 11, no. 2, pp. 311-342, 2009.

Preprints

Bierbrauer F., *On the legitimacy of coercion for the financing of public goods*, issue 2009/15, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Bierbrauer F., Mechtenberg L., Winners and Losers of Early Elections: On the Welfare Implications of Political Blockades and Early Elections, issue 2008/50, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Bierbrauer F., *A unified approach to the revelation of public goods preferences and to optimal income taxation*, issue 2008/39, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Bierbrauer F., *Optimal Income Taxation, Public Goods Provision and Robust Mechanism Design*, issue 2008/31, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Bierbrauer F., Sahm M., Optimal Democratic Mechanisms for Taxation and Public Good Provision, issue 2008/09, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Lectures and Seminar Presentations (since 2007)

2007

Collectively Incentive Compatible Tax Systems
Public Finance Lunch, Massachusetts Institute of Technology, Cambridge, MA, U.S.A.
March 2007

Optimal Income Taxation and Public-Good Provision with Endogenous Interest Groups
University Duisburg-Essen, Germany
May 2007

Optimal Income Taxation and Public-Good Provision with Endogenous Interest Groups
Northamerican Summer Meeting of the Econometric Society
Duke University, Durham, NC, U.S.A.
June 2007

Robust and Coalition-Proof Mechanisms for Income Taxation and Public-Good Provision
Public Economic Theory Meeting, Vanderbilt University, Nashville, TN, U.S.A.
July 2007

Optimal Income Taxation and Public-Good Provision with Endogenous Interest Groups
EEA Meeting, Budapest, Hungary
August 2007

Robust and Coalition-Proof Mechanisms for Income Taxation and Public-Good Provision
European Meeting of the Econometric Society, Budapest, Hungary
August 2007

Informative Voting and the Samuelson Rule
North-American Winter Meeting of the Econometric Society, New Orleans, U.S.A.
January 2008

Optimal Democratic Mechanisms for Taxation and Public Goods Provision
Tagung des Sonderforschungsbereichs SFB Tr 15, Gummersbach, Germany
März 2008

Optimal Democratic Mechanisms for Taxation and Public Goods Provision
Mannheim University, Germany
September 2008

Optimal Democratic Mechanisms for Taxation and Public Goods Provision
PGPPE 08 Workshop, Bonn, Germany
October 2008

Optimal Democratic Mechanisms for Taxation and Public Goods Provision
Christmas Meeting of German Economists Abroad, Bonn, Germany
December 2008

On the Legitimacy of Coercion for the Financing of Public Goods
ETH Zürich, Switzerland
February 2009

On the Legitimacy of Coercion for the Financing of Public Goods
CESifo area conference on applied microeconomics, Germany
March 2009

On the Legitimacy of Coercion for the Financing of Public Goods
Vanderbilt University, Nashville, U.S.A.
April 2009

A unified approach to optimal income taxation and the revelation of public goods preferences
Decentralization Conference, Washington University, St.Louis, U.S.A.
April 2009

Optimal Income Taxation and Public Good Provision in a Large Economy with Aggregate Uncertainty
WZB, Berlin, Germany
May 2009

On the Legitimacy of Coercion for the Financing of Public Goods
Workshop on "Incentives, Efficiency, and Redistribution in Public Economics",
HIM Trimester Program on Mechanism Design, Bonn, Germany
May 2009

Optimal Income Taxation and Public Good Provision in a Large Economy with Aggregate Uncertainty
Heidelberg University, Germany
June 2009

Winners and Losers of Early Elections: On the Welfare Implications of Political Blockades and Early Elections
2009 Silvaplana Workshop on Political Economy, Switzerland
July 2009

Public Good Provision in a Large Economy
Jahrestagung des Vereins für Socialpolitik, Magdeburg, Germany
September 2009

Nadine Bläser

Summary Report

Over the last two years, my research focused on Antitrust Law and Behavioral Law and Economics, as these research areas are closely related to my doctoral thesis. In particular, my thesis investigates Leniency Programmes by implementing insights from both traditional and behavioral economics.

Leniency Programmes were introduced in most industrial countries, starting with the United States of America in 1978, as a promising tool in fighting hardcore cartels. They offer cartel members an exemption from paying the fine or a reduction of the fine in exchange for disclosing the existence of the cartel and for cooperating constantly with the Antitrust Authorities during the administrative procedure.

- By introducing these programmes, the Antitrust Authorities pursued mainly the following objectives:
- Undermining trust between the undertakings aligned in a cartel and thereby achieving complete deterrence of cartels in the long run.
- Accelerating and facilitating the discovery of cartels and thereby reducing the damage done to economic welfare.
- Increasing the number of detected cartels without having to increase the detection probability.
- Saving public resources.

Economic Analysis on Leniency Programmes yields mixed results. Leniency Programmes might lead to a destabilisation of cartels by increasing the incentives of the cartel members to undercut a collusive agreement and by inducing a "Race-to-the-Courthouse". This means that Leniency Programmes might provide cartel members with an incentive to rush forward with information, given that the probability of being detected is high enough anyway. However, these results are not undisputed. Leniency Programmes might as well lead to a stabilization of cartels: they might be used as a form of punishment in order to maintain a cartel that might not have been enforceable otherwise. Furthermore, they might lead to a destabilisation of initially unstable cartels, but to a stabilisation of the most harmful cartels for economic welfare, which is a kind of "worst-case-scenario".

In my thesis, I focus primarily on the incentives of undertakings to form a cartel in the first place, taking into account that cartels are in many cases "children of distress". This means that risk preferences, the perception of risks and the perceived ability to control

these risks might play an important role in the evaluation of Leniency Programmes. The final objective of my thesis is to formalise these ideas in a simple model.

Research Agenda

Currently Philipp Weinschenk and I are working on a joined project analysing the objectives of Art. 81 and Art. 82 of the EC Treaty as well as the objectives of § 1 and § 2 of the Sherman Act. In the legal as well as in the economic discussion, it is highly disputed what the objectives of Art. 81, 82 EC Treaty are respectively what they should be. One goal widely mentioned is the pursuit of economic efficiency. An important element of economic efficiency is dynamic efficiency, which describes the innovative and technological development of markets.

The law in general is suspicious with respect to monopolies, regardless whether a single entity is able to exert market power or whether a collective of entities – e.g., via the formation of a cartel –aims at achieving the position of a monopoly. One reason for this suspicion is the fear of the Antitrust Authorities that monopolies, since the competitive pressure is lacking, do not have sufficient incentives to innovate, which will lead to the detriment of total welfare. This fear partly stems from the fact that engaging in innovative activities is in general a risky investment. If there is no competitive pressure forcing the entities to invest in product or process innovation to preserve or enhance their market position, there might be no incentive at all to risk valuable money.

The analysis is based on work by Philipp Weinschenk completed in 2009 and shows that most of the "risk" research is done by potential entrants, but not by incumbents. Incumbents, on the other hand, specialize in "safe" research that is rarely undertaken by potential entrants. Therefore the suspicion of the Antitrust Authorities and the resulting intervention seems to be at least partly justified.

Stefanie Brilon

Summary Report

Having done most of my doctoral studies at the universities of Mannheim and Toulouse, I joined the Max Planck Institute in December 2007. In the last two years, I finished my thesis which consists of several papers in the area of organization theory and personnel economics.

In the first paper, which is joint work with Dr. Frank Rosar, University of Bonn, we consider situations where two parties, a principal and an agent, have diverging preferences over the choice of a project they want to realize together. The extent to which they are willing to accept the other's preferred project, i.e., their respective *willingness to compromise*, is their private information. Both players have to agree on the project choice in order to complete the project successfully. In our setup, authority consists of two components: the *authority to initiate* or choose a project, and the *authority to approve* or implement a project, with the principal deciding on the allocation of both tasks.

We show that delegating the authority over the project choice can have a *motivating effect* on the agent, as he is able to choose a project for which he is also willing to provide effort. However, delegation of authority may also have a *discouraging effect* on the agent, in particular if he is unsure about whether the principal is going to accept his project choice. Furthermore, we find that under certain circumstances, the principal will give *all* authority to the agent, i.e., both the authority to initiate and to approve a project. He thus can avoid the discouraging effect of delegation that arises when the agent can initiate a project, but when he is not sure whether it will be implemented. However, the more likely the principal is to approve the agent's choice, the more the latter will try to push his own preferred project, thus lowering the principal's utility. A principal who is more willing to compromise hence risks the agent taking advantage of this circumstance. As a consequence, a principal who is more flexible with respect to the project choice will actually cede *less* authority to the agent.

The second paper, which is joint work with Emmanuelle Auriol from the Toulouse School of Economics, asks how different sources of intrinsic motivation of workers may affect both for-profit and non-profit organizations.

Most theoretical models on this topic suppose that intrinsic motivation arises if workers derive a benefit from doing good – what is often referred to as "warm glow" utility – or when workers are interested in a certain goal or mission, like for example helping the poor or protecting the environment. An organization that is dedicated to such a mission may hence find it easier to attract workers who are motivated by similar goals. Intrinsic motivation is thus generally treated as something beneficial.

However, other aspects of a job may also instil intrinsic motivation in certain types of workers. And these other aspects are not necessarily beneficial for the employer: for instance, a spy would be interested in jobs where he is likely to obtain a lot of sensitive information while his risk of being discovered is low. Similarly, a paedophile would probably derive some intrinsic benefit from working in a job where he is in contact with children.

To capture this problem, we present a model with two sectors, one profit- and one mission-oriented, and three types of workers: regular workers, who care only about monetary incentives; good workers, who care about money and the mission of the organization; and bad workers, who care about money and whether they can do things as they like, albeit things that are harmful to the organization.

We first describe a benchmark model with only good and regular workers and show that, relative to profit-oriented organizations, mission-oriented organizations can attract motivated workers using lower extrinsic incentives. We then analyze how both sectors will have to adapt their incentive schemes and monitoring efforts if there are "bad" motivated workers. In particular the mission-oriented sector may have to change drastically: even a small number of bad workers may make it necessary to introduce large extrinsic incentives, such that both sectors come to resemble each other.

Finally, the third paper considers under which circumstances performance in one job can be a good signal about performance in another job. Why would an employer want an employee to work first in job 1 before letting him do job 2? Besides on-the-job training, worker selection may play a role: By observing a worker's performance in job 1, the employer learns more about the worker's ability and whether he might be suited for job 2.

In this paper, I thus focus on the employer's job assignment problem when workers differ in their technical and managerial skills and different jobs require a different combination of these skills. A worker's skill profile is not directly observable, but only his overall performance in a job. The model then analyzes under which circumstances different allocation patterns may arise and shows that firms may choose to promote workers even if these workers are more efficiently allocated in their present job.

The model thus offers an alternative explanation to the Peter Principle, which states that workers are promoted up to their level of incompetence. Here, this occurs over a certain range of skill levels, because firms may prefer to promote a worker on whom they have at least some information, rather than to hire an unknown worker, even though the promoted worker is likely to have a relatively low competence level in his new job.

Research Agenda

I plan to continue working in the field of organization and personnel economics by further exploring some questions that arose while working on my thesis: for instance, the question of how governance structures in firms may facilitate or hinder cooperation between workers and affect their initiative. Furthermore, I would like to learn more about how market structures and production constraints may shape the governance structure of a firm, such as its degree of centralization or the form of incentives within the hierarchy.

Building on the analysis of the non-profit sector, I also became interested in the economic analysis of philanthropy, in particular spending by firms or what is often called "corporate social responsibility", but also more generally the impact of donations on public-goods provision and the role of accountability in this context.

Lectures and Seminar Presentations

2007

Motivation and Delegation
Toulouse School of Economics, France
3 April 2007

Motivation and Delegation
SFB TR 15 Summer School, Kloster Bronnbach, Germany
25 August 2007

The Good, the Bad and the Lazy: Labor Management in Non-Profit Organizations
ASSET Conference, Padova, Italy
3 November 2007

2008

The Good, the Bad and the Lazy: Labor Management in Non-Profit Organizations
CSAE, Oxford, U.K.
17 March 2008

Authority and Motivation
ESEM, Milan, Italy
28 August 2008

The Good, the Bad and the Lazy: Labor Management in Non-Profit Organizations
University of Mannheim, Germany
25 November 2008

Arndt Bröder

Summary Report

My research is primarily driven by the attempt to develop research methods that allow for sound conclusions concerning hypotheses about cognitive processes. Being an experimental cognitive psychologist by training, my interest is centered around the problem of bridging the gap between hypotheses about unobservable cognitive processes and observable behavior in empirical investigations. This can be done, for example, by formal measurement models that make explicit the connections between latent (cognitive) and observable (experimental) events.

Pursuing this methodological ideal, my recent research concerns multi-attribute decision making processes, and retrieval and reconstruction processes in memory.

The psychological research on multi-attribute decisions aims at formulating cognitive process models that describe actual decision behavior. Cognitive models describe decisions in terms of information representation, information retrieval, and information integration. The strategies used may involve short-cut heuristics to save processing costs, or they may more closely resemble the normative ideal of a thorough information integration like in multi-attribute utility models. Which type of strategy people use is highly contingent on the payoff structure of environments, task variables, situation variables (e.g., time pressure), as well as individual strategy preferences. Within the framework of Gerd Gigerenzer's "adaptive toolbox" of strategies (Gigerenzer et al., 1999), my research aims at identifying predictors of strategy selection experimentally and integrating the results into a theoretical framework. Collaborative projects with Ben R. Newell in Sydney and Tilmann Betsch in Erfurt aim at sound tests of different cognitive models of decision making.

My work on memory was hitherto primarily focused on the representation of simple context features that accompany the memory for episodes. Using stochastic measurement models for disentangling the multitude of elementary processes involved in retrieving a memory trace, a research project funded by the DFG (BR 2130/4-1) aims to rectify methodological shortcomings in the memory-modeling literature and shows that signal-detection models are preferred over threshold models because of methodological artifacts.

Research agenda

In close cooperation with Andreas Glöckner, one main focus of my future work is the experimental analysis of suitable models for describing cognitive processes in multi-

attribute decision making. Here, a multitude of models and model classes have been developed in recent years. The model classes or "metaphors" make fundamentally different assumptions about the processes involved, but they are often hard to disentangle empirically. The goal is to develop experimental methods that try to contrast the fundamental assumptions of the metaphors. The methods include the analysis of eye movements during information processing. A DFG project (BR 2130/4-1) aims at analyzing influences of various factors on multi-attribute decisions that are based on memory representations of attribute information.

Publications (since 2007)

Articles in Peer-reviewed Journals

Bröder A., Semantically clustered words are stored with integrated context. Validating a Measurement Model for Source Memory, Storage, and Retrieval in Free Recall, *Zeitschrift für Psychologie*, In Press.

Hilbig B. E., Pohl R. F., Bröder A., Criterion knowledge: A moderator of using the recognition heuristic?, *Journal of Behavioral Decision Making*, In Press.

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Bröder A., Newell B. R., Challenging some common beliefs: Empirical work within the adaptive toolbox metaphor, *Judgment and Decision Making*, vol. 3, pp. 205-214, 2008.

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Book Chapters

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Bröder A., Memory reconstruction, *Encyclopedia of medical decision making*, Kattan M., (Ed.), London, Sage, In Press.

Lectures and Seminar Presentations (since 2007)

2007

A toolbox of strategies? The Psychology of Decision making
Invited lecture at the University of Gent, Belgium
11 May 2007

Carsten Burhop

Summary report

1. Transfer of innovations and patents in Imperial Germany

We have investigated the transfer of innovations within and between firms in Imperial Germany between 1877 and 1913. In a case study, we investigated the emergence of a centralized research laboratory at the pharmaceutical company Merck during the 1890s. The research organization and the relations to outside inventors were investigated. It turned out that nearly all product innovations were acquired from outside inventors using high-incentive profit-sharing contracts, whereas process improvements were made in the central research laboratory by researchers receiving a fixed wage and some incentive pay.

In a comparative study of working contracts of researchers at three firms from the chemical and electrical engineering industries, we show that incentive schemes for researchers were used. In general, incentives were based upon the profit or sales of a specific product. An econometric analysis suggests a positive impact of bonus payments on future research output with a lag of about two years.

Two papers were devoted to the transfer of patents via patent markets and licensing agreements. The first paper is a descriptive analysis of all patent transfers conducted between 1883 and 1913. It turns out that the relative size of the German patent market grew over time, but it was substantially smaller than the relative size of the historical patent market in the United States. Like in the U.S., the early patent market was dominated by individual inventors transferring their patents to firms, whereas the patent market of the early 20th century was dominated by business-to-business transfers. The historical licensing market is analyzed using licensing contracts from seven firms. We use the contracts to test contract-theoretical predictions regarding the optimal contract design. We find evidence that contracts were designed to solve post-contracting moral hazard problems. In particular, innovations requiring an effort of the inventor after sealing the licensing contract were more often profit-sharing agreements.

2. History of corporate governance

This research area deals with the monitoring of delegated managements by proprietors of companies (e.g., shareholders) and the laws and corporate charters influencing this relationship. In particular, we investigate the relationship between legal norms and executive compensation in Germany between 1870 and World War I. We show that boards of managers were already motivated by extremely high performance-based compensation packages during the middle of the 19th century. Considerable

improvements on the corporate-governance regulations concerning the stock corporation law were made in 1884, which led to a significant reduction of remuneration by result. This hints at the fact that the monetary motivation of managers was substituted by the improved possibilities of control by the shareholders. In addition, we can document that a connection between the success of a manager and the probability of his remaining in his post cannot be found until the reform in 1884.

Moreover, we have investigated the difference between legal standards and chartered standards of corporate governance of German banks during the early 1870s. In turned out that standards codified in corporate charters were, on average, even below the weak standards set by corporate law. More specifically, restricting shareholders' voting and monitoring rights decreased the survival probability of firms as well as their market-to-book valuation at the stock market.

Furthermore, we have shown that managerial incentives packages had a positive impact on the productive efficiency of cartelized coal-mining corporations at the turn of the 20th century. Thus, lacking incentives from tight product markets competition can be replaced by high monetary rewards.

3. Historical macroeconomics

We were engaged in a debate about the level of comparative German-British industrial labour productivity at the turn of the 20th century. Our result that German industrial labour productivity was only slightly higher than the British was challenged by a competing paper, claiming a substantial German lead. In our detailed response, we outline that our result is – by and large – correct, but we revised our main result slightly.

In a related paper, we investigate the comparative real income of workers and the unit labour costs in Britain and Germany between 1871 and 1938. We show that real incomes of employees were substantially lower in Germany throughout – in the aggregate economy, in agriculture, and in industry. However, German service sector employees were better remunerated than their British counterparts. Furthermore, we show that aggregate unit labour costs as well as unit labour costs in agriculture and services were substantially higher in Germany. In contrast, industrial unit labour costs were substantially lower in Germany. Thus, we put forward the hypothesis that Germany's rise to industrial power at the turn of the 20th century was based on comparatively low wages.

Research is conducted in cooperation with:

Prof. Dr. Christian Bayer, University of Bonn, Department of Economics
Prof. Stephen Broadberry, PhD, University of Warwick, Department of Economics
Dr. Thorsten Lübbers, Max Planck Institute for Research on Collective Goods

Research is co-funded by: Deutsche Forschungsgemeinschaft

Research Agenda

1. Initital public offerings in Imperial Germany, 1871-1913

Research will focus on stock-market development in Germany between 1870 and World War I. First, we will investigate the relationship between corporate law and activity on the market for IPOs in Germany between 1870 and 1913. Second, we will investigate the structure of the market for IPOs in two different financial systems. To this end, we will compare IPOs in Britain and Germany between 1900 and World War I.

In a related vein, we investigate the size of transaction costs at the Berlin Stock Exchange during the two decades preceding World War I by estimating effective spreads.

2. Transfer of innovations and patents in Imperial Germany

This research will be extended in four dimensions. First, we will conduct a small study investigating the usability of patents as an indicator for innovations. Second, we will evaluate the relationship between financial constraints and innovative activity of joint-stock companies at the turn of the 20th century. Third, we will investigate border effects on technology markets using our patent transfer data and employing gravity equations. Fourth, we are going to investigate the going public of technology-based firms.

3. The credit policy of German banks before and during the 1931 banking crisis

We will evaluate the credit scores allocated by Germany's central bank to a large number of firms to assess the average creditworthiness of German firms between 1910-13 vs. 1924-32. Moreover, we will assess the predictive power of the central bank credit scores by comparing the credit score with bankruptcy or financial distress of the firms. Finally, we will conduct case studies comparing the creditworthiness assessment of specific firms by the central banks and by commercial banks.

Research is conducted in cooperation with:

David Chambers, PhD, University of Cambridge, Judge School of Management
Prof. Dr. Sergey Gelman, Moscow State University, Department of Finance
Sybille Lehmann, PhD, Max Planck Institute for Research on Collective Goods
Prof. Dr. Jochen Streb, University of Hohenheim, Department of Economics
Prof. Dr. Nikolaus Wolf, Warwick University, Department of Economics

Research is co-funded by:

Deutsche Forschungsgemeinschaft
Fritz-Thyssen-Foundation

Publications (since 2007)

Articles in Peer-reviewed Journals

Burhop C., Lübbers T., Incentives and Innovation? R&D Management in Germany's Chemical and Electrical Engineering Industries around 1900, *Explorations in Economic History*, In Press.

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Burhop C., Bayer C., If only I could sack you! Management turnover and performance in large German banks between 1874 and 1913, *Applied Economics Letters*, vol. 16, no. 2, pp. 141-145, 2009.

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Book Chapters

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Burhop C., Banking Crises in Germany: 1873-1974, *Die internationale Finanzkrise: Was an ihr ist neu, was alt? Worauf muss in Zukunft geachtet werden? 31. Symposium des Instituts für bankhistorische Forschung e. V. am 10. Juni 2009 im Hause der Deutschen Bundesbank*, vol. 47, Stuttgart, In Press.

Burhop C., Regionale Beschäftigungsstruktur und Patentierungstätigkeit in Deutschland, 1877-1914, *Innovationsgeschichte*, Walter R., (Ed.), Stuttgart, Steiner, pp. 295-307, 2007.

Preprints

Burhop C., *The Transfer of Patents in Imperial Germany*, issue 2009/26, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

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Broadberry S. N., Burhop C., *Real Wages and Labour Productivity in Britain and Germany, 1871-1938: A Unified Approach to the International Comparison of Living Standards*, issue 2009/18, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Burhop C., *The Underpricing of Initial Public Offerings in Imperial Germany, 1870-1896*, issue 2008/46, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Burhop C., Lübbers T., *Incentives and Innovation? R&D Management in Germany's High-Tech Industries During the Second Industrial Revolution*, issue 2008/38, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Broadberry S. N., Burhop C., *Resolving the Anglo-German Industrial Productivity Puzzle, 1895–1935: A Response to Professor Ritschl*, issue 2008/27, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Burhop C., Lübbers T., *Cartels, managerial incentives, and productive efficiency in German coal mining, 1881-1913*, issue 2008/13, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Bayer C., Burhop C., *Corporate Governance and Incentive Contracts: Historical Evidence from a Legal Reform*, issue 2008/11, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Burhop C., *Pharmaceutical research in Wilhelmine Germany: The case of E. Merck*, issue 2008/03, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Lectures and Seminar presentations (since 2007)

2007

Corporate governance and incentive contracts
ASSA Meeting, Chicago, U.S.A.
6 January 2007

The underpricing of initial public offerings at the Berlin Stock Exchange, 1870-1896
Economic History Society, Durham, U.K.
31 March 2007

The underpricing of initial public offerings at the Berlin Stock Exchange, 1870-1896
BETA CNRS Finanical History Conference, Strasbourg, France
4 May 2007

Cartels and managerial incentives in German coal mining 1881-1913
European Historical Economics Society Meeting, Lund, Sweden
30 June 2007

The market for patents in Imperial Germany, 1877-1913
University of Oxford, U.K.
8 November 2007

The underpricing of initial public offerings at the Berlin Stock Exchange, 1870-1896
Moscow State University, Russia
29 November 2007

2008

The market for patents in Imperial Germany
University of Groningen, The Netherlands
21 February 2008

Corporate governance and the failure of the Leipziger Bank
Ausschuß für Wirtschaftsgeschichte des Vereins für Socialpolitik, Salzburg, Austria
6 March 2008

No need for governance?
Annual meeting Economic History Society, Nottingham, U.K.
29 March 2008

The market for patents in Imperial Germany
Warwick University, U.K.
25 April 2008

Corporate governance and incentive contracts
Tagung des SFB-TR 15, Governance und Effizienz ökonomischer Systeme, Fraueninsel, Germany
27 April 2008

The market for patents in Imperial Germany
Max Planck Institute for the Study of Societies, Cologne, Germany
12 June 2008

Real wages and labour productivity in Britain and Germany, 1871-1938
University of Zurich, Switzerland
18 June 2008

The underpricing of initial public offerings at the Berlin Stock Exchange
6th World Congress of Cliometrics, Edinburgh, U.K.
18 July 2008

Banking crises in Germany, 1873-1974
Institut für bankhistorische Forschung / Landesbank Hessen-Thüringen, Frankfurt a. M., Germany
5 September 2008

The market for patents in Imperial Germany
Annual meeting Economic History Association, New Haven, U.S.A.
13 September 2008

The market for patents in Imperial Germany
Jahrestagung Verein für Socialpolitik, Bayreuth, Germany
25 September 2008

The transfer of patents in Imperial Germany and the impact of patent lawyers
Landesbank Baden-Württemberg, Stuttgart, Germany
9 October 2008

Incentives and innovation?
Tagung des SFB-TR 15, Governance und Effizienz ökonomischer Systeme, Gummersbach, Germany
22 October 2008

Corporate governance and incentive contracts
University of Cologne, Germany
3 November 2008

Real wages and labour productivity in Britain and Germany, 1871-1938
University of Munich, Germany
1 December 2008

2009

The market for patents in Imperial Germany
University of Cologne, Germany
12 January 2009

Putting Versailles into perspective
University of Bonn, Germany
13 January 2009

Real wages and labour productivity in Britain and Germany, 1871-1938
University of Münster, Germany
14 January 2009

The market for patents in Imperial Germany
WHU Otto Beisheim School of Management, Koblenz, Germany
9 February 2009

Real wages and labour productivity in Britain and Germany, 1871-1938
Harvard University, Cambridge, U.S.A.
16 March 2009

Incentives and innovation?
Harvard Business School, Cambridge, U.S.A.
19 March 2009

The historical market for technology licenses
Yale University, New Haven, U.S.A.
30 March 2009

The underpricing of initial public offerings at the Berlin Stock Exchange
Stern School of Business, New York, U.S.A.
1 May 2009

Banking crises in Germany, 1873-1974
Institut für bankhistorische Forschung / Deutsche Bundesbank, Frankfurt a. M., Germany
10 June 2009

The historical market for technology licenses
University of Bochum, Germany
17 June 2009

The underpricing of initial public offerings at the Berlin Stock Exchange
Queen's University Belfast, Ireland
25 June 2009

Stephan Dickert

Summary Report

My main interests are focused on how information is processed in judgment and decision making. A central aspect of my research revolves around the role of affective vs. deliberative information processing in the construction of preferences and values. As part of the Intuitive Experts research group, I investigate affective and emotional determinants of judgments and choice behavior in a variety of domains, including legal and economic decision making. In collaboration with Britta Herbig and Andreas Glöckner, I explore how complexity of information and emotional reactions influence legal judgments of experts and lay people (Herbig, Dickert, Glöckner, Gansen, & Portack, submitted). Our results suggest that experts and lay people use different mental representations of the decision task, and that emotional reactions towards legal cases increase with increasing complexity for non-experts, but decrease for experts. Furthermore, the decision performance of lay people increases when they consult their emotional reactions, whereas this enhancement effect of emotions is not visible for experts. In a different project and in collaboration with Nina Horstmann, I investigate how non-diagnostic, but emotionally salient information influences people's judgment of a defendant's guilt. The underlying theme of these projects is to uncover the extent to which emotions bias information processing and subsequent legal decisions. Another related line of research explores the role of intuitive/affective information processing as a determinant for decision quality in experience-based risky decision making. Using a classic card-gambling paradigm, I contrast the effects of deliberation and intuitive processing on experience-based explicit and implicit knowledge (Dickert & Peters, working paper). In this experience-based learning task, intuitive information processing leads to better decision performance than deliberative processing. Making knowledge explicit during the learning process impairs decision quality and overall learning of the task. Furthermore, this project incorporates individual differences in affective reactivity and process measures to explain variations in decision quality. Of interest is that positive affective reactivity leads to better learning and performance only when information is processed intuitively, whereas a deliberative approach weakens the connection between affect and performance.

A significant part of my scientific work also builds on my dissertation (Dickert, 2008) and focuses on affective determinants of charitable giving. In a series of experiments, I investigated which emotional reactions are conducive to pro-social behavior (Dickert, Sagara, & Slovic, submitted for publication; forthcoming) and the conditions under which these emotions are typically encountered (Dickert & Slovic, 2009). In this line of research, I propose a 2-stage processing model for how decisions to donate to a humanitarian cause are derived. Specifically, while the initial decision to donate anything at all is

related to mood management of the donor, the donation amount is associated to feelings related to empathy. An extension to this work on donations is also a project on how people construct prices in consumer decisions (e.g., the endowment effect) and the extent to which strategic financial decisions are dependent on people's social value orientation and forecasted affective experience (Dickert & Beckenkamp, in progress). A pro-social value orientation typically leads to a higher willingness to cooperate. However, anticipated emotions (i.e., happiness and regret) also reflect the payoff structure differently depending on someone's value orientation. This suggests that these emotions are a part of the psychological costs of inequity – and motivation for inequity aversion – that are taken into account differently by pro-social vs. pro-selfish individuals.

Research Agenda

My research agenda for the next two years is aimed at furthering our understanding of information processing in judgment and decision making relevant to the general goals of the research group Intuitive Experts. Thus, future projects will investigate the roles of automatic intuitive/affective and deliberative components in the selection, weighting, and integration of information. When presented with several different and possibly divergent pieces of information (for example, as is common in legal cases), decision makers can use a variety of strategies to construct mental representations of the decision task. These representations are often seen as a key to understanding the process by which judgments and decisions are made. By making use of different complimentary methodologies, including reaction times, eye-tracking, and self-report questionnaires, my research explores how mental representations of task characteristics influence choice behavior. Of specific interest are the determinants for emotional responses in choice situations, which may act as moderators for how information is assimilated and integrated, and their role in the quality and accuracy of decisions. These basic mechanisms are evaluated in contexts that include judgments and economic/financial as well as pro-social decision making. As part of my research plan for charitable giving, I will investigate the extent to which people use consistency-maximizing strategies to dissolve emotional dissonance in relation to pro-social behavior. This is especially pertinent when considering the motivations to engage in single vs. repeated donations. The underlying mechanisms that drive repeated donations (as in sponsoring somebody for a specific time) are possibly different from those that motivate single donations (i.e., to reduce dissonance). My line of research in the next two years will also further explore the role of automatic information processing and affective reactivity in experience-based vs. strategic decision making. In this work, I focus on the extent to which affective components influence automatic processes in decision making, how these affective components are best measured by self-report assessment (Dickert, in press), and the roles of cognitive vs. affective processes in the accuracy, quality, and outcome of decisions. An example for this line of research is the exploration of how emotions are related to situational aspects (e.g., the specific decision task) as well as personality factors (e.g., affective reactivity and value orientation)

in cooperative economic games, the endowment effect, and individual strategies in experience-based vs. descriptive decision making.

Honours / Grants

2007 Graduate Student Research Award, University of Oregon

Publications (since 2007)

Articles in Peer-reviewed Journals

Dickert S., Slovic P., Attentional mechanisms in the generation of sympathy, *Judgment and Decision Making*, vol. 4, no. 4, pp. 297-306, 2009.

Book Chapters

Dickert S., Measuring affect and emotions in decision making: The affective side of intuitive information processing, *Tracing intuition: Recent methods in measuring intuitive and deliberative processes,* Glöckner A., Witteman C. L. M., (Eds.), In Press.

Dickert S., Sagara N., Slovic P., Affective motivations to help others: A two-stage model of donation decisions, *Experimental Approaches to the Study of Charitable Giving*, Oppenheimer D. M., Olivola C. Y., (Eds.), In Press.

Malle B. F., Dickert S., Values, *The Encyclopedia of Social Psychology*, Baumeister R., Vohs K., (Eds.), Thousand Oaks, CA, Sage, pp. 1011-1014, 2007.

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Herbig B., Dickert S., Glöckner A., Gansen, C., Portack R., *Decision making and expertise in law – Determinants of decision quality in legal case studies*, Bonn, Max Planck Institute for Research on Collective Goods, In Press.

Glöckner A., Dickert S., *Base-rate Respect by Intuition: Approximating Rational Choices in Base-rate Tasks with Multiple Cues*, issue 2008/49, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Dissertation

Dickert S., Two Routes to the Perception of Need: The role of affective and deliberative information processing in pro-social behavior. University of Oregon, OR, 2008.

Lectures and Seminar Presentations (since 2007)

2008

Two Routes to the Perception of Need: The role of affective and deliberative information processing in pro-social behavior
Paper presented at the Society of Personality and Social Psychology, Albuquerque, New Mexico, U.S.A.
February 2008

Die Erfassung intuitiver und deliberater Prozesse bei Entscheidungen unter Nutzung verhaltens- und neurowissenschaftlicher Methoden
[Surveying intuitive and deliberate Decision Processes, using Methods of Behavioral and Neuroscience]
Discussant, 50. Tagung experimentell arbeitender Psychologen
March 2008

2009

Wahrnehmung und affective Prozesse: Ein Beitrag zur Empathieforschung und pro-sozialem Verhalten
[Perception and Affective Processes: A Contribution to Empathy Research and Pro-social Behavior]
51. Tagung experimentell arbeitender Psychologen
March 2009

Die Integration von Informationen im Entscheidungsprozess
[Information Integration in Decision Processes]
Discussant, 51. Tagung experimentell arbeitender Psychologen
March 2009

Social Values and affect as determinants of cooperation in prisoner dilemma games
Summer School in Psychological Economics and Economic Psychology, Trento, Italy
June 2009

Anticipated regret and sympathy as affective antecedents to helping others: When feelings facilitate pro-social behavior
Paper presented at the European Congress on Psychology, Oslo, Norway
July 2009

Mood management and Sympathy as predictors of Donations
Paper presented at the conference for Subjective Probability, Utility and Decision Making
Rovereto, Italy
August 2009

Der Einfluss affektiver Informationen auf Urteile und Wahrscheinlichkeits-einschätzungen in komplexen rechtlichen Fällen
[The Influence of Affective Information on Verdicts and Probability Estimates in Complex Legal Cases]
Fachgruppentagung Rechtspsychologie der Deutschen Gesellschaft für Psychologie
August 2009

Jieyao Ding (IMPRS)

Summary Report

Before joining the Max Planck Institute, I was research assistant in Herbert A. Simon's & Reinhard Selten's Behavioral Decision Research Lab, Southwest Jiaotong University, P. R. China (2007-2008). During this period, I worked with many foreign professors and researchers who were working on experimental economics, and I learnt experimental design, experimental data analysis and so on. I also completed a Masters thesis in experimental economics. In this thesis, I used different elicitation methods to study individual risk preferences, individual time preferences and the relationship between these. Two methods were used in the experiments: one of them is "choosing", which means that participants face two given options and have to choose one of them; the other one is "matching", which means that participants have to state their indifference points between a risky, or delayed, and a certain, or immediate, payoff, respectively. The experimental results showed that, first, the aggregate risk preference reverses when we switch preference elicitation methods from matching to choosing. This can be explained by the principle of scale compatibility. Subjects who give monetary matching responses to a single lottery tend to focus more on the payoff than participants who make choices between two options, where participants tend to focus more on the probability. Second, the aggregate time preference reverses when the matching preference-eliciting method is replaced by the choosing method. The underlying reason needs further research. Third, there is a positive relationship between risk and time delay, that is, the lower the probability is, the longer the participants can accept time delay. This relationship is stable for all stake conditions in my design.

At the same time, I have been working on the Chinese B2C online market. In one project, my co-author Prof. FuHao (professor in Southwest Jiaotong University) and I used an EEG test to distinguish the customers' reaction to the design of an online market webpage in order to see which factors of webpage design affect potential consumers' purchasing decisions. In another project, we modeled the two kinds of online retailers' price competition on B2C market.

Now, I am a PhD student and part of the International Max Planck Research School on Adapting Behavior in a Fundamentally Uncertain World (IMPRS-Uncertainty).

In the past year, my research mainly focused on a cross-culture comparison between the German and Chinese cultures, and on whether intention matters when we make punishment decisions. The literature has confirmed that for Western subjects, intention is an important consideration when making punishment decisions. However, this is not the case with the Chinese. The result was that the Chinese severely punished others who had no bad intention, while the Germans did not, which means when making punishment

decisions, intention matters for Germans, but not for Chinese. Recently, we designed a new experiment to see the underlying reason that the Chinese punished even when others had no bad intentions.

Research Agenda

While my work in the past year has mainly focused on finishing the earlier experiments, I will work more on the other ongoing projects in the next two years. One of my projects is comparing the deterrence effect of monetary punishment and imprison. It has been argued that deterrence is ineffective at achieving its ultimate goal. Critics of specific deterrence argue that offenders do not pause to consider the possible punishment for a crime they are about to commit, especially in the heat of the moment, and when drugs or alcohol are involved. It is not that easy to distinguish the deterrence effect of different sanction systems in the field; therefore, I will experimentally study which system is more effective. I am also interested in the incentive effect of different salary structures. There are many kinds of salary structures in the real world. And it is a hot topic to discuss which kind of salary structure can make employers work more. I will use experiments to test this. Meanwhile, I am working on public-goods game with partial contribution as its dominant strategy. In the past, people applied different punishment systems to increase contribution to a linear public good. However, when partial contribution is a dominant strategy, the whole story is changed. I will experimentally test which sanction system can increase contribution under such a condition. In addition, I will try to make some potential cooperation opportunity into joint projects, and I hope I can cooperate more with other members in the institute.

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Asia-Pacific Regional Meeting of Economic Science Association, Osaka, Japan
10 February 2007

Christoph Engel

Summary Report

Hindsight is easier than foresight. In hindsight it seems obvious that the director of an institute for behavioral research should run experiments. Yet if this director is a lawyer, and if this institute is located in Germany, the obvious may be less easy to see.

There is certainly no lack of interest in the discipline, in my country. Over the last two years, I was invited twice to speak about the behavioral underpinnings of antitrust (Engel 2008, 2009). Others wanted me to open a conference on a behavioral approach to copyright (Engel Kurschilgen 2009). I do still have to deliver contributions on the behavioral foundations of corporate governance (ZGR), and on the evolution of law (for a conference in the Netherlands). Yet most of behavioral law and economics, even in the US, works with foreign evidence. Lawyers read themselves into the pertinent experimental economics or psychology literature, and they relate the major findings to the definition of legal problems, or they use them for critically assessing the effect of legal intervention. As the burgeoning literature demonstrates, this is a worthwhile exercise. In the past, I have made quite a few contributions to this literature, most intensely in my book on generating predictability. And I continue to do so, for instance in a paper published in the University of Vermont Law Review.

This paper starts from one of the few real differences between US and continental European law. In the US, standards of proof discriminate between classes of law suits. In criminal law, the standard is "beyond a reasonable doubt", whereas in private law normally the standard is "preponderance of the evidence". In criminal law, the legal order goes a long way to avoid false convictions, even if this means that many guilty defendants are acquitted. In private law, US lawyers want to stay neutral between the plaintiff and the defendant. The plaintiff wins if only, in light of the evidence, it is more probable than not that she is right. Continental law is not only stricter; it conceptualises proof differently. Instead of relying on (objective) probability theory, continental law asks for the *intime conviction* of the judge.

Relying on the work of the psychologists at the Institute, in this paper I explain why the continental European approach is closer to how judges and jury members really make decisions. In a typical court case, until the end the evidence remains incomplete. Worse still, legal problems are hardly ever well-defined. Since courts decide on people's lives, the legal order is not willing to narrow down problems such that they become rigorously tractable. In principle, the human mind is well-equipped to solve ill-defined problems. It does so by way of intuition. The psychologists at the institute have developed and tested a model of intuition that puts its essentially non-linear character into relief. If one interprets the mechanism in a teleological way, one may say that it forces a decision, even if the

information is clearly incomplete. The mechanism reaches this goal by progressively transforming the input until the decision criterion is met. The best way of expressing this criterion is the overall level of coherence, which translates itself into a level of confidence. The decision criterion of continental law thus directly matches mental mechanism.

In terms of methodology, in this kind of paper one makes a contribution to the legal discourse by surveying the pertinent behavioral literature, and relating its results to the legal research question. My meta-study on oligopoly experiments went one step further (Engel 2007). It still uses foreign evidence. But it makes these findings comparable by generating two indices: for the proportional deviation from the market clearing price or quantity, and for the proportional deviation from the Nash prediction. Over the last two years, this database has turned out a very useful tool. In two papers, I was able to use findings from the meta-study to generate predictions for experiments (Engel Normann 2009, Engel Rockenbach 2009). In three papers, a reanalysis of this data and a refinement of the statistical analysis yielded new insights (Engel 2007, 2008, 2009).

At the end of the day, foreign evidence only gets you so far. The wholly interdisciplinary composition of my group, and the presence of two well-known experimentalists as visiting professors, provided the framework I used when I embarked on my own experiments. All my experimental papers are joint work. Hans-Theo Normann, Bernd Irlenbusch, Bettina Rockenbach, Sebastian Kube, Andreas Nicklisch, Andreas Glöckner, Michael Kurschilgen and Lilia Zhurakhovska joined me in these endeavours. The experiment with Andreas Glöckner is in the spirit of a psychology experiment, working with vignettes. The remaining experiments follow the experimental economics tradition of a highly decontextualised setting, with incentivized choices as the dependent variables.

Quite often, the legal question is no different from what an economist or a psychologist would also want to know. This often holds if the experiment sheds light on problem definition, like the one with Bettina Rockenbach on the provision of public goods that give outsiders a windfall profit – or harm them, for that matter. Legal illustrations of the former are equatorial countries preserving their ecosphere, with a side benefit on the preservation of climate and on biodiversity. The prime illustration of the latter is oligopoly. Collusion is a dilemma for cartelists, since each cartel member is individually best off if others are faithful to the cartel, while she defects. If cartelists effectively overcome their dilemma, this inflicts harm on the opposite market side. Lawyers and economists are interested in the same question: does the social problem become harder if the internal dilemma has external side effects? Does this increase or decrease the need for legal intervention?

In other instances, the problem can be expressed in economic language, can possibly even be formally modelled. But it would not be natural for economists to study the issue. An example is the joint project with Michael Kurschilgen. The German statute on copyright gives authors a right to claim additional remuneration if, ex post, their work turns out to be a huge commercial success. Success and failure are distributed very unevenly in media markets. We hypothesized that the statutory provision might react to

the fact that, in such a context, fairness ex ante is assessed very differently from fairness ex post. To test this, we designed an ultimatum game where the proposer (the publishing house) and the responder (the author) have to decide without knowing whether the object of their trade has a high or a low value. After the value is realised by a random draw, they have a chance to punish each other. In the treatment, if the commodity has high value, the original ultimatum game is repeated, to capture renegotiations. If renegotiations fail, the price is determined by a third player (the court). Once the facts are thus stylised, they lend themselves to game-theoretic modeling, which gives us predictions derived from theory.

In yet other instances, legal practice invites a research question that is of interest for both disciplines, albeit for different reasons. An example of this is the joint project with Heike Hennig-Schmidt, Bernd Irlenbusch and Sebastian Kube. As pointed out in greater detail in the summary report of the work of the group, punishment features prominently in the experimental literature on public goods. Now in criminal law practice, first offenders are normally not directly incarcerated. Instead, they are usually put on probation. For experimental economics, it is interesting to learn whether conditional punishment is as effective as unconditional punishment. Since punishment is costly both for the punisher and for the punishee, there might be a welfare gain. For the law, the experiment is interesting because one gets rid of the identification problem that plagued work with field data: those put on probation are less likely to recidivate in the first place. Moreover, in the public-goods experiment, contribution levels provide a (quasi-) continuous dependent variable, whereas in the field, one practically only has the binary variable of recidivism: yes or no. In the experiment, one is therefore able to say *how strongly* sensitivity to probation differs from sensitivity to directly effective punishment.

In a similar vein, the legal and the psychological research questions may complement each other. This is illustrated by one of the joint projects with Andreas Glöckner. From the law side, this is another contribution to our line of research on legal decision making. In the courtroom, within limits of course, the prosecutor and the counsel for the defense are allowed to be partisan. We wanted to know how such an assigned role changes perception and influences judgement. For comparability, we used the same vignettes, developed by Dan Simon, that we had already used for our standard of proof experiment. Yet it would have been odd in terms of external validity, had we subsequently asked our mock prosecutors and defense counsels to decide the case themselves. Instead, we asked them to predict how a real court, whom we had approached with our vignettes, had decided. This manipulation turned out to be of equal interest from a perspective of cognitive psychology. How does intuition go about prediction tasks? It turned out that the difference between parallel constraint satisfaction in a decision and in a prediction task is pronounced.

Research Agenda

Over the next years, I intend to continue with experimental law and economics. A few of the projects under way have already been mentioned in the main report. Together with Michael Kurschilgen, I am working on a design that uses a public-goods experiment with punishment and counterpunishment to test the conditions under which customary law emerges. Together with Lilia Zhurakhovska, I am extending the greed and fear experiment to a situation with negative externalities, and to a setting where successful cooperation is sanctioned with positive probability. Both manipulations are meant to capture that collusion in an oligopoly is embedded into a larger social context. Together with Markus Englerth and two colleagues from the university, we are testing prisoners on the same design. This will be my first experiment outside the university lab. Together with Andreas Glöckner, I plan to continue our line of research on legal decision making. A natural next step would be to expose experimental mock jury members to biased pleadings. (How well) are they able to resist a patent attempt to manipulate them? Do conflicting pleadings neutralise each other? How well is intuition, in other words, equipped to cope with the adversarial system?

Honours

I have been elected to be a member of the board of the Deutsche Staatsrechtslehrerver-einigung for the years 2008 – 2009.

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Fairness Ex Ante and Ex Post. The Benefits of Renegotiation in Media Markets (with Michael Kurschilgen)

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On Probation – An Experimental Analysis (with Heike Hennig-Schmidt, Bernd Irlenbusch and Sebastian Kube)

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24 January 2007

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22 October 2007

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27 November 2007

Institutions for Intuitive Man
Workshop with Bruno Frey and Dieter Frey, University of Zurich, Switzerland
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2008

Governance by Law in an Ageing Society
MPI for Demographic Research, Rostock, Germany
07 February 2008

Automaticity – Why is it a Lawyer's Business?
Automaticity Conference, University of Erfurt, Germany
28 February – 02 March 2008

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25 April 2008

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08 – 12 May 2008

Comment on Eric Posner "Erga Omnes Norms, Institutionalization and Constitutionalism in International Law"
Seminar on The New Institutional Economics (JITE 2008), Lübbenau, Germany
12 – 14 June 2008

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30 June 2008

Die Bedeutung der Verhaltensökonomie für das Kartellrecht
[The Relevance of Behavioral Economics for Antitrust]
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14 – 17 October 2008

Ist die Unschuldsvermutung nur eine Illusion?
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Symposium 70. Geburtstag Prof. Streit, MPI for Economics, Jena, Germany
26 February 2009

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Conference "Foundations and Limitations of an Economic Approach to Competition Law", MPI for Intellectual Property, Competition and Tax Law, Munich, Germany
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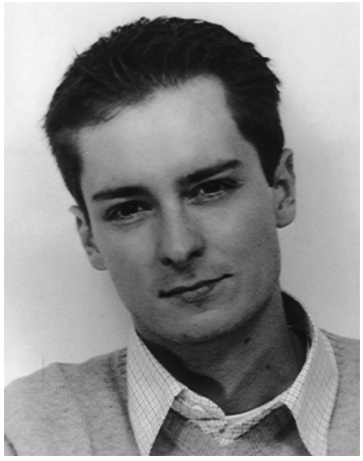
Bonner Juristenforum, Universitätsclub, Bonn, Germany
24 November 2009

Tacit Collusion – The Neglected Experimental Evidence
Nachwuchskreis Bundeskartellamt, Bonn, Germany
20 November 2009

Recht im Labor: Der Bestsellerparagraph Urhebergesetz
[Legal Studies in the Lab: the Bestseller Paragraph "Copyright Act"]
Bonner Colloquium, Bonn, Germany
10 December 2009



Markus Englerth

Summary Report

Over the last 2 years my research has focused primarily on criminal law and criminology. Chief among my projects was my doctoral dissertation, which is to be submitted this year. It aims to lay the theoretical groundwork for an interdisciplinary cooperation between criminology and behavioral economics. I submit that while rational choice economists have contributed significantly to the understanding of criminal behavior, even more is to be expected from a behavioral account of the criminal choice. Such an account not only delivers more accurate predictions. It is also more compatible with the traditional sociology of deviant behavior.

Additionally I have contributed a chapter for a forthcoming text book on economic methods in law edited by my colleagues Niels Petersen and Emanuel Towfigh. My text sketches the evolution of Behavioral Law and Economics and its most important concepts, using examples from criminal law and criminal procedure.

Finally, in late 2008 I published an article on the U.S. Supreme Court's controversial *Boumediene* decision, which grants detainees at Guantánamo Bay the writ of habeas corpus. I analyse the ruling in the context of previous decisions regarding the detention camp, concluding that its reasoning is overly broad and undifferentiated, which will cause practical problems in the future. I identify the concept of a global "war on terror" as the main source of that confusion and suggest clearly distinguishing between 'genuine' battlefield cases, which will be dealt with through the law of war, and other cases, which can be handled by the criminal justice system.

Research Agenda

I hope to complete my dissertation this fall and will subsequently start my mandatory clerkship.

In the remaining time I hope to put the theoretical framework I have developed to test. Together with Professor Engel and two economists affiliated with the University of Shanghai, I will conduct a series of experiments designed to test the rational choice hypothesis that criminals are "just like everyone else". We will play a prisoner's dilemma game with convicted criminals and a reference group to find out whether criminals differ in the degree of cooperation. We will also run some additional tests to identify the motivation (greed or fear) underlying a potential difference in behavior.

I have also committed myself to writing an article for an anthology on criminal law and economics edited by Professor Alon Harel of Hebrew University. The text will deal with the old concept of "positive general prevention", which has been called a bedrock of German criminal law science. Making use of several insights from behavioral economics, I will try to provide this rather lofty concept with an empirical grounding.

Publications (since 2007)

Articles in Peer-reviewed Journals

Englerth M., Quo vadis, Guantánamo? Reflections on the U.S. Supreme Court's Boumediene Decision, *European Journal of Crime, Criminal Law & Criminal Justice*, pp. 397-432, 2008.

Books

Recht und Verhalten. Beiträge zu Behavorial Law and Economics, Engel C., Englerth M., Lüdemann J., Spiecker gen. Döhmann I. (Eds.), Tübingen, Mohr Siebeck, pp. 414, 2007.

Book Chapters

Englerth M., Die verhaltensökonomische Analyse des Rechts – eine Einführung mit strafrechtlichen Beispielen, *Ökonomische Methoden im Recht – Eine Einführung für Juristen*, Petersen N., Towfigh E. (Eds.), In Press.

Englerth M., Vom Wert des Rauchens und der Rückkehr der Idioten. Paternalismus als Antwort auf beschränkte Rationalität?, *Recht und Verhalten*, T, Mohr Siebeck, pp. 231-258, 2007.

Englerth M., Behavioral Law and Economics – eine kritische Einführung, *Recht und Verhalten*, Tübingen, Mohr Siebeck, pp. 60-130, 2007.

Lectures and Seminar Presentations (since 2007)

Der rationale Verbrecher – Anmerkungen zur ökonomischen Theorie der Kriminalität
Ferienakademie "Verbrechen und Strafe" des Cusanuswerks, Undorf, Germany
August 2007

Sven Fischer

Summary Report

My research during the last two years can broadly be divided in two main categories: behavioral finance and other regarding preferences. Most projects I mention in this section will be finished and submitted before the end of October this year. Other projects I already started to work on, but most likely will not be able to finish this year, are listed in the subsequent section.

In "Do People Fall for the Gambler's Fallacy in Markets?", I experimentally test whether market feedback in the form of information on the median decision of other subjects in the previous round suffices to help subjects to unlearn the Gambler's fallacy, most of them fall prey to. Here, the Gambler's fallacy describes the wrong belief that a sequence of independent and identically distributed random draws is self correcting, i.e., "mean reversing". While feedback significantly reduces the occurrence of wrong beliefs, it does not suffice to crowd out the Gambler's fallacy completely.

In a paper I co-authored together with Werner Güth and Christoph Köhler ("Effects of Profitable Downsizing on Collective Bargaining"), we experimentally tested how acceptance thresholds react to the decision of a proposer to exclude one of two receivers from further participation, or on the decision not to do so despite strong monetary incentives. What we found was that the decision to exclude one subject results in a polarization of acceptance behavior of the remaining responder. However, there is no overall change in the average size of the acceptance threshold. Furthermore, the decision not to exclude one subject was not reciprocated. The results of the paper inspired a new project I am co-authoring together with Werner Güth, which looks deeper into the interplay between direct and indirect reciprocity ("Direct and Indirect Reciprocity in Bargaining", invited for revision and resubmission to the *Journal of Economic Psychology*).

In a recent project together with Eva Maria Steiger, we experimentally tested effects of wage discrimination of symmetric, i.e., equally productive workers, on individual working efforts. In a variation of a principal-agent-game outlined in a theoretical paper by Eyal Winter (*American Economic Review,* 2004), we compared treatments in which wage discrimination is observable with others in which this is not possible. The design makes wage discrimination of symmetric agents optimal for the principal in the sense that it is the cheapest wage mechanism which in equilibrium guarantees full effort by all agents. Our design allows separating effects of (observability of) wage discrimination on individual efforts and on the decision by the principal to discriminate. We find that observable discrimination initially induces much lower effort choices among agents and that if discrimination is observable, principals shy away from doing so. Over the course of the

experiment, however, these effects die down and become insignificant, indicating strong learning effects.

Research Agenda

Behavioral Finance

I am still co-authoring a long-term project on financial contagion together with Antonio Guarino, Marco Cipriani and Giovanni Guazzarotti. We experimentally test whether informational channels of financial contagion, as suggested by King and Wadhwani (*Review of Financial Studies*, 1990), can be replicated in a controlled laboratory environment. Unfortunately, this project was repeatedly delayed due to technical problems. Depending on its progress in the following months, research on other channels of financial contagion may follow (correlated liquidity shocks and portfolio adjustment effects as modelled, e.g., in Kodres and Pritsker (*The Journal of Finance*, 2003).

I also intend to continue my research on the relevance of the Gambler's fallacy for market interaction. So far, financial constraints limited my experimental research to a stylized individual decision making experiment. A final conclusion with respect to the initial research question, however, can only be made if the experiment actually replicates market interaction, something I still intend to do in the future.

Other Regarding Preferences

In a project together with Andreas Nicklisch from the institute, we want to test whether group behavior is more "rational" or, more specifically, guided by more selfish preferences due to a crowding-out effect of other regarding preferences of the individual group members. The general idea is that if decisions are made by majority rule, some group members "hide" behind the majority and stop feeling responsible for the utility of others.

In a more general line of research, I intend to continue working on other regarding preferences in general. I wish to find a proper characterization of other regarding preferences in situations in which more than two parties are involved, and to what extent such preferences also apply to monotonic transformations of private information payoffs in order to test their relevance in utility rather than mere payoffs.

Conditional Cooperation

From a previous pilot study employing Fischbacher et al.'s (*Economics Letters*, 2001) method to elicit conditional willingness to cooperate in a public-good game, I have reasons to assume that preferences to cooperate crucially depend on beliefs concerning the preferences and not the mere intended contribution levels of other subjects. More specifically, norms like conformity may drive individuals to adjust their own conditional contribution schedules according to the conditional behavior they observe of others. Let us assume, for example, that a subject believes that everyone else is a conditional coop-

erator and due to this belief also submits a conditional contribution schedule. If now, however, the subject learns that everyone else is a free-rider, he may also want to change his contribution schedule to that of a free-rider. Clearly, this has no effect on his payoffs. However, previous results indicate that this is actually the case. I plan to run a set of experiments controlling feedback about other subjects' conditional contribution schedules. Furthermore, I will measure individual willingness to pay for changes in one's own conditional contribution schedule.

Industrial Organization / Law and Economics

Recently I started work on a law and economics project together with Werner Güth and Christoph Engel on the impact of no-compete clauses on the hold-up problem inherent in human capital investment.

Publications (since 2007)

Articles in Peer-reviewed Journals

Fischer S., Nicklisch A., Ex Interim Voting: An Experimental study of referendums for public good provision, *Journal of Institutional and Theoretical Economics*, vol. 163, no. 1, pp. 56-74, 2007.

Fischer S., Güth W., Pull K., Is there As-if Bargaining?, *Journal of Socio-Economics*, vol. 36, no. 4, pp. 546-560, 2007.

Fischer S., Güth W., Pull K., Evolution in imperfect commitment bargaining – strategic versus ignorant types, *Metroeconomica*, vol. 58, no. 2, pp. 299-309, 2007.

Book Chapters

Fischer S., Güth W., Köhler C., Effects of Profitable Downsizing on Collective Bargaining, *Experimentelle Wirtschaftsforschung*, vol. 38, Tübingen, Mohr Siebeck, pp. 223-248, 2009.

Working Papers (available in several discussion paper series)

Direct and Indirect Reciprocity in Bargaining (together with Werner Güth), 2009. Invited for revision and resubmission to the *Journal of Economic Psychology*.

Do People Fall for the Gambler's Fallacy in Markets? 2009.

Pay Secrecy: Avoiding Negative Reciprocity from Discriminated Workers? (with Eva Maria Steiger) 2009.

Stated Social Attitudes and Experimental Behavior – A Comparison with a Representative Sample (with Christoph Köhler & Olaf Struck) *Arbeitspapier des SFB 580*, 2007.

Lectures and Seminar Presentations (since 2007)

Ex Interim Voting in Public-Good Provision
Spring Meeting of Young Economists, Hamburg, Germany
May, 2007

Effects of Profitable Downsizing on Collective Bargaining
Jahrestagung der Gesellschaft für Experimentelle Wirtschaftsforschung
Goslar, Germany
April, 2007

Do People Fall for the Gambler's Fallacy in Markets?
Meeting of the Asia-Pacific Economic Science Association, Haifa, Israel
March, 2009

Alia Gizatulina

Summary Report

In the last two years, I conducted research in two different areas:

A. I have been working on a theoretical model clarifying issues of emergence of third-party contract enforcement institutions (e.g., official legal system or private mediators). These institutions possess features of an (excludable) public good, as on the one hand they are likely to require an up-front investment into capacity and, on the other hand, their presence provides security in equilibrium in a non-rival manner. Consequently, in this project I study how a population of traders could collect resources in order to cover the fixed cost of an enforcement institution, such that if collected resources fall short the threshold which is necessary for emergence of an efficient institution, traders yet have an opportunity to enforce their trades via some imperfect governance system. In my case, "imperfection" is partiality of the system, i.e., it differentiates trading agents and only those who have more resources (agents are heterogeneous in resource endowments) are able to punish their counterparties for reneging on a contract. The analysis demonstrates the following: (i) Even if agents do not collect enough resources, i.e., only the asymmetric contract enforcement institution is available to everyone, its presence is still beneficial to society, compared to no governance at all. However, the level of cheating is always non-negative under asymmetric governance, whereas it is easily zero under symmetric governance. (ii) There exists an equilibrium of the contribution game where all agents, including the most resourceful ones, who prefer that only the asymmetric governance mode is available to everyone, contribute to the costs of the efficient symmetric system, provided that the latter excludes non-contributors from punishing for cheating in their trades with the contributors. (iii) There is a multiplicity of equilibria in the contribution game, and this may explain the persistence of inefficient contract enforcement systems.

B. The second part of my research activity focused on issues of implementation of social goals under uncertainty about beliefs that agents may have. Most of the mechanism design literature studies implementation issues in environments where the mechanism designer and agents are certain about beliefs that everyone possesses about the state of nature. Only agents' payoffs from a given allocation are taken to be uncertain. As it seems not to be that realistic, several recent papers have been relaxing this strong assumption, and this is where Martin Hellwig and I have contributed as well.

(i) In the first paper, named "Payoffs Can be Inferred from Beliefs, Generically, When Beliefs are Conditioned on Information", we demonstrate that when agents share a common prior about the underlying state of payoff-relevant, fundamental uncertainty, and thus, following Aumann's view (*Econometrica*, 1987), their heterogeneity in beliefs is

due to heterogeneity in information, agents' beliefs are fully informative about the information on which they are conditioned. This result holds true in a large class of economic environments. This, in turn, has an implication that in a large class of economic environments, any social objective could be implemented in an incentive-compatible way by means of a mechanism based on lotteries. This result is in opposition to the conclusions of Neeman (*JET*, 2004) and Heifetz and Neeman (*Econometrica*, 2006). The reason for this is that we do not impose an ad-hoc structure on belief hierarchies as they do, as we treat beliefs as being endogenous, derived by agents from a common prior given their information sets.

(ii) In the second paper, named "Details Behind Belief Hierarchies Matter", we demonstrate that implementation results for a given set of hierarchies of beliefs about some space of fundamental uncertainty may vary as we vary a model that is used to represent this set of hierarchies. We consider sets of belief hierarchies from the construction of Mertens-Zamir (*IJGT*, 1985) where a modeller specifies some underlying space of fundamental uncertainty, agents' beliefs about it, agents' beliefs about beliefs about it, etc. The issue with this construction is that the same belief hierarchies could be represented by different models of, for example, information-generating processes. Consequently, we show that for sets of belief hierarchies à la Mertens-Zamir, there exist social choice functions which could or could not be implemented, depending on which model we pick to represent these sets of belief hierarchies. This implies that some of the implementation impossibility results documented in the previous literature employing the Mertens-Zamir construction are non-robust; they are valid only for their abstract type spaces, but not for more detailed models with the same hierarchies.

(iii) In another paper, named "Informational Smallness and the Relevance of Private Information in Mechanism Design", we show that even if agents' beliefs about the state of nature do not perfectly reveal their own information, including information about their payoff types, there is still a possibility to extract almost the entire agents' surplus, provided that the aggregate of information of all but one agent is a sufficiently good predictor of information of this agent. In other terms, almost full surplus extraction could be achieved despite failure of lottery mechanisms if the information of each agent could be inferred from the information of the rest of the society. This result stands in contrast to the result of Neeman (*JET*, 2004). The reason for this is that in his model, agents' heterogeneity in beliefs is not due to their heterogeneity in information, and hence an increase of the number of agents in economy cannot lead to increases in aggregate information, as happens in the framework that we adopt.

Research Agenda

In the medium term, I plan to concentrate my research on the following three subjects, all unified by the theme of agents' heterogeneity in privately-known beliefs.

1. One is to continue exploring what implementation results are in environments where agents have heterogeneous beliefs. For example, it is still an open question how one could achieve models-invariant, robust predictions for implementation problems, i.e., how one could mitigate the issue from our paper in (ii). We plan to verify two approaches to this issue. The first is to fix a solution concept and then search for an appropriate construction of belief hierarchies, which would provide details on invariant predictions and which would be sufficiently rich to encompass all strategically relevant variables (while being sufficiently coarse and not over-burdened with details irrelevant to the implementation outcomes). The second is to fix the type space – the underlying fundamental uncertainty and belief hierarchies about it – and to search for a solution concept which would also provide results invariant with regard to the details of models that maybe used to represent them.

2. I am also interested in conducting research on the impact of higher-order beliefs on the sets of rationalizable strategies in games. Specifically, I am interested whether it is possible to parameterize infinite belief hierarchies in a meaningful way and then to check whether one could extend the literature on monotone comparative statics under standard uncertainty (e.g., Authey, *QJE*, 2002) to the cases where there is uncertainty about higher-order uncertainty as well. As a first step in this direction, I plan to check whether any results could be achieved in aggregate games (including, e.g., potential games). Non-cooperative public goods provision games, Cournot competition or coordination games are such games. These games are a good starting point, as one should care only about agents' aggregate beliefs, i.e., each agent's beliefs about an aggregate of actions and types of others, rather than keeping track of his beliefs about remaining agents separately. This could largely simplify the analysis. As applications are vast, it seems to be beneficial to obtain tools for getting predictions about changes in rationalizable strategies as we vary details of higher-order uncertainty in these games.

3. Additionally I am interested in the issue of optimal design of financial markets from a general mechanism design perspective. The basic aim of this research is to verify whether there exist financial instruments that would maximize agents' welfare by maximizing, on the one hand, their expected gains from speculative betting on the state of fundamentals tomorrow and, on the other hand, by providing correct incentives for their own actions today (which, when aggregated, affect fundamentals tomorrow). This research is motivated by the recent financial crisis and is related to the results of the paper by Eliaz-Spiegler (*Econometrica*, 2007).

Publications (since 2007)

Preprints

Gizatulina A., Hellwig M., *Informational Smallness and the Scope for Limiting Information Rents*, issue 2009/28, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Working papers

Endogenous Contract Enforcement Institutions

Payoffs Can be Inferred From Beliefs, Generically, When Beliefs are Conditioned on Information (joint with Martin Hellwig)

Details Behind Belief Hierarchies Matter (joint with Martin Hellwig)

Lectures and Seminar Presentations (since 2007)

Endogenous Contract Enforcement Institutions
American Economic Association meeting, New Orleans, U.S.A.
January 2008

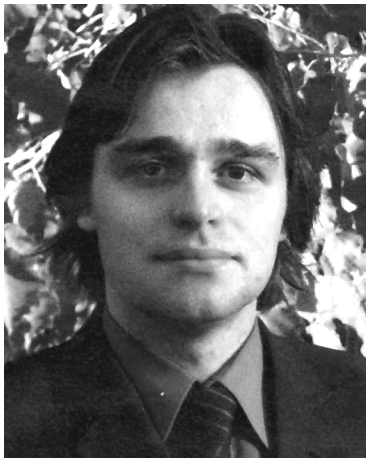
Private Beliefs and Implementation of Efficient Decision Rules
Econometric Society European Meeting, Milan, Italy
August 2008

Private Beliefs and Implementation of Efficient Decision Rules
Doctoral Students Seminar, University of Mannheim, Germany
October 2008

Details Behind Belief Hierarchies Matter
Public Economic Theory Meeting 2009, Galway, Ireland
June 2009

Payoffs Can be Inferred From Beliefs, Generically, When Beliefs are Conditioned on Information
Workshop "Information and Dynamic Mechanism Design", Bonn, Germany
June 2009

Payoffs Can be Inferred From Beliefs, Generically, When Beliefs are Conditioned on Information
Econometric Society European Meeting, Barcelona, Spain
August 2009



Andreas Glöckner

Summary Report

Overview

In my research, I investigate individuals' decision making processes. I am particularly interested in the complex interplay between automatic-intuitive and deliberate processes in judgment and decision making and the influence of different levels of expertise. Based on this knowledge about cognitive processes, I investigate implications for economic and legal issues. As head of the research group Intuitive Experts, I have tried to foster interdisciplinary collaborations between lawyers, economists, and psychologists in the institute. Some of the resulting projects are described below. More details on some of them can be found in section C.II.2, which describes the research of the Intuitive Experts group.

Model Development and Testing

A general PCS model. In the last two years, Tilmann Betsch and I have established the parallel constraint satisfaction approach which highlights the importance of automatic-intuitive processes in decision making (Glöckner & Betsch, 2008b). It provides an alternative account to the views that people either rely on simple shortcuts or mainly use deliberate calculation strategies. It specifies the complex interplay between intuitive and deliberate processes. We have applied the approach to a variety of decision problems. In particular, we investigated probabilistic inference tasks (Glöckner & Betsch, 2008c; Glöckner, Betsch, & Schindler, in press), risky choices (Glöckner & Herbold, 2008, in press), base-rate tasks (Glöckner & Dickert, 2008), endowment situations (Glöckner, Kleber, Tontrup & Bechtold, 2009; Glöckner, Tontrup, & Kleber, submitted), and complex legal judgments (Glöckner & Engel, 2008; Herbig, Dickert, Glöckner, Gansen, & Portack, under review).

Empirical tests. Elaborating on previous research, we have found empirical support for several core hypotheses derived from the PCS model. We were able to show a) that people are able to integrate quickly large amounts of information (Glöckner & Betsch, 2008a, 2008c; Glöckner & Dickert, 2008; Glöckner & Engel, 2008; Glöckner & Moritz, 2008, in press), b) that systematic information distortions occur in decision making of individuals and groups (Glöckner, Betsch, & Schindler, in press; Glöckner & Engel, 2008; Glöckner & Fiedler, in preparation), c) that increasing inconsistency of information leads to increasing decision times, decreasing confidence, and increasing physiological arousal (Glöckner & Betsch, 2008a, 2008c; Glöckner & Dickert, 2008; Glöckner & Hochman, under review), and d) that people shift their attention towards favored options and attributes in the decision process (Glöckner & Herbold, 2008, in press).

Decision making on different levels of expertise. In joint projects with Britta Herbig, we have applied the PCS model to account for decision making on different levels of expertise (Herbig & Glöckner, 2009). We argue that differences in the decision making of experts and novices (e.g., different reactions to complexity of cases and differences in emotional responses) result from the systematically different ways in which mental representations of the decision task are constructed. We found first evidence for this claim in a study on premeditation judgments in legal cases comparing lay persons and experienced law students (Herbig et al., under review).

Method Developments

To explore intuitive-automatic processes, new methods had to be developed, and existing ones had to be improved. For this purpose, I have developed the multiple-measure maximum likelihood strategy classification method which simultaneously analyzes choices, decision times, and confidence in order to test process models of decision making in an unobtrusively manner (Glöckner, 2009a, in press). Furthermore, in two projects we have introduced an extended usage of eye-tracking technology for testing intuitive-automatic processes in decision making (Glöckner & Herbold, 2008, in press; Horstmann, Ahlgrimm, & Glöckner, 2009). Together with Cilia Witteman, I have edited a book which provides the "Foundations for Tracing Intuition" (Glöckner & Witteman, in press).

Interdisciplinary Projects

Besides this basically psychological and methodological work, I have been active in a variety of projects on legal and economic issues. Some of these should be outlined.

Legal procedure and juror decisions. In a project with Christoph Engel, we experimentally investigated the possible downside of jurors relying on intuitive-automatic processes in decision making (Glöckner & Engel, 2008). We found that U.S. model jury instructions for preponderance of the evidence and beyond reasonable doubt influence conviction rates in the intended direction and are not undermined by coherence shifts. However, even massive changes in explicitly stated probabilities, while holding the overall constellation of facts constant, did not influence conviction rates and the estimated probability for conviction. We argue that improvements for legal procedure should focus on measures to circumvent the negative side-effects of coherence based reasoning in general and, specifically, to make probabilistic information better evaluable for decision makers in law. In a few other publications, I took a more general perspective and discussed possible implications of the PCS-perspective on decision making for legal institutions such as evidence law/criminal procedure (Glöckner, 2008a, 2008b, 2009b). In a preliminary analysis it was found that core aspects of German criminal procedure adhere to the principles suggested by PCS in many respects.

Sticky rebates and market foreclosure. In a project with the lawyers Alexander Morell and Emanuel Towfigh, we have shown experimentally that targeted roll-back rebates can lead

to irrational stickiness and that their potential for market foreclosure might have been underestimated (Morell, Glöckner, & Towfigh, 2009).

Endowment effects in strategic group interaction/dilemma of the anticommons. In a project with Janet Kleber and the lawyers Stefan Bechtold and Stephan Tontrup, we investigated the relative influence of endowment effects, group effects, and strategic effects in anticommons situations (Glöckner, Kleber et al., 2009). We found that endowment effects are reduced by 50% in group situations and completely diminish in situations with additional strategic incentives to overprice. We argue that it is therefore not sufficient to design transaction rules such that owners of goods do not have strategic incentives to overprice, but that intervention needs to focus on reducing the endowment effects in groups as well.

Leading with(out) sacrifice in public good situations. In a joint project with the behavioral economists Bernd Irlenbusch, Sebastian Kube, Andreas Nicklisch, and Hans-Theo Normann, we analyzed two team settings in which one member in a team had stronger incentives to contribute than the others (Glöckner, Irlenbusch, Kube, Nicklisch, & Normann, 2009, in press). If contributions constitute a sacrifice for the strong player, the other team members were more inclined to cooperate than if contributions were strictly dominant for the strong player.

Latent payback increase efficiency in public good situations. In a project with Sebastian Kube and Andreas Nicklisch, we analyzed the effect of immediate and latent feedback on punishment in repeated public-good games (Glöckner, Kube, & Nicklisch, in preparation). We observed that contributions and efficiency increased significantly, when both mechanisms were used simultaneously. The sanctioning efficiency per immediate punishment point, that is, the increase in contribution by punished players in consecutive periods, increased drastically if latent punishment was at hand. This effect enhances cooperation within a group enormously.

Research Agenda

My research in the next two years will focus on the further development and specification of the PCS model for decision making. Many of the projects illustrated above will be continued and extended. A particular focus will be on decisions under risk, learning, and endowment effect. I will, of course, also continue my interdisciplinary collaboration with lawyers and economists on investigating current legal and economic issues. Two important projects are outlined here:

Elaborating the PCS Model for Risky Choices

As reported above, we have suggested PCS as a model for risky choices. In an eye-tracking study, we have found initial support for this hypothesis. I want to investigate how the model can account for the multitude of classic violations of rationality and whether it

can predict new ones. Specifically, concerning the usage of probabilities the PCS model makes different predictions compared to expected utility models and prospect theory. Prospect theory predicts that probabilities are transformed into decision weights according to an inversed S-shaped function and that low probabilities are overweighted. According to the PCS model, in contrast, the evaluation of probabilities is dependent on the context. Low probabilities might be overweighted in some situations and underweighted in others. The resulting temporal distortions in the perception of probabilities (and values) might carry over to subsequent decisions. This could account for intransitivities in risky choices which will be investigated in a set of studies.

Modeling and Testing Long-term Learning in PCS models

The currently suggested PCS models simulate ad-hoc interpretations given certain mental representations. The models do not describe long-term learning effects based on feedback. Assuming that people learn to behave more rationally in interaction with incentivized marked environments, a simulation of these processes seems to be of major importance. Based on basic learning mechanisms (i.e., the delta rule), I aim to develop and test a learning model for mental representations that extends existing PCS models. The hypothesis is that feedback-based adaptations of mental representations help people to behave approximately rationally in repeated decision environments, without requiring them to learn the deliberate calculations which are formally necessary to derive the rational solution.

Honours / Grants

Funding for the Independent Junior Research Group "Intuitive Experts" by the Max Planck Society (August 2007)

Publications (since 2007)

Articles in Peer-reviewed Journals

Glöckner A., Irlenbusch B., Kube S., Nicklisch A., Normann H., Leading with(out) Sacrifice? A Public-Goods Experiment with a Super-Additive Player, *Economic Inquiry*, In Press.

Glöckner A., Betsch T., Schindler N., Coherence Shifts in Probabilistic Inference Tasks, *Journal of Behavioral Decision Making*, In Press.

Glöckner A., Witteman C. L. M., Beyond dual-process models: A categorization of processes underlying intuitive judgment and decision making, *Thinking & Reasoning*, In Press.

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Glöckner A., Investigating intuitive and deliberate processes statistically: The Multiple-Measure Maximum Likelihood strategy classification method, *Judgment and Decision Making*, vol. 4, no. 3, pp. 186-199, 2009.

Horstmann N., Ahlgrimm A., Glöckner A., How Distinct are Intuition and Deliberation? An Eye-Tracking Analysis of Instruction-Induced Decision Modes, *Judgment and Decision Making*, vol. 4, no. 5, pp. 335-354, 2009.

Glöckner A., Betsch T., Multiple-Reason Decision Making Based on Automatic Processing, *Journal of Experimental Psychology: Learning, Memory and Cognition*, vol. 34, no. 5, pp. 1055-1075, 2008.

Glöckner A., Betsch T., Do People Make Decisions Under Risk Based on Ignorance? An Empirical Test of the Priority Heuristic against Cumulative Prospect Theory, *Organizational Behavior and Human Decision Processes*, vol. 107, no. 1, pp. 75-95, 2008.

Glöckner A., Betsch T., Modeling Option and Strategy Choices with Connectionist Networks: Towards an Integrative Model of Automatic and Deliberate Decision Making, *Judgement and Decision Making*, vol. 3, no. 3, pp. 215-228, 2008.

Books

Foundations for tracing intuition: Challenges and methods, Glöckner A., Witteman C. L. M., (Eds.), London, Psychology Press & Routledge, In Press.

Book Chapters

Glöckner A., Witteman C. L. M., Foundations for tracing intuition: Models, findings, categorizations, *Foundations for tracing intuition: Challenges and methods*, Glöckner A., Witteman C. L. M., (Eds.), London, Psychology Press & Routledge, In Press.

Glöckner A., Multiple measure strategy classification: Outcomes, decision times and confidence ratings, *Foundations for tracing intuition: Challenges and methods*, Glöckner A., Witteman C. L. M., (Eds.), London, Psychology Press & Routledge, In Press.

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Articles (not peer-reviewed)

Glöckner A., Schönfeldt K., Ich überlege. Mein Bauch entscheidet? – Intuition und Entscheidung, *Richter ohne Robe*, vol. 2, pp. 60-61, 2009.

Preprints

Glöckner A., Herbig B., Dickert S., Portack R., *Decision making and expertise in law – Determinants of decision quality in legal case studies*, Bonn, Max Planck Institute for Research on Collective Goods, In Press.

Glöckner A., Hochman G., *The interplay of experience-based affective and probabilistic cues in decision making: Arousal increases when experience and additional cues are inconsistent,* Bonn, Max Planck Institute for Research on Collective Goods, In Press.

Glöckner A., Kleber J., Tontrup S., Bechtold S., *The Endowment Effect in Groups with and without Strategic Incentives*, issue 2009/35, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Morell A., Glöckner A., Towfigh E., *Sticky Rebates: Rollback Rebates Induce Non-Rational Loyalty in Consumers – Experimental Evidence*, issue 2009/23, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Beckenkamp M., Engel C., Glöckner A., Irlenbusch B., Hennig-Schmidt H., Kube S., Kurschilgen M., Morell A., Nicklisch A., Normann H., Towfigh E., *Beware of Broken Windows! First Impressions in Public-good Experiments*, issue 2009/21, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Glöckner A., Hodges S. D., *Parallel Constraint Satisfaction in Memory-Based Decisions*, issue 2009/17, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Horstmann N., Ahlgrimm A., Glöckner A., *How Distinct are Intuition and Deliberation? An Eye-Tracking Analysis of Instruction-Induced Decision Modes*, issue 2009/10, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Glöckner A., Irlenbusch B., Kube S., Nicklisch A., Normann H., *Leading with(out) Sacrifice? A Public-Goods Experiment with a Super-Additive Player*, issue 2009/08, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Herbig B., Glöckner A., *Experts and Decision Making: First Steps Towards a Unifying Theory of Decision Making in Novices, Intermediates and Experts*, issue 2009/02, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Glöckner A., Dickert S., *Base-rate Respect by Intuition: Approximating Rational Choices in Base-rate Tasks with Multiple Cues*, issue 2008/49, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Glöckner A., Moritz S., *A Fine-grained Analysis of the Jumping to Conclusions Bias in Schizophrenia: Data-Gathering, Response Confidence, and Information Integration,* issue 2008/48, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Glöckner A., Herbold A., *Information Processing in Decisions under Risk: Evidence for Compensatory Strategies based on Automatic Processes*, issue 2008/42, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Glöckner A., Engel C., *Can We Trust Intuitive Jurors? An Experimental Analysis*, issue 2008/36, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

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Glöckner A., Betsch T., Schindler N., *Coherence Shifts in Probabilistic Inference Tasks*, issue 2008/14, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

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Glöckner A., *How Evolution Outwits Bounded Rationality The Efficient Interaction of Automatic and Deliberate Processes in Decision Making and Implications for Institutions?*, issue 2008/08, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Glöckner A., Betsch T., *Do People Make Decisions Under Risk Based on Ignorance? An Empirical Test of the Priority Heuristic against Cumulative Prospect Theory*, issue 2008/05, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Glöckner A., Betsch T., *Modeling Option and Strategy Choices with Connectionist Networks: Towards an Integrative Model of Automatic and Deliberate Decision Making*, issue 2008/02, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Web Article

Glöckner A., Zur Rolle intuitiver und bewusster Prozesse bei rechtlichen Entscheidungen [Intuitive and deliberate processes in legal decision making]: Max Planck Society, 2008.

Work in Progress

Glöckner, A., Kube, S. and Nicklisch, A., (in preparation). The benefits of latent payback in social dilemmata.

Herbig, B., Dickert, S., Glöckner, A., Gansen, C., & Portack, R. (under review). Decision making and expertise in law – Determinants of decision quality in legal case studies.

Glöckner, A., Tontrup, S., & Kleber, J. (under review). Investigating the query theory for value construction: Endowment effects are caused by bidirectional activation instead of query order.

Fiedler, S., & Glöckner, A. (in preparation). Coherence shifts in groups.

Selected Lectures and Seminar Presentations (since 2007)

2007

Anticommons and Endowment Effects
(with S. Bechtold and S. Tontrup)
Paper presented at the Commons Workshop for Young Scholars, Bonn, Germany
7–9 May 2007

2008

Die Interaktion intuitiver und bewusster Prozesse bei Entscheidungen
[The Interaction of Intuitive and Conscious Processes in Decision Making]
University of Bonn, Germany
22 January 2008

Automatic processes in judgment and decision making
(Symposium with T. Betsch, A. Bröder, Ch. Engel and R. Hogarth)
University of Erfurt, Germany
28 February–1 March 2008

Shifting the bounds of rationality: The efficient interaction of automatic and deliberate processes in decision making
CEREB Small Group Meeting. Paper presented at the Symposium Automaticity Processes in Judgment and Decision Making, Erfurt, Germany
29 February 2008

Das Parallel Constraint Satisfaction Modell der Entscheidung
50. Tagung experimentell arbeitender Psychologen, Marburg, Germany
3 March 2008

Die Messung der Prozesseigenschaften intuitiver Entscheidungsstrategien
[The measurement of process properties of intuitive decision strategies]
50. Tagung experimentell arbeitender Psychologen (TeaP), Marburg, Germany
3 March 2008

Die Erfassung intuitiver und deliberater Prozesse bei Entscheidungen unter Nutzung verhaltens- und neurowissenschaftlicher Methoden
[Surveying intuitive and deliberate Decision Processes, using Methods of Behavioral and Neuroscience]
50. Tagung experimentell arbeitender Psychologen (TeaP), Jena, Germany
3 March 2008

Entscheidung und Intuition
[Decision making and intuition]
(Workshop with D. Fetchenhauer) MPI for Collective Goods, Bonn, Germany
17 April 2008

Die Nutzung automatischer Prozesse bei Entscheidungen unter Unsicherheit
[Using Automatic Processes in Decisions under Insecurity]
Workshop Decision making and intuition, MPI for Collective Goods, Bonn, Germany
17 April 2008

Investigating Intuition: Automatic and Deliberate Processes in Quick Decisions
Technion, Haifa, Israel
10 July 2008

How to replace multiple strategies by multiple representations: Parallel Constraint Satisfaction Models for Decision Making
29th International Congress for Psychology, Berlin, Germany
24 July 2008

Discussion: Judgments of frequency and duration
29th International Congress for Psychology, Berlin, Germany
25 July 2008

Determinants of Risky Decisions in a Financial Crisis: An Online-Experiment on Small Stake Investment Decisions
MPI Institute Colloquium, Bonn, Germany
10 November 2008

Base-Rate Respect by Intuition: Approximating rational choices in base-rate tasks with multiple cues
28th Annual Conference of the Society for Judgment and Decision Making
Chicago, U.S.A.
16 November 2008

2009

Investigating decision making in risky choices using eye-tracking
47th Annual Edwards' Bayesian Conference, Fullerton, U.S.A.
7 January 2009

Intuition, Deliberation, Entscheiden: Parallel Constraint Satisfaction Modell und Evidenz
[Intuition, Deliberation, Decision: Parallel Constraint Satisfaction Model and Evidence]
University of Bonn, Germany
27 January 2009

Entscheidungen, Intuition und Expertise
[Decision making, intuition, and expertise]
(Workshop with M. Raab) MPI for Collective Goods, Bonn, Germany
5 March 2009

Base-rate respect by intuition
Workshop Decision making, intuition, and expertise
MPI for Collective Goods, Bonn, Germany
5 March 2009

Wie Intuition rationale Normen approximiert
[How intuition approximates rational norms]
51. Tagung experimentell arbeitender Psychologen (TeaP), Jena
29 March 2009

Komplexe Modelle des Entscheidens: Eine konstruktive Erweiterung der Bounded Rationality-Perspektive
[Complex models of decision making: A constructive extension of the bounded rationality approach]
51. Tagung experimentell arbeitender Psychologen (TeaP), Jena, Germany
29 March 2009

The Parallel Constraint Satisfaction Approach to Judgment and Decision Making
Gerd Gigerenzer-MPI Colloquium, Berlin, Germany
6 May 2009

Sticky Rebates: Rollback Rebates Induce Non-Rational Loyalty in Consumers
Competition Law and Economics European Network (CLEEN) Conference
Tilburg, Netherlands
13 May 2009

Discussion of: Naked Exclusion – Towards a Behavioral Approach to Exclusive Dealing by Boone, Müller & Suetens
Competition Law and Economics European Network (CLEEN) Conference
Tilburg, Netherlands
14 May 2009

The Parallel Constraint Satisfaction Approach to Judgment and Decision Making
Ralf Hertwig-Colloquium, University of Basel, Switzerland
26 May 2009

Intuition und Rationales Entscheiden: Theorie und Befunde zur Auflösung eines Widerspruchs
[Intuition and rational decision making: Theory and findings to resolve a contradiction]
Psychology Colloqium, University of Greifswald, Germany
6 June 2009

Sebastian Goerg

Summary Report

Before joining the Max-Planck Institute for Research on Collective Goods in May 2009, I was a research assistant at the BonnEcolab, University of Bonn. During that time I worked, under the supervision of Prof. Dr. h.c. mult. Reinhard Selten, in three externally funded projects: the first project deals with the experimental comparison of behavioral stationary concepts. The second project investigates the different cultural background as one influence on how subjects perceive strategic situations and thus how this influences their behavior. The third one investigates incentive mechanisms in teams. Parallel to these projects, I have been working on my Ph.D. and the chapters of my dissertation thesis are based on papers from the three projects.

1. Together with Reinhard Selten (University of Bonn) I wrote a paper entitled *"Experimental Investigation of a Cyclic Duopoly Game"*. In this paper, we experimentally test the predictive success of three stationary concepts in two cyclic duopoly games. The investigated concepts are Nash equilibrium, impulse-balance equilibrium, and payoff-sampling equilibrium. The comparison of the three concepts with mixed strategies shows that the order of performance from best to worst is as follows: payoff-sampling equilibrium, impulse-balance equilibrium, and Nash equilibrium. Our results confirm the superior predictive power of impulse-balance equilibrium and payoff-sampling equilibrium in comparison to Nash equilibrium, as observed by Selten & Chmura (2008) in 2x2 games. Overall, both behavioral concepts perform significantly better than Nash equilibrium does. Our results differ from Selten & Chmura regarding the equality of impulse-balance equilibrium and payoff-sampling equilibrium: in our study, payoff-sampling equilibrium performs significantly better than impulse-balance equilibrium does. In our opinion, this disadvantage of impulse-balance equilibrium in comparison to the mentioned 2x2 games is caused by the sequential move structure of the cyclic game.

2. In a joint paper with Gari Walkowitz (University of Bonn), entitled *"On the Prevalence of Framing Effects Across Subject Pools"*, we investigate the impact of game presentations on cooperation dependent on subject pool affiliation. In two continuous prisoner's dilemma games decision makers can choose an individual level of cooperation. In the first game, a transfer creates a positive externality for the opposite player. In the second game, this externality is negative. In an international experimental study involving subjects from Abu-Dis (West Bank), Chengdu (China), Helsinki (Finland), and Jerusalem (Israel), we test for a strategic presentation bias applying these two games. Subjects in Abu-Dis and Chengdu show a substantially higher cooperation level in the game with a positive externality. In Helsinki and Jerusalem, no presentation effect is observed. Thus, cooperation levels are higher in Abu-Dis and Chengdu than in Helsinki and Jerusalem if the game with the positive externality is played, while results are vice versa in the game

with the negative externality. We conclude that, recognizing the impact of the chosen presentation might be essential for the design of culture-sensitive institutions or the conduct of international negotiations in which foreign agents interact for the first time. Depending on their ethnic background, decision makers might perceive bargaining and cooperation setups differently and therefore some institutions may generate higher levels of cooperation and agreements than others.

3. Together with Sebastian Kube (MPI Bonn and University of Bonn) and Ro'I Zultan (Hebrew University) I wrote a paper with the name *"Treating Equals Unequally – Incentives in Teams, Workers' Motivation and Production Technology"*. In this paper we study how reward mechanisms and production technologies affect effort provision in teams. Our experimental results demonstrate that unequal rewards can potentially increase productivity by facilitating coordination, and that the effect strongly interacts with the exact shape of the production function. We show that in the case of a production function of complementarity, i.e., increasing returns to scale, highest efficiency is obtained if workers do not receive equal wages for equal effort. Taken together, our data highlight the relevance of the production function for the construction of organizations and suggest that equal treatment of equals is neither a necessary nor a sufficient prerequisite for eliciting high performance in teams.

Research Agenda

In addition to ongoing projects I would like to focus my research on three topics:

1. The performance of institutions in public goods settings if uninformative noise is introduced; 2. The dimensions of discrimination and their interplay; 3. Behavioral learning theories.

1. Together with Andreas Nicklisch (MPI Bonn) I analyze the impact of rewards in public good settings, if there is uncertainty about the contributions of other players. If accurate feedback is available, it has been shown that compared to punishment, rewards only have a negligible (positive) influence on contributions (Andreoni, Harbaugh, & Vesterlund, 2003). But this does not necessarily hold if the quality of the feedback changes and more and more uninformative noise is introduced. While the unintended punishment of a (high) contributor leads to decreased contributions, this is probably not the case if a reward mechanism is applied. We test whether the unintended rewarding of a low contributor does not have any influence, while the intended rewarding of a high contributor stabilizes contributions. Testing punishment and reward mechanisms in public good settings with unambiguous feedback is important for the transfer into real-world applications, in which in most cases only noisy feedback is available.

2. Besides this, I investigate, in a joint project with Heike Hennig-Schmidt and Gari Walkowitz (both University of Bonn), what different types of discrimination can be observed in labor market settings. In our experiment, employers receive the short CVs of

twelve potential employees with different combinations of characteristics. The CVs differ by the applicant's gender, her/his country of origin and the applicant's result in the A-levels. Employers decide on a rank order of the applicants, a wage for each applicant and whether the work of an applicant is controlled (i.e., whether a minimum effort level is imposed). This introduces three dimensions of discrimination, and we are interested in the relation between these dimensions. While an employer might have a clear order of preference about the applicants, it is not clear whether this is also reflected in the wages paid. We analyze which dimension of discrimination is activated by which characteristic of an applicant. In addition, we investigate the reaction of the employees for a given dimension of discrimination depending on the subject pool affiliation (i.e., the country of origin).

3. In addition, together with Reinhard Selten (University of Bonn), I develop and experimentally test learning models based on the behavioral stationary concepts, which I already investigated in my dissertation. While it is known that learning dynamics based on Bayesian updating might lead to a Nash equilibrium (e.g., Kalai & Lehrer, 1993) it is by no means clear that actual human learning mechanisms must converge to Nash equilibrium. Broad experimental evidence suggest that, at least for the short run, human learning processes approach different points than Nash equilibrium. Therefore, it is very promising to investigate learning models that are based on (and, in the optimal case, even lead to) behavioral stationary concepts, which are closer to the aggregate human behavior than Nash equilibrium. The investigated learning models include impulse-balance learning, payoff-sampling learning (actions are done according to randomly sampled payoffs) and action-sampling learning (actions are done according to optimization against randomly sampled actions of the opponent). For control, we include the models of reinforcement learning (e.g., Roth & Erev, 1995) and sophisticated EWA (Ho, Camerer, & Chong, 2007).

Honours / Grants

2008 Lindau Meeting of Noble Laureates in Economic Sciences

2007 – 2008 DAAD scholarship for a research visit at the JiaoTong University, Shanghai, China

Publications (since 2007)

Articles in Peer-reviewed Journals

Goerg S. J., Selten R., Experimental Investigation of Stationary Concepts in Cyclic Duopoly Games, *Experimental Economics*, vol. 12, no. 3, pp. 253-271, 2009.

Goerg S. J., Kaiser J., Non-Parametric Testing of Distributions – the Epps-Singleton two-sample test using the Empirical Characteristic Function, *The Stata Journal*, vol. 9, no. 3, pp. 454-465, 2009.

Lectures and Seminar Presentations (since 2007)

2007

The Janus Face of Cooperation Intra- and Cross-Cultural Considerations
Bonn-Cologne Workshop on Experimental Economics, University of Bonn, Germany
6 February 2007

The Janus Face of Cooperation Intra- and Cross-Cultural Considerations
IZA Workshop: Behavioral and Organizational Economics, IZA, Bonn, Germany
25–26 May 2007

The Janus Face of Cooperation Intra- and Cross-Cultural Considerations
Asia-Pacific Regional Meeting of the Economic Science Association, JiaoTong University, Shanghai, China
3–5 August 2007

2008

Experiments over the unit square
Asia-Pacific Regional Meeting of the Economic Science Association, National University of Singapore, Singapore
22–24 February 2008

2009

Treating Equals Unequally – Incentives in Teams, Workers' Motivation and Production Technology
Research Seminar in Applied Microeconomics, University of Cologne, Germany
20 July 2009

Kristoffel Grechenig

Summary Report

My recent research focused on the economic analysis of private law, including corporate law & economics, and on comparative legal theory. I choose three projects (torts, evolution of legal thought, and shareholders suits) to give an overview of my work:

First, in a paper recently published in the *Rabel Journal*,[1] we analyze the effects of a certain rule of causation in tort law called "Einwand des rechtswidrigen Alternativverhaltens". We show how this rule has to be applied when causation is uncertain in order to set incentives for the tortfeasor/injurer to take optimal care in a model of unilateral accidents. We link this rule to the discussion on proportional liability and cite legal norms and court decisions from various countries. We argue that the courts apply this rule fairly accurately in cases of certainty and fairly inaccurately in cases of uncertainty.

Another paper, also published in the *Rabel Journal*, deals with the evolution of legal thought with respect to the use of economic arguments in the legal discourse. We compare the widespread use of economic ideas in U.S. law schools to the (partial) rejection by the legal community in German-speaking Europe and explain the divergence historically. We have enriched the paper with further arguments and a much longer version was subsequently published in the *Hastings International and Comparative Law Review*. A translated version will be reprinted in a Portuguese collected edition together with law & economics papers by Coase and others. Further translations into Chinese and Italian are currently being undertaken. We have presented our project at various conferences, including the 18th Annual Conference of the American Law & Economics Association at Columbia University and at the Third Annual Comparative Law Works in Progress Workshop at the University of Michigan.

Thirdly, we develop a theoretical model of shareholder suits to explain the absence of such lawsuits in continental Europe. We argue that due to the specific legal environment (most importantly percentage limits, which require shareholders to hold a minimum amount of shares in order to take legal action), potential plaintiffs will collude with the managers. Such a contract imposes a negative externality on part of the small shareholders who are not allowed to bring a lawsuit. We are currently revising the paper and will soon resubmit it to the *International Review of Law and Economics*. We have presented the paper at various conferences, including the World-Wide Young Corporate Scholar Workshop at Columbia University and at the 23rd Annual Conference of the European Association for Law and Economics in Madrid.

1 The best-ranked journal for international law out of 36, according to the JURAF ranking.

Besides teaching law and economics on an undergraduate and a graduate level, I co-organize the semi-monthly Bonn "Law & Econ Workshop" (http://www.wipol.uni-bonn.de/lehrveranstaltungen-1/lawecon-workshop), where we invite both young and experienced Law & Economics scholars from European and U.S. law schools and economics departments. Past speakers include Jennifer Reinganum, Andrew Daugherty, Lars Feld, Roberto Galbiati, Nuno Garoupa, and Geoffrey Miller.

Research Agenda

My short-term research agenda includes two projects on public goods; one is experimental, and the other theoretical: in the public-goods experiment we recently ran, we introduced uncertainty over contributions and compared treatments with and without a punishment mechanism. We will analyze the data in the upcoming months. Ideally, this project will only be the starting point for more research on uncertainty in social dilemmas. Secondly, with a theoretic approach, I wish to analyze the partial protection of intellectual property and explain under which circumstances this may be welfare-enhancing. With this project, I wish to contribute to the literature that departs from the dichotomy of full protection or no protection of (intellectual) property rights.

Apart from more research on public goods with uncertainty, my medium-term agenda will include a better understanding of tort law, from an economics point-of-view. I would like to develop a model of unilateral or bilateral accidents, showing that a damage regime with damages below harm may be welfare-enhancing. Various papers have tried to explain this legal phenomenon (i.e., damages below harm) with economic tools, but have not captured the entire realm of cases known from legal disputes.

My long-term research agenda includes my "Habilitation" in the field of private law & economics, dealing with the allocation of property rights in information by the law (e.g., the law on mistakes) and looking at alternative regulations from a social welfare point-of-view.

Publications (since 2007)

Articles in Peer-reviewed Journals

Litschka M., Grechenig K., Law by Human Intent or Evolution? Some Remarks on the Austrian School of Economics' Role in the Development of Law and Economics, *European Journal of Law and Economics*, In Press.

Grechenig K., Stremitzer A., Der Einwand rechtmäßigen Alternativverhaltens – Rechtsvergleich, Ökonomische Analyse und Implikationen für die Proportionalhaftung, *Rabels Zeitschrift für ausländisches und internationales Privatrecht (RabelsZ)*, pp. 336-371, 2009.

Grechenig K., Gelter M., The Transatlantic Divergence in Legal Thought: American Law and Economics vs. German Doctrinalism, *Hastings International and Comparative Law Review*, vol. 31, pp. 295-360, 2008.

Grechenig K., Gelter M., Divergente Evolution des Rechtsdenkens – Von amerikanischer Rechtsökonomie und deutscher Dogmatik, *Rabels Zeitschrift für ausländisches und internationales Privatrecht (RabelsZ)*, pp. 513-561, 2008.

Grechenig K., Bezugsrechtsausschluss und Ausgabepreis nach Art. 652b OR, *Schweizerische Zeitschrift für Wirtschafts- und Finanzmarktrecht (SZW)*, pp. 489-496, 2008.

Grechenig K., Discriminating Shareholders through the Exclusion of Pre-emption Rights? – The European Infringement Proceeding against Spain (C-338/06), *European Company and Financial Law Review (ECFR)*, pp. 517-592, 2007.

Gelter M., Grechenig K., Juristischer Diskurs und Rechtsökonomie, *Journal für Rechtspolitik (JRP)*, pp. 30-41, 2007.

Book Chapters

Roberto V., Grechenig K., Zurechnungsprobleme im Haftpflicht- und Sozialversicherungsrecht – die Rolle der Adäquanz, *Personen-Schaden-Forum, HAVE-Tagungsband*, Weber, (Ed.): Schulthess, pp. 55-70, 2009.

Grechenig K., Positive and Negative Information – Insider Trading Rethought, *Insider Trading – Global Developments and Analysis*, Gregoriou, Ali, (Eds.): CRC Press, pp. 245-259, 2009.

Preprints

Grechenig K., *Schadenersatz bei Verletzung von § 14 WpHG? Insiderhandel mit positiver und negativer Information*, issue 2008/32, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Working papers (under submission)

Grechenig, K., Sekyra M., No Derivative Shareholder Suits in Europe – A Model of Percentage Limits and Collusion – revise and resubmit (International Review of Law and Economics)

Selected Seminar Presentations (since 2007)

2007

No Derivative Shareholder Suits in Europe
World Wide Young Corporate Scholar Workshop, Columbia University, New York, U.S.A.
March 2007

Complementary Mechanisms to Disclosure Duties: An Analysis of Whistleblowing & Insider Trading
Conference on Recent Trends in Law & Economics, Humboldt-University Berlin, Germany
November/December 2007

2008

Insider Trading on Bad News – Uncovering Corporate Fraud
Public Lectures in Law and Economics, University of Bologna, Italy
January 2008

The Transatlantic Divergence in Legal Thought: American Law and Economics vs. German Doctrinalism
18th Annual Meeting of the American Law and Economics Association, Columbia University, New York, U.S.A.
May 2008

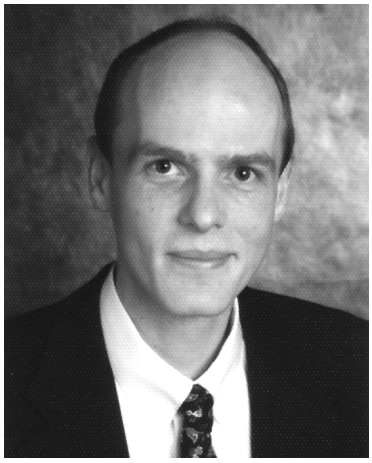
The Transatlantic Divergence in Legal Thought: American Law and Economics vs. German Doctrinalism
Third Annual Comparative Law Works in Progress Workshop, University of Michigan, U.S.A.
May 2008

Positive and Negative Information – Insider Trading Rethought
25th Annual Conference of the European Association for Law and Economics
Haifa, Israel
September 2008

2009

Bezugsrechtsausschluss und Ausgabepreis – Neues vom EuGH zur Verwässerung von Aktionärsrechten
[Exclusion of Subscription Rights and Issuing Price: News from the ECJ on Watering Shareholders' Rights]
Forum Junge Rechtswissenschaft, University of Tübingen, Germany
January 2009

Discriminating Shareholders through the Exclusion of Pre-emption Rights?
13th Annual Meeting of the Latin American and Caribbean Law and Economics. Association (*ALACDE),* University Pompeu Fabra, Barcelona, Spain
June 2009



Mark Hahmeier

Summary Report

Over the last two years – except, however, for a parental leave of nearly nine months, and only until the summer of 2009, when I left the Max Planck Institute – my research focused on questions and problems associated with regulatory policy or design and related issues in the context of collective goods, mainly from an application-oriented perspective.

One research topic or project that I was working on and able to complete during my time at the Institute in the form of a preprint is concerned with a rather classical public good, namely the global climate, which, however, has been subject to very intensive research and discussion in recent years. In particular, my paper on "Prices versus Quantities in Electricity Generation" contributes to the ongoing debate about the right policy or instrument for the regulation of carbon dioxide emissions. In the tradition of Weitzman's seminal article on "Prices vs. Quantities", published in *The Review of Economic Studies* in 1974, the objective of my research was to examine and compare, from a welfare point of view, the optimal regulation via taxes with that via a quantity control, such as the European Emissions Trading Scheme, introduced by the European Union in 2005. In contrast to Weitzman and subsequent contributions analyzing the presence of uncertainty or asymmetric information about abatement costs and/or environmental damages, the focus of my research was an important characteristic specific to the economic environment in Europe (and recently used as an argument in this context by Newbery, "Climate Change Policy and its Effect on Market Power in the Gas Market", *Journal of the European Economic Association*, 2008), namely a certain degree of market power in the gas market, and its consequences for the regulation of emissions from electricity generation, the largest sector covered by the European Emissions Trading Scheme in terms of emissions. Having considered different models capturing the effects of a monopolistic gas supplier, the version which finally entered my preprint assumes an elastic electricity demand and employs a natural game-theoretic approach, thereby providing a strong economic-theory-based support for the use of taxes rather than permits in an up-to-date real-world application.

In the winter semester 2008/09, I also gave a course in "Regulatory Economics" at the University of Bonn, jointly with one of my colleagues at the Max Planck Institute, Jos Jansen. The regular lectures were intended for and attended by students of the Masters Program in Economics and advanced Diploma students. They covered topics from the fields of theory of regulation and antitrust.

Publications (since 2007)

Preprints

Hahmeier M., Prices versus Quantities in Electricity Generation, issue 2009/27, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Martin Hellwig

Over the past two years, the focus of my research has shifted from public economics to the analysis of financial institutions and financial stability. This shift is somewhat at odds with the research agenda formulated two years ago and was motivated by the financial crisis. In earlier work, in the mid-nineties, I had described many of the mechanisms that have played a role in the dynamics of the crisis from August 2007 to October 2009. Given this "preparation", I considered it important to use the earlier insights in order to improve our understanding of what was going on and of what had gone wrong in the years preceding the crisis. On some of these issues, however, there is a close link between the analysis of the financial crisis and a wider research agenda on proper governance, which concerns public and publicly-provided goods, as well as financial institutions and, more generally, the proper relation between public concerns and private interests.

Financial Institutions and Financial Stability

The major research achievement of 2008 was the paper "Systemic Risk in the Financial Sector: An Analysis of the Subprime-Mortgage Financial Crisis", now published as a monograph by the Netherlands Institute for Advanced Study and reprinted in the journal *De Economist* of the Royal Dutch Economics Association. An early version of the paper was presented as the Jelle Zijlstra Lecture in Amsterdam in May 2008; in view of many questions about institutional details that were raised at the lecture and in view of ongoing developments, the text was substantially revised and expanded, so that, by contrast to the material presented at the lecture, it contains a detailed analysis of the theory and reality of mortgage securitization, as well as an analysis of the system dynamics that were set off in August 2007. Even so, the latter must be considered the paper's major contribution. The paper argues that developments from August 2007 to October 2008 were, by and large, due to the interplay of price declines in malfunctioning markets, fair value accounting forcing banks immediately to put these price declines on their books, a lack of "free" equity, i.e., equity in excess of regulatory requirements implying that book losses induced an immediate need for deleveraging, i.e., asset sales, which in turn induced further price declines in markets, etc. Because, under the models-based approach to determining regulatory capital, bank equity altogether was very low, concerns about possible insolvencies arose fairly quickly, impairing the banks' ability to refinance and enhancing defensive attitudes that made for a desire to deleverage and a reluctance to acquire assets even though they might seem cheap. The paper also discusses the responsibility of statutory regulation ("Basel") in this context.

The Zijlstra Lecture has led to a large demand for presentations, at official as well as academic institutions, and for additional written contributions. Among these additional texts, "The Causes of the Financial Crisis" in the ifo Forum of December 2008 and "Brandbeschleuniger im Finanzsystem" in Max Planck Forschung 2009 provide concise summaries of the main points.

This work has also led to a certain involvement in policy discussion. I was in charge of drafting two letters from the Scientific Advisory Committee to the Federal Minister for Economic Affairs, one in early October 2008, on the need to provide support to the financial system in order to avert a collapse of the banking system, and one in January 2009, with a recommendation to suspend "Basel II" in order to prevent another round of financial implosion occurring when the recession would affect debt service from the nonfinancial sector to banks and, under "Basel II", write-offs on loans with lagging payments, as well as reassessments of debtor quality, would have adverse effects on the relation between available capital and required capital of banks.

Both these letters called for the government to use a hands-on approach to the banks, following the Swedish example of 1992 and intervening so as to hold incumbent shareholders and managers responsible for past mistakes, to take control of the requisite reorganization, and to eliminate any incentive to gamble for resurrection. For various, mainly political reasons, this latter part of our recommendations was not followed. Given the ignorance of the German public about other countries' experiences with banking crises, e.g., the very notion of gambling for resurrection, I have written a few more texts for public consumption, some of them alone, some of them together with Beatrice Weder di Mauro. These texts have had little impact on policy, but contributed to my being awarded the Gustav Stolper Prize 2009 of the Verein für Socialpolitik (German Economic Association).

In this area, I now have three items on my research agenda: first, I want to translate the analysis of banking regulation in the Zijlstra Lecture into the language of formal modeling. In principle, the arguments are all in the Lecture, but our profession being what it is, they need to be expressed in the language of a formal model if I want them to affect professional thinking. Second, I wish to write down a model showing that, if people providing short-term finance to a bank are affected by overconfidence in their ability to acquire and use information to withdraw their funds ahead of a disaster, then we should expect to see an excessive reliance of banks on "cheap" short-term finance. The point of the model would be to deflate the notion that short-term funding provides for a mechanism of "market discipline" for the bank. This notion has dominated political thinking in the United States for at least the past decade. The crisis has shown the costs of this approach. However, such an experience will not have a lasting effect unless it can be translated into a theoretical analysis showing that the notion of "market discipline" involves more ideology than theory. Third, I want to develop a formal analysis of the role played by the selection of "politically correct" topics of discussion in, e.g., boards of directors (or academic journals, for that matter) as an instrument for economizing on resources needed for discussion and for channelling and censoring communication in

such groups, with implications for the allocation of power within the group and for the ability of the group as a whole to perceive or not to perceive problems as they arise.

Governance Issues

Partly in the context of banking and banking regulation, and partly as a result of a report that I wrote in 2007 for the German Council of Economic Experts, I have returned to writing about issues of corporate governance. The report for the German Council of Economic Experts was supposed to be dealing with governance issues raised by the prospect of sovereign wealth funds investing in German corporations (and has been largely integrated into the chapter of their 2007 Annual Report that dealt with this issue). In the process of writing, I came to appreciate that the substantive issues at stake have less to do with the nature of sovereign wealth funds and more with the overriding question of what is the public interest and what is the role of private investors in a corporation. Besides their normative economic interest, these questions have a legal dimension, in particular in the European context, and a political dimension because the German polity is firmly in the tradition of seeing a corporation as an entity with "social responsibility" – and little say for shareholders. This view is at odds with the Anglo-Saxon tradition of treating the shareholder as the owner of the corporation, to whom the managers have at least some fiduciary duty. The clash is apparent in many contexts, discussions about European jurisdiction, discussions about hedge funds investing in German corporations and expressing "voice" at shareholder meetings, discussions about private equity firms reorganizing companies and cutting employment in the process, and last not least discussions about managerial remuneration tied to "shareholder value".

My report to the Council of Economic Experts dealt with the following topics: (a) What limits on national regulation and legislation are drawn by European legislation and jurisdiction? (b) To what extent is there a public interest in private corporations in a private-ownership, market economy? (c) How do these matters affect a country's position in the competition for the location of corporate headquarters? (d) How are we to assess developments of the past two decades, with ever greater concerns about Anglo-Saxon modes of corporate governance undermining the "Rhenish capitalism" that Germany had been used to? Concerning (a), I noted that, with reference to the freedom of capital movement guaranteed by the EC Treaty, European jurisdiction in fact takes the Anglo-Saxon mode of governance as a model and limits national attempts to deviate from that, e.g., by "Golden Shares" and other devices. In a subsequent article in the *Zeitschrift für das Gesamte Handelsrecht*, I expand on this material. While expressing a lot of sympathy for the view that, under current German regulations, shareholder protection is insufficient, I also take issue with the European Court of Justice arguing that limitations on the ability of shareholders to exert influence on a corporation reduce the attractiveness of such shares for foreign investors and must therefore be considered as infringements of the freedom of capital movements. The Court has overlooked the price effects of such

regulations: if the limitations in question concern all shareholders, not just foreigners, share prices must be lower, and the net effect on cross-border capital movements is unclear. I also take issue with the notion of the shareholder as "owner" of the corporation and argue that the very institution of the corporation has been invented to prevent the shareholder from directly interfering with the firm's assets, e.g., taking them away as he might under a partnership arrangement. At that point, the regulation of corporate governance becomes a concern of the *ordre public* and is, of course, a suitable subject for a public regulation that does not start from a simplistic view of the shareholder as owner.

All this being said, however, from a normative point of view, there are reasons to believe that German regulation may have gone too far in the opposite direction. Concerning (b) in the above list of questions, I had warned of a simple industrial-policy approach which treats everything as a matter of public concern and would subject the choice of firm strategy to the vagaries of the tabloids and talk shows or to the vagaries of political logrolling. Concerning (c), I had warned that a regulatory approach that protects incumbent management from shareholder interference, making it difficult to take resources out of a corporation, is likely to lead to an ossification of corporate structures, with little scope for new corporations emerging and growing to become large. Concerning (d), I had pointed to the paradox that, on the one hand, the worst abuses in the name of "shareholder value" come from incumbent management bent on enriching themselves and, on the other hand, public outrage over the demise of "Rhenish capitalism" is focussed on hedge funds and other institutions that try to limit such abuses; statutory measures designed to limit such shareholder involvement would, if anything, increase the power and the scope for abuse of incumbent management.

In future research, I would like to expand on the latter analysis. A key question is why "shareholder value" has gained so much prominence in the past two decades, more precisely, why "shareholder value" has come to be accepted as a norm in corporate discourse by all people who take it for granted that "shareholder power" is completely unacceptable. One answer might be that radical changes in international comparative advantage, Stolper-Samuelson effects on relative input scarcities, and changes in communication and information processing technologies have created a scope for large gains from reorganizing production in the economy – and that, by tying management remuneration to share prices, incumbent management gave itself the means to participate in these gains. (Presumably, the high share of investment bank profits in GDP can be ascribed to the same cause.) If this assessment is correct, it requires us to think again about such issues as enrichment versus incentives in management remuneration or, more generally, the welfare assessment of these shifts. A deeper underlying question concerns the welfare assessment of the power that goes with managerial incumbency.

The issues raised here link up with both, the analysis of "market discipline" in banking, raised above, and the issues of governance in network industries that were raised in our previous report and are raised again in Section C.1 of this report.

Public Economic Theory

In the area of public economic theory, I have mainly continued previous work. Most of this research has been spelled out in the last two Institute Reports for that period. Preprint 2004-14, "Optimal Income Taxation, Public-Goods Provision and Public-Sector Pricing: A Contribution to the Foundations of Public Economics", which I would consider to be the major achievement of this project, has been revised again for *Econometrica*. A revised version of Preprint 2006-26 has also been resubmitted to *Econometrica*. Preprint 2009-04, an offshoot of my 2005 article in the *Journal of Public Economics* on utilitarian admission fees for excludable public goods, has been accepted for publication in *Economic Theory*. Whereas my 2005 article had restricted the analysis to mechanisms based on admission fees, which people decide to pay or not to pay, this paper allows from more general mechanisms and shows that under certain circumstances, randomization in admissions may actually be welfare-enhancing; it also gives a condition under which this is not the case. Preprints 2008-45 and 2008-47 contain two small but useful extensions of the Atkinson-Stiglitz Theorem on the undesirability of distortionary commodity taxation or pricing when income taxation can be used to raise revenue for government finance and/or redistribution.

As explained at length in the previous Institute Report, a major effort has gone into the normative analysis of public-good provision in a large economy. This work is joint with Felix Bierbrauer. Completion of this work has been held up by various issues concerning technical and conceptual details. However, the paper is now finished.

Another co-operation came from serving as thesis adviser to Alia Gizatulina. She was bothered by certain pieces in the literature on the implications of the privateness of information for the rents that people can obtain if the information is to be used by society. At this point, we have two papers finished ("Informational Smallness and the Scope for Information Rents" and "Payoffs Can be Inferred From Beliefs, Generically, When Beliefs Are Given by Conditional Distributions"). Further work will deal with more fundamental issues concerning the specification of information and beliefs in strategic settings involving incomplete information.

Competition Policy and Sector-Specific Regulation of Network Industries

In this area, my article on "Competition Policy and Sector-Specific Regulation for Network Industries" has at last come out (Preprint 2008-29). In addition, I have been asked to given presentations at a conference of the Hamburg Max Planck Institute on the EU's new guidelines for dealing with bonuses and rebates under Article 82 and at a conference of the Munich Max Planck Institute on the normative foundations of competition policy. The former is based on the analysis presented in the Jöhr Lecture (Preprint 2007-19), the latter on the analysis presented in the Mestmäcker Festschrift (Preprint 2006-20). Because

of my appointment to the Lenkungsrat Unternehmensfinanzierung this spring, I have not yet been able to put these texts into writing.

Honours

Jelle Zijlstra Fellow 2008, Netherlands Institute for Advanced Study

Gustav Stolper Prize 2009, Verein für Socialpolitik (German Economic Association)

Doctor honoris causa, University of Basel, November 2009

Designated Thünen Lecturer 2010, Verein für Socialpolitik (German Economic Association)

Publications (since 2007)

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Hellwig M., Competition Policy and Sector-Specific Regulation for Network Industries, *EU Competition Policy Fifty Years Onward After the Treaty*, Vives X., (Ed.), Oxford, Oxford University Press, pp. 203-235, 2009.

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Hellwig M., *Switzerland and Euroland: European Monetary Union, Monetary Stability and Financial Stability*, issue 2007/09, Bonn, Max Planck Institute for Research on Collective Goods, 2007.

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Reports of the Scientific Advisory Committee of the German Ministry of Economics and Technology

(I only list reports in which I had some role.)

Zum Gesetzentwurf Wagniskapitalbeteiligung und Unternehmensbeteiligungsgesellschaften (On the Proposed Law Concerning the Treatment of Venture Capital Companies and Private Equity Firms), Letter to the Minister, July 2007.

Schuldenbegrenzung nach Artikel 115 GG (Constitutional Limit to Public Debt Finance), Letter to the Minister, December 2007.

Zur Begrenzung der Staatsverschuldung nach Art. 115 GG und zur Aufgabe des Stabilitäts- und Wachstumsgesetzes; Report, March 2008.

Zur Finanzkrise, Letter to the Minister, October 2008 (Lead Author).

Zur Bankenregulierung in der Finanzkrise, Letter to the Minister, January 2009 (Lead Author).

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http://www.bmwi.de/Navigation/Ministerium/Beiraete/wissenschaftlicher-beirat-veroeffentlichungen.html

Other Policy Reports

Zur Problematik einer Staatlichen Kontrolle ausländischer Beteiligungen an deutschen Unternehmen als Beitrag zu einer strategischen Industriepolitik (A Critical Appraisal of Proposals for Public Control of Foreign Participations in German Companies as an Element of Industrial Policy), Report to the Sachverständigenrat zur Begutachtung der Gesamtwirtschaftlichen Entwicklung (Council of Experts for Assessing the State and Development of the Economy), October 2007; this report has largely been incorporated into Chapter VII of the Council's Annual Report 2007/2008.

Arbeitsweise der deutschen Bankenaufsicht vor dem Hintergrund der Finanzkrise (Working Practices of the German Banking Supervisor – An Assessment in the Context of the Financial Crisis, with Michael Hüther, Manfred Schäfer, Thomas Hartmann-Wendels), Report to the Federal Ministry of Finance, February 2009.

Lectures and Seminar Presentations (since 2007)

2007

Competition and Access Regulation in the Railway System
Conference on the Law and Economics of Regulating the Railway System after Privatization, Humboldt University, Berlin, Germany
25 January 2007

Optimal Income Taxation, Public goods Provision and Public-Sector Pricing, A Contribution to the Foundations of Public Economics
Workshop of the ESF Network Public Goods, Public Projects, Externalities
Marseille, France
4 April 2007

Keynote Lecture: Contracts versus Institutions: A Critique of Corporate Governance Theory
ECGI-JFI-CFS-Mannheim Conference on Financial Contracting, Mannheim, Germany
20 April 2007

A Reconsideration of the Jensen-Meckling Model of Outside Finance
ECGI-JFI-CFS-Mannheim Conference on Financial Contracting, Mannheim, Germany
21 April 2007

Contracts versus Institutions: A Critique of Corporate Governance Theory
Max Planck Institute for Research on Collective Goods, Bonn, Germany
30 April 2007

Zum Verhältnis von Wettbewerbspolitik und Sozialpolitik in Art. 86 EC
[Social Policy versus Competition Policy? On the Application of Art. 86 EC]
Representation of the State of North Rhine-Westfalia to the European Union, Brussels, Belgium
10 May 2007

Public-Good Provision in a Large Economy
University of Bonn, Germany
6 June 2007

Wirtschaftspolitik als Rechtsanwendung: Zum Verhältnis von Ökonomie und Jurisprudenz in der Wettbewerbspolitik
[Implementing Economic Policy under a Rule of Law: On the Relation between Economics and Jurisprudence in Competition Policy]
Walter-Adolf-Jöhr Lecture, University of St. Gallen, Switzerland
8 June 2007

Excessive Pricing in the Energy Sector? Market Structure and Electricity Prices in Germany
12th EUI Competition Law and Policy Workshop, Florence, Italy
9 June 2007

Zur "Volkswirtschaftlichen Verantwortung" von Unternehmen
[On the "Economic Responsibility" of Firms]
Conference "Monopole, Macht und Moral" (Monopolies, Power, and Morals) of the Gerhard Weisser Institute, Bonn, Germany
14 June 2007

Financial Markets, Financial Institutions, and Financial Stability
6th Annual BIS Conference, Brunnen, Switzerland
18 June 2007

The Need for a More Economic Approach to Art. 82 EC
Conference on the Reform of the Application of Art. 82 EC, University of Münster, Germany
20 June 2007

Public-Good Provision in a Large Economy
Fondation Jean-Jacques Laffont, Toulouse, France
25 June 2007

Laffont Lecture: The Relation between Sector-Specific Regulation and Competition Policy in Network Industries
2nd Annual Conference on Competition and Regulation, Corfu, Greece
20 July 2007

Contribution to Panel "Policy Options for European Energy Industries"
2nd Annual Conference on Competition and Regulation, Corfu, Greece
21 July 2007

Incentive Problems With Hidden Characteristics
Econometric Society European Meetings, Budapest, Hungary
28 August 2007

Contribution to Panel "Policy Options for European Energy Industries"
European Economic Association Annual Congress, Budapest, Hungary
30 August 2007

Optimal Income Taxation, Public goods Provision and Public-Sector Pricing, A Contribution to the Foundations of Public Economics
European Economic Association Annual Congress, Budapest, Hungary
30 August 2007

Contribution to Panel "The More Economic Approach to Art. 82 EC: Chances and Risks"
Conference on Art. 82 EC, Bundeskartellamt, Bonn, Germany
20 September 2007

Public-Good Provision in a Large Economy
University of Zurich, Switzerland
4 October 2007

Contribution to Panel "Recent Developments in the Financial System: Do We Need More Regulation"
Symposium on Financial Stability, Zeit-Stiftung, Hamburg, Germany
16 October 2007

Competitive Insurance Markets with Asymmetric Information: Rothschild & Stiglitz (1976) Revisited
Conference in Honour of Michael Rothschild, Princeton, N.J., U.S.A.
19 October 2007

Optimal Income Taxation, Public goods Provision and Public-Sector Pricing, A Contribution to the Foundations of Public Economics
Public Economics Workshop, MIT, Cambridge, Mass., U.S.A.
22 October 2007

Public-Good Provision in a Large Economy
Microeconomics Workshop, Yale University, New Haven, U.S.A.
23 October 2007

Regulation and Litigation in Antitrust
NBER Workshop on Regulation and Litigation, Cambridge, Mass., U.S.A.
24 October 2007

Public-Good Provision in a Large Economy
Harvard-MIT Seminar in Economic Theory, Cambridge, Mass., U.S.A.
25 October 2007

Optimal Income Taxation, Public goods Provision and Public-Sector Pricing, A Contribution to the Foundations of Public Economics
NBER Workshop on General Equilibrium and Mathematical Economics, Evanston, U.S.A.
26–28 October 2007

Wirtschaftspolitik als Rechtsanwendung: Zum Verhältnis von Ökonomie und Jurisprudenz in der Wettbewerbspolitik
[Economic Policy under a Rule of Law: On the Relation between Economics and Jurisprudence in Competition Policy]
Law and Economics Seminar, University of Bonn, Germany
3 November 2007

Zur "Volkswirtschaftlichen Verantwortung" von Unternehmen
[On the "Economic Responsibility" of Firms]
Kurt W. Rothschild Lecture, University of Linz, Austria
6 November 2007

Countries in Competition for Corporate Headquarters: Is there a Need to Adjust the Rules of Corporate Control?
Conference "Is There a Need for National or European Champions?", ifo Institute, Munich, Germany
16 November 2007

The Relation between Sector-Specific Regulation and Competition Policy in Network Industries
Conference 50 Years of the Treaty, Barcelona, Spain
20 November 2007

Warum sind die Strompreise so stark gestiegen?
[Why have Electricity Prices Risen so Much?]
ifo Institute, Munich, Germany
12 December 2007

2008

Systemic Risk in the Financial Crisis
Bellagio Group, European Central Bank, Frankfurt, Germany
18 January 2008

Systemic Risk in the Financial Crisis
European Central Bank, Frankfurt, Germany
30 January 2008

Public Good Provision in a Large Economy
Department of Economics, University of California at Davis, Davis, CA, U.S.A.
25 February 2008

Public Good Provision in a Large Economy
Department of Economics, Stanford University, Stanford, CA, U.S.A.
27 February 2008

Public Good Provision in a Large Economy
Department of Economics, University of California at Los Angeles, Los Angeles, CA, U.S.A.
28 February 2008

Privatization, Finance, and Governance: The Case of Deutsche Bahn
Netherlands Institut for Advanced Study, Wassenaar, Netherlands
4 April 2008

Public Good Provision in a Large Economy
Tinbergen Institute, University of Amsterdam, Netherlands
24 April 2008

The Passing-On Defense and the Assessment of Private Damages in Antitrust
Amsterdam Centre for Law and Economics, University of Amsterdam, Netherlands
19 May 2008

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
Jelle Zijlstra Lecture, Free University of Amsterdam, Netherlands
27 May 2008

Current Issues in Competition Policy
Contribution to Panel on Competition Policy at the Opening of the Toulouse School of Economics, Toulouse, France
2 June 2008

Staatliche Beschränkungen von Unternehmensübernahmen
[Staturory Restrictions against Corporate Takeovers]
Symposium to Celebrate the 150th Anniversary of the Zeitschrift für das gesamte Handelsrecht und Wirtschaftsrecht, Berlin, Germany
6 June 2008

Privatization, Finance, and Governance: The Case of Deutsche Bahn
Centraal Plan Bureau, Den Haag, Netherlands
16 June 2008

Contribution to Panel on Private Damages in Antitrust
Conference on Private Damages in Antitrust, Tilburg University, Netherlands
20 June 2008

Contribution to Panel on Regulation and Supply Security in Natural Gas
European School of Management and Technology Annual Forum, Berlin, Germany
26 June 2008

Private Purposes, Public Purposes, and the Role of Regulation
Rencontres Économiques, Aix-en-Provence, France
6 July 2008

Systemic Risk in the Financial Crisis
Contribution to Panel on the Financial Crisis, Lindau Nobel Prize Winners' Meeting
21 August 2008

Systemische Risiken in der Finanzkrise
[Systemic Risk in the Financial Crisis]
Gespräch im Haus am Turm, Frankfurt, Germany
27 August 2008

The Treatment of Capital Costs in Network Regulation: Fundamental Issues
Conference on Capital Costs in Network Regulation, Wissenschaftliches Institut für Kommunikationsdienste, Königswinter, Germany
3 September 2008

Why Has the Liberalization of Gas and Electricity Markets in Germany Failed?
EWI/FAZ Conference on Current Developments in the Energy Sector, Cologne, Germany
11 September 2008

Optimal Income Taxation, Public-Goods Provision and Public-Sector Pricing: A Contribution to the Foundations of Public Economics
Conference on Current Issues in Taxation, IZA, Bonn, Germany
12 September 2008

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
Annual Meeting, Verein für Socialpolitik, Graz, Austria
24 September 2008

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
Annual Conference of the ESF Network on Public Goods, Public Projects, Externalities, Bonn, Germany
22 October 2008

Systemic Risk in the Financial Sector. An Analysis of the Subprime Mortgage Crisis
Max Planck Institute for Research on Collective Goods, Bonn
03 November 2008

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
Brueghel, Brussels, Belgium
6 November 2008

Wirtschaftspolitik als Rechtsanwendung: Zum Verhältnis von Ökonomie und Jurisprudenz in der Wettbewerbspolitik
[Implementing Economic Policy under a Rule of Law: On the Relation between Economics and Jurisprudence in Competition Policy]
Berlin-Brandenburg Academy of Sciences, Berlin, Germany
20 November 2008

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
Herbert-Giersch-Stiftung, Frankfurt, Germany
17 December 2008

Why Has the Liberalization of Gas and Electricity Markets in Germany Failed?
Commission Champsaur on the Future of Electricity Price Regulation, Paris, France
18 December 2008

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
Keynote Lecture, 10th Congress on Money, Banking, and Insurance, Karlsruhe, Germany
19 December 2008

2009

Der neue § 29 GWB – Grundlage einer umfassenden Preisaufsicht in der Energiewirtschaft ?
[The new Art. 29 in the Law against Restraint of Competition – A Foundation for an Extensive Energy Price Regulation ?]
Annual Energy Congress, Handelsblatt, Berlin, Germany
21 January 2009

The Treatment of Rebates under Art. 82 EC
Conference on Market Structure and Performance in European Competition Policy, Max Planck Institute for Foreign and International Private Law, Hamburg, Germany
23 January 2009

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
Banque de France – Toulouse School of Economics Conference on the Financial Crisis, Paris, France
28 January 2009

Public Good Provision in a Large Economy
Swiss Federal Polytechnic, Zürich, Switzerland
12 February 2009

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
ifo Institute, Munich, Germany
16 February 2009

Efficiency versus Freedom to Compete – On the Normative Foundations of Competition Policy
Conference on the More Economic Approach to Competition Policy, Max Planck Institute for Intellectual Property, Competition Law and Tax Law, Munich, Germany
12 March 2009

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
Allianz Representation, Berlin, Germany
18 March 2009

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
Conference "Back from the Brink", IGIER and Bocconi University, Milan, Italy
27 March 2009

Eliminating the Procyclicality of Basel II
Deutsche Bundesbank, Frankfurt, Germany
7 April 2009

Pitfalls in Not Thoroughly Cleaning Up the Banking Mess
Working Group on the Financial Crisis, Christian Democratic Union Parliamentary Group, Berlin, Germany
23 April 2009

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
University of St. Gallen, Switzerland
30 April 2009

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
University of Bremen, Bremen, Germany
4 May 2009

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
Economic Theory Group, Verein für Socialpolitik, Eltville, Germany
8 May 2009

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
4th Alfred Weber Lecture, University of Heidelberg, Heidelberg, Germany
12 May 2009

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
Austrian National Bank, Vienna, Austria
14 May 2009

Public Good Provision in a Large Economy
Joint Conference of the Max Planck Institute for Research on Collective Goods and the Hausdorff Centre of the University of Bonn on Incentives and Mechanism Design in Public Economics, Bonn, Germany
21 May 2009

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
Bank of Korea International Conference, Seoul, Korea
3 June 2009

Provision and Pricing of Liquidity
Conference of the Journal of Central Banking, Federal Reserve Bank of New York, New York, USA
12 June 2009

Comment on Duffie "The Mechanics of Dealer Bank Failures"
BIS Annual Conference, Basel, Switzerland
25 June 2009

Public Good Provision in a Large Economy
Society for Economic Dynamics Annual Conference, Istanbul, Turkey
3 July 2009

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
Katholieke Universiteit Leuven, Leuven, Belgium
17 July 2009

Efficiency versus Freedom to Compete – On the Normative Foundations of Competition Policy
Symposium in Honour of Wernhard Möschel, Tübingen, Germany
24 July 2009

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
Friedrich-Ebert-Stiftung, Bonn, Germany
29 July 2009

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
Summer Academy of the Studienstiftung des deutschen Volkes, St. Johann, Italy
1 September 2009

Konzeptionelle Defizite der Regulierung als Faktor in der Krise
[Conceptual Deficits of Regulation – a Contributory Cause of the Crisis]
Working Group on Controlling and Risk Management, Schmalenbach Gesellschaft, Berlin, Germany
18 September 2009

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
Hamburg Society for the Study of Insurance, Hamburg, Germany
8 October 2009

Funding Liquidity Risk and Capital Regulation
Basel Committee on Banking Supervision, Paris, France
13 October 2009

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
Max Planck Institute for Solid State Research, Stuttgart, Germany
14 October 2009

Issues in Corporate Governance
Meeting of the Sonderforschungsbereich SFB-TR 15, Tutzing, Germany
15 October 2009

Systemic Risk and Regulation
Conference Organized by the Federal Ministry for Economic Cooperation and Development, Bonn, Germany
29 October 2009

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
University of Gießen, Germany
2 November 2009

Konzeptionelle Defizite der Regulierung als Faktor in der Krise
[Conceptual Deficits of Regulation – a Contributory Cause of the Crisis]
Conference of the German Insurers's Association on "Solvency II", Berlin, Germany
3 November 2009

Industrial Policy
German Bankers' Association/Confederation of German Industry, Berlin, Germany
10 November 2009

Systemic Risk and Regulation
Berlin-Brandenburg Academy of Sciences, Berlin, Germany
12 November 2009

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
Keynote Lecture, Conference "Financial Crisis", University of Geneva, Geneva, Switzerland
16 November 2009

On the Economics and Politics of Corporate Governance
Commonalities of Capitalism Conference, Schloss Ringberg, Germany
19 November 2009

Systemic Aspects of Risk Management in Banking and Finance
University of Basel, Basel, Switzerland
26 November 2009

Systemic Risk and Regulation
Swiss Finance Institute, Zurich, Switzerland
30 November 2009

Governance Failures and Systemic Risk in the Financial Crisis
Law and Economics Conference, Swiss Federal Polytechnic, Zurich, Switzerland
1 December 2009

Issues in Corporate Governance
Law and Economics Conference, Swiss Federal Polytechnic, Zurich, Switzerland
2 December 2009

Systemic Risk in the Financial Sector: The Subprime Mortgage Financial Crisis
Workshop on Monetary Economics, Würzburg, Germany
5 December 2009

Conceptual Deficits of Banking Regulation as a determining factor in the Financial Crisis
Erich Schneider Lecture, Kiel, Germany
16 December 2009

Heike Hennig-Schmidt (Affiliate)

Summary Report

My main research field is experimental economics. As the head of *B*onn*E*con*L*ab, the Laboratory for Experimental Economics at the University of Bonn, I work on a variety of experimental research topics. My interests most pertinent to the research agenda of the Max Planck Institute for Research on Collective Goods are public-good and prisoner's dilemma games, the impact of asymmetry, framing, and fairness perceptions on behavior, decision making of collective actors and policy implications of institutions. I also study these topics in an intercultural context. I analyze behavioral and verbal data the latter gained by questionnaires and video experiments. Here, subjects decide in groups and are observed during their decision making with their discussions being videotaped. The video tapes are transcribed word for word and analyzed by content analysis according to the specific research questions.

My research on policy implications of institutions involves joint work with members of the Max Planck Institute for Research on Collective Goods. In a series of public-good experiments with punishment and counter-punishment opportunities, the effect of first impressions has been found to have a strong effect on further behavior. Even though stabilising cooperation in these experiments requires some risk of sanctions, it has been shown in group prisoner's-dilemma experiments that mutual cooperative starting moves are also predictive for long stable cooperation without punishment opportunities.

Other joint experimental research with members of the Max Planck Institute for Research on Collective Goods compares two punishment institutions, immediate punishment and probation. The lab experiments suggest themselves because in a meta-study we show that the field evidence is inconclusive. We find probation to have a beneficial and a detrimental effect. While on probation, experimental subjects increase their contributions to the joint project. Once the probation period expires, however, they reduce their contributions. While in the aggregate these two effects almost cancel each other out, those who are not themselves punished do trust the institution less (materializing in reduced contributions) if punishment does not become effective immediately.

I also study the implications of changing institutions in the healthcare system by means of a lab experiment, in particular the behavioral impact of the commonly-used physician payment systems fee-for-service (FFS) and capitation (CAP). As in the literature on probation, empirical findings do not allow a general conclusion on how the systems affect behavior. We find that, in line with theoretical analyses, patients are

overserved in FFS and underserved in CAP. Financial incentives are not the only motivation for physicians' decisions, though, as the patient benefit is of considerable importance as well. Patients are affected differently by the two payment systems; those in need of a low level of medical services are better off under CAP, whereas patients with a high need of medical services gain more health benefit when physicians are paid by FFS. How these gains and losses are to be weighed against each other is a matter of political decision, however.

Corruption is a major economic problem around the world. In particular, it has huge negative welfare effects. Corruption and anti-corruption are, hence, important political issues, in particular in developing countries and in cultures with a tradition of gift-giving and returning favors, such as China. In order to study whether sensitizing people has an effect on their inclination towards corruption, we compare lab experiments in China where corruption was made salient (instructions loaded with the bribery context) or was implicit (neutral instructions). Context did have a sensitivity impact, for in the loaded treatment, participants playing the role of public officers accept fewer bribes and grant less permissions that affect society in a negative way. Interestingly, firms are not affected by context.

Justice and fairness have been central concerns in Western thinking; by now, they are an established explanans for decisions at odds with behavior of the 'economic man' predicted by standard game theory. A large body of theoretical and empirical/ experimental literature incorporates fairness as a basic element. For countries that are quite different in their philosophical backgrounds, like Germany and China, it is not self-evident that fairness is a concept or norm well-founded in both cultures. To investigate this question, we run a one-shot cross-cultural video-experimental study on ultimatum bargaining in Germany and China, where we study fairness perceptions in symmetric and asymmetric settings. Our insights are new in several respects. A remarkable proportion of player groups in both countries did not make fairness an issue in their discussions. Fairness seems to be more important to German participants as more Germans discuss fairness and it becomes an issue significantly earlier than in the Chinese sessions. Apparently, asymmetry does not influence fairness perceptions, and a self-serving bias does not seem to exist either, as the equal split is the fairness notion that is discussed by most groups in both countries. Yet, more Germans than Chinese talk about the equal split in connection with fairness. We find clear evidence for subjects reflecting on their counterparts via mentalizing and empathizing, as suggested by the neuro-economic literature. In both modes, they reason up to the second level when discussing fairness. We find strong intercultural differences with more German than Chinese groups taking their counterpart into account, and Germans reasoning on higher levels.

Research Agenda

My future research is based on my current work and will provide a natural extension of these issues. Policy implications of institutions will be one of my main research topics in the future and will include joint projects with members of the Max Planck Institute for Research on Collective Goods. Communication is a vital component of social behavior. It has been shown to have an important behavioral influence. The impact of promises and pre-play communication in social dilemma situations will still be another focal issue in my future research. Here, I will extensively use content analysis of the videotaped communication. Finally, my intercultural investigations in these issues will show whether results from Western research are transferable to other cultures. This is especially important with regard to growing globalization.

Publications (since 2007)

Articles in Peer-reviewed Journals

Hennig-Schmidt H., Rockenbach B., Sadrieh A., In Search of Workers' Real Effort Reciprocity – A Field and a Laboratory Experiment, *Journal of the European Economic Association*, In Press.

Hennig-Schmidt H., Li Z., Yang C., Why People Reject Advantageous Offers – Non-monotone Strategies in Ultimatum Bargaining, *Journal of Economic Behavior and Organization*, vol. 65, pp. 373-384, 2008.

Preprints

Engel C., Hennig-Schmidt H., Irlenbusch B., Kube S., On Probation. An Experimental Analysis, issue 2009/38, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Beckenkamp M., Engel C., Glöckner A., Irlenbusch B., Hennig-Schmidt H., Kube S., Kurschilgen M., Morell A., Nicklisch A., Normann H., Towfigh E., *Beware of Broken Windows! First Impressions in Public-good Experiments*, issue 2009/21, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Discussion Papers

Hennig-Schmidt H., Geng H., Sensitivity to Corruption – An Experimental Investigation in China, *Working Paper. University of Bonn*, 2009.

Hennig-Schmidt H., Leopold-Wildburger U., Path Dependence of Cooperation – An Experimental Investigation on the Prisoner's Dilemma Game, *Working Paper, Department of Business, University of Graz*, 2009.

Hennig-Schmidt H., Yan Z., Equity and Prominence in Asymmetric Bargaining – An Experimental Study on Aspiration Formation and Adaptation in Germany and P. R. China, *Working paper, University of Bonn*, 2009.

Hennig-Schmidt H., Geng H., Walkowitz G., Are groups Better in Capitalizing on Power than Individuals?, *Working paper, University of Bonn*, 2009.

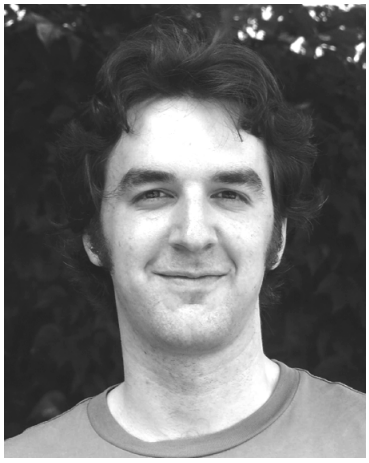
Hennig-Schmidt H., Geng H., Walkowitz G., On Fairness in Symmetric and Asymmetric Ultimatum Games – An Experimental Investigation in China and Germany, *Working paper, University of Bonn*, 2009.

Hennig-Schmidt H., Engel C., Irlenbusch B., Kube S., On Probation – An Experimental Analysis, *Working paper, Max Planck Institute for Research on Collective Goods*, 2009.

Hennig-Schmidt H., Selten R., Wiesen D., How Payment Systems Affect Physicians' Provision Behavior – An Experimental Investigation, *Working paper, University of Bonn*, 2009.

Hennig-Schmidt H., Brosig J., Communication effects in large groups – An experimental study on the Public Good Game, *Working Paper. University of Bonn (revision 2009)*, 2007.

Hennig-Schmidt H., Selten R., Walkowitz G., Winter E., Dakkak I., Actions and Beliefs in a Trilateral Trust Game Involving Germans. Israelis and Palestinians, *Working paper, University of Bonn (revision 2009)*, 2007.



Georg von Heusinger

Summary Report

In June 2009, I joined the International Max Planck Research School on Adapting Behavior in a Fundamentally Uncertain World as a PhD student. I was already affiliated with the Institute as a student assistant, when I had the task of programming experiments from November 2008 onwards. During that time, I wrote my experimental diploma thesis about focal points in threshold public goods, under the supervision of Prof. Dr. Sebastian Kube.

Research Agenda

I plan to focus my dissertation thesis on identifying the individual characteristics that drive contribution rates and/or punishment behavior in public-goods games.

Group dynamics in public-goods games are already very well researched. However, relatively little attention has been paid to the behavior of individual subjects. Understanding individual motivations is crucial for implementing proper mechanisms to raise contribution levels. Subjects are generally only classified as free-riders or contributors. However, the motivations for free-riding behavior can differ greatly, for example a person who contributes zero in a threshold public-goods game without refunds does not necessarily have to be a free-rider. An alternative explanation could be that the subject is simply risk-averse and does not trust his group members to contribute. If we find that a lot of free-riding behavior is driven by motives other than profit-maximization, then a better understanding of individual reasoning could lead to improving the institutional setting of the VCM game to induce more cooperative behavior.

Completed projects

In my diploma thesis experiment, we investigated whether giving subjects an alternative pareto-dominated PG option changes subjects' behavior in a threshold PG game with no refund and a rebate rule. We used two treatments. In the first treatment (1PG), subjects were randomly assigned into groups of 5. We used a partner design, so subjects remained in the same group for all 15 periods. Each subject had an endowment of 55 points per period, which the subjects could distribute between their private account and a group account. Payoffs from the group accounts were calculated as follows:

if the total contribution from all group members to a group account reached the required threshold value of 150, all group members received a bonus of 120 tokens. If the contributions to the group account exceeded the threshold value, each point above the

threshold value resulted in a payoff of 1 token for all group members. If the contributions to the group account were below the required threshold value, all points allocated to the group account gave a payoff of zero tokens. Points allocated to the private good resulted in a payoff of 2 tokens. At the end of the experiment, tokens were exchanged into Euro at the rate of 0.5 Cent per token.

In the second treatment (2PG), everything was kept identical, but subjects could now also invest their endowment into a group account with a threshold value of 200.

We found strong evidence that introducing the second group account creates a focal point which strongly shifts subjects' contributions towards the equal split contribution of 30 towards the group account with a threshold of 150. However, we also found that the introduction of the focal point significantly reduced over-contributing behavior and increased the coordination problem. This resulted in less overall contributions, compared to the 1PG treatment. Additionally it appears that contribution rates are strongly correlated with individual trust attitudes in the 1PG game. This leads to the conclusion that contribution decisions are mainly driven by the focal point in the 2PG game, whereas they are mostly driven by trust attitudes in the 1PG game.

Future projects

a) As a follow-up to my diploma thesis, I plan to conduct an experiment on dynamic rewards in the threshold public-goods game. Curiously, there exists a downward trend in the general threshold public-goods game without refunds, even though contributing the threshold is a Nash-GG for the group. To induce more stability in the threshold PG game, I would like to link the periodic payoffs to successful contributions in previous periods. For the linear VCM game, Noussair & Soo (2008) have already done an experimental study with dynamic rewards and shown that this can induce very high contribution levels. However, their results suffer from a lack of comparability. Compared to the standard VCM game, subjects could earn a lot more due to the rising payoff function. With a threshold PG game, keeping payoffs comparable between treatments is possible.

b) Additionally, I plan to pursue an experiment with Gert Poenitzsch (BGSE Bonn) on threshold public-goods games with an endogenous contribution order. We can often observe that the decision process to fund a public good is not made simultaneously, but rather in sequential order (e. g., pledges made by individual nations to reduce carbon dioxide emissions). We expect to find different contribution behavior compared to the standard simultaneous PG game and, in addition, hope to gain more insights into leadership behavior. In a pilot experiment undertaken at the Mannheim Empirical Research Summer School 2009, we found surprisingly high levels of cooperation compared to an exogenous or a simultaneous contribution order.

Benjamin Hilbig (Affiliate)

Summary Report

Most of my previous research has dealt with issues of judgment and decision making. I concentrated most strongly on multi-attribute judgments and heuristic mechanisms, though I approach this domain from several different angles. A toolbox of heuristic mechanism for judgment and choice has been proposed and received much interest in psychology and beyond over the past decade. However, the research program of heuristic judgments faces severe methodological shortcomings and theoretical challenges and most of my work has been devoted to overcoming these.

Aiming to solve one of the central methodological problems in judgment and decision making research, viz. the question 'how can we know/identify which strategy a decision maker used?', we have made several contributions (Hilbig, Erdfelder, & Pohl, in press; Hilbig & Pohl, 2008). The more recent of these bridges the gap between theory and empirical data by means of a formal measurement model from the class of multinomial processing tree models, which is also applicable to highly 'natural' types of judgments.

Secondly, to shed light on the descriptive adequacy of heuristic mechanisms, I conducted several experiments, examining both choice and response latency data. Overall, little evidence for heuristics which propose that decisions should be based on one reason (or cue) alone could be obtained. Both in the realm of comparative judgments (Hilbig & Pohl, 2009; Hilbig, Pohl, & Bröder, in press) and concerning risky choice (Hilbig, 2008b; Hilbig & Markett, 2009), we found models which propose information integration to provide substantially more explanatory power than theories of 'one-reason decision making'. Clearly, this has implications both for further theory building and practice. The pervasive use of simplifying heuristics – as has been proposed long ago and widely accepted even beyond psychology – appears to by dubitable. Indeed, it is the central conclusion of my recently completed Ph.D. thesis that the 'rationality' of human decision makers springs from *not* applying heuristics. As visiting member of the Intuitive Experts group, I plan to extend my work towards critical testing parallel constraint satisfaction models as a possible alternative model.

My work has also mirrored the intent to gain insight across subfields in psychology and beyond. For example, I recently began work on how information valence influences truth judgments (Hilbig, 2009), which is at the verge of social psychology, judgment and decision making and law psychology. In a series of studies, I was able to show that framing a formal piece of information negatively (e.g., '20 % of marriages are divorced within 10 years') rather than positively ('80 % of marriages last 10 years or longer') substantially increases truth ratings. I have interpreted this as an instance of a negativity bias in judgments of truth which has strong societal implications.

Finally, I have been fascinated by questions of how individual differences drive behavior – and, more importantly, how personality interacts with situation and context in shaping judgments and decisions. For example, work on the interplay of trait anxiety (as a proxy for fear of failure) and comparative judgments showed that use of heuristic mechanisms is more likely for those who are more anxious (Hilbig, 2008a) – which can be interpreted as a motivational effect based on avoidance of diagnostic tasks.

Also, in close collaboration with Ingo Zettler (RWTH Aachen University), I have delved into individual difference factors underlying cooperation – as is typically studied in behavioral economics. We found that the recently proposed sixth broad personality factor Honesty/Humility is essential for explaining differences in cooperation (Hilbig & Zettler, 2009). In particular, it explains the degree to which individuals will strategically adapt to the given context (i.e., the chance to exploit others without fearing retaliation) and thus provides the quintessential opportunity for investigating how person and situation interact in bringing about (non-) cooperation.

Research agenda

In my current research efforts, I aim to build upon my previous work to obtain more insight concerning the individual and situational determinants of judgment and decision making. In one project, I intend to make use of our measurement model (Hilbig, Erdfelder et al., in press) in a quest for contextual determinants and moderators of decision strategy selection. This will be guided by (but not bound to) the notion of adaptive decision making, that is, an effort-accuracy trade-off in strategy selection. Also, I will address individual differences in the use of judgment heuristics and the cognitive and motivational personality characteristics associated with these differences. Overall, I will try to connect the parallel constraint satisfaction approach and the strategy selection approach, if possible.

A second line of research will extend the preliminary findings concerning personality and cooperation. I will join the effort of the Intuitive Experts group to shed light on the psychological determinants of cooperation. Specifically, the predictive power of the Honesty/Humility factor will be studied across a wider range of games (especially social dilemma tasks). Importantly, choice behavior in a controlled lab setting with actual interaction and monetary incentives will be the main criterion – thus testing whether the previously obtained results in hypothetical situations extend to tasks deemed more valid in behavioral economics and related fields.

Publications (since 2007)

Articles in Peer-reviewed Journals

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Hilbig B. E., Erdfelder E., Pohl R. F., One-reason decision making unveiled: A measurement model of the recognition heuristic, *Journal of Experimental Psychology: Learning, Memory, and Cognition*, In press.

Hilbig B. E., Pohl R. F., Bröder A., Criterion knowledge: A moderator of using the recognition heuristic?, *Journal of Behavioral Decision Making*, In press.

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Hilbig B. E., Pohl R. F., Ignorance- vs. evidence-based decision making: A decision time analysis of the recognition heuristic, *Journal of Experimental Psychology: Learning, Memory, and Cognition*, vol. 35, pp. 1296-1305, 2009.

Hilbig B. E., Zettler I., Pillars of cooperation: Honesty-Humility, social value orientations, and economic behavior, *Journal of Research in Personality*, vol. 43, no. 3, pp. 516-519, 2009.

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Hilbig B. E., One-reason decision making in risky choice? A closer look at the priority heuristic, *Judgment and Decision Making*, vol. 3, no. 6, pp. 457-462, 2008.

Hilbig B. E., Pohl R. F., Recognizing users of the recognition heuristic. Experimental Psychology, *Experimental Psychology*, vol. 55, no. 6, pp. 394-401, 2008.

Work submitted

Hilbig, B. E. (subm.). On premature conclusions drawn from inappropriate methods: Studying and measuring use of the recognition heuristic.

Hilbig, B. E., Czenna, S., & Pohl, R. F. (subm.). Think or blink – is the recognition heuristic an 'intuitive' strategy?

Hilbig, B. E. & Habeck, A. (subm.). On the objective and subjective usefulness of atom recognition in predicting the outcome of sports events.

Hilbig, B. E., & Markett, S. A. (subm.). On the priority of the priority heuristic: critical tests of a fast and frugal model for risky choice.

Zettler, I. & Hilbig, B. E. (subm.). Attitudes of the Selfless: Explaining Political Orientation with Altruism.

Zettler, I., Friedrich, N., & Hilbig, B. E. (subm.). On the singularity of career commitment: The role of machiavellianism.

Nina Horstmann

Summary Report

After finishing my studies in psychology at the University of Trier, I joined the institute as a research fellow of the independent research group *Intuitive Experts* in August 2007. Over the last two years, the research within the scope of my dissertation has focused on affective and cognitive processes underlying intuitive and deliberate decision making. This research interest arose from the fact that until now relatively little is known about basic mental mechanisms of intuitive and deliberate processing modes. Indeed, numerous studies comparing intuition and deliberation were published in recent years, but they primarily focused on outcome measures such as decision quality while affective and cognitive processes have, for the most part, been neglected so far. I refrained from continuing this debate on decision quality and went one step further investigating process properties of intuitive and deliberate decision making with a special focus on predictions derived from the parallel constraint satisfaction model of decision making (Glöckner & Betsch, 2008). In my dissertation, I trace the following two lines of research.

First, I am interested in basic information search and integration processes of intuition and deliberation. Essential questions guiding my research are: how much information is sought in simple and complex decision scenarios when persons are instructed to decide intuitively or deliberately? Which weighting schemes do persons use to integrate information into their decision? And specifically, are intuition and deliberation completely distinct and separable processing modes? To address these questions, besides outcome-based strategy classification methods (e.g. Glöckner, 2009), I particularly used eye-tracking technology in my studies. This method seems to be suitable to capture intuitive and deliberate processes, because it does not limit information search like classic decision methodology, and it additionally provides important dependent measures that give indications of the depth of processing. In a joint paper with Andrea Ahlgrimm and Andreas Glöckner (2009), we aim to shed light on the long-standing dual-process debate in decision making. Within this debate, roughly two classes of theories modeling the interplay of intuitive and deliberate processes can be distinguished. According to the traditional dual-process framework, intuition and deliberation are conceptualized as two completely distinct modes between which people alternate under different conditions (see Evans, 2008). However, another class of models (e.g., Glöckner and Betsch, 2008) assumes that every decision is based on intuitive or automatic processes and can be supplemented by deliberate processes if necessary. Overall, our analysis of well-established eye-tracking parameters supports the latter class of theories. We could, for instance, show that instructions to decide intuitively or deliberately do not influence single fixation duration and that short fixations considerably prevail. As fixation duration is a

reliable indicator for levels of processing (e.g., Velichkovsky et al., 1999), our findings indicate that the instruction to deliberate does not necessarily lead to qualitatively different information processing compared to the instruction to decide intuitively.

A second line of research is devoted to the role affect plays in intuitive and deliberate decision making. Several theories assume that intuition is particularly sensible to affective stimuli, while deliberation rather deals with neutral information (e.g., Kahneman, 2003). In joint work with Stephan Dickert, I investigated the influence of affectively charged information on final judgments in complex legal cases. More precisely, I aimed to analyze if information about the defendant (which elicits an affective reaction, but in fact has no predictive power for a specific legal case) is processed differently under instructions to decide intuitively or to base the decision on conscious deliberation. First evidence shows that affectively charged information can influence probability assessments of guilt. Affectively negative information that is given in addition to (affectively neutral) exculpatory and inculpatory evidence results in higher probability-of-guilt ratings than affectively positive or neutral information. With regard to intuitive and deliberate processing modes, in contrast to our expectations no differential influences of affective information on final judgments were found. However, further research is currently being conducted to investigate this null effect more thoroughly.

Besides working on my dissertation, I was concerned with further projects. In cooperation with Sabine Czenna of the University of Mannheim, I investigated in an eye-tracking study what kind of information individuals search and rely on when asked to judge the randomness of binary sequences. Recent research identified several cues on which judgments of randomness can be based: alternation (frequency of symbol change within a given sequence) and run length (maximal length of directly succeeding symbols). Surprisingly, most studies focused only on one of these cues ignoring the other one and never capturing information search. To close this gap, we manipulated both alternation and run length in one study and measured parameters of information search using eye-tracking technology. Additionally, we induced different processing modes by asking participants to give their judgments intuitively or after conscious deliberation.

In joint work with Daniel Hausmann and Stefan Ryf of the University of Zurich, I contributed a chapter for the upcoming book "Foundations for Tracing Intuition: Challenges and Methods" edited by Andreas Glöckner and Cilia Witteman. Within this chapter, we present a critical review of well-established methods for the experimental induction of intuitive and deliberate processing modes.

Together with Tanja Ostermann, I organized the two-day workshop "Decision Research for Junior Scientists", which was held at the Max Planck Institute for Research on Collective Goods in September 2008. This workshop aimed at bringing together Ph.D. students and post-doctoral researchers and encouraging the discussion on current topics of decision research. Our concept seemed to have worked out: as a result of this workshop, a network of junior scientists in decision research emerged and a second workshop was arranged at the University of Mannheim in July 2009.

Publications (since 2007)

Articles in Peer-reviewed Journals

Horstmann N., Ahlgrimm A., Glöckner A., How Distinct are Intuition and Deliberation? An Eye-Tracking Analysis of Instruction-Induced Decision Modes, *Judgment and Decision Making*, vol. 4, pp. 335-354, 2009.

Book Chapters

Horstmann N., Hausmann D., Ryf S., Methods for Inducing Intuitive and Deliberate Processing Modes, *Foundations for Tracing Intuition: Challenges and Methods*, Glöckner A., Witteman C. L. M., (Eds.), London, Psychology Press & Routledge, In Press.

Preprints

Horstmann N., Ahlgrimm A., Glöckner A., *How Distinct are Intuition and Deliberation? An Eye-Tracking Analysis of Instruction-Induced Decision Modes*, issue 2009/10, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Lectures and Seminar Presentations (since 2007)

2008

Deliberation oder Intuition? Der Einfluss des Entscheidungsmodus auf die Informationsintegration bei probabilistischen Inferenzen niedriger und hoher Komplexität
[Deliberation or Intuition? The Influence of Decision Mode on Information Integration in Simple and Complex Probabilistic Inferences]
Poster presented at the 50. Tagung experimentell arbeitender Psychologen, Marburg
March 2008

Deliberation or Intuition? An Analysis of Cognitive Processes underlying Decision Modes
Poster presented at the XXIX International Congress of Psychology, Berlin
July 2008

Eine Eye-Tracking Analyse kognitiver Mechanismen in Abhängigkeit des Entscheidungsmodus
[An Eye-Tracking Analysis of Cognitive Mechanisms depending on Decision Mode]
Talk presented at the Workshop Decision Research for Junior Scientists, Max Planck Institute for Research on Collective Goods, Bonn
September 2008

2009

Urteilsbildung in komplexen rechtlichen Fällen: Der Einfluss des Entscheidungsmodus auf die Integration affektiver Informationen
[Judgment in Complex Legal Cases: The Influence of Decision Mode on the Integration of Affective Information]
Talk presented at the 51. Tagung experimentell arbeitender Psychologen, Jena, March 2009

An Eye-Tracking Analysis of Intuitive and Deliberate Decision Modes
Talk presented at the 11th European Congress of Psychology, Oslo, Norway
July 2009

How Distinct are Intuition and Deliberation? An Eye-Tracking Analysis of Instruction-Induced Decision Modes
Talk presented at SPUDM 22 (Subjective Probability, Utility and Decision Making), The European Association for Decision Making, Rovereto, Italy
August 2009

Workshop organized

Workshop Entscheidungsforschung für Nachwuchswissenschaftler
[Workshop decision research for junior scientists]
Organized by Tanja Ostermann and Nina Horstmann, Max Planck Institute for Research on Collective Goods
17-19 September 2008, Bonn

Bernd Irlenbusch (Affiliate)

Summary Report

As already outlined in the last report, one of my main research interests is the question why humans are inclined to contribute to public goods in some situations, while they are reluctant to do so in others (Abbink, Irlenbusch & Renner 2000, 2002; Fahr & Irlenbusch 2000; Fischer, Irlenbusch & Sadrieh 2004). In my view, this question is becoming increasingly important, in particular because enforcement mechanisms which have been naturally developed in local communities tend to lose their grip in a globalised world.

To approach the issue of mobility, we experimentally investigate a situation in which participants have the choice between two different communities and can vote with their feet on which community to join (Gürerk, Irlenbusch & Rockenbach 2009). Building on our Science paper (Gürerk, Irlenbusch & Rockenbach 2006), in each of the two communities public-good games are played among those who have chosen the same community. Communities differ in their sanctioning facilities. In one of the communities, participants can punish each other after having observed the contributions by others. Punishment is not feasible in the other community. The game is played repeatedly and it turns out that in the beginning subjects are quite reluctant to join the punishment institution. Some participants, however, have chosen the community with punishment possibility right from the start. In general they make high contributions and also heavily punish free-riders. They thereby succeed in establishing a cooperative culture in this community. The high contribution rates are observed by the members of the sanction-free community, in which contributions go down over time. In the end, virtually all participants migrate to the community with the sanctioning possibility, and the sanction-free community becomes completely depopulated. In the new paper, we compare this voting-with-feet setting (in which participants can endogenously choose the institution) with an experiment in which the same migration pattern is exogenously imposed. In such a setting, contributions are significantly lower. Contributions are even lower in a third experiment, in which the population under each institution is fixed. Our findings suggest that the endogenous choice of institutions is crucial to the observed high levels of cooperation.

In the same context of punishment institutions and public-good provision, several projects emerged in discussion with other researchers during my stay at the Max Planck Institute in Bonn during the academic year 2007/2008. In one project, we investigate the institution of probation in a public-good experiment (Engel et al 2009). Two treatments are conducted. In one treatment, probation is mandatory, while all punishment is immediate in the other. We find that probation has a beneficial and a detrimental effect. While experimental subjects are on probation, they increase their contributions to the joint

project. However, once the probation period expires, they reduce their contributions. Thus, probation in our experiment only has an effect as long as convicts are under the threat of punishment, but not thereafter. In another experiment with Professor Engel, we investigate in how far social history and the degree of detailed information on social history can influence contributions in a public-good situation with centralised punishment.

When we discussed the influence of leadership on public-good provision at the Institute, we came up with a project on leading by sacrifice. In Glöckner et al (2009), we analyse two public-good settings in which one community member has stronger incentives to contribute than the others. We find that if contributions constitute a sacrifice for the strong player, the other members are more inclined to cooperate than if contributions are strictly dominant for the strong player. In a related paper on leadership, we approach the question how different incentive schemes and their actual choice by the leader shape a team's culture and contribute to the team's success (Gürerk et al. 2009). We investigate how a leader chooses between rewards or punishment in an experimental team setting and how teammates' contributions in a public goods setting are influenced by this choice. Leaders show a clear initial preference for rewards, which diminishes over time in some teams. Leaders who observe more free-riders in their teams tend to switch to punishment incentives. A change from rewards to negative incentives results in an immediate and enduring increase in contributions. On the other hand, contributions show a decreasing trend in teams with a leader who sticks to rewards. One specific form of incentives in teams is also investigated in Harbring and Irlenbusch (2009). Here we look at relative performance schemes. Although these schemes are pervasive in organisations reliable empirical data on induced sabotage behavior is almost non-existent. We study sabotage in tournaments in a controlled laboratory experiment and are able to confirm one of the key insights from theory: effort and sabotage increase with the wage spread. Additionally, we find that even in the presence of tournament incentives, agents react reciprocally to higher wages, which mitigates the sabotage problem. Destructive activities are reduced by explicitly calling them by their name 'sabotage'. Communication among principal and agents curbs sabotage due to agreements on flat prize structures and increased output. With two co-authors from the University of Innsbruck, we looked at situations where teams have to coordinate with other teams (Feri et al. 2009). So far, the literature on the determinants of efficient coordination has focused on individual decision making. We present a series of coordination experiments with a total of 1,101 participants and find that teams of three subjects each coordinate much more efficiently than individuals. We explain the differences between individuals and teams using the experience weighted attraction learning model.

Looking back at these projects, it is self-evident that my stay at the Max Planck Institute was a challenging and inspiring time with a lot of freedom to pursue new ideas. I am happy that the Institute provided me with the opportunity to continue these collaborations as a Research Affiliate.

Publications (since 2007)

Articles in Peer-reviewed Journals

Glöckner A., Irlenbusch B., Kube S., Nicklisch A., Normann H., Leading with(out) Sacrifice? A Public-Goods Experiment with a Super-Additive Player, *Economic Inquiry*, In Press.

Irlenbusch B., Gürerk Ö., Rockenbach B., Motivating Teammates: The Leader's choice between Positive and Negative Incentives, *Journal of Economic Psychology*, vol. 30, pp. 591-607, 2009.

Irlenbusch B., Fahr R., Identifying Personality Traits to Enhance Trust between Organisations – An Experimental Approach, *Managerial and Decision Economics*, vol. 29,
pp. 469-487, 2008.

Irlenbusch B., Harbring C., How Many Winners are Good to Have? On Tournaments with Sabotage, *Journal of Economic Behavior and Organization*, vol. 65, pp. 682-702, 2008.

Irlenbusch B., Ruchala G., Relative Rewards within Team-Based Compensation, *Labour Economics*, vol. 15, pp. 141-167, 2008.

Irlenbusch B., Harbring C., Kräkel M., Selten R., Sabotage in Corporate Contests – An Experimental Analysis, *International Journal of the Economics of Business*, vol. 14, pp. 367-392, 2007.

Irlenbusch B., Harbring C., Verhandlungen über Lohndifferentiale. Einsichten aus einem Experiment mit Kommunikation, *Die Betriebswirtschaft*, vol. 67, pp. 201-223, 2007.

Irlenbusch B., Borges G., Fairness Crowded Out by Law. An Experimental Study on Withdrawal Rights, *JITE*, vol. 163, pp. 84-101, 2007.

Book Chapters

Irlenbusch B., Fahr R., Information Cascades Among Groups and Individuals – A Pilot Study, *Experimentelle Wirtschaftsforschung*, vol. 38: Mohr Siebeck, In Press.

Irlenbusch B., Harbring C., Zur Fairness von Entlohnungsformen – Einsichten aus einem Experiment mit Kommunikation, *Governance und Marktdesign*, Tschochohei H., Zimmermann S., (Eds.), pp. 231-263, 2009.

Preprints

Engel C., Hennig-Schmidt H., Irlenbusch B., Kube S., On Probation. An Experimental Analysis, issue 2009/38, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Glöckner A., Irlenbusch B., Kube S., Nicklisch A., Normann H., *Leading with(out) Sacrifice? A Public-Goods Experiment with a Super-Additive Player*, issue 2009/08, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Feri F., Irlenbusch B., Sutter M., *Efficiency Gains from Team-Based Coordination – Large-Scale Experimental Evidence*, issue 2009/14, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Beckenkamp M., Engel C., Glöckner A., Irlenbusch B., Hennig-Schmidt H., Kube S., Kurschilgen M., Morell A., Nicklisch A., Normann H., Towfigh E., *Beware of Broken Windows! First Impressions in Public-good Experiments*, issue 2009/21, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Discussion Paper

Hennig-Schmidt H., Engel C., Irlenbusch B., Kube S., On Probation – An Experimental Analysis, *Working paper, Max Planck Institute for Research on Collective Goods*, 2009.

Jos Jansen

So far, my research interests have been related to intellectual property rights and the acquisition and use of information in oligopolistic industries. In particular, my research covers three principal areas. First, I analyze the effects of knowledge diffusion and information transmission between companies in oligopolistic industries. Second, I study the incentives to invest in research and development (R&D) under asymmetric information. Finally, I analyze the optimal incentive regulation of network industries. In the past, my work has been related to these three topics, and my work in the near future will be related to these areas as well. My work is of a theoretical nature.

Summary Report

During the period 2008-2009, I focused my research efforts on knowledge diffusion and information transmission by oligopolistic firms.

Incentives in oligopoly

In the area of knowledge diffusion in oligopoly, I am working on two related problems of strategic knowledge diffusion in environments with weak intellectual property rights. In particular, I analyze the following basic trade-off between two effects. On the one hand, the diffusion of knowledge about a production technology may enable a competitor to adopt the technology to some degree, and become a more "aggressive" competitor in the product market (expropriation effect). On the other hand, it makes a competitor aware of the relative efficiency of the firm's diffused technology, which affects the competitor's strategy in the product market (signaling effect).

First, I study how the competitive pressure in the product market affects the incentives of an innovative firm to diffuse its knowledge through an imperfect patent. Different measures of competitive pressure have different effects on the incentives of a firm to apply for a patent with probabilistic validity. Whereas an increase in the number of firms gives a smaller patenting incentive, an increase in the degree of product substitutability gives a greater incentive to apply for a patent. A switch from price competition to quantity competition reverses the direction of the signaling effect, and changes the incentives to share technologies. Switching from Bertrand to Cournot competition gives a smaller (greater) patenting incentive if patent protection is weak (strong). Some economic consequences of these results are explored.

Second, I study the technology-sharing incentives of two innovative firms that compete in quantities when intellectual property right protection is absent. The skewness of the firms' technology distributions affects the relative sizes of the expected expropriation and

signaling effects, which determines the technology sharing incentives of the two firms. Interestingly, the profit gain from technology sharing is non-monotonic in the size of the innovation. A firm has the greatest incentive to share for intermediate technologies.

In the area of information transmission in oligopolistic markets, I have analyzed the welfare effects of strategic information acquisition and information sharing by oligopolistic firms. Here I study how strategic information acquisition may change the impact of information sharing on the consumer surplus. First, in a joint project with Juan José Ganuza, we analyze the transmission of information about independently distributed production costs. If information is exogenous to the firms, then information sharing hurts consumers on average. However, when information is acquired by firms, then information sharing creates a greater incentive to acquire information, which increases the expected consumer surplus. This beneficial effect of information sharing may dominate the former effect. Second, I studied the welfare effects of information acquisition and information sharing about a common demand intercept. A related trade-off emerges. For an exogenously given level of information acquisition, the consumer surplus increases after information sharing. However, firms invest less in information acquisition when they share information, which reduces the expected consumer surplus. Again, the latter effect may dominate the former effect.

Finally, I study the incentives of an efficient firm to disclose its production cost in an asymmetric Cournot duopoly. Whereas the efficient firm (consumers) prefers information sharing (concealment) when the firms choose accommodating strategies in the product market, the firm (consumers) may prefer information concealment (sharing) when it can exclude its competitor from the market. Hence, the rankings of expected profit and consumer surplus can be reversed if exit of the inefficient firm is possible. Although the efficient firm has stronger incentives to share information when it shares strategically, there remain cases in which the firm conceals information in equilibrium to induce exit.

Incentives in innovation

First, I prepared the final version of a paper on Strategic Information Disclosure and Competition for an Imperfectly Protected Innovation, for the *Journal of Industrial Economics*. In this paper, I study how the imperfect appropriability of revenues from innovation affects the incentives of firms to invest, and to disclose information about their innovative productivity. It creates a free-rider effect in the competition for the innovation that countervails the familiar business-stealing effect. Moreover, it affects the disclosure incentives such that full disclosure emerges for extreme revenue spillovers (e.g., full protection and no protection of intellectual property), but either partial disclosure or full concealment emerges for intermediate spillovers. Further, I analyze the implications of imperfect appropriability and strategic disclosure for the firms' profits and the probability of innovation.

The second paper in this area, which remains work in progress, explores the disclosure strategies in a simple contest. A contestant has private information about the size of the prize he can obtain as a winner of the contest. For example, a research laboratory may

have private information about the cost reduction it can achieve if it is the first to patent a process innovation. The contestant has the smallest incentive to disclose prizes that are equal to the prize of the competitor. The disclosure incentives increase as the contestant's prize moves further away from the rival's prize. That is, the profit gain from disclosure is non-monotonic in the size of the contestant's prize, if the rival's prize lies in the interval of feasible prizes. In the near future, I intend to explore the economic implications of this observation.

Research Agenda

In the near future, I intend to revise and finish the research papers I have been working on so far, and venture into a few new problems within the second and third research areas.

Incentives in oligopoly

In the area of information transmission in oligopolistic markets, I recently started working on a joint research project with Rune Stenbacka. We intend to analyze the incentives of insurance companies to acquire and share information about risk. Subsequently, we intend to characterize the effects of information sharing on the producer and consumer surpluses. Currently, the EU competition authority considers an extension of the block exemption on joint information acquisition and dissemination in the insurance market.

In a joint research project with Luigi Filippini, we study the effects of a horizontal merger on the incentives of firms in an oligopoly to disclose information strategically about production costs. A merger between two firms has at least two effects on the incentives to disclose information. First, the merger increases the market concentration, and thereby changes the sensitivity of a firm's profit with respect to information disclosure. Second, the merged firm consolidates the information of the individual firms and coordinates the information disclosure and pricing strategies of the individual firms.

Incentives in innovation

In the near future, I intend to analyze the consequences of secrecy by innovative firms on the incentives to invest in a patent race. Secrecy creates ambiguity about the number of firms that are developing competing technologies in an industry. The more time passes during which no discovery has been made, the more optimistic firms become about the competitive pressure, and the lower investment incentives are. These investment dynamics have interesting economic consequences, which I will explore in the future. Characterizing the effects of secrecy and research dynamics on profits, welfare, and macroeconomic performance rank high on my research agenda. Furthermore, I would like to gain insights in the incentives of innovative firms for adopting secrecy in the first place.

Incentives in regulation

Finally, I intend to work on the incentive regulation of network industries. One problem that fascinates me currently is the optimal regulation of access to a network. Resolving the access-pricing problem is often crucial to the successful deregulation of network industries, and there remain some open questions in this area. In particular, I would like to study the effect of cross-subsidization incentives on the optimal regulation of a network provider.

Publications (since 2007)

Articles in Peer-reviewed Journals

Jansen J., Strategic Information Disclosure and Competition for an Imperfectly Protected Innovation, *Journal of Industrial Economics*, In Press.

Jansen J., Information Acquisition and Strategic Disclosure in Oligopoly, *Journal of Economics & Management Strategy*, vol. 17, no. 1, pp. 113-148, 2008.

Jansen J., Jeon D., Menicucci D., The Organization of Regulated Production: Complementarities, Correlation and Collusion, *International Journal of Industrial Organization*, vol. 26, no. 1, pp. 327-353, 2008.

Preprints

Jansen, J., Share to Scare: Technology Sharing in the Absence of Intellectual Property Rights, issue 2009/36, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Jansen J., *Beyond the Need to Boast: Cost Concealment Incentives and Exit in Cournot Duopoly*, issue 2009/32, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Jansen J., *On Competition and the Strategic Management of Intellectual Property in Oligopoly*, issue 2009/13, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Jansen J., *Strategic Information Disclosure and Competition for an Imperfectly Protected Innovation*, issue 2009/06, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Jansen J., *Information Acquisition and Strategic Disclosure in Oligopoly*, issue 2007/13, Bonn, Max Planck Institute for Research on Collective Goods, pp. 46, 2007.

Work in progress

Jansen, J., Competition Policy towards the Disclosure of Acquired Demand Information in Duopoly, May 2009

Ganuza, J.J. and J. Jansen, Too Much Information Sharing? Welfare Effects of Disclosing Acquired Cost Information. May 2009

Jansen, J., Something Big (or Small) Is Gonna Happen: Strategic Information Disclosure in Contests. May 2009

Filippini, L. and J. Jansen, Mergers and Messages: Strategic Cost Disclosure and Mergers in Oligopoly. March 2009

Lectures and Seminar Presentations (since 2007)

2007

The Carrot and the Claim: Strategic Patent Choices in Differentiated Duopoly
Seminari del Martedì, Università Cattolica del Sacro Cuore, Milan, Italy
March 2007

The Carrot and the Claim: Strategic Patent Choices in Differentiated Duopoly
34th Annual Conference of EARIE, Valencia, Spain
September 2007

Share to Scare: Technology Sharing in the Absence of Intellectual Property Rights
Annual meeting of the Association of Southern European Economic Theorists (ASSET), Padova, Italy
November 2007

2008

On Competition and the Strategic Management of Intellectual Property
SFB/Transregio 15 (GESY) Conference, Gummersbach, Germany
April 2008

On Competition and the Strategic Management of Intellectual Property in Duopoly
Department of Economics Lunch Seminar, University of Bologna, Bologna, Italy
May 2008

On Competition and the Strategic Management of Intellectual Property in Oligopoly
Zvi Griliches Summer School in the Economics of Innovation, Barcelona, Spain
July 2008

Share to Scare: Technology Sharing in the Absence of Intellectual Property Rights
23rd Annual Congress of the European Economic Association, Milan, Italy
August 2008

Competition Policy towards the Disclosure of Acquired Demand Information in Duopoly
Annual Meeting of the Association of Southern European Economic Theorists, Florence, Italy
November 2008

2009

On Competition and the Strategic Management of Intellectual Property in Oligopoly
Economics Research Seminar, Helsinki Center of Economic Research, Helsinki, Finland
January 2009

On Competition and the Strategic Management of Intellectual Property in Oligopoly
Economics Research Seminar, University of Cologne, Cologne, Germany
February 2009

Competition Policy towards the Disclosure of Acquired Demand Information in Duopoly
Economics Seminar, Copenhagen Business School, Copenhagen, Denmark
April 2009

Competition Policy towards the Disclosure of Acquired Demand Information in Duopoly
Workshop of Competition Law and Economics European Network, Tilburg, Netherlands
May 2009

Competition Policy towards the Disclosure of Acquired Demand Information in Duopoly
Internal Economics Seminar, University of Bologna, Bologna, Italy
May 2009

Competition Policy towards the Disclosure of Acquired Demand Information in Duopoly
Economics Seminar of Tuesdays, Università Cattolica Milano, Milan, Italy
May 2009

On Competition and the Strategic Management of Intellectual Property in Oligopoly
24th Annual Congress of the European Economic Association, Barcelona, Spain
August 2009

Competition Policy towards the Disclosure of Acquired Demand Information in Duopoly
36th Conference of the European Association for Research in Industrial Economics
Ljubljana, Slovenia
September 2009

On Competition and the Strategic Management of Intellectual Property in Oligopoly
International Conference on Competition Policy and Property Rights, Milan, Italy
September 2009

Too Much Information Sharing? Welfare Effects of Disclosing Acquired Cost Information
(joint with Juan-José Ganuza)
24th Jornadas de Economía Industrial, Vigo, Spain
September 2009

Something Big (or Small) Is Gonna Happen: Strategic Information Disclosure in Contests
24th Jornadas de Economía Industrial, Vigo, Spain
September 2009

Share to Scare: Technology Sharing in the Absence of Intellectual Property Rights
10th Internal Conference of SFB/Transregio 15, Tutzing, Germany
October 2009

Information Exchange in the Insurance Industry: A Procompetitive or Anticompetitive Device?
(joint with Rune Stenbacka) Workshop on "Liquidity and Trust in Incomplete Markets," Freiburg, Germany
November 2009

On Competition and the Strategic Management of Intellectual Property in Oligopoly
Séminaire Économie et Économétrie de l'Innovation, Paris, France
December 2009

Janet Kleber

Summary Report

I joined the Max Planck Institute for Research on Collective Goods in July 2007 as an undergraduate research assistant in the Research Group *Intuitive Experts* and started my PhD in psychology in the group in autumn 2009.

My current research pertains to the psychological mechanisms of pricing decisions and focuses on the *endowment effect* with a special focus on how endowment effects can be explained by a parallel constraint satisfaction model (PCS, Glöckner & Betsch, 2008). The term endowment effect refers to the phenomenon that people systematically assign higher monetary values to sell a good, if they own it, than they are willing to pay to acquire it. A recent theory tries to explain the endowment effect as a result of biased memory retrieval processes (Johnson, Häubl & Keinan, 2007). According to this theory, the status quo induces a specific order of memory queries, namely that people start thinking about the arguments speaking for the status quo and only later on think about arguments for leaving the status quo. Because of inhibitory processes, the first retrieved arguments receive more weight which results in an overvaluation of the status quo state. In joint research with Andreas Glöckner and Stephan Tontrup (Glöckner, Tontrup, & Kleber, in preparation), I experimentally tested this hypothesis by systematically manipulating query orders. Although we could replicate the query order effect, our results show that this effect is partially independent of the mere effect of endowment state. The effects of query order and endowment state on pricing seem both to be mediated by changes in people's mental representations of the situation. We therefore argue that the PCS approach provides a more general framework for explaining the different factors that contribute to the endowment effect.

In my Masters research project, I extend this research on endowment effects and investigated a specific hypothesis derived from PCS. Specifically, I manipulated whether sellers or buyers focus on positive or negative attributes of the traded good (i.e., lottery tickets) by changing their salience. This salience manipulation had an effect on pricing, as predicted by PCS.

In a related project with Andreas Glöckner, Stephan Tontrup (MPI for Economics, Jena), and Stefan Bechtold (ETH Zurich), we examined the interaction of endowment effect, group effects, and strategic effects. Our study shows that even under total anonymity and without communication the mere effect to play in a group reduces the endowment effect by 50%. With incentives for strategic overpricing, the endowment effect completely disappears. Interestingly, these effects are confined to pricing decisions, while personal valuation of the items remains unaffected.

Furthermore, I have been involved in a variety of research projects in other fields of judgment and decision making. In one project, I investigated the processes that underlie

the construction of time and frequency judgments (Lindow, et al., in preparation). In a project led by Tilmann Betsch (University of Erfurt), I investigated the role of behavioral models in routine decision making (Betsch, Lindow, Ulshöfer, Kleber, & Engel, under review). Finally, in cooperation with Johannes Hönekopp, I examined the predictive power of measures of research quality (Hirsch-Index and Impact Factor) by analyzing the citation frequency of articles (Hönekopp & Kleber, 2008).

In the next two years, I plan to continue my work on endowment effects and aim to explore further how PCS models can account for it. A special focus will be on specific mathematical modeling.

Publications (since 2007)

Articles in Peer-reviewed Journals

Hönekopp J., Kleber J., Sometimes the impact factor outshines the H index, *Retrovirology*, vol. 5, pp. 88, 2008.

Preprints

Glöckner A., Kleber J., Tontrup S., Bechtold S., *The Endowment Effect in Groups with and without Strategic Incentives*, issue 2009/35, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Work in Progress

Betsch, T., Lindow, S., Ulshöfer, C., Kleber, J. and C. Engel, The role of behavioral models in routine decision making (under review).

Glöckner, A., Tontrup, S. and J. Kleber: Are Endowment Effects Caused by Query Order? Investigating the Query Theory for Value Construction.

Lindow, S., Kleber, J., Briese, N., Krüger, M., Bernauer, J., Lindow, F. and T. Betsch, Physical strain and the storage of frequency and duration in memory.

Lectures and Seminar Presentations (since 2007)

Einfluss von Anstrengung und Rhythmus auf Urteile über Zeit und Häufigkeit
[The impact of strain and rhythm on time and frequency judgments]
(with N. Briese, S. Lindow & T. Betsch)
Talk presented at the 51. Tagung experimentell arbeitender Psychologen (TEAP)
April 2009

The influence of focus and domain on the endowment effect
Talk presented at the 2.Workshop Decision Research for Junior Scientists, Mannheim
July 2009

The Endowment Effect within Strategic Groups
(with A. Glöckner)
Poster presented at the 22. SPUDM, Rovereto, Italy
August 2009

Endowment Effekte in Gruppensituationen mit strategischen Anreizen: Warum Innovationen nicht realisiert werden
[Endowment effect in strategic groups: Why innovations aren't realized]
(with A. Glöckner)
Talk presented at the 12. Fachgruppentagung Sozialpsychologie, Luxemburg
September 2009

Sebastian Kube

Summary Report

I joined the Institute in March 2007. After receiving my diploma in Economics from the University of Bonn, Germany, in 2002, I joined *SURVIVE*, a project about traffic control in North Rhine-Westphalia funded by the German Federal Ministry of Education and Research (BMBF), as a research assistant at the Laboratory for Experimental Economics at the University of Bonn. In 2003, I became research and teaching assistant at the chair of Prof. Dr. Clemens Puppe at the University of Karlsruhe, Germany. Since 2008, I am research fellow at the IZA. In April 2009, I became Professor of Economics at the University of Bonn.

During my time in Karlsruhe, I wrote my PhD thesis entitled *homo oeconomicus vs homo aequus – Experimental Investigations of Social Preferences*, which was supervised by Prof. Dr. Clemens Puppe, Prof. D. Reinhard Selten, and Prof. Dr. Christof Weinhardt, and was finally accepted in January 2007. The thesis consists of four different contributions, which all have in common that they make use of Experimental Economics methods and lie in the intersection between Behavioral Economics, Personnel Economics, and Social Choice. These three areas partly reflect my current general research foci.

I am exploring which factors shape cooperation in groups – on a broad scale as well as in the special case of working teams. In particular, I am interested in how these factors interact with the social motives of the group members and the consequences for the designing of optimal mechanisms in these areas.

For example, in joint work that is now forthcoming in the *Economic Inquiry ("Leading with(out) Sacrifice? A Public-Goods Experiment with a Privileged Player")*, Andreas Glöckner, Bernd Irlenbusch, Andreas Nicklisch, Hans-Theo Normann and I explore two team settings in which one member in a team has stronger incentives to contribute than the others. We find that if contributions constitute a sacrifice for the strong player, the other team members are more inclined to cooperate than if contributing is strictly dominant for the strong player. This finding is particularly interesting for the latest strand of literature which tries to explain voluntary contribution in social dilemmas by conditional cooperation.

Another recent approach in the literature is to explain such voluntary cooperation in groups by the existence of social sanctions. Social sanctions mean that group members can observe what others have done and subsequently sanction free-riders. As has been shown in numerous lab experiments, players usually cooperate in the presence of social sanctioning possibilities. This finding even holds true if the sanctioned player does not immediately learn that he has been sanctioned, as I show in the study "*The benefits of latent payback in social dilemmas*" (together with Andreas Nicklisch and Andreas

Glöckner). However, using a novel design in which social sanctions and subsequent "counter-punishment" was possible, some authors found that cooperation fails again. Together with Christoph Engel and numerous other researchers at the MPI, we therefore worked on a study entitled "*Beware of Broken Windows! First Impressions in Public-good Experiments*" to explain this phenomenon. Using a large dataset of different experimental studies, we show that the development of future cooperation rates crucially depends on the initial group composition – independently of the concrete variation of the public-goods game; i.e., without and with social sanctions, as well as without and with counter-punishment opportunities. This means that even in the presence of counter-punishment opportunities, social sanctions can foster cooperation as long as first-period impressions are sufficiently positive. Whether this is the case seems to hinge strongly on the expectations that the players have about the behavior of the other participants in the game, or in the environment – as is shown by us in a subsequent study "*Breaking Windows*".

Surprisingly, the existing literature in the area of social sanctions usually abstracts from the existence of legal sanctions. Legal sanctions are often used to enforce pro-social behavior, although they are frequently 'non-deterrent'. Nevertheless, we basically observe widespread compliance with such 'mild laws'. A possible explanation might be that incentives to comply with laws not only derive from legal law enforcement, but also "from the informal enforcement of social mores by acquaintances, bystanders, trading partners, and others." In joint work with Christian Traxler, we analyze the relationship between legal and social norm enforcement. To this mean, we had to invent a new method to measure individual's social-sanctioning activities. Our method allows us clearly to assess the impact of legal on social sanctions. Moreover, we will use it subsequently to study how norm enforcement, conditional cooperation and individuals' traits are related.

The unpacking effect in public goods is the motivation for a joint project with Michel Marechal and Luca Corazzini. The idea is to increase giving behavior by simply splitting one public good into many public goods. From a theoretical viewpoint, this framing should not alter the decision of a rational individual. However, we observe that in the lab experiment, overall contributions to the public goods are increased if subjects are provided with the possibility to divide money between a private account and two (instead of one) public accounts. The corresponding paper *"Two are better than One! Individuals' Contributions to Unpacked Public Goods"* is now forthcoming in *Economics Letters*.

In a follow-up study (together with Bodo Aretz of the ZEW in Mannheim), we tried to implement a similar setup in the field. The organization "Doctors for Developing Countries" (Ärzte für die dritte Welt) agreed to cooperate with us on this project. Together with the organization, we developed two solicitation letters. Both letters consisted of two double-sided pages including one remittance slip. In the control group, people could decide how much money they wished to donate to the project work of the organization. In contrast, the donors in the treatment group could decide to which particular project countries (if any) they wanted to give their money. By entering five-digit codes in the

"reason of transfer" on the remittance slip, subjects were able to pick between zero and all five countries to donate to. We find no overall treatment effect, which is likely to be driven by the fact that people rarely use the possibility to target a specific country with their donation. However, those who do state a recipient donate significantly larger amounts. Therefore, in the near future I will try to re-run this study again (together with Kirsten Häger of the University of Jena and Luca Corazzini of the University of Padua) in a different setup in which the persons are forced to decide on the recipient of their donation (namely, by providing one remittance slip per country with the solicitation letter).

Of course, public-good provision is not the only area where individual and group interests are in conflict. The same frequently holds true for working groups, e.g., in organizations. Therefore, together with Sebastian Goerg and Ro'i Zultan of the Hebrew University, I wrote a paper with the name "*Treating Equals Unequally – Incentives in Teams, Workers' Motivation and Production Technology*". In this paper, we study how reward mechanisms and production technologies affect effort provision in teams. Our experimental results demonstrate that unequal rewards can potentially increase productivity by facilitating coordination, and that the effect strongly interacts with the exact shape of the production function. We show that in the case of a production function of complementarity, i.e., increasing returns to scale, highest efficiency is obtained if workers do not receive equal wages for equal effort. Taken together, our data highlight the relevance of the production function for the construction of organizations and suggest that equal treatment of equals is neither a necessary nor a sufficient prerequisite for eliciting high performance in teams. In a related study (together with Eyal Winter, Ro'i Zultan and Esteban Khor of the Center of Rationality in Jerusalem), we analyze whether the previous findings change if players move sequentially rather than simultaneously. Interestingly, in certain situations it can now theoretically happen that an increase in the payments of all workers in a group results in a situation in which everybody works less and is worse off. We are currently in the process of writing the paper, which should nicely add to the discussion on the role of money (resp. monetary incentives) as motivation. Along these lines, my joint paper on "*The Currency of Reciprocity*" (written with Michel Maréchal of the University of Zürich and Clemens Puppe of the University of Karlsruhe) also contributes to this literature. Here, we explore if we can trigger voluntary cooperation at the workplace by giving a gift in-kind rather than money.

Publications (since 2007)

Articles in Peer-reviewed Journals

Kube S., Abeler J., Altmann S., Wibral M., When Equality Is Unfair – Reciprocity and Payment Modes in a Principal-Multi-Agent Experiment, *Journal of the European Economic Association*, In Press.

Kube S., Corazzini L., Maréchal M., Two are better than One! Individuals' Contributions to "Unpacked" Public Goods, *Economics Letters*, In Press.

Glöckner A., Irlenbusch B., Kube S., Nicklisch A., Normann H., Leading with(out) Sacrifice? A Public-Goods Experiment with a Super-Additive Player, *Economic Inquiry*, In Press.

Kube S., Puppe C., (When and How) Do Voters Try to Manipulate? Experimental Evidence from Borda Elections, *Public Choice*, vol. 139, pp. 39 ff., 2009.

Kube S., Kaiser J., Behavioral Finance meets Experimental Macroeconomics: On the Determinants of Currency Trade Decisions, *Journal of Behavioral Finance*, vol. 10, 2009.

Kube S., Selten R., von Hagen J., Pope R., Experimental Evidence on the Benefits of Eliminating Exchange Rate Uncertainties, *Indian Journal of Economics and Business*, vol. 7, pp. 1-31, 2008.

Kube S., Selten R., Chmura T., Pitz T., Schreckenberg M., Experiments and Simulations on Day-to-Day Route Choice-Behavior, *Games and Economic Behavior*, vol. 58, issue 2, pp. 394-406, 2007.

Preprints

Engel C., Hennig-Schmidt H., Irlenbusch B., Kube S., On Probation. An Experimental Analysis, issue 2009/38, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Glöckner A., Irlenbusch B., Kube S., Nicklisch A., Normann H., *Leading with(out) Sacrifice? A Public-Goods Experiment with a Super-Additive Player*, issue 2009/08, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Beckenkamp M., Engel C., Glöckner A., Irlenbusch B., Hennig-Schmidt H., Kube S., Kurschilgen M., Morell A., Nicklisch A., Normann H., Towfigh E., *Beware of Broken Windows! First Impressions in Public-good Experiments*, issue 2009/21, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Working Papers

Hennig-Schmidt H., Engel C., Irlenbusch B., Kube S., On Probation – An Experimental Analysis

Glöckner, A., Kube, S., Nicklisch, A., The benefits of latent payback in social dilemmas

Goerg, S., Kube, S., Zultan, R., Treating Equals Unequally – Incentives, Motivation and Production Technology in Teams (revised and resubmit)

Corazzini, L., Kube, S., Maréchal, M. A., Elections and Deceptions

Kube, S., Puppe, C., Maréchal, M. A., Do Wage Cuts Damage Work Morale? Evidence from a Natural Field Experiment

Kube, S., Puppe, C., Maréchal, M. A., The Currency of Reciprocity – Cash, Perks and Workers' Motivation in the Field

Lectures and Seminar Presentations (since 2007)

2007

Workshop: Reciprocity. Theories and Facts, Milan-Bicocca, Italy
22–24 February 2007

Elections and Deception
1st World Meeting of the Public Choice Society, Amsterdam, Netherlands
29 March–1 April 2007

Elections and Deception
Economic Research Seminar at the University of Karlsruhe, Germany
3 May 2007

Elections and Deception
World Meeting of the Economic Science Association, Rome, Italy
28 June–1 May 2007

Wages and Working Morale
European Meeting of the Econometric Society, Budapest, Hungary
27–31 August 2007

Elections and Deception
Economic Brown Bag Seminar, University of Innsbruck, Austria
11 October 2007

Elections and Deception
School of Education at the Hebrew University, Jerusalem, Israel
8 November 2007

Elections and Deception
Frey/Frey/Engel research seminar in Zurich, Switzerland
27–29 November 2007

2008

Elections and Deception
Asia-Pacific Meeting of the Economic Science Association, Singapore
21–24 February 2008

Elections and Deception
Experimental Research Seminar, Bonn, Germany
30 May 2008
Broken Windows in the Lab
Public Economic Theory Meeting, Seoul, South Korea
23–28 June 2008

Workshop: Nobel Laureate Meeting in Economics, Lindau, Germany
19–24 August 2008

2009

Wages and Working Morale
When incentives Backfire – Theory meets Practice, London
30 June–1 July 2009

Michael Kurschilgen

Summary Report

Trained in Economics and Social Sciences at the Universities of Bonn and Maastricht as well as the IEP Paris, I have a genuine fascination for interdisciplinary research.

In 2007, I wrote my Masters thesis at Maastricht University under the supervision of Bettina Klaus on the "Equitability of the Spanish National Hydrological Plan (NHP) of 2001". The thesis analyses a legal topic with the help of economic theory enriched by insights from psychology, philosophy and political science. The NHP was a highly controversial law stipulating the transfer of water resources from one water-abundant basin to four water-scarce regions. The legislator claimed the law to be "equitable" without specifying which conception of equitability was underlying the individual transfer quantities. My Masters thesis tries to shed some light on this question. For that purpose, I model the situation as a bankruptcy scenario in which the scarce resource water is allocated among several claimants, the water basins. I then apply to this claims problem a set of common decision rules. In addition, I examine the possible influence of several principles of distributive justice, such as tradition, need and efficiency. My results suggest that the transfer quantities of the NHP follow a pattern that is very close to the one recommended by the proportional rule. Moreover, the equitability conception of the NHP appears to place considerable weight on the justice principle of tradition. Hence, water is treated as if it belonged to the individual basins, which contradicts sharply the notion of water being "national property", as expressed in the text of the law.

Since joining the Institute as well as the Uncertainty School in January 2008 as a PhD student, the focus of my research has shifted from real-world applications towards more abstract and fundamental questions of institutional design, which I study predominantly by means of laboratory experiments.

Together with Stephan Tontrup (MPI for Economics, Jena), I have analysed the effect of the expressive function of the law on voluntary contributions to a public good. The experiment consists of a repeated public-goods game preceded by a stage in which the 4 subjects of a group can agree on a minimum contribution to the public good. In one treatment, the agreement is a mere promise, whereas in the other treatment, the agreement is a real contract. Subjects are well aware of the fact that even though the contract is legally valid, it is not enforceable because of the anonymity conditions of the lab. The results are striking, showing that contributions to the public good are substantially higher in the contract treatment than in the promise treatment throughout all periods of the game. Being able to rule out both signalling and deterrence, our results are a strong indication for the expressive power of law. For the economic community this implies that the usual definition of contracts as enforceable promises must be reconsidered.

Together with Christoph Engel and Sebastian Kube I have investigated the role of home-grown expectations in the punishment-counterpunishment (PCP) game of Nikiforakis (2008). This experimental framework attempts to capture situations that are sufficiently complex for several potentially conflicting behavioral norms to emerge. The main variable of interest in the PCP game is the average voluntary contribution to the public good. Two earlier experiments of the PCP game, run in Bonn and in London, report totally differing behavior. Whereas in London contributions decline steadily to about 25% in the last period, cooperation in Bonn averages more than 70% throughout the experiment. The innovation of this paper builds on the classic "Broken Windows" field experiment (Zimbardo, 1969). By giving subjects in Bonn selective examples of uncooperative behavior, we manage to reduce dramatically the average level of cooperativeness. Just as Zimbardo generated Bronx-like behavior in peaceful Palo Alto back in 1969, we are able to create London-like behavior in the Bonn lab. In addition to expanding Zimbardo's important finding with a new methodological approach, we can understand better the processes behind the observed effect: what happens in the initial period of interaction is crucial for the further development of cooperation. In later periods, the gap between initially cooperative and uncooperative groups does not diminish, but rather widens. Initial behavior, in turn, critically depends on pre-game expectations, which we show to be easy to manipulate in a setting with norm ambiguity. Our results in the group dimension suggest that very similar neighborhoods might witness a totally contrary development of cooperation simply because of different initial expectations. For policy makers, these findings represent both a chance and a peril. In any case, we show that home-grown expectations must not be disregarded in order to attain the socially desirable outcome. In situations where the success of a law depends on the willingness of individual citizens to cooperate – for instance in areas like waste separation and sustainable water use – the government should seriously consider a PR campaign in order to create a general atmosphere of cooperativeness within the population.

Together with Christoph Engel I have studied a rather peculiar norm from German copyright law, the so-called "bestseller paragraph". This norm stipulates that the buyer of a copyright license is obliged to give the author an "appropriate" additional remuneration in case the original license price was too cheap. The market for copyrights is characterised by a highly skewed distribution of profits: very few movies, books and songs generate huge profits, whereas the great bulk barely manages to recover the production costs. We explore the effect of the "bestseller paragraph" on welfare, market allocation and perceived fairness in an experimental setting that contains the main properties of the market for copyrights. Our results show that the norm leads to lower prices for copyrights. Moreover, the norm seems to enhance welfare in the sense that more deals between buyer and seller are struck and that there is less perceived unfairness.

Research Agenda

I plan to continue my research in the field of behavioral law and economics, taking advantage of the synergies available both at the Institute and in the context of the Uncertainty School. I am especially interested in working on questions of fairness, trust and reciprocity under uncertainty.

One project is already quite advanced. Together with Alexander Morell and Ori Weisel (Hebrew University Jerusalem), I am planning a study on the competition of consortia, building on an experiment by Bornstein and Gneezy (2002). They explore a Bertrand duopoly in which each of the two players is composed of three agents. This framework approximates a situation in which two consortia compete for a public project and the consortium with the smallest total asking price is awarded the contract. The total asking price of a consortium results from the addition of the three individual asking prices of its members. Bornstein and Gneezy play two treatments: in case of winning the competition, in the SP-treatment ("shared profits") the awarded money is divided equally among the three members of the consortium, whereas in the PP-treatment ("private profits") all members receive their individual asking prices. The experimental results show substantially lower asking prices in the SP-treatment than in the PP-treatment.

In the light of these findings, we would like to tackle the following policy questions:

A. How to write cooperation agreements in order to win bidding competitions?

B. Does tacit collusion in terms of paying schemes occur?

C. Should state regulation take into account internal paying schemes of alliances in order to lower prices?

As a first new treatment, we intend to let PP and SP groups compete against each other. Our hunch is that the SP groups will have a competitive advantage vis-à-vis PP alliances, due to problems of coordination, envy and free-riding. We should therefore observe SP teams winning more rounds than PP teams. But what happens if we let subjects choose whichever paying scheme they prefer? Choosing between these two paying schemes represents a typical prisoners' dilemma: the social optimum has all players choosing PP, whereas the dominant strategy of every player is to choose SP. Tacit collusion on paying schemes would imply that people somehow coordinate on the PP scheme, which in turn would be bad news for customers.

Publications (since 2007)

Preprints

Beckenkamp M., Engel C., Glöckner A., Irlenbusch B., Hennig-Schmidt H., Kube S., Kurschilgen M., Morell A., Nicklisch A., Normann H.-T., Towfigh E. V., *Beware of Broken Windows! First Impressions in Public-good Experiments*, issue 2009/21, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Lectures and Seminar Presentations (since 2007)

Self-Governance in View of Revenge – an experimental analysis of cooperation in the presence of counter-punishment
Law, Economics & Psychology Seminar
ETH Zurich, Switzerland
May 2008

Fairness Ex Ante and Ex Post – the Benefits of Renegotiation in Media Markets
IMPRS Thesis Workshop
University of Jena, Germany
February 2009

Fairness Ex Ante and Ex Post – the Benefits of Renegotiation in Media Markets
Seminar on Intellectual Property
ETH Zurich, Switzerland
November 2009

Sibylle Lehmann

Summary Report

My research interests are international trade, public choice and capital markets in historical perspective.

In my PhD thesis, which contains the main work of the last years, I focused on different kinds of voting behavior in this context. The thesis is a collection of three essays, which can be divided into two parts. The first part contains two essays that study voting behavior in general elections before turning points in trade policy. They aim to shed light on the question of why European countries pursued different trade policies at the end of the 19th century, although the structure of the societies were often quite similar, implying that the preferred trade policies should have been similar as well.

The first essay focuses on late 19th-century Germany and the second one on Sweden in the same period. The essay on Germany studies voting behavior during the elections in 1877 and 1878. Bismarck introduced high tariffs in 1879, a step that changed the course of European development because it also prompted other European countries to increase their levels of protection. In order to introduce tariffs, Bismarck needed a conservative majority in the parliament. In 1878 the liberal parties lost so many votes that they lost the majority, which they had defended in the general election just one year before. In this essay, the question of which sector voters came from, and whether it was floating voters or new voters who made the difference, is re-examined. The analysis uses a new set of data aggregated at a lower level than those examined by previous studies; it also makes use of the tools provided by modern political science, specifically King's algorithm, to solve ecological inference problems. The major finding is that liberal losses in 1878 were, in contrast to the existing view, not caused by an increased turnout among agricultural workers, but rather by agricultural workers who had previously voted for free trade, turning to protection in 1878. Furthermore, there is evidence that the agricultural sector did not vote homogeneously for protection, as generally believed. Different subsectors voted rationally for what seemed to them to have been the best trade policy, given their product mixes. A paper based on this chapter is forthcoming in the *Journal of Economic History*.

The second chapter addresses the same questions for Sweden, by investigating the general elections of 1887. Amidst the discussion on whether to introduce tariffs in the parliament, the King dissolved the parliament and called for new elections before it came to a final vote. The special election of March 1887 therefore resembles a referendum about tariffs. Again applying King's algorithm, I explore which income classes, property owners and sectors voted for free trade or protection, and I ask whether this was rational. The major finding for this chapter is that voters chose the trade policy which made them

better off, just as in Germany. There were, however, other influences such as suffrage or cultural pressures that severely influenced the political outcome.

The second part of the thesis concentrates on the inter-war period in Germany, the 'Weimar Republic', and the decision making process in the parliament. This essay studies the voting behavior of politicians in roll-call votes, in order to detect factors that disrupted the functioning of the parliament and its government. Governments did not last long, and historical research has tried to identify influences that caused this instability. These historical hypotheses are re-examined by studying this new dataset covering 489 ballots in the parliament during the 14 years. According to the findings of this study, the parliament was not as unorganized and chaotic as often suggested, and the reasons for instability are probably to be found outside parliament. A paper based on this chapter is forthcoming in *Public Choice*.

Research Agenda

In my current work and future projects I will further concentrate on public choice in historical perspective.

The structure of protection and growth in the late 19th century (with Kevin H. O'Rourke)

There is a vast literature on the relationship between 'openness' and growth, including several papers on the late 19th-century experience. However, standard trade models suggest that the structure of protection, rather than the overall average tariff level, should matter for resource allocation and hence for growth. We assembled a database of agricultural, manufacturing and revenue tariffs for a sample of countries between 1875 and 1913, and ask what the relationship was between each of these variables and (a) aggregate (b) sectoral growth. One first paper with a sample of 10 countries is published as an NBER working paper. Currently, we are further enlarging the database and the time horizon.

Furthermore, in a second step, we plan to use the same database to study the question why some countries chose the tariffs they had from a public-choice perspective.

Initial Public Offerings and Stock Market Development in Germany 1869-1925 (with Carsten Burhop)

We will extend previous work of Carsten Burhop on underpricing of initial public offerings (IPOs) at the Berlin Stock Exchange to the period of 1897 to 1925. We will investigate whether standard underpricing theories, based on asymmetric information, signalling mechanisms, or litigation risk, can explain underpricing and how underpricing in historical markets related to underpricing in modern markets. Furthermore we will investigate the role and influence of some particular big banks as lead underwriters, and the general development of the stock market at the time.

Honours / Grants

August 2009: Nominee for the Gino Luzzatto Dissertation Prize of the European Historical Economics Society

October 2005 – October 2007: CEG Award, Department of Economics, Trinity College Dublin

Publications (since 2007)

Articles in Peer-reviewed Journals

Lehmann S., Chaotic Shop-Talk or Efficient Parliament? The Reichstag, the Parties, and the Problem of Governmental Instability in the Weimar Republic, *Public Choice*, In Press.

Lehmann S., The German elections in the 1870s: who caused the turn towards protectionism?, *Journal of Economic History*, In Press.

Lehmann S., A Rent Seekers' Paradise, or Why There Was No Revolution in Fifteenth to Eighteenth Century Nuremberg, *Homo Oeconomicus*, vol. XXI, no. 1, München, 2004.

Preprints

Lehmann S., *The German elections in the 1870s: why Germany turned from liberalism to protectionism*, issue 2009/34, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Discussion Papers

Lehmann S., O'Rourke K. H., The Structure of Protection and Growth in the Late 19th Century, *NBER Working Papers,* no. 14493: National Bureau of Economic Research, 2008.

Lehmann S., Baur D. G., Does the Mobility of Football Players Influence the Success of the National Team?, *Discussion Paper Series, iiisdp217, IIIS*: The Institute for International Integration Studies, 2007.

Lectures and Seminar Presentations

2007

Parties in the Weimar Republic: Cohesion and Cooperation in the Parliament
Graduate Workshop in Economic and Social History, Nuffield College, Oxford, U.K.
March 2007

The Political economy of Protection in Sweden
Summer School Tartu, Estonia
August 2007

2009

Why Germany turned to protectionism in 1878
Economic Workshop, University of Münster, Germany
January 2009

German stock market regulation and its effect on initial public offerings before the first World War
Economic Workshop, Trinity College Dublin, Ireland
March 2009

The structure of protection and growth in the late 19th century
Tokyo Conference on "Economics of Institutions and Organization" at the Institute of Social Science, University of Tokyo, Japan
August 2009

Philip Leifeld

The Political Discourse Network of German Pension Politics

Dissertation

Analyses of political discourse usually either try to disentangle the contents of a discourse (e.g., critical discourse analysis, semantic network analysis, category-based content analysis), or they try to explain policies by examining the configuration of actors (e.g., policy networks, Advocacy Coalition Framework, Punctuated Equilibrium Theory, Hajer's discourse coalitions). The dissertation overcomes this dichotomy by analysing the political discourse of German pension politics between 1993 and 2003 from a social network perspective. A descriptive model of political discourse, based on graph theory as well as several algorithms for the extraction of network data from text data, is developed and implemented in a software called Discourse Network Analyzer (DNA), downloadable from http://www.philipleifeld.de. The approach allows us to look both at the network of actors via common concepts or beliefs and, simultaneously, at the network of concepts via common actors, either statically or over time. The benefits of this approach are that interactions between coalitions/clusters and external events like elections and policy reforms can be assessed, and that cross-country comparisons of the role of certain actor types in the political process are facilitated. In the pension politics application, the Punctuated Equilibrium hypothesis, as set out in the political science literature on pension politics, is tested on a meso level.

Relevance for the institute

Political outcomes (like the 2001 Riester reform) are **produced in a collective way**, i.e., a number of governmental and societal actors interact until policy change becomes feasible – either by means of belief updating by policy learning (like in the classic constructivist assessments of discourse) or by struggling over the primacy of preferences of actor coalitions (like in a bounded-rationality framework).

In consensual political systems, the goal is to **produce a common good** that satisfies most actors and societal groups, while majoritarian systems tend to have a higher degree of conflict over reforms. The policy at issue is usually about a public good, be it the distributional consequences of the pension system (Leifeld 2009), the public health consequences of toxic chemicals (Schneider/Leifeld 2009), or the politics of climate change (see below).

In addition to the empirical and methodological contributions of the dissertation, an agent-based simulation of political discourse has been created that incorporates some of the **behavioral theories** into the policy-making process, e.g., consistency-maximisation

heuristics of actors, and is therefore an attempt at putting some of the institute's findings into a political context.

Actor-centered discourse analysis is also related to the **corporate actor problem** because the underlying discourse model allows to test how coherent the interest groups and governmental actors are internally in terms of their speakers' preferences, and whether this level of coherence changes with covariates like election campaigns or institutional roles.

Progress

The descriptive model of political discourse has been finished and implemented into the software Discourse Network Analyzer (Leifeld 2009). The software now includes many sophisticated algorithms and is being used by several research projects throughout the world: among others, the large-scale Compon (Comparing Climate Change Policy Networks) project (http://www.compon.org).

Publications (since 2007)

Books

Politiknetzwerke. Modelle, Anwendungen und Visualisierungen, Schneider V., Janning F., Leifeld P., Malang T., (Eds.), Wiesbaden, VS Verlag für Sozialwissenschaften, pp. 406, 2009.

Book Chapters

Leifeld P., Die Untersuchung von Diskursnetzwerken mit dem Discourse Network Analyzer (DNA), *Politiknetzwerke, Modelle, Anwendungen und Visualisierungen*, Schneider V., Janning F., Leifeld P., Malang T., (Eds.), Wiesbaden, VS Verlag für Sozialwissenschaften, pp. 391-404, 2009.

Leifeld P., Janning F., Schneider V., Malang T., Diskursnetzwerkanalyse. Überlegungen zur Theoriebildung und Methodik, *Politiknetzwerke, Modelle, Anwendungen und Visualisierungen*, Schneider V., Janning F., Leifeld P., Malang T., (Eds.), Wiesbaden, VS Verlag für Sozialwissenschaften, pp. 59-92, 2009.

Leifeld P., Schneider V., Überzeugungssysteme, Diskursnetzwerke und politische Kommunikation: Ein zweiter Blick auf die deutsche Chemikalienkontrolle der 1980er Jahre, *Politiknetzwerke, Modelle, Anwendungen und Visualisierungen*, Schneider V., Janning F., Leifeld P., Malang T., (Eds.), Wiesbaden, VS Verlag für Sozialwissenschaften, pp. 139-158, 2009.

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Leifeld P., Policy Networks. A Citation Analysis of the Quantitative Literature. Master thesis. University of Konstanz, Department of Politics and Management., *Department of Politics and Management*: University Konstanz, 2007.

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2007

Discourse Networks – An Overview
(with Frank Janning, Thomas Malang and Volker Schneider)
Workshop "Discourse Networks and Risk Policy", Konstanz, Germany
14 December 2007

2009

Comparing Political Systems in the Perception of Slow-Moving Policy Problems: Theoretical and Methodological Considerations and their Application to the Climate Change Problem
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7th International Science Conference on the Human Dimensions of Global Environmental Change, IHDP Open Meeting 2009, UN Campus, Bonn, Germany
26-30 April 2009

Discourse Network Analysis
Comparing Climate Change Policy Networks (Compon) Workshop, IHDP Open Meeting 2009, Bonn
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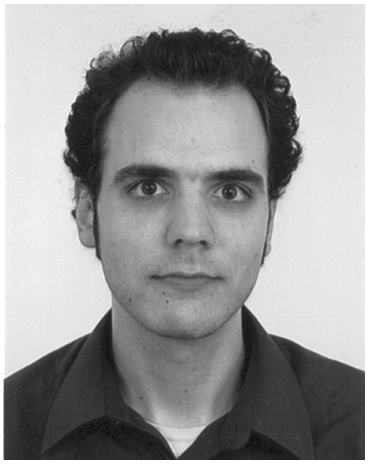

Thorsten Lübbers

Summary Report

In the period 2007 to 2009, my research focused on two topics. First, I investigated the economic effects of collusive arrangements. More specifically, I studied the Rhenish-Westphalian Coal Syndicate (Rheinisch-Westfälisches Kohlensyndikat, RWKS), a coal cartel that operated in the German Ruhr district. Founded in 1893, the organisation existed for more than 50 years, until it was finally broken up by the Allies after the Second World War, and thus constituted one of the longest-lasting collusive arrangements ever. It was set up in a legal environment, where cooperative behavior among producers was not only legal, but cartel contracts were even judicially enforceable. In the economic historiography of Imperial Germany, this view on collusion and its practical consequences – a number of cartels unmatched by any other European country – are regarded as one pillar of a peculiar German business model that fostered industrialisation and economic growth and enabled Germany to catch up to the leading industrial countries of the day.

In the cause of my research, I gathered empirical evidence on three aspects of cartelisation in the Ruhr district. At first, the impact of the cartel on the productive efficiency of the companies that participated in the organisation was examined in a joint paper with Carsten Burhop (Burhop and Lübbers 2009a). In this paper, a panel of joint-stock mining companies that operated in the Ruhr district between 1881 and 1913 and became members of the cartel either in 1893 or in 1903 was employed to estimate production functions by stochastic frontier techniques. The main result of the paper turned out to be that membership in the RWKS had no adverse effects on productive efficiency. Thus, unlike the prediction in a famous quote by John R. Hicks, the restriction of competition by the cartel did not result in its members enjoying "a quiet life".

Secondly, I investigated the interplay between cartelisation and concentration through mergers and acquisitions (Lübbers 2008a). For this purpose, I made use of standard event study methodology and investigated 37 takeovers in the mining industry of the Ruhr district between 1896 and 1913. All the bidders and targets that were analysed were also members of the RWKS. In line with previous modern and historical studies, I found that, in general, the investigated mergers and acquisitions increased shareholder value and that the gains were exclusively distributed to the owners of the targeted companies. Furthermore, it turned out that the positive wealth effects in takeovers that were predominantly driven by the existence of the RWKS (i.e., those whose main purpose was the acquisition of a company's cartel quota and not of the company itself) meant that the shareholders of the target gained significantly more than in those cases that were motivated by other factors. Since the acquisitions in these cartel-driven takeovers either performed poorly or even failed, this result can be regarded as an indication that by

providing them with the valuable asset of a cartel quota, the RWKS was giving these companies a compensation for market exit that they would not have received in a more competitive environment.

Finally, I analysed the effect of the RWKS on the variability of coal prices and on the profitability of the cartel members (Lübbers 2009). For this purpose, I compared the variance of coal prices in the cartel period to the variance in the pre-cartel period. Furthermore, using stock price data of up to 19 joint-stock mining companies and event study methodology, I examined the stock market reactions to the formation of the cartel in 1893 and to two major revisions of the original cartel contract in 1896 and 1904. Finally, I cross-checked the results of the stock market analysis by investigating profitability indicators calculated from accounting data for the period 1880 to 1913. The results show that the RWKS successfully stabilised coal prices, but did not increase the profits of the cartel members. However, theoretical considerations suggest that the cartel was able to raise coal prices far enough above the competitive level to avert a decline in company profitability.

In the second part of my research programme in the years 2007 to 2009, I focused on intra- and inter-company relations in the German patent system between 1877 and 1913. First, in a joint paper with Carsten Burhop, I analysed the relationship between incentives and innovations (Burhop and Lübbers, forthcoming). Employing a newly-constructed data set on fixed and variable payments of employed researchers at three companies (BASF, Bayer, and Siemens), in combination with information on patents granted to these companies and autoregressive distributed lag models, we investigated if, and to what extent, innovative output was related to performance-related pay. The legal background of this investigation was a passage in the German patent law that stipulated that patents would be granted to the first individual or institution that applied for a patent at the patent office, and not necessarily to the inventor. Presumably, this regulation caused a principal-agent problem, because intellectual property rights were allocated to the companies and not to their employed inventors. The results of our investigation showed that some of the investigated companies were aware of the principal-agent problem and offered performance-related compensation schemes to their scientists. However, neither a higher total compensation nor a higher share of variable compensation in total compensation was correlated with a higher innovative output. Thus, incentive techniques were already being used during the early history of industrial research laboratories, but their impact on innovative output was unsystematic.

Secondly, in another joint paper with Carsten Burhop, I analysed a sample of 145 technology licensing contracts closed by German chemical, pharmaceutical, and electrical engineering companies between 1880 and 1913 (Burhop and Lübbers 2009b). OLS and Probit regressions showed that licensing contracts closed before a patent was granted and contracts closed between firms and individual inventors had a higher probability of containing a profit-sharing clause. This supports the findings of economic models that propose equity-sharing licensing contracts to solve moral hazard problems.

Moreover, we showed that milestone payments were a substitute for profit shares. Finally, exclusive licences offered a significantly higher profit share to the licensor.

Last but not least, I examined business co-operations in the field of industrial property rights in the chemical and electrical engineering industry between 1880 and 1913 (Lübbers, forthcoming). The basis of this investigation was information on 31 research co-operations, R&D joint ventures, cross-licensing agreements, and patent pools gathered from archival sources. The interpretation of the empirical findings in the light of economic theory revealed that, from an economic point of view, most of the investigated agreements would not be labelled beneficiary. First of all, they show various design deficits. Furthermore, in the majority of cases, they were not restricted to R&D and property rights. The participating companies also restricted competition on the product market, either by fixing output, prices, and profits, or by joining production and sales in newly-founded companies.

Publications (since 2007)

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Preprints

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Lectures and Seminar Presentations (since 2007)

2007

Risk and Return Effects of Collusive Arrangements. The Rhenish-Westphalian Coal Syndicate, 1893 – 1913.
New Researchers Session. Annual Conference of the Economic History Society,
Peter Chalk Centre, University of Exeter, U.K.
30 March – 1 April 2007

2008

Incentives and Innovation: Working Contracts of Researchers in Germany's High-Tech Industries, 1877-1913
Paper presented at the Business History Conference in Sacramento, U.S.A.
10–12 April 2008

Shareholder Value Mining: Wealth Effects of Takeovers in German Coal Mining, 1896-1913
Paper presented at the International Conference on Business History 2008 in Tokyo, Japan
26–27 January 2008

Jörn Lüdemann

Summary Report

Over the last two years, my research focused on public economic law and legal theory.

In the field of public economic law, my habilitation thesis was the most significant project. It deals with two areas of legal studies in which the regulation of the economy is as dynamic as it is intense: telecommunications law, on the one hand, and the law of bank supervision, on the other. My habilitation thesis explores three aspects in particular, all of which are central to public economic law: how can the administration of regulatory bodies be constitutionally disciplined? And where should regulatory decisions be made: at national level, in Brussels, or internationally? Further, what kind of influence does the financing of the administration have on the regulation of these sectors?

In addition, I worked on an essay concerning "Competition and Regulation in Telecommunications". It examines the regulation of new telecommunications markets and uses economic theory to criticize the increasing centralization of regulation. This paper is part of a collection of essays on the regulation of network industries, which I edited and published in 2008 under the title "Telecommunications, Energy, and Railway: Which Regulation Do Network Industries Need?"

The monograph on "Public Authority as Lessee" ["Die öffentliche Hand als Leasingnehmer"] was extended and updated. A second edition was printed in 2008 and examines the legal aspects of public leasing in the context of public procurement law and budget law. A further study, also published in 2008, deals with media law and explores the broadcasting of public television programmes in digitalized cable networks.

These focal points of my research are also reflected in my university teaching. As in previous years, I continued to teach courses at the University of Osnabrück in 2008 and 2009, where I taught Telecommunications Law and Media and Communications Law as Associate Lecturer.

Two essays are at the fore of my legal theory research, as they analyze the relation of legal studies to the social sciences and to economics. The first, published in late 2007, is entitled "Networks, Public Law and Reception Theory" ["Netzwerke, Öffentliches Recht und Rezeptionstheorie"] and examines possible levels and advantages of interdisciplinary co-operation with neighboring disciplines, using networks as an example. At the same time, the paper provides a stepping-stone towards a reception theory of legal studies. While the focus of this contribution lies on the application of the law, the second essay concentrates on research into legal policy. Under the heading "Law-making and Interdisciplinarity in the Science of Administrative Law" ["Rechtsetzung und Interdiszi-

plinarität in der Verwaltungsrechtswissenschaft"], it examines, from the perspective of scientific theory, the advantages and disadvantages of conceivable models of interdisciplinary co-operation in preparing the theoretical groundwork for law-making. The origin of this essay lies in a conference on theory of science, held at the Max Planck Institute on 2 February 2008 and organized by Dr. Andreas Funke of the University of Cologne and by myself. The Fritz Thyssen Stiftung für Wissenschaftsförderung [Fritz Thyssen Foundation for the Promotion of Science] supported this colloquium financially. We published the conference contributions in a volume entitled "Öffentliches Recht und Wissenschaftstheorie" ["Public Law and Theory of Science"].

Apart from several smaller projects, I worked primarily on an essay about "Staatliche Konsumlenkung im Rechtsstaat" ["State-run Consumer Direction in the Constitutional State"]. This paper analyzes reasons for, and manifestations of, state attempts to guide consumer behavior in various areas of life and exposes the constitutional problems of such governance measures.

Research Agenda

For the period following my habilitation, I plan to continue a joint research project with Andreas Glöckner, covering both the fields of Psychology and Legal Studies. In this project, we discuss "Framing and the Willigness to Pay for Broadcasting Fees in Germany". The experimental study is not only of interest in the context of the debates on media law in Germany; it also promises to provide first insights into the more general question of whether there is a connection between the framing of fees and the willingness to contribute to public goods.

A further study that lies between the areas of media and fiscal law concerns the financing of public broadcasting. While the current financing provides the kind of incentives for the stations that run counter to the goals set by public broadcasting, a different way of financing is suggested, namely one that is more in line not only with said goals, but also with constitutional stipulations, as set, in particular, by the Federal Constitutional Court.

A final focus of my future research will be the question of how to make economic theory and empiricism more beneficial to the field of public economic law. While in civil law the economic foundation has become an everyday feature of research, the science of administrative law is rather more tentative in this regard. The regulation law of network industries is just as apt for such a project as, for instance, the areas of public procurement law and state aid law.

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Books

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Reviews

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Lüdemann J., Anne Hombergs, Europäisches Verwaltungskooperationsrecht auf dem Sektor der elektronischen Kommunikation (Recht und Ökonomik der Netzregulierung; Bd. 2), Berlin 2006, *Europäische Zeitschrift für Wirtschaftsrecht (EuzW)*, pp. 663, 2007.

Preprints

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Lüdemann J., Magen S., *Effizienz statt Gerechtigkeit?*, issue 2008/41, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Lüdemann J., *Netzwerke, Öffentliches Recht und Rezeptionstheorie*, issue 2007/07, Bonn, Max Planck Institute for Research on Collective Goods, pp. 17, 2007.

Lectures and Seminar Presentations (since 2007)

2007

Europäisches Regulierungsrecht
[European Regulatory Law]
Europarecht. Justizakademie des Landes Nordrhein-Westfalen, Germany
24 January 2007

Netzwerke, Öffentliches Recht und Rezeptionstheorie
[Networks, Public Law, and Reception Theory]
Netzwerke. 47. Assistententagung Öffentliches Recht
Humboldt Universität und Freie Universität Berlin, Germany
9 March 2007

2008

Rechtsetzung und Interdisziplinarität in der Verwaltungsrechtswissenschaft
[Law-making and Interdisciplinarity in the Science of Administrative Law]
"Öffentliches Recht und Wissenschaftstheorie", 1. Forschungskolloquium des KölnBonnerForums, Max-Planck-Institut zur Erforschung von Gemeinschaftsgütern, Bonn, Germany
2 February 2008

Die Wissenschaft vom Verwaltungsrecht
[The Science of Administrative Law]
Kolloquium Verwaltungsrechtswissenschaft, Friedrichsdorf, Germany
29 September 2008

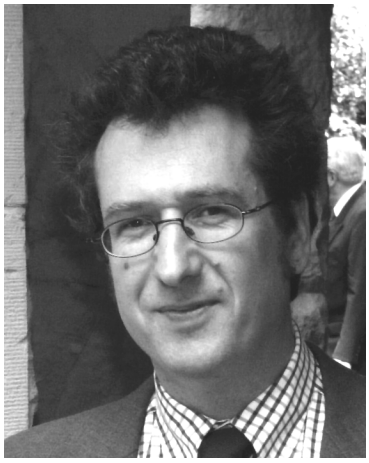
2009

Aktuelle Fragen des europäischen Kommunikationsrechts
[Current Questions on European Communications Law]
Europarechtliche Tagung. Justizakademie des Landes Nordrhein-Westfalen, Germany
11 February 2009

Privatheit in den Medien und die staatliche Medienaufsicht
[State Media Supervision and Privateness in the Media]
"Ich hab´ doch nichts zu verbergen. Das Private als Auslaufmodell"
Graduiertentagung der Bischöflichen Studienförderung Cusanuswerk
Katholische Akademie Schwerte, Germany
14 May 2009

Staatliche Konsumlenkung im Rechtsstaat
[State Consumer Direction in the Constitutional State]
University of Bonn, Germany
19 June 2009

Telekommunikationsregulierung in Europa
[Telecommunications Regulation in Europe]
Europarechtliche Tagung. Justizakademie des Landes Nordrhein-Westfalen, Germany
14 October 2009



Stefan Magen

Summary Report

In this period, I finalized and submitted my habilitation thesis, which puts forward an empirically-founded theory on the relationship between cognitions of justice, preferences for fairness, and the law. Based on recent findings in different areas of psychology, I derived the conclusion that individual fairness preferences and some basic concepts of legal reasoning rest on a common 'moral grammar', i.e., a core cognitive judgmental mechanism called 'justice schema'. This mental mechanism is functionally specialized and comprises specific representations and computations. It not only drives intuitions about justice, but also provides a basic conceptual structure which is elaborated on in explicit reasoning about justice. Thus, the justice schema also functions as a cognitive 'row material' for legal reasoning and forms an integral, albeit often implicit part of legal doctrine. With regard to the external function of law, I argued that the law is a social institution that has specifically evolved to address and cope with fairness preferences in other than close-knit informal relationships. I drew on game theory and experimental economics in order to describe the social mechanisms by which the law affects behavior. Typically, the law is concerned with social problems that have features of a mixed cooperation and conflict game. When faced with attempts to solve social problems of this kind, people do not only care about their own payoffs, but also about how their co-citizens behave and how benefits and burdens are distributed. The function of the law can broadly be described as curbing defection, hedging negative reciprocity and helping people to coordinate (implicitly) their normative expectations. If effective, the law facilitates the emergence of social mirror norms that roughly correspond to legal imperatives.

I also started to work on emissions trading law. A chapter of the habilitation thesis examines how economic models, legal doctrine, and notions of justice act together in shaping the meaning and structure of German emissions trading law. In a follow-up paper, the relationship between the economic model of emissions trading and legal doctrine is analyzed in greater detail with a focus on allocation rules. I argue that legal scholarship could benefit from a 'more economic approach' to emissions trading because parts of the literature and even the German Federal Constitutional Court misconstrue allocation rules that only distribute abatement costs as incentive mechanisms, while at the same failing to recognize adverse incentives that are created unwillingly by other seemingly innocuous allocation rules.

Research Agenda

Future research will retain emissions trading law as a major focus, but will broaden the perspective. It will follow a more international and comparative approach and include the interaction of emissions trading with other areas of climate change law, such as energy regulation and renewable energy. I will also continue to pursue more fundamental research on fairness preferences, following a 'more cognitive approach' compared to other behavioral law and economics approaches. Thus, the emphasis will be, in collaboration with cognitive scientists, on identifying the cognitive processes by which the impact of the law on fairness preferences is mediated. In this vein, the theoretical framework put forward in my habilitation thesis will serve as a starting point for empirical research.

Publications (since 2007)

Books

Magen S., *Gerechtigkeit als Proprium des Rechts, (Habilitation Thesis)*, Bonn, pp. 619, Submitted.

Book Chapters

Magen S., Rechtliche und ökonomische Rationalität im Emissionshandel, *Recht und Markt. Wechselbeziehungen zweier Ordnungen*, Towfigh E., (Ed.), Baden-Baden, Nomos, pp. 9-28, 2009.

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Magen S., Fairness, Eigennutz und die Rolle des Rechts eine Analyse auf Grundlage der Verhaltensökonomik, *Recht und Verhalten*, Engel C., Englerth M., Lüdemann J., Spiecker gen. Döhmann I., (Eds.), Tübingen, Mohr Siebeck, pp. 261-360, 2007.

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Magen S., Grundfälle zu Art. 4 III GG, *Juristische Schulung (JuS)*, In Press.

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Reviews

Magen S., Anderheiden, Gemeinwohl in Republik und Union, *Rabels Zeitschrift für ausländisches und internationales Privatrecht*, in press.

Lectures and Seminar Presentations (since 2007)

2007

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[Justice and the Specific of Law. A Behavioral Perspective]
Max Planck Institute for European Legal History, Frankfurt am Main, Germany
September 2007

2009

Rechtliche und ökonomische Rationalität im Emissionshandel
[On the Interplay of Legal and Economic Concerns in Emissions Trading Law]
Eröffnungsvortrag, 49. Assistententagung Öffentliches Recht, Recht und Markt – Wechselbeziehungen zweier Ordnungen, Bonn, Germany
March 2009

Frank P. Maier-Rigaud (Affiliate; Senior Economist, European Commission)

Summary Report

My main research interests are in industrial organization, experimental economics, competition law and public economics. I am particularly interested in the application of game theory and experimental economics to competition policy. As Senior Economist in the Directorate General for Competition of the European Commission, I have worked in the Policy Directorate in merger and antitrust case support and was also involved in policy projects such as Article 82, antitrust remedies, private enforcement and the development of the sector inquiry tool that have stimulated my research interests. I currently work in the Energy and Environment Directorate where I developed an increased interest in energy economics and from where I am also following the EU Emission *Trading* System.

Publications (since 2007)

Articles in Peer-reviewed Journals

Maier-Rigaud F. P., Martinsson P., Staffiero G., Ostracism and the Provision of a Public Good – Experimental Evidence, *Journal of Economic Behavior and Organization*, In Press.

Maier-Rigaud F. P., Parplies K., EU Merger Control Five Years after the Introduction of the SIEC test: What explains the drop in Enforcement Activity?, *European Competition Law Review (ECLR)*, vol. 11, pp. 565-579, 2009.

Maier-Rigaud F. P., Adam M., The Law and Economics of Article 82 EC and the Commission Guidance Paper on Exclusionary Conduct, *Journal of Competition Law (ZWeR – Zeitschrift für Wettbewerbsrecht)*, vol. 1, pp. 131-146, 2009.

Maier-Rigaud F. P., Hellström P., Bulst F. W., Remedies in European Antitrust Law, *Antitrust Law Journal*, vol. 76, pp. 43-63, 2009.

Maier-Rigaud F. P., Friederiszick H., Triggering inspections ex officio: Moving beyond a passive EU cartel policy, *Journal of Competition Law and Economics*, vol. 4, no. 1, pp. 89-113, 2008.

Maier-Rigaud F. P., Wiesen D., Parplies K., Experimental Economics and Competition Policy: Unilateral and coordinated effects in competition games, *European Competition Law Review (ECLR)*, vol. 29, no. 7, pp. 408-417, 2008.

Book Chapters

Maier-Rigaud F. P., Maier-Rigaud R., Rüstows Konzept der Sozialen Marktwirtschaft: Sozial- und wettbewerbspolitische Dimensionen einer überwirtschaftlichen Ordnung, *60 Jahre Soziale Marktwirtschaft: Illusionen und Reinterpretationen einer ordnungspolitischen Integrationsformel*, Aßländer M., Ulrich P., (Eds.), Bern/Stuttgart/Wien, Haupt Verlag, pp. 69-94, 2009.

Maier-Rigaud F. P., Friederiszick H., The Role of Economics in Cartel Detection in Europe, *The More Economic Approach in European Competition Law*, Schmidtchen D., Albert M., Voigt S., (Eds.), Tübingen, Mohr Siebeck, pp. 179-196, 2008.

Maier-Rigaud F. P., Lowe P., Quo Vadis Antitrust Remedies, *International Antitrust Law & Policy: Fordham Competition Law 2007*, Hawk B., (Ed.): Fordham University School of Law, pp. 597-611, 2007.

Preprints

Maier-Rigaud F. P., Beckenkamp M., *Purchase Decisions with Non-linear Pricing Options under Risk – Experimental Evidence*, issue 2007/10, Bonn, Max Planck Institute for Research on Collective Goods, pp. 33, 2007.

Selected Lectures and Seminar Presentations (since 2007)

2007

Private enforcement and calculation of damages
Organisation for Economic Cooperation and Development (OECD), Paris, France
6-7 February 2007

The Commission's upcoming White Paper: An Economic Perspective
Conference on Private Enforcement in Competition Law: Legal and Economic Issues, Center for European Policy Studies (CEPS), Brussels, Belgium
2 March 2007

An economic methodology for initiating ex-officio cartel investigations
Forensic Economics in Competition Law Enforcement, Amsterdam Center for Law & Economics (ACLE), Amsterdam, Netherlands
17 March 2007

Antitrust remedies and sanctions
Organization for Economic Cooperation and Development (OECD), 97th Meeting of the Competition Committee and working party meetings, Paris, France
6-9 June 2007

The EU's Sector Inquiry tool
Conference on Competition Policy in Regulated or 'Special' Sectors, Regulatory Policy Institute, University of Oxford, Oxford, U.K.
2-3 July 2007

On Purchase Decisions with Non-linear Pricing Options under Risk
33rd Conference of the European Association for Research in Industrial Economics (EARIE), Amsterdam, Netherlands
25-27 August 2007

EU Sector Inquiries versus UK Market Investigations
British Institute of International and Comparative Law (BIICL), London, U.K.
18 October 2007

The review of Article 82
American Bar Association (ABA), Meeting of the Antitrust Law Section, Washington DC, U.S.A.
16-17 November 2007

Series of Presentations on "Unilateral and Coordinated Effects in Mergers"
Expert Training of the Antimonopoly Office of the Slovak Republic, Bratislava, Slovakia
19-20 November 2007

Presentations on the EU competition policy regime, in particular on vertical agreements, abuse of dominance and the role of IPR in competition cases
National People's Congress, Anti-monopoly subcommittee, Beijing, China
18-19 December 2007

2008

Antitrust Remedies in EU Law
Conference on Antitrust Remedies for Dominant Firm Misconduct, American Bar Association (ABA), Charlottesville, U.S.A.
4-5 June 2008

2009

Pro Regulation, Pro Competition
Energy Institute (EI), London, U.K.
19 February 2009

Loss of Exclusivity and Generic Entry in the Pharmaceutical Sector – Experimental Evidence
Department of Economics, University of Hohenheim, Hohenheim, Germany
6-9 June 2009

Some basic remarks on rebates
European Competition Journal Conference, Jesus College Oxford, Oxford, U.K.
17 July 2009

Monia Manâa

Summary Report

Before recently joining the Max Planck Institute, I worked as a research fellow at the Westfälische Wilhelms-Universität Münster, focusing primarily on both law and economics and legal history. In these fields, I am especially interested in the way legal institutions affect human behavior and vice versa, as well as the integration of new methodological approaches into legal science. Thus, my thesis evaluates the question to which extent legal institutions factually rule human behavior.

Hence, the legal framework of Corporate Law is employed and its influence on human behavior exemplified by the analysis of the effective corporate governance structures within BMW AG. German corporate law with its bicentennial history of trying to regulate the internal structure and allocation of competences between the different organs of stock corporations offers solid data on the legal history part. The case study of BMW secures a broad data base for the behavior of a sample of addressees of these norms, as BMW has opened their archives to scientific research. Data on the factual operative actions of the company management were collected over a period of nearly three decades, and I am now empirically evaluating them. The resulting longitudinal study on BMW's code of practice will be compared to the results from my analysis of the development of the legal framework, which I evaluate with classic legal science and legal history methods and the results from economic history approaches.

Research Agenda

Since my first doctoral supervisor, the late Prof. Dr. Andreas Heldrich passed away at the end of 2007, I now am in the unique situation of working on two major research projects:

a.) At the beginning of 2008, I commenced a new doctoral thesis, supervised by Prof. Dr. Horst Eidenmüller of the Ludwig-Maximilians-Universität in Munich, entitled: "Legal Business History – A Bridge between Law and Reality: Exemplified by the Evaluation of the Corporate Governance Practice of the BMW AG from 1949 to 1977."

If legal academics utilize legal history to approach the phenomenon of "stock corporations", they naturally analyze the available historic legal sources, interpreting the respective laws of a given time and country, as well as the accompanying case-law. Thus, they try to deduce how the regulation of stock corporations has changed over the researched period. If they concentrate on the diversity of individual regulations which used to characterize corporations in the 19th century, they will add the companies'

charters representing those regulations that the stock companies have given themselves to establish governance. Ever since Douglass C. North published *Institutions, Institutional Change and Economic Performance (Political Economy of Institutions and Decisions)* (Cambridge, 1990), even economists regard these legal sources as formal or informal historic institutions that govern economic strategy and operative action of stock corporations. Hence, research on the history of Corporate Law is thought to be a valid means to evaluate not only the code of practice, but the actual commercial practice of stock companies. But when studying corporate law and charters, legal historians and economists only concentrate on macro-economic aspects. Thus, both these approaches merely evaluate one layer of the concept of the corporation. Only if both methods are combined in a micro-economic approach will they help us to understand part of the complex role of law and the legal system in the economic practice of stock companies.

The new approach of *Unternehmensrechtsgeschichte* (Legal Business History), which I will present in my thesis, does not only combine the evaluation of laws and the respective legal system by economical and legal methods, but incorporates legal and socio-legal sciences and a micro-economical evaluation of in-house sources. The method is introduced by the case study of BMW AG. Sources evaluated in this analysis include minutes of management and supervisory board meetings, annual records, correspondence, and memoranda. Hence, the study will compare the legal ideal of corporate governance with the actual internal organization of the company in the years 1949 to 1977.

The subject was chosen not only because BMW AG is a recognized global player in the automobile industry, but a company that looks back on a well-documented history of 90 years in the business, which guarantees the continuity that is necessary for reliable data. Thus, when the company opened its archives to international researchers, it did not only enhance the sources for engineers and economists, but for legal historians as well. The data found so far indicates that the role and function of law and legal systems might be far smaller than presumed up to now. Regarding the corporate governance practice of BMW, the data also proposes that said governance is more likely based on the internal leverage of the respective addressee of the norm, e.g., on individual behavior, than on the external legal framework.

Beyond the results of the actual case-study, the new method presented here offers a means to study further the relevance and influence of legal standards on commercial practice in general, because it is not only applicable to any given stock company, but to any given legal system (e.g., civil or common law).

b.) Up to Prof. Dr. Heldrich's untimely death, I worked on a thesis entitled "History of Merger Law – An economic and juridical analysis of the protection of shareholders and creditors during the merger of corporations", which I have postponed for now, but intend

to submit as a habilitation thesis that will include not only the mandatory extended legal history and economical analysis, but an intensive evaluation of the applicable law also.

In this second major research project, I focus on the question of how the legal framework reacts to existing conflict situations in economy throughout the history of stock corporations. I have concentrated mainly on two questions: first, which interests of shareholders and creditors the respective legislature identified and hence wanted to protect in case of a merger of corporations, and secondly, how the resulting legal frameworks tried to accomplish such protection since the beginning of Corporate Law.

In a first step, the different interests of the respective groups have been evaluated with economic methods, and the resulting conflicts of such interests have been recorded to establish a broad data-base for the project. The emphasis of this analysis has been laid on evaluating the different interests of shareholders and creditors – comparing the interests of both groups as well as the interests of the individuals within his or her respective peer-groups – from different thematic and scientific points of view (i.e., I have employed methods from the fields of legal history, economics and the socio-legal sciences). For example, the interests of the shareholders regarding their membership in an economic organization, i.e., the stock corporation, and their function as investors, i.e., their participation in the capital market, have thus been evaluated.

In a second step, the results were employed to analyze the evolution of the legal framework that tries to protect said interests, with regard to the strategies with which the legislature wants to secure such protection, as well as whether or not the legislature estimates such interests worth a legal regulation – and if they do, to which extent such regulations are specified for a given conflict situation. Thus the economic, historical, and social evaluation of both the respective group and individual interests allows estimating the historic development of the legal framework that distributes the specific risks of a merger of stock corporations equally among shareholders and creditors. Hence, the combined methods might offer a way to detect possible path dependencies within the German Merger Law that might not otherwise have been found.

c.) In addition, I am currently working on a minor project on the legal consequences of the German financial crisis of 1931, on which only little research – both in legal and economic history – has been done up to now. I focus on the extent to which the laws that were issued as a consequence of this crisis (the *Kreditwesengesetz* of 1934 and the *Aktiengesetz* of 1937) were modified in order to facilitate direct crisis management. This contribution to the interdisciplinary conference "Causes and Consequences of the German Financial Crisis of 1931 in National and International Perspective", organized by Carsten Burhop, is part of the conference's approach to analyze the theoretically presumed effects of said reforms from different scientific points-of-view, and to compare these findings with the effective historical development.

Publications (since 2007)

Articles in Peer-reviewed Journals

Manâa M., Did the Financial Crisis of 1931 put an End to Economic Liberalism in Germany?, *Jahrbuch für Wirtschaftsgeschichte*, In Press.

Book Chapters

Manâa M., Gemeinwohl/Wohlfahrtsstaat/Sozialstaat, *Examinatorium Rechtsgeschichte*, Schmoeckel M., Stolte S., (Eds.), Köln, Berlin, München, pp. 119-122, 2008.

Manâa M., Interessenjurisprudenz, *Examinatorium Rechtsgeschichte*, Schmoeckel M., Stolte S., (Eds.), Köln, Berlin, München, pp. 377-379, 2008.

Honours

Since Spring 2009: Mentee, Mentoring-Program (LMU excellent), LMU Mentoring: provides career support for highly qualified, emerging female academics working toward a professorship, Ludwig-Maximilians-Universität, Munich.

Lectures and Presentations (since 2007)

Schutz der Interessen von Aktionären und Gläubigern bei der Verschmelzung von Aktiengesellschaften – Eine analytische und rechtshistorische Betrachtung
[Protection of shareholders and creditors during the merger of Stock Corporations – an economic and juridical analysis]
Economics Workshop, Max Planck Institute for Research on Collective Goods, Bonn, Germany
18 September 2007

Legal Business History – A Bridge between Law and Reality: Exemplified by the Evaluation of the Corporate Governance Practice of the BMW AG from 1949 to 1977
First Early Career Workshop, Law and Society Association, Denver, U.S.A.
25–27 May 2009

Banking Law and Corporate Law after the German Financial Crisis of 1931
Conference: Causes and consequences of the German financial crisis of 1931 in national and international perspective
Max Planck Institute for Research on Collective Goods, Bonn, Germany
18 September 2009

Alexander Morell

Summary Report

Since September 2007, I have been writing a doctoral thesis on targeted rebates under the European regime regulating the abuse of dominant position. It is supervised by Professor Engel. My thesis deals with the assessment of rollback rebates under article 82 EC – a controversial topic both between the EU and the US and within both jurisdictions.

As announced in the last status report, I reviewed the behavioral (law and) economics literature to assess claims by the Commission and the Courts on the effects of rebates. I found that the Court's claim that a longer reference period leads to a greater suction effect of a rebate can be seen as a good intuition that reflects findings from behavioral economics. It therefore seems to have become part of the case law with good reason. Other claims – like the one by the Commission that greater uncertainty leads to greater attraction of the rebate – find no support in behavioral theory.

The suggested test of the 2006 discussion paper is largely consistent with my findings. To facilitate the enforcement of article 82 EC, I nevertheless propose that a presumption of abusiveness of rollback rebates offered by the dominant firm would be an adequate rule. This presumption would partly rest on arguments from standard theory and partly on arguments grounded in prospect theory and experimental evidence.

My work has turned out to follow a slightly broader scope than planned. It has turned out to be impossible to focus solely on behavioral economic theory. Therefore standard economic theory had to be integrated into the construction of a legal rule.

Taking advantage of the interdisciplinary character of the MPI, I wrote a joint experimental study on rollback rebates with Andreas Glöckner and Emanuel Towfigh. We aimed at furnishing empirical evidence on how consumers really react when confronted with rollback rebates, which contributes to the international discussion about how rollback rebates should be dealt with under competition law. We found that rollback rebates impede a rational switching of consumers. This effect is reinforced by a longer reference period. Prospect Theory predicts some, but not all, effects we find.

Daniel Rubinfeld invited me to spend a research semester at the UC Berkeley School of Law from January 2008 to May 2008. I took this opportunity to take classes in economic theory and behavioral economics, as well as in American antitrust law. My attempt to model the effects of rollback rebates taking into account non-rational loyalty have remained incomplete to date, but were extremely fruitful for my understanding of the existing theoretical literature on rollback rebates.

In cooperation with Michael Kurschilgen and Ori Weisel (from the Center for the Study of Rationality, Jerusalem), I am working on an experimental paper on the competition between teams. Gary Bornstein has shown that how teams behave in competition depends crucially on the internal distribution of payoffs. We would like to investigate how this effect plays out in markets with heterogeneous teams and which factors can influence it. Ultimately we hope to find suggestions on how joint ventures of small enterprises could be organized most effectively, and conditional on the goal pursued.

Following some very helpful suggestions by Botond Köszegi in Berkeley, I am developing some experimental designs to test and perhaps suggest some slight specifications to the theory of reference-dependent preferences with endogenous reference points by Köszegi and Rabin (2006). I am particularly interested in modifying the experiment of Abeler et al. (2009), which supported the theory in a very simple real-effort task. I would like to test whether the results still hold if the reference point is induced by a gamble instead of a fixed payoff. Further, I would like to explore the assumed time lag of the rational expectations determining the reference points.

Parallel to my work at the Institute, I am pursuing my *Referendariat* (a required clerkship for German lawyers) at the District Court of Bonn.

Publications (since 2007)

Book Chapters

Morell A., Johannes Althusius, *Examinatorium Rechtsgeschichte*, Schmoeckel M., (Ed.), Köln, pp. 145-148, 2008.

Morell A., Wahl, *Examinatorium Rechtsgeschichte*, Schmoeckel M., (Ed.), Köln, pp. 334-338, 2008.

Articles (not peer-reviewed)

Morell A., Schicksal der Vormerkung bei redlichem Erwerb eines Auflassungsanspruchs, *Juristische Ausbildung*, vol. 30, no. 3, pp. 165-169, 2008.

Preprints

Beckenkamp M., Engel C., Glöckner A., Irlenbusch B., Hennig-Schmidt H., Kube S., Kurschilgen M., Morell A., Nicklisch A., Normann H., Towfigh E., *Beware of Broken Windows! First Impressions in Public-good Experiments*, issue 2009/21, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Morell A., Glöckner A., Towfigh E., *Sticky Rebates: Rollback Rebates Induce Non-Rational Loyalty in Consumers – Experimental Evidence*, issue 2009/23, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Lectures and Seminar Presentations (since 2007)

2007

Psychology of Decision Making in Antitrust Law? First Steps in the Doctrine of Art. 82 EG
Bonn LawEcon Workshop, Graduate School of Economics, the Law Faculty and the Max Planck Institute for Research on Collective Goods, Bonn, Germany
17 April 2007

Targeted Consumer Rebates Under Article 82 EC – What if Human Behavior Matters?
Workshop on the Law and Economics of Competition Policy, Max Planck Institute for Research on Collective Goods, Bonn, Germany
6–7 December 2007

2008

Differences In The Regulation Of Dominant Firms Under Article 82 EC and Section 2 Sherman Act
CLEEN Workshop 2008, CCP Norwich, U.K.
June 2008

Sticky rebates: Do Rollback Rebates Induce Non-Rational Loyalty In Consumers? – Experimental Evidence
CCP Norwich, U.K.
October 2008

2009

Sticky rebates: Do Rollback Rebates Induce Non-Rational Loyalty In Consumers? – Experimental Evidence
ALEA Annual Meeting at University of San Diego, U.S.A.
May 2009

Sticky rebates: Do Rollback Rebates Induce Non-Rational Loyalty In Consumers? – Experimental Evidence
LawEcon Workshop, University of Bonn, Germany
May 2009

Can a more economic approach to Article 82 EC work, if based on rules?
ETH Zurich, Switzerland
September 2009

Andreas Nicklisch

Summary Report

My research areas are law and economics, and public economics. My current work focuses on two specific fields: first, research on individual cooperation in social dilemmas and mechanisms that maintain the cooperation and, second, formal and informal contracts that organize bilateral cooperation in principal-agent relationships.

Cooperation in social dilemmas

Cooperation in social dilemmas is at the centre of experimental public economics. Here, social efficiency, which is fully obtained if all individuals cooperate, is challenged by individual incentives to defect. One way in which economists typically formalize social dilemmas is through the provision of public goods. Real-world examples include, for instance, the global warming agreements, multi-national fishing rate treaties. A large number of mechanisms have been analyzed concerning the potentials to stabilize and increase the level of cooperation within small groups. Particularly, decentralized mechanisms that do not change the theoretical incentive structure of social dilemmas have been tested in laboratory experiments. Examples are non-binding communication among group members, and ostracism and sanctioning mechanisms. My research during the last years was mostly concerned with institutional settings that facilitate cooperation. In joint study with Sven Fischer (2007), I could show that ex-interim referenda over the distribution of cooperation gains stabilize the level of social cooperation significantly. A mechanism that allows group members to reimburse social contributions partly increases individual cooperation rates substantially.

In a recent joint article with Andreas Glöckner, Bernd Irlenbusch, Sebastian Kube and Hans-Theo Normann (2009), the question of leadership for conditional cooperations in small groups are explored. Particularly, the article shows that in groups with privileged members (i.e., those who participate more from group cooperation than others) can initiate higher social contributions by the other group members if their contribution constitutes a sacrifice than if the privileged group member does not suffer from its social contribution. Our experimental results suggest that other group members evaluate the contribution of a sacrificing leader more kindly than the same contribution of a non-sacrificing leader, and condition their contribution decision accordingly.

During the last year, the focus of my research has been drawn to the effect of sanctioning mechanisms for the provision of public goods. Here, each group member can inflict a costly punishment on other members in the absence of centralized institutions. It is important to stress that due to its individual costs, punishment itself is a (second-order) public good: suppose sanctioning seeks to punish defectors, all group members enjoy the benefits of disciplining the non-co-operators, while the individual bears the costs for

punishment. A large body of research has shown that individuals are, nonetheless, willing to execute punishment even in anonymous, non-repeated interactions. In a recent working paper, co-authored by members of the institutional design research unit of the institute (including myself), we were able to show the crucial influence of the initial cooperation rates for the further success of the sanctioning mechanism (Beckenkamp et al., 2009).

Along this line of research, I am currently working on the effect of uncertainty for the success of sanctioning mechanisms in facilitating social cooperation. Further details of this research project are provided in my research agenda.

Formal and informal contracts

The second line of research focuses on the effect of formal and informal contract design for cooperation in principal-agent relationships. In a joint article with Dorothea Alewell (2009), we experimentally test the effect of co-employment of employees and temporal employees for wage acceptance. Results indicate that social comparison affects the decisions of both types of agents. It seems that social utility reasons like inequity aversion substantially matter for disadvantaged agent groups (typically temporal employees). Experimental findings suggest that agents who belong to the advantaged group also dislike inequality between wage offers. Their wage acceptance decreases significantly. Finally, policy implications of the results are discussed in the article. The effect of social utility for cooperation and non-contractible asset provision in firms are discussed in more detail in another theoretical article (Nicklisch, 2009).

My current research on formal and informal principal-agent contracts moves away from the standard laboratory experiments. Here, I make use of an entirely new research method, field experiments in virtual worlds. Recently, experimental economists have intensively discussed the potentials of virtual worlds which visually mimic complex physical space for research on socially embedded human interactions. Virtual worlds connect millions of players by special software, interchanging the information between users via the internet. The software simulates a large, complex, three-dimensional environment filled with artificial objects through which the player can subjectively walk, swim, or fly. Players are represented by animated characters. Participation in those games allows the experimenter to interact with subjects who are unaware that they are participating in experiments while measuring their skills and effort in much larger precision than in real worlds.

In a current working paper, joint work with Tobias Salz (2008), we test the influences of principals' social status for agents' voluntary effort provision vis-à-vis changing wage rates. The results document that lower wage rates offered by low status principles lead to substantially different effort provision of agents than the same wage rate offered by a high-status principal. This finding shows that status influences agents' beliefs about what the principal might have offered as a wage, and therefore about the evaluation of the wage offer.

Further projects on field experiments in virtual worlds are currently being planned and conducted. Details are discussed in my research agenda.

Research Agenda

My research agenda for the next two years focuses on three different field. The first two – cooperation in social dilemmas and formal and informal contracts – are already introduced. The third, belief formation on financial markets, is discussed below.

Cooperation in social dilemmas

As mentioned earlier, I am currently working on the role of uncertainty for the effect of sanctioning mechanisms in facilitating social cooperation. Here, the concern is that the effectiveness of punishment crucially depends on the perfect information of group members concerning individual contributions and received punishment. In a joint research project with A. Glöckner and S. Kube, we differentiate between immediate feedback over punishment (i.e., instantly if the individual receives a sanction) and latent feedback over punishment (i.e., at the end of a sequence of interactions). Our data indicate that latent sanctions alone are able to sustain cooperation in groups. However, the real power of latent sanctions is unleashed when combined with immediate sanctions. It is in these situations that cooperation within groups is enormously enhanced – and, moreover, without increasing the general amount of punishment. This surprising result provides a potential explanation for the co-existence of latent and immediate sanctions in social interactions.

A second direction of uncertainty in social dilemmas deals with the uncertainty over individual contributions and the willingness to execute punishment in this environment. In a joint research project with K. Grechenig and C. Thöni, we show that punishment is much less efficient in the absence of accurate information over the contribution of the other players. This result is particularly relevant for lawyers, as in a great variety of legally relevant circumstances, people have to decide whether or not to behave pro-socially (e.g., to comply with specific welfare-enhancing laws) although individuals face imperfect information. Findings indicate that despite the uncertainty over individual contributions, players reveal the same willingness to execute punishment as in the case of accurate information. However, under uncertainty, pro-social behavior cannot be maintained and punishment is inefficient. Even massive punishment does not significantly increase pro-social behavior.

Along this line of research, and in joint work with Sebastian Goerg, I analyze the impact of rewards on public-goods provision when there is uncertainty about the contributions of other players. If accurate feedback is available, it has been shown that compared to punishment, rewards only have a minor positive influence on contributions. However, this does not necessarily hold if the accuracy of the feedback changes. While the unintended punishment of a (high) contributor could lead to decreased contributions, this is likely not

the case if a reward mechanism is applied. Again, testing punishment and reward mechanisms in public-goods settings with unambiguous feedback is important for the transfer into real-world applications, in which in most of the cases only noisy feedback is available.

Formal and informal contracts

In order to conduct further projects on field experiments in virtual worlds, I am invited as a guest researcher in the team of Ernst Fehr at the institute for empirical research in economics at the University of Zurich in the time between September 2009 and February 2010. Here, several experiments on formal and informal principal-agents contracts are planned.

Among others, there is an ongoing research project with Bruno Frey and Susanne Neckermann, in which we are analyze the effect of non-monetary rewards for voluntary effort provision. The unique characteristic of the virtual world allows us to measure agents' acceptance to perform the task. Moreover, we are able to measure effort provision over much longer periods than a standard laboratory experiment.

In another field experiment in a virtual world (a joint project with Tobias Salz), we compare the influence of controlling the agents (monitoring whether agents are at the workplace) with the effect of supporting actions (increasing agents' ability) for effort provision. The results show that the variance of effort provision is substantially reduced by both means. Here, the special characteristic of the virtual world allows us to measure agents' abilities to perform the task. When controlling for agents' ability, the data indicate that agents with high ability refrain to provide extra effort if they are controlled.

The last field experiment is accompanied by a joint laboratory study with Gerlinde Fellner, testing the effect of insufficient and costly versus insufficient and costless control of agents. This issue is very important for economists: previous research indicates that agents increase their effort if costless, but insufficient, control is not introduced. Here, non-control enhances efficiency both for principals and for agents. Our first results indicate that this result does not hold once insufficient control is costly. This result suggests that refraining from costless control is perceived as kind, leading to a kind response from agents (i.e, they voluntarily provide effort). Yet, refraining from costly control can also be interpreted as a principal's miserliness, triggering no particularly kind response.

Belief formation on financial markets

The third field focuses on the influence on the formation of beliefs on financial markets and the influence of the effects of those beliefs on the stability of markets. The belief formation in experimental initial public offerings is analyzed in particular, along the effect of the IPO mechanism for the efficiency of trades in consecutive asset markets (these are typically formalized as double auctions). IPO mechanisms vary between dynamic auctions, book building, and a random distribution of assets. This research project, joint work with Sascha Füllbrunn and Tibor Neugebauer, contributes to the long-standing

experimental research on asset market price bubbles and market stability. The project is supported by a grant from the research funding system of the University of Luxemburg.

Publications (since 2007)

Articles in Peer-reviewed Journals

Nicklisch A., Cantner U., Güth W., Weiland T., Competition in product design: An experiment exploring innovation behavior, *Metroeconomica*, In Press.

Nicklisch A., Alewell D., Wage differentials and social comparison: An experimental study of interrelated ultimatum bargaining, *International Review of Law and Economics*, In Press.

Glöckner A., Irlenbusch B., Kube S., Nicklisch A., Normann H., Leading with(out) Sacrifice? A Public-Goods Experiment with a Super-Additive Player, *Economic Inquiry*, In Press.

Nicklisch A., The (de)composition of firms: Interdependent preferences of corporate actors, *European Business Organization Law Review*, In Press.

Fischer S., Nicklisch A., Ex Interim Voting: An Experimental study of referendums for public good provision, *Journal of Institutional and Theoretical Economics*, vol. 163, no. 1, pp. 56-74, 2007.

Preprints

Nicklisch A., Wolff I., *Cooperation norms in multiple-stage punishment*, issue 2009/40, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Beckenkamp M., Engel C., Glöckner A., Irlenbusch B., Hennig-Schmidt H., Kube S., Kurschilgen M., Morell A., Nicklisch A., Normann H., Towfigh E., *Beware of Broken Windows! First Impressions in Public-good Experiments*, issue 2009/21, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Glöckner A., Irlenbusch B., Kube S., Nicklisch A., Normann H., *Leading with(out) Sacrifice? A Public-Goods Experiment with a Super-Additive Player*, issue 2009/08, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Nicklisch A., Salz T., *Reciprocity and status in a virtual field experiment*, issue 2008/37, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Nicklisch A., *Semi-collusive advertising and pricing in experimental duopolies*, issue 2008/25, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Nicklisch A., *Inequity Aversion, Reciprocity, and Appropriateness in the Ultimatum-Revenge Game,* issue 2008/24, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Nicklisch A., *The (de)composition of firms: Interdependent preferences of corporate actors*, issue 2007/21, Bonn, Max Planck Institute for Research on Collective Goods, pp. 19, 2007.

Honours / Grants

Research Grant: University of Luxemburg, research grant (one year): IPOs and belief formation on experimental asset markets, 25.000 Euro.

Lectures and Seminar Presentations (since 2007)

2007

Inequity, Reciprocity, and Efficiency-Preferences
International Conference on Reciprocity: Theories and Facts, Milan, Italy
February 2007

Inequity, Reciprocity, and Efficiency-Preferences in the Ultimatum-Revenge Game: Intermediate Results
Research Seminar, Ruhr University Bochum, Germany
May 2007

Inequity, Reciprocity, and Efficiency-Preferences in the Ultimatum-Revenge Game: Intermediate Results
Germany Annual Meeting of the German Association for Experimental Economics
Goslar, Germany
June 2007

Inequity, Reciprocity, and Efficiency-Preferences in the Ultimatum-Revenge Game
International Meeting of the Economic Science Association, Rome, Italy
June 2007

Inequity Aversion, Reciprocity, and Efficiency-Preferences in the Ultimatum-Revenge Game
Annual Meeting of the German Economic Association, Munich, Germany
October 2007

Inequity Aversion, Reciprocity, and Efficiency-Preferences in the Ultimatum-Revenge Game
Research Seminar, Erfurt, Germany
October 2007

2008

The norms of multiple-stage punishment
International Meeting on Experimental and Behavioral Economics, Alicante, Spain
March 2008

Reciprocity and status in a virtual field experiment
Annual Meeting of the German Association for Experimental, Mannheim, Germany
Economics
November 2008

Reciprocity and status in a virtual field experiment
North American Meeting of the Economic Science Association, Tucson, U.S.A.
November 2008

Reciprocity and status in a virtual field experiment
Research Seminar, Heidelberg, Germany
December 2008

2009

The benefits of latent feedback
Public Economic Theory Conference, Galway, Ireland
June 2009

Controlling versus supporting actions in virtual world principal-agents interactions
International Meeting of the Economic Science Association, Washington, U.S.A.
June 2009

Hans-Theo Normann (Affiliate)

Summary Report

With previous projects on public-goods experiments with punishment completed, my current research focuses on two major projects. The first one continues the research on oligopoly experiments. The second one is theoretical and experimental research on signalling games. Both projects are based on previous own research. The Max Planck Institute provides an outstanding research environment, ideally suited to pursue the work on these projects.

My research on oligopoly experiments specifically addresses issues of tacit collusion. These are increasingly important because, with an increase of coordinated-effects arguments in merger cases, an active competition policy field emerges against tacit collusion.

In Fonseca and Normann (2008), we argued that concentration resulting from the merger does not necessarily harm competition when asymmetric market structures arise. However, they do harm competition when the merger leads creates symmetric firms because of the coordinated effects of the merger. At the same time, it is well-known that the numbers of firms affects the likelihood of collusion—or coordinated merger effects—as seen in Huck, Normann and Oechssler (2004).

My current research extends these previous studies by adding excess capacity to the setup. In a joint project with Miguel Fonseca, we provide a comparative-statics analysis of excess capacity in experimental Bertrand-Edgeworth markets. We will run experiments with several levels of capacities, addressing the whole range of capacities between monopoly and perfect competition. Results from pilot sessions indicate that observed weighted average prices decrease as excess capacity goes up. Tacit collusion (where firms charge the monopoly price) seems to occur only rarely, though.

The second line of research is on signalling games. In joint work with Thomas Jeitschko (Michigan State University), we consider a signalling game in which we compare the deterministic and the stochastic signal-generating mechanism. In the vast majority of signalling games, the signal-generating mechanism is deterministic. The sender is able to control the signal perfectly, and the receiver precisely observes the signal that is sent. We also consider the stochastic variant. Technically, what happens in stochastic signaling games is that any signal realization is consistent with any action taken by any type whenever the noise perturbing the signal has full support. Thus, signals are no longer invertible and therefore do not allow complete information about the underlying actions of the sender, even when agents of different types undertake different actions in equilibrium (i.e., a separating equilibrium). The observable signals only allow incomplete

inferences about the sender's true (unobservable) type. We provide theoretical analyses (this part is complete already) and we will also run experimental data for this setup.

A related project on signalling games investigates how the prior belief affects play in experiments even if the prior does not change the game-theoretic prediction. Both signalling projects build on previous research in Kübler, Müller and Normann (2008).

Publications (since 2007)

Articles in Peer-reviewed Journals

Nikiforakis N., Normann H., Wallace B., Asymmetric Enforcement of Cooperation in a Social Dilemma, *Southern Economic Review*, In Press.

Glöckner A., Irlenbusch B., Kube S., Nicklisch A., Normann H., Leading with(out) Sacrifice? A Public-Goods Experiment with a Super-Additive Player, *Economic Inquiry*, In Press.

Normann H., Ricciuti R., Experiments for Economic Policy Making, *Journal of Economic Surveys*, In Press.

Normann H., Vertical Integration, Raising Rivals' Costs and Upstream Collusion, *European Economic Review*, vol. 53, no. 4, pp. 461-480, 05/2009.

Normann H., Kübler D., Müller W., Job Market Signalling and Screening in Laboratory Experiments, *Games and Economic Behavior*, vol. 64, pp. 219-236, 2008.

Normann H., Fonseca M., Mergers, Capacity Consolidations and Collusion: Experimental Evidence, *Economic Journal*, vol. 118, pp. 387-400, 2008.

Normann H., Nikiforakis N., A Comparative-Statics Analysis of Punishment in Public Good Experiments, *Experimental Economics*, vol. 11, no. 4, pp. 358-369, 2008.

Normann H., Koch A., Giving in Dictator Games: Regard for Others or Regard by others?, *Southern Economic Journal*, vol. 75, no. 1, pp. 223-231, 2008.

Normann H., Huck S., Konrad K. A., Müller W., The Merger Paradox and Why Aspiration Levels Let it Fail in the Lab, *Economic Journal*, vol. 117, pp. 1073-1095, 2007.

Normann H., Engelmann D., An Experimental Test of Strategic Trade Policy, *Journal of Economic Behavior and Organization*, vol. 64, issue 1, pp. 144-156, 2007.

Normann H., Müller W., Conjectural Variations and Evolutionary Stability in Finite Populations, *Journal of Evolutionary Economics*, vol. 17, issue 1, pp. 53-61, 2007.

Normann H., Güth W., Nikiforakis N., Vertical Cross-Shareholding: Theory and Experimental Evidence, *International Journal of Industrial Organization*, vol. 25, pp. 69-89, 2007.

Normann H., Ruffle B., Snyder C., Do Buyer-Size Discounts Depend on the Curvature of the Surplus Function? Experimental Tests of Bargaining Models, *RAND Journal of Economics,* vol. 38, no. 3, pp. 747-767, 2007.

Books

Experiments and Competition Policy, Normann H., Hinloopen J., (Eds.), Cambridge, Cambridge University Press, 2009.

Preprints

Glöckner A., Irlenbusch B., Kube S., Nicklisch A., Normann H., *Leading with(out) Sacrifice? A Public-Goods Experiment with a Super-Additive Player*, issue 2009/08, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Nikiforakis N., Normann H., Wallace B., *Asymmetric Enforcement of Cooperation in a Social Dilemma*, issue 2009/20, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Beckenkamp M., Engel C., Glöckner A., Irlenbusch B., Hennig-Schmidt H., Kube S., Kurschilgen M., Morell A., Nicklisch A., Normann H., Towfigh E., *Beware of Broken Windows! First Impressions in Public-good Experiments*, issue 2009/21, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Normann H., *Vertical Integration, Raising Rivals´ Costs and Upstream Collusion*, issue 2008/30, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Lectures and Seminar Presentations (since 2007)

2007

Vertical Integration, Raising Rivals Cost and Upstream Collusion
TU Berlin, Germany
June 2007

A Within-Subjects Analysis of Other-Regarding Preferences
Max Planck Institute, Bonn, Germany
July 2007

A Within-Subjects Analysis of Other-Regarding Preferences
Max Planck Institute, Jena, Germany
July 2007

A Within-Subjects Analysis of Other-Regarding Preferences
J.-W.-Goethe University Frankfurt, Germany
July 2007

Job-Market Signalling and Screening: an Experimental Comparison
University of Osnabrueck, Germany
September 2007

Vertical Integration, Raising Rivals Cost and Upstream Collusion
University of Goettingen, Germany
October 2007

Vertical Integration, Raising Rivals Cost and Upstream Collusion
University of Heidelberg, Germany
November 2007

A Within-Subjects Analysis of Other-Regarding Preferences
University of Berlin, Germany
December 2007

Capacity Consolidations and Collusion: Experimental Evidence
University St. Gallen, Switzerland
December 2007

2008

The Effects of Cartel Policy: Evidence from the German Power Cable Industry
Tilburg Center for Law and Economics (TILEC), Netherlands
January 2008

Vertical Mergers, Foreclosure and Raising Rivals' Costs – Theory and Experimental Evidence
University of Mannheim, Germany
April 2008

Vertical Mergers, Raising Rivals' Costs and Upstream Collusion
International Industrial Organization Conference (IIOC) Arlington, U.S.A.
May 2008

2009

Signalling in Deterministic and Stochastic Settings: A Theoretical and Experimental Investigation
Max-Planck-Institute, Jena, Germany
April 2009

Vertical Mergers, Foreclosure and Raising Rivals' Costs – Theory and Experimental Evidence
University of Innsbruck, Austria
May 2009

The Use of Experiments in Competition Policy
(extensive three-day training delivered for DGCOMP)
European Commission, DG Competition, Brussels, Belgium
June 2009

Excess Capacity and Collusion in Bertrand-Edeworth experiments
UEA Conference of Cartels and Tacit Collusion, Norwich, U.K.
June 2009

Vertical Mergers, Foreclosure and Raising Rivals' Costs – Theory and Experimental Evidence
University of Nuremberg, Germany
August 2009

Signalling in Deterministic and Stochastic Settings: A Theoretical and Experimental Investigation
ESA Conference Innsbruck, Austria
September 2009

Tanja Ostermann

Summary Report

My research focuses on the cognitive processes underlying decision making. I am particularly interested in systematic information distortions, so called *coherence shifts*, which result from the fact that people rely on intuitive-automatic processes to make decisions. Coherence shifts refer to the fact that people unconsciously increase the valuation of evidence that speaks for their favored option and devalue evidence that speaks against it. By this a consistent interpretation of the decision situation is construed even before the actual decision is made, i.e., the re-evaluation of information is a predecisional process. These information distortions can be modelled by parallel constraint satisfaction (PCS) networks (e.g., Glöckner & Betsch, 2008). According to this PCS model the core mechanism of every decision process is the maximizing of consistency. In my work, I empirically investigate the situational and personality factors influencing the size of coherence shifts and try to model differential coherence shifts on an individual level.

In a first series of studies, I tested whether the distribution of cues has an impact on the strength of coherence shifts. I found that an uneven distribution of cues (i.e., most cues favoring one option) comes along with a higher reevaluation of information, as compared to decision tasks in which cues equally strongly favor both options. Considering the findings that the pre- and post-decisional re-evaluation of information is dependent on interindividual differences (e.g., Beckmann & Kuhl, 1984; Cialdini, Trost, & Newsom, 1995; Russo, Meloy, & Wilks, 2000), I further investigate personality factors which influence the strength of coherence shifts. I found that persons scoring high on the preference for consistency scale (PFC-B, Cialdini, Trost, & Newsom, 1995) spread alternatives apart to a greater degree than persons scoring low on that scale. In line with Beckmann and Kuhl (1984), I also found that persons with a high decision-related action orientation showed a larger re-evaluation of information than state-oriented participants.

In a second series of experiments, I extended the paradigm from one-shot decisions to repeated decisions. I thereby investigated whether the repeated presentation of a similar decision situation leads to a stabilization or an extremization of the assessments. Whereas mere repetition leads to a predominant devaluation of cues, the additional provision of "crucial information" caused a systematic re-evaluation of information and high confidence in the decisions. These results suggest that mere repetition of a decision hinders the construction of an adequate mental representation and leads to uncertainty. Additional information which points to the right answer counteracts this effect.

In a third line of research which is of growing importance for my work I run simulations to answer two questions: does the parallel constraint satisfaction model predict the

empirically found differences between cue patterns? Do PCS processes contribute significantly to the prediction of post-test validity ratings when controlling for pre-test ratings? In extending previous simulation studies (e.g., Glöckner, 2006), I ran individual simulations by using empirical data as input parameters. The data suggest that both questions are to be answered in the affirmative: the PCS model predicted the empirically found differences between cue patterns and, furthermore, analyses of correlation and regression analyses indicated that simulation results contributed significantly to the prediction of post-test validity ratings.

Besides working on my dissertation I got involved with building a network of junior scientists interested in decision research. As a starting point I organized, in cooperation with my colleague Nina Horstmann, a workshop for junior decision researchers which took place at the MPI for Research on Collective Goods in September 2008. At this workshop, junior scientists from different universities and institutes presented and discussed their latest research. In response to the excellent feedback, all participants agreed to regard this workshop as the first one in a series of annual workshops for junior decision researchers. Together with Sabine Czenna (University of Mannheim), Mark Jekel (University of Bonn) and Geoffrey Schweizer (University of Potsdam), I organized this year's workshop which was held at the University of Mannheim at the end of July 2009.

Furthermore, I organized a symposium at the 51. Tagung experimentell arbeitender Psychologen in Jena, in which researchers presented their work concerning the integration of information during the process of decision making.

Lectures and Seminar Presentations (since 2007)

2008

Die Veränderung subjektiver Cue-Validitäten im Entscheidungsprozess: Eine Frage der Entscheidungssituation?
[The change of subjective cue validities in the course of decision making. A question of the decision situation?]
Poster presented at the 50. Tagung experimentell arbeitender Psychologen, Marburg, Germany
March 2008

Eine Analyse kognitiver Mechanismen im Entscheidungsprozess
[An analysis of cognitive mechanisms in the decision process] (with Nina Horstmann)
Talk presented at the Workshop Entscheidung und Intuition [Workshop Decision Making and Intuition], Max Planck Institute for Research on Collective Goods, Bonn, Germany
April 2008

Back and forth: Bidirectionality in reasoning
Poster presented at the XXIX International Congress of Psychology, Berlin, Germany
July 2008

More is less? The influence of repetition on coherence shifts
Poster presented at the 22nd SPUDM Conference, Rovereto, Italy
August 2008

The construction of consistent interpretations in decision making
Talk presented at the 10th European Social Cognition Network Meeting, Volterra, Italy
September 2008

Der Weg zu einer "guten" Entscheidung: Die prädezisionale Umwertung von Informationen
[The path to a "good" decision: The predecisional reevaluation of information]
Talk presented at the Workshop Entscheidungsforschung für Nachwuchswissenschaftler [Workshop decision research for junior scientists], Max Planck Institute for Research on Collective Goods, Bonn, Germany
September 2008

Predecisional reevaluation of information: Factors of influence
Poster presented at the 28th Annual Conference of the Society for Judgment and Decision Making, Chicago, U.S.A.
November 2008

2009

Der Einfluss situationaler und personaler Faktoren auf die prädezisionale Informationsumwertung
[The influence of situational and personal factors on the predecisional reevaluation of information]
Talk presented at the 51. Tagung experimentell arbeitender Psychologen, Jena, Germany
March 2009

More is less? The influence of repeated choices on biased predecision processing
Talk presented at the 11th European Congress of Psychology, Oslo, Norway
July 2009

Workshops organized

1st Workshop decision research for junior scientists
Organized by Tanja Ostermann and Nina Horstmann, Max Planck Institute for Research on Collective Goods, Bonn, Germany
September 2008

2nd Workshop decision research for junior scientists
Organized by Sabine Czenna (University of Mannheim), Mark Jekel (University of Bonn), Tanja Ostermann (MPI) and Geoffrey Schweizer (University of Potsdam)
University of Mannheim, Mannheim, Germany
July 2009

Niels Petersen

Summary Report

Currently, my research concentrates on three distinct areas. I am working in two different thematic fields – on the one hand, competition and antitrust law and, on the other hand, international law and comparative constitutional law. Furthermore, I have a methodological interest, jurimetrics, which is not necessarily related to a particular field of law.

The principal area of my research is currently the field of antitrust and competition law, where I am writing my habilitation thesis on "The Normative Foundations of Competition Law". In the thesis, I try to analyze different strands of normative theories and to compare these theoretical models with some empirical studies on the effect of competition law. The book will try to tackle different interrelated issues, such as the normative goal of competition law, the suitability of different strategies to deal with uncertainty and the methodology to decide antitrust and merger issues. It will then try to show how these theoretical findings influence various doctrinal questions in competition law.

The second field, international law, is the field of my PhD thesis, which I finished in May 2008. The topic of the thesis was "The Principle of Democratic Teleology in International Law". During the last two years, I have worked on some projects, which still stemmed from my time as a doctoral student. Among these were an extended English version of the main argument of my PhD thesis, which has been published in an American law journal, and a contribution to the Max Planck Encyclopedia of International Law. Furthermore, I worked on some follow-up projects. One project was a short study on the tension of cultural diversity in the international society and the universalist tendency of international law, which I presented at an international conference in Tokyo. Another project was a comparative study of the strategy of different constitutional courts in determining the direct effect of decisions of international authorities in their domestic legal order.

A final major project of the last two years was the organization of the Assistententagung Öffentliches Recht, which took place in Bonn from 10-13 March 2009. The conference was addressed to junior scholars, who are either working on their dissertations or their post-doctoral theses. It is the most important conference for young German scholars working in the field of public law and has been organized for 49 consecutive years so far. The focus of the Bonn conference was the interplay between legal regulation and market processes – a topic that fits well into the research focus of the institute. I organized the conference together with my colleague Emanuel Towfigh and some research fellows from the University of Bonn. During the conference organization, I had to perform different tasks, such as elaborating the thematic conception, acquiring financial support,

and inviting and selecting speakers. Furthermore, I held the welcome address on the opening evening of the conference.

Research Agenda

My research agenda for the next two years is two-fold. During the next academic year, I will participate in a Masters program in "Quantitative Methods in the Social Sciences" at Columbia University. The goal of this undertaking is to become more familiar with empirical methods in order better to understand empirical research, and, in particular, to be able to perform empirical research myself. The advantage would be that I could tailor the design of the respective empirical research to the questions stemming from legal scholarship, which I am interested in.

After my return to Bonn, which will presumably be in summer 2010, I will continue to work on my habilitation thesis, which I plan to finish within three years after my return. Furthermore, I am planning to work on some empirical papers in the fields of competition law and international law.

Finally, I am currently pursuing a smaller project together with my colleague Emanuel Towfigh. We are working on a German textbook on the use of social science methods for legal research. In contrast to the already existing textbooks, which mainly concentrate on the analysis of certain areas of law using economic expertise, we want to focus on methodology, like economic modeling or empirical research. The goal is to give a general introduction for legal scholars, highlighting the use of social science methods for legal work and enabling them better to understand social science papers that might be useful for legal research.

Publications (since 2007)

Articles in Peer-reviewed Journals

Petersen N., How Rational is International Law?, *European Journal of International Law*, vol. 20, pp. 1247-1262, 2009.

Books

Petersen N., Demokratie als teleologisches Prinzip. Zur Legitimität von Staatsgewalt im Völkerrecht, *Beiträge zum ausländischen öffentlichen Recht und Völkerrecht*, vol. 204, Springer, pp. 280, 2009.

Recht und Markt – Wechselbeziehungen zweier Ordnungen. 49. Assistententagung Öffentliches Recht, Bonn., Towfigh E., Schmolke K., Petersen N., Lutz-Bachmann S., Lange A., Grefrat H., (Eds.), Baden-Baden, Nomos, pp. 270, 2009.

Book Chapters

Petersen N., Demokratie und Grundgesetz – Veränderungen des Demokratieprinzips in Art. 20 Abs. 2 GG angesichts der Herausforderungen moderner Staatlichkeit, *Jahrbuch des öffentlichen Rechts der Gegenwart*, vol. 58, In Press.

Petersen N., Globalisierungsforschung in Kultur- und Sozialwissenschaften: Rechtswissenschaft, *Globalisierung. Ein interdisziplinäres Handbuch*, Niederberger A., Schink P., (Eds.), Stuttgart, Verlag J. B. Metzler, In Press.

Petersen N., War, Effect on Contracts, *Max Planck Encyclopedia of Public International Law*, Wolfrum R., (Ed.), Oxford, Oxford University Press, In Press.

Petersen N., Völkerrecht und Gewaltenteilung – Die aktuelle Rechtsprechung des US Supreme Court zur innerstaatlichen Wirkung von völkerrechtlichen Verträgen –, *Völkerrecht im innerstaatlichen Bereich*, Binder C., Fuchs C., Goldmann M., Lachmeyer K., Kleinlein T., (Eds.), vol. 13, Baden-Baden, Nomos, pp. 49-63, 2010.

Petersen N., Anforderungen des Völkerrechts an die Legitimation politischer Entscheidungen – Zwischen domaine réservé und right to democratic governance, *Legitimation ethischer Entscheidungen im Recht – Interdisziplinäre Untersuchungen*, Vöneky S., Hagedorn C., Clados M., von Achenbach J., (Eds.), Berlin, Springer, pp. 173-189, 2008.

Articles (not peer-reviewed)

Petersen N., Rational Choice or Deliberation? – Customary International Law between Coordination and Constitutionalization, *Journal of Institutional and Theoretical Economics*, vol. 165, pp. 71-85, 2009.

Petersen N., Customary Law without Custom? Rules, Principles and the Role of State Practice in International Norm Creation, *American University International Law Review*, vol. 23, pp. 275-310, 2008.

Petersen N., The Principle of Democratic Teleology in International Law, *Brooklyn Journal of International Law*, vol. 34, pp. 33-84, 2008.

Petersen N., Der Wandel des ungeschriebenen Völkerrechts im Zuge der Konstitutionalisierung, *Archiv des Völkerrechts*, vol. 46, pp. 502-523, 2008.

Petersen N., Towfigh E., Freiheit, Sicherheit, Öffentlichkeit – Die 48. Assistententagung Öffentliches Recht vom 26. bis zum 29. Februar 2008 in Heidelberg, *Die Öffentliche Verwaltung*, vol. 61, no. 14, pp. 591-594, 2008.

Preprints

Petersen N., *The Reception of International Law by Constitutional Courts through the Prism of Legitimacy*, issue 2009/39, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Petersen N., *Abkehr von der internationalen Gemeinschaft? – Die aktuelle Rechtsprechung des US Supreme Court zur innerstaatlichen Wirkung von völkerrechtlichen Verträgen –*, issue 2009/05, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Petersen N., *Review Essay: How Rational is International Law?*, issue 2009/16, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Petersen N., *Rational Choice or Deliberation? – Customary International Law between Coordination and Constitutionalization*, issue 2008/28, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Petersen N., *Demokratie und Grundgesetz – Veränderungen des Demokratieprinzips in Art. 20 Abs. 2 GG angesichts der Herausforderungen moderner Staatlichkeit*, issue 2008/26, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Petersen N., *The Principle of Democratic Teleology in International Law*, issue 2008/16, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Lectures and Seminar Presentations (since 2007)

2007

Development, Democratization, and the Legitimacy of National Governments under International Law
J.S.D Forum of the NYU School of Law, New York, U.S.A.
12 February 2007

Die Legitimität staatlicher Herrschaft und das Völkerrecht – zwischen 'domaine réservé' und 'right to democratic governance'
[The Legitimacy of State Governance and International Law – Between 'domaine réservé' and 'right to democratic governance']
Research Colloquium: Demokratische Legitimation ethischer Entscheidungen
Heidelberg, Germany
30 November 2007

Asia and the right to democratic governance
ALIN International Academic Conference: Asia's Emerging Laws in the Digital Age, Bangkog, Thailand
7 December 2007

2008

Rational Choice or Deliberation? – Customary International Law between Coordination and Constitutionalization
Seminar on the New Institutional Economics: Coordination in the Absence of Sovereignty
Lübbenau, Germany
12 June 2008

Die Rechtsprechung des US Supreme Court zur innerstaatlichen Wirkung von Völkerrecht
[The U.S. Supreme Court Decision on the Domestic Effect of International Law]
Conference on the Domestic Effect of International Law, Vienna, Austria
6 December 2008

2009

Human Rights Protection by Means of Foreign Rule? A Liberal Response to the Charge of Paternalism
Comment on Daniel Voelsen at Conference on the Legitimacy of Political Systems
Berlin, Germany
29 January 2009

Recht und Markt
[The Law and the Market]
Welcome Address at the 49th Conference for Doctoral and Postdoctoral Scholars in the field of Public Law, Bonn, Germany
10 March 2009

Contracts and Promises – An Approach to Pre-Play Agreements
Comment on Topi Miettinen at Conference on Frontiers in the Economic Analysis of Contract Law, Bonn, Germany
4 June 2009

Demokratie als teleologisches Prinzip
[Democracy as a Teleological Principle]
Colloquium on Issues in Political Philosophy
Goethe University, Frankfurt/Main, Germany
8 June 2009

Die Rezeption von Völkerrecht durch Verfassungsgerichte
[The Reception of International Law through Constitutional Courts]
Workshop on the Normativity and the Legitimacy of Political Orders, Hamburg, Germany
11 July 2009

Rational Choice und die Effektivität von Normen ohne Sanktionsmechanismus
[Rational Choice and the Effectiveness of Norms Without a Sanction Mechanism]
Colloquium on the formation of rules, the technique of rule-making and the effect of legal norms, Bonn, Germany
24 July 2009

International Law, Democracy and Cultural Diversity
Second Biennial General Conference of the Asian Society of International Law: International Law in a Multi-polar and Multi-civilizational World, Tokyo, Japan
2 August 2009

Susanne Prantl

Summary Report

Over the last few years, my research has considered the relationship between institutions, public policy or regulation and economic performance with a focus on firm entry and young firms.

"The Effects of Entry on Incumbent Innovation and Productivity" (joint with Ph. Aghion, R. Blundell, R. Griffith, and P. Howitt, The Review of Economics and Statistics, 2009).

In the paper "The Effects of Entry on Incumbent Innovation and Productivity", our main interest is in the heterogeneity of entry effects on incumbent productivity growth and patenting, depending on the distance to the technology frontier. We start out from the empirical observation that greenfield foreign firm entry in the United Kingdom and incumbent productivity growth are strongly and positively correlated in industries close to the technology frontier, but weakly or even negatively in industries that lag behind.

Our explanation for this variation follows from Schumpeterian growth theory – the threat from frontier entrants induces incumbents in sectors that are initially close to the technology frontier to innovate more, and this triggers productivity growth, but discourages those in sectors further from the frontier. In the former case, incumbent firms close to the frontier know that they can escape and survive the entry threat by innovating successfully, and so they react with more intensive innovation activities aimed at escaping the threat. In the latter case, the entry threat reduces the expected rents from doing R&D for incumbents and these have no hope to win against an entrant.

In our empirical analysis we investigate how incumbent (labor and total factor) productivity growth and patenting react to entry and find results that mirror the theoretical predictions. The main identification problem that we address arises because entry threat is not observable and it is endogenous to incumbent performance. We use actual foreign firm entry as a proxy for the unobservable entry threat, which, if anything, exacerbates the endogeneity problem. To tackle this, we exploit variation in UK entry conditions that arises from a major policy reform in the European Union (EU), the Single Market Programme, and from a series of UK product market reforms in combination with rich micro panel data. We find a consistent pattern of variation in incumbents' reactions to foreign firm entry when using either UK policy reforms or EU-wide policy reforms, and when allowing for endogeneity of additional factors. We complement our analysis for foreign entry with evidence for domestic entry and entry through imports and we explain that the full pattern of our empirical results is inconsistent with the two most likely alternative theoretical explanations that might be put forward – both of these are based on knowledge spillovers.

Lending Decisions of Cooperative Banks, Private Credit Banks and Savings Banks (joint with M. Almus, J. Egeln, and D. Engel, Journal of Applied Social Science Studies, 2009).

In the paper "Lending Decisions of Cooperative Banks, Private Credit Banks and Savings Banks", we examine how German cooperative banks, (non-cooperative) private credit banks and savings banks contribute to the long-term loan financing of young and small firms in Germany. We focus on a specific type of loan: these loans come from public subsidized loan programs, are assigned by cooperative banks, private credit banks or savings banks and constitute a substantial part of all long-term bank loans to young firms and SME in Germany. We present empirical analyses for West Germany in the 1990s based on county-level as well as detailed firm-level data. We find that private credit banks did not change their lending to young and small firms during that period. Already since the start of the 1990s, they have played only a minor role in start-up and small business lending. Cooperative and savings banks have had, in contrast, a strong, positive influence. As German savings banks are publicly owned in contrast to cooperative banks one particularly relevant finding is that the lending activities of cooperative and savings banks turn out to be similarly strong; they do not differ significantly. Taken together, our results imply that having banks that operate regionally with a decentralized organizational form is crucial to the observed lending activities, but not public ownership.

"How does entry regulation influence entry into self-employment and occupational mobility?" (joint with A. Spitz-Oener, forthcoming in: Economics of Transition, 2009)

and

"The Impact of Entry Regulation on Sustained Entry and the Size of Long-living Entrants.", mimeo.

With the paper "How does entry regulation influence entry into self-employment and occupational mobility?", I started research on the consequences of firm entry regulation on self-employment, entrants' performance, and occupational mobility. We consider a strong form of firm entry regulation in Germany that imposes a mandatory educational standard on individuals who want to start a legally independent firm in one of the regulated product markets. This regulation in the German Trade and Crafts Code is similar to entry regulation in several other European countries. Using a substantial natural experiment in entry regulation that follows from the German reunification, we can identify the causal effects of a substantial shift in the regulatory context on entry into self-employment and occupational mobility. The same regulatory rules should be more binding in East than in West Germany as the unexpected economic transition necessitates substantial industry and labor dynamics in East Germany, but not in West Germany, and as the pool of people fulfilling the entry requirement in regulated occupations in East Germany is smaller due to decisions taken under the planned economy system of the German De-

mocratic Republic. Our findings suggest that entry regulation slows down entry into self-employment more in regulated occupations in the East German transition context after reunification than in the more stable West German context. These regulatory effects are stronger among individuals who would be expected to be more constrained than others by the imposed entry costs. We also show that entry regulation reduces occupational mobility among workers more in the regulated occupations in East than in West Germany after reunification. Our explanations for this result follow from the finding that entry regulation hampers entry and competition more in regulated occupations in East than in West Germany.

In the paper "The Impact of Entry Regulation on Sustained Entry and the Size of Long-living Entrants", I show first that entry regulation reduces *sustained* entry into self-employment after reunification, not only entry in general as reported by Prantl and Spitz-Oener (2009). This finding is in line with the view that the entry regulation imposed by the German Trade and Crafts Code not only suppresses transient, short-lived entrants, but also long-living entrants that have a much higher potential of positively impacting technological progress, economic growth and social welfare. Second, I find that the regulatory effect on the number of long-living entrants is not accompanied by a counter-acting effect on the long-run employment size of long-living entrants in regulated markets. Altogether, these empirical results strengthen the view that the entry regulation in the German Trade and Crafts Code may hinder technological progress and economic growth and it may ultimately reduce welfare.

Research Agenda

In several new research projects, I plan to explore the implications of product market regulation and regulatory reforms on the process of technological progress and on labor market developments. My core goals are twofold: first, I want to provide theory-guided empirical evidence on whether and how the organization of knowledge creation in firms as well as the direction and the scope of the innovation process respond to product market regulation and regulatory reforms. Second, I aim at identifying regulatory effects on employment, unemployment, and wages.

In an ongoing project that is joint work with R. Griffith (University College London; Institute for Fiscal Studies, London), we investigate how firms adapt their research collaboration activities in response to product market deregulation and whether they do so in order to facilitate collusion in the product market. While it has long been noted in the theoretical literature in industrial organization that firms may collaborate in research and development in order to collude in the product market, empirical evidence identifying such effects is scarce and policy-relevant. If firms change how they create knowledge and how they innovate in order to offset the effects of product market deregulation on their profits, this needs to be taken into account in future decisions on product market regulation and in case decisions of Competition Authorities at the national and the EU level. Moreover,

such empirical evidence is also relevant for coordinating innovation and R&D policies with competition policy and product market regulation.

Another recent project focuses on identifying the effects of firm entry regulation on employment and wages in a situation where product markets with regulated and unregulated firm entry are confronted with a unique, large and unexpected labor supply shock. This joint research with A. Spitz-Oener (Humboldt-University Berlin) is motivated by two facts: first, many European countries have been plagued by sluggish job creation and persistent unemployment rates in recent decades, and this fact has contrasted with the U.S. experience. Second, the recent empirical literature in labor economics found that rigid labor market institutions in continental Europe and adverse demand shocks can explain only part of the distinct development of labor market outcomes in the United States and European countries. Recent theoretical work stresses the relevance of product market regulation and its interactions with labor market institutions and adverse labor market shocks as additional explanatory factors, but related micro-econometric evidence is still rare.

The labor supply shock that we exploit is the massive inflow of East German migrants in West Germany after the German reunification in 1989. Between 1989 and 1992, the labor force in West Germany increased by about 4 percent. This migration shock is unique insofar as East German migrants are closer substitutes to West Germans than traditional immigrants. As East German migrants are unlikely to represent a random sample from the population in East Germany and as they may self-select themselves into West German occupations in response to employment and wage expectations, we have to deal with potentially substantial endogeneities. To tackle these issues, we exploit instrumental variation in detailed training data that arises due to the quasi-experimental nature of German reunification and the characteristics of the planned economy system of the German Democratic Republic.

Honors /Grants

01/2007–12/2009: Leibniz Association Grant (Wissenschaftsgemeinschaft Gottfried Wilhelm Leibniz, WGL), Pakt für Forschung und Innovation, Research Project „Competition and Innovation“ (with Thomaso Duso and Lars-Hendrik Röller), 201 300 € (of total amount 984 000 €).

Publications (since 2007)

Articles in Peer-reviewed Journals

Prantl S., Spitz-Oener A., How Does Entry Regulation Influence Entry into Self-employment and Occupational Mobility?, *Economics of Transition*, vol. 17, no. 4, pp. 769-802, 2009.

Aghion P., Blundell R., Griffith R., Howitt P., Prantl S., The Effects of Entry on Incumbent Innovation and Productivity, *Review of Economics and Statistics*, vol. 91, no. 1, pp. 20-32, 2009.

Prantl S., Almus M., Egeln J., Engel D., Kreditvergabe durch Genossenschaftsbanken, Kreditbanken und Sparkassen: Eine empirische Analyse von Förderkrediten für junge, kleine Unternehmen [Lending Decisions of Cooperative Banks, Private Credit Banks and Savings Banks], *Journal of Applied Social Science Studies (Schmollers Jahrbuch – Zeitschrift für Wirtschafts- und Sozialwissenschaften)*, vol. 129, no. 1, pp. 83-132, 2009.

Articles (not peer-reviewed)

Prantl S., Beihilfen unter Beobachtung. Industriepolitische Förderprogramme müssen verstärkt evaluiert werden [Evaluation of State Aid in the European Union], *WZB Mitteilungen*, no. 119 March, pp. 38-40, 2008.

Discussion Papers

Prantl S., Spitz-Oener A., How Does Entry Regulation Influence Entry into Self-employment and Occupational Mobility?, IFS Working Paper W09/14, Institute for Fiscal Studies, London, UK, 2009.

Prantl S., Almus M., Egeln J., Engel D., Kreditvergabe durch Genossenschaftsbanken, Kreditbanken und Sparkassen: Eine empirische Analyse von Förderkrediten für junge, kleine Unternehmen [Lending Decisions of Cooperative Banks, Private Credit Banks and Savings Banks], WZB Discussion Paper SP II 2008-14, pp. 51, Wissenschaftszentrum Berlin.

Revise and Resubmit

Exit Decisions of Young Firms, revise and resubmit: Journal of Industrial Economics.

Unpublished Research Papers

Prantl, S., Exit Decisions of Young Firms.

Prantl, S., The Role of Policies Supporting New Firms.

Prantl, S. and Böhme, U., Incorporation Laws and New Firms.

Prantl, S., The Design of Firm Entry Policies: What Matters? What Doesn't?

Prantl, S. and Spitz-Oener, A., Labor Market Outcomes, Labor Supply Shocks, and Firm Entry Regulation.

Prantl, S., The Impact of Entry Regulation on Sustained Entry and the Size of Long-living Entrants.

Lectures and Seminar Presentations (since 2007)

2008

Firm Entry Regulation, Labor Supply Shocks and Labor Market Outcomes
Institute for the Study of Labor (IZA), Bonn
1 April 2008

Firm Entry Regulation, Labor Supply Shocks and Labor Market Outcomes
University of Mannheim
22 April 2008

Product Market Regulation, Labor and Innovation
University of Cologne
2 June 2008

Product Market Regulation, Labor and Innovation
Leibniz Association, Berlin
10 June 2008

2009

Entry Regulation, Self-Employment and Employee Reallocation
University of Hamburg
27 February 2009

Entry Regulation, Self-Employment and Employee Reallocation
Max-Planck Institute for Research on Collective Goods, Bonn
11 March 2009

How Does Entry Regulation Influence Entry into Self-employment and Occupational Mobility?
Competition Workshop organized by The Netherlands Bureau for Economic Policy Analysis (CPB), The Dutch Ministry of Economic Affairs and Tilburg University, The Hague
2 April 2009

How Does Entry Regulation Influence Entry into Self-employment and Occupational Mobility?
Conference of the Collaborative Research Centre SFB/TR15, Caputh
14 May 2009

Indra Spiecker gen. Döhmann (Affiliate)

Summary Report

Though still being affiliated with the Max Planck Institute, my position changed as I received a tenured professorship for Public and Administrative Law, especially Information Law, Data Protection Law and Telecommunications Law, at the University of Karlsruhe/Karlsruhe Institute of Technology in April 2008. I had been on leave to fill a vacant chair in Constance since 2007. However, my past and future research is considerably influenced by the many extremely valuable insights gained during my time with the MPI.

After having completed my habilitation project "state decisions in the face of uncertainty" in the summer of 2007, my research interests concentrated on several fields. One central aspect remained the legal framework of decision making in situations of risk and uncertainty. A second major aspect centered on the field of knowledge and information. Major works concentrate on questions concerning the gathering, transfer, and presentation of information by the state. Finally, I have strengthened my research in the field of social law, looking mostly at the conditions and the impact of regulatory decisions.

Uncertainty and Risk

In my habilitation thesis, I worked on the legal system and its structures how state institutions, particularly the executive and the legislative, decide under conditions of uncertainty.

Law has traditionally been based on the assumption of certainty. However, societal developments have made the legal community aware that many decisions cannot be based on a safe basis of knowledge. Often, information is lacking, uncertain or biased. Frequently, the existence and the amount of ignorance at the time of the decision only become known long after the decision. Therefore, non-knowledge can only be described if at least some knowledge exists. Consequently, any legal strategy how to cope with uncertainty has to start with efforts how to gather information to diminish the existing lack of knowledge. However, more information can also mean less certainty. And more information does not necessarily lead to better results of the following decision. Therefore, alternative processes, e.g., heuristics as they have been identified in psychology, have to be included in a legal decision making framework. Once uncertainty has been identified and accepted, a legal decision theory has to be developed. Law does know such a theory, but has so far not identified it clearly. Economic theory assists in this task. However, as legal decision making does not stop at the decision, but rather has to stand the test before courts, the ex-post control leads to further challenges to the law. Traditional instruments such as the principle of proportionality do not function if means and goal in their effects are not certain. Insights from Behavioral Law and Economics,

such as biases and heuristics, enable the law at least to some degree to control legal decisions under uncertainty with more clarity and precision.

Further research has been invested in the analysis of institutional instruments of the state how to cope with (health) risks by examining counteracting biases such as time inconsistency, over-positivity or controllability. A critique of the precautionary principle rounds up this area.

Information and Knowledge

A second research interest looks at the changes the state faces due to the development of the "Knowledge society". Questions that interest me are the governance of and by information, the conditions of generating and transferring knowledge, of determining its content quality as well as researching its presentation and technical aspects from the standpoint of a state information order ("Staatliche Informationsordnung"). Its functionary conditions are of special importance to me. Some of these questions have been dwelled upon in the course of my habilitation thesis. Other papers have looked into new areas:

One major contribution consists of a co-edited book, derived from the results of an earlier interdisciplinary conference in 2007, sponsored by the VolkswagenStiftung. It particularly concentrated on the aspects of how to organize and institutionalize information gathering and transfer processes in the system of administration. It integrated aspects from organisation theory, economics, sociology, psychology and decision making theory. My co-authored extensive introduction sketches the field, identifying some urging problems; my own particular contribution looks at the incentives of the parties on disclosure of information in administrative proceedings.

Another strong field in this part of my research agenda consists of examinations of legal restrictions of the use of information, such as data-protection laws. My research interest goes beyond this, however. Therefore, I have looked into the legal foundation how confidential business data is protected by material and procedural standards, once on the particular legal provisions in the field of telecommunications and once on their potential infringement by freedom of information laws.

Material Law: Social Law (Sozialrecht), Administrative Law, Constitutional Law, Environmental Law, Telecommunications Law

Naturally, material law has played an important role in my research, although I generally employ an interdisciplinary approach. In all of the projects mentioned above, particular legal institutions have been used to identify and illustrate the theoretical problems. I have also used legal as well as interdisciplinary tools to criticise some of the present legal rules in particular fields and to offer matching and individual solutions. Many examples have been taken from the fields of general administrative law and constitutional law, but also from highly specified fields such as environmental law or telecommunications law.

One area has been looked into with special intensity: the field of Social and Health Law. Here, I am especially interested in its regulation. Why is market failure present, and

which institutions can be, and have been, established to overcome it? Can regulatory experiences from other fields be transferred? How do the multiple arenas in the European Union function in this area? One major article established some of the restrictions of health markets, employing mostly economic theory in the analysis. Another legal theoretic piece develops the constitutional background of any social system. Finally, one further article has looked into special health insurance institutions against the background of time-inconsistency bias, controllability bias and overpositivity bias.

Publications (since 2007)

Articles in Peer-reviewed Journals

Spiecker gen. Döhmann I., Das Verwaltungsrecht zwischen klassischem dogmatischem Verständnis und steuerungswissenschaftlichen Anspruch, *DVBl*, pp. 1074-1083, 2007.

Books

Spiecker gen. Döhmann I., Staatliche Entscheidungen unter Unsicherheit. Habilitation thesis, *Jus Publicum*, Tübingen, Mohr Siebeck, pp. 550, In Press.

Generierung und Transfer staatlichen Wissens im System des Verwaltungsrechts, *Neue Staatswissenschaften*, Spiecker gen. Döhmann I., Collin P., (Eds.), vol. IX, Tübingen, Mohr Siebeck, pp. 388, 2008.

Recht und Verhalten. Beiträge zu Behavorial Law and Economics, Engel C., Englerth M., Lüdemann J., Spiecker gen. Döhmann I., (Eds.), Tübingen, Mohr Siebeck, pp. 414, 2007.

Book Chapters

Spiecker gen. Döhmann I., Risikomanagement durch Versicherungsmechanismen, *Risikoregulierung im Bio-, Gesundheits- und Medizinrecht*, Albers M., (Ed.), Baden-Baden, In Press.

Spiecker gen. Döhmann I., Verfassungstheorie des Sozialstaats, *Verfassungstheorie*, Depenheuer O., Grabenwarter C., (Eds.), Tübingen, Mohr Siebeck, In Press.

Spiecker gen. Döhmann I., The Effects of the Protection of Business and Business-related Information on Corruption and the Quality of Decision making in the U.S., E.U. and Germany compared, *Law and Magic*, Corcos C., (Ed.), Durham, In Press.

Spiecker gen. Döhmann I., Protection of Confidential Business Data in the Age of Convergence, *International Workshop on Communication Regulation in the Age of Digital Convergence: Legal and Economic Perspectives*, Seifert S., Krämer J., (Eds.), Karlsruhe, pp. 29-42, 2009.

Spiecker gen. Döhmann I., Collin P., Generierung und Transfer staatlichen Wissens im System des Verwaltungsrechts – ein Problemaufriss, *Generierung und Transfer staatlichen Wissens im System des Verwaltungsrechts*, Spiecker gen. Döhmann I., Collin P., (Eds.), Tübingen, Mohr Siebeck, pp. 3-26, 2008.

Spiecker gen. Döhmann I., Gesundheitsleistungen: Individual- oder Gemeinschaftsgüter? – Institutionen zur Regulierung von Märkten jenseits der Netzwirtschaften, *Bitburger Gespräche zum Thema "Zwischen Freiheit und Solidarität" – Perspektiven für eine Reform der Kranken- und Pflegeversicherung*, Das Institut für Rechtspolitik an der Universität Trier, (Ed.), München, Beck, pp. 39-60, 2008.

Spiecker gen. Döhmann I., Die informationelle Inanspruchnahme des Bürgers im Verwaltungsverfahren: Der Amtsermittlungsgrundsatz nach § 24 VwVfG, *Generierung und Transfer staatlichen Wissens im System des Verwaltungsrechts*, Spiecker gen. Döhmann I., Collin P., (Eds.), Tübingen, Mohr, pp. 196-216, 2008.

Spiecker gen. Döhmann I., Kurzenhäuser S., Das juristische Darstellungsgebot. Zum Umgang mit Risikoinformation am Beispiel statistischer Datenerhebung am Beispiel des BInfSchG, *Recht und Verhalten. Beiträge zu Behavioral Law and Economics*, Engel C., Englerth M., Lüdemann J., Spiecker gen. Döhmann I., (Eds.), Tübingen, Mohr Siebeck, pp. 133-164, 2007.

Preprints

Spiecker gen. Döhmann I., *Die informationelle Inanspruchnahme des Bürgers im Verwaltungsverfahren: Der Amtsermittlungsgrundsatz nach § 24 VwVfG*, issue 2007/20, Bonn, Max Planck Institute for Research on Collective Goods, pp. 19, 2007.

Reviews

Spiecker gen. Döhmann I., Schmidt am Busch, Birgit, Die Gesundheitssicherung im Mehrebenensystem, *DVBl.*, In Press.

Spiecker gen. Döhmann I., Schuppert, Gunnar Folke/Voßkuhle, Andreas, Governance von und durch Wissen, *Die Verwaltung*, In Press.

Spiecker gen. Döhmann I., Kühling, Jürgen/Elbracht, Alexander, Telekommunikations-recht, *DVBl.*, pp. 438-439, 2009.

Spiecker gen. Döhmann I., Vorsicht vor dem Vorsorgeprinzip, review of Cass R. Sunstein, Laws of Fear. Beyond the Precautionary Principle, *RabelsZ*, vol. 72, pp. 656-659, 2008.

Spiecker gen. Döhmann I., Dominik Kupfer, Die Verteilung knapper Ressourcen im Wirtschaftsverwaltungsrecht, *DVBl*, pp. 892, 2007.

Lectures and Seminar Presentations (since 2007)

2007

Der Schutz von Betriebs- und Geschäftsgeheimnissen, insbesondere im Prozessrecht
[Protecting Company and Business Secrets, particularly in Procedural Law]
Habilitation Lecture, University of Osnabrück, Germany
June 2007

Die Forschung mit genetischen Daten, insbesondere durch Bio-Datenbanken, am Schnittfeld von Forschungsfreiheit und informationeller Selbstbestimmung
[Scientific Research with Genetic Data, particularly Bio Databases, between Freedom of Research and Informational Self-Determination]
Invited Lecture, University of Cologne, Germany
June 2007

Die Verwendung genetischer Daten zu Forschungszwecken – ein Ende der datenschutzrechtlichen Zweckbestimmung?
[Using Genetic Data for Research Purposes – an End to Data Protection Purposes?]
Lecture, University of Osnabrück, Germany
July 2007

Datenschutz und Informationsfreiheit im Gesundheitssektor, insb. nach der Gesundheitsreform
[Data Protection and Freedom of Information in the Health Sector, particularly after the Health Reform]
Fourth Conference of the Scientific Network Competition – Cooperation – Control: Tools of Governance in Public Health and Health Law: New Developments through Recent Reforms, Fulda, Germany
September 2007

Gesundheitsleistungen – Individual- oder Gemeinschaftsgüter?
[Healthcare Provision – Individual or Collective Goods?]
Invited Lecture at the 49th Bitburg Talks (Bitburger Gespräche): Zwischen Freiheit und Solidarität. Neue Ideen für die Kranken- und Pflegeversicherung, Berlin, Germany
October 2007

Staatliche Entscheidungen unter Unsicherheit: Anforderungen an das System Recht
[State Decisions in Insecure Circumstandes: Demands on the Legal System]
Invited Lecture, Systemwissenschaftliches Kolloquium, Institut für Umweltsystemforschung, University of Osnabrück, Germany
November 2007

2008

What do you Think How Safe is Safe?
Law, Cultures and Humanities Conference: "Imagining Justice and Injustice"
UC at Berkeley, U.S.A.
March 2008

Selbstkontroll-Mechanismen durch Recht
[Mechanisms of Self-control Through Law]
University of Bayreuth, Germany
July 2008

Zwangslizensierung: Königsweg für Innovationsanreize und Wissensdiffusion?
[Forced Licence Granting: The Best Way to Stimulate Innovation and Spread Knowledge?]
4. Wissenschaftlicher Round Table Informationsgesellschaft und Wettbewerb, DIW Berlin, Germany
September 2008

Neue Wege im öffentlichen Versicherungswesen
[New Paths in Public Insurance]
Systemwissenschaftliches Kolleg, Institut für Umweltsystemforschung
University of Osnabrück, Germany
October 2008

Protection of Confidential Business Data in the Age of Convergence
International Workshop on Communication Regulation in the Age of Digital Convergence: Legal and Economic Perspectives
University of Karlsruhe/Karlsruhe Institute of Technology, Germany
December 2008

2009

Herausforderungen an eine neue Informationsordnung am Beispiel des Umweltrechts
[Challenges for a New Information Order, using the Example of Environmental Law]
University of Frankfurt a.M., Germany
January 2009

Die Vertraulichkeit und Integrität informationstechnischer Systeme – Das Online-Durchsuchungsurteil des Bundesverfassungsgerichts: Darstellung und rechtliche Würdigung
[Confidentiality and Integrity of Information Technology Systems – the Federal Constitutional Court's Decision on Online Searches: Description of the Situation and Legal Analysis]
Tagung des Beirats der DGRI "Integrität und Vertraulichkeit in der Datenverarbeitung", Germany
May 2009

Was will Öffentliches Informationsrecht?
[What does the Public Right to Obtain Information Want?]
Eröffnung des Karlsruher Dialogs zum Informationsrecht, Germany
June 2009

Emanuel Vahid Towfigh

Summary Report

During the past two years, my first years at the Institute, I started to develop a research program that can at the same time relate to current issues of legal doctrine and take advantage of the more 'scientific', i.e., theoretically and empirically driven, inter-disciplinary research for which the Institute provides so formidable an infrastructure.

To that end, I engaged in a more thorough phase of learning the necessary theoretical and methodological foundations for such an interdisciplinary approach. I attended the 2007 and 2008 summer schools of the International Max Planck Research School (IMPRS) on Adapting Behavior in a Fundamentally Uncertain World in Jena, a statistics course at ETH Zürich (Hertig/Bechtold, lectured by Kathy Zeiler of Georgetown), a course on Constitutional Law & Economics in Gerzensee (by Samuel Issacharaoff, NYU) and organized an ongoing statistics course for the Institute's lawyers (taught by Stephan Dickert). During this learning phase, I came to realize that there is no adequate, broad German-language introduction into economic methods for lawyers, so I seized the opportunity and, together with some colleagues at the MPI, I am currently in the process of editing such a textbook (co-edited with Niels Petersen, contributions by Markus Englerth, Stefan Magen, Andreas Nicklisch and Sebastian Goerg).

Turning this theoretical knowledge into practice, I pursued a number of empirical projects, to get hands-on experience. Two of the projects are experiments that try to provide empirical answers to current questions of legal doctrine, namely the question which stance competition law should take with view to the admissibility of targeted rollback rebates (research together with Alexander Morell and Andreas Glöckner) and the question whether there are empirical reasons for the strict regulation of sports bets and whether sports bets should rather be qualified as skill games or as mere gambles (research together with Andreas Glöckner). A third project was connected to the group's joint project on (counter-)punishment in public-good games (applying a standard paradigm, the voluntary contribution mechanism); that resulted in a paper on "Broken Windows": the paper gives evidence that first impressions are of great importance for the contribution behavior of subjects in public-good settings. Apart from the experimental research, I also got engaged in a project on advanced law student's learning during university training with a set of field data from my former university, the University of Münster (80,000+ observations over a period of 10 years, research together with Andreas Glöckner and Christian Traxler).

Furthermore, I pursued a larger project on the relation of the complexity of legal statutes and normative clarity. Heavily drawing on insights from economic theory and behavioral research, the paper investigates the mechanisms through which the law moderates the

behavior of its subjects, and the effects complexity has in this respect. I claim that legal statutes are made for lawyers rather than for the general public, and draw conclusions for the doctrinal figure of the constitutional requirement of normative clarity. The paper led to quite some correspondence with both German legal scholars and the general public, and it was discussed in the national press (*Frankfurter Allgemeine Zeitung*).

In reminiscence to my academic past, I am still following up on and, in a very limited scale, try to contribute to questions of the constitutional law pertaining to religions and church-state relations more broadly.

Finally, I was among the organizers of one of the most renowned junior researchers' conferences in German-speaking Europe, the "Assistentententagung Öffentliches Recht" [Junior Researchers Conference Public Law], on the topic of "Recht und Markt — Wechselbeziehungen zweier Ordnungen" [Law and Market — Interrelations of two orders] that was held in Bonn in 2009 (200+ participants, approx. 60,000 € budget, project together with Niels Petersen and lawyers from the University of Bonn).

Research Agenda

During my research in the past two years, I came to realize that I would like to investigate further the mechanisms through which the law affects the behavior of its subjects. The adequate methodological and theoretical framework to approach this question is that of behavioral law and economics, with an emphasis on the psychological-behavioral perspective.

It is in that context that I have decided to engage in research on the goals and effects of (especially legislative and administrative) state measures. The link to legal doctrine is the principle of proportionality, which for any state measure necessitates the pursuit of a legitimate goal and the reasonable prospect that the applied measure is adequate to achieve this goal. The juridically central principle of proportionality of German constitutional law has hardly been tackled by legal scholarship, and this holds particularly for the question of the legitimacy of goals pursued. That seems astonishing, especially as the definition of the aim of a measure determines the further assessment of its proportionality. If the state is free to choose any goal, then it will most probably find some goal that will render any measure proportionate. What adds to this problem is that we only know very little about the mode of action of the law. Therefore, we can barely assess whether a measure really helps to accomplish a goal set. This is especially true with a view to the polymorphic facts viable in postmodern life, the complexity with which the law reacts to this variety, and the heterogeneity of the addressees of the law. While all these questions pertain to the very heart of law and insights are likely to have substantial impact on legal doctrine, answers cannot be sought in the realm of legal doctrine, and with methods of classical legal scholarship only. Rather, they require a thorough reception of the research in neighboring social sciences, namely psychology and econo-

mics, and their fructification for the legal discourse. The project is intended to follow these questions from a theoretically informed doctrinal perspective, drawing on the described reception of other social sciences, while adjacent interdisciplinary projects — mainly experiments — with MPI colleagues shall empirically back my theoretical hypotheses.

A further project is the completion of a book by Christoph Engel on the legal constitution of the economy.

Publications (since 2007)

Books

Recht und Markt — Wechselbeziehungen zweier Ordnungen. 49. Assistententagung Öffentliches Recht, Bonn., Towfigh E., Schmolke K., Petersen N., Lutz-Bachmann S., Lange A., Grefrat H., (Eds.), Baden-Baden, Nomos, In Press.

Oebbecke J., Pieroth B., Towfigh E., Islam und Verfassungsschutz: Dokumentation der Tagung am 7. Dezember 2006 an der Universität Münster, *Islam und Recht*, vol. 6, Frankfurt am Main, Lang, pp. 155, 2007.

Towfigh E., Oebbecke J., Kalisch M S., Die Stellung der Frau im islamischen Religionsunterricht, *Islam und Recht.*, Oebbecke J., (Ed.), vol. 5, Frankfurt, Peter Lang, pp. 101, 2007.

Book Chapters

Towfigh E., Religious Plurality in Society, *Transforming the Global Legal Order: Baha'i Principles and Contemporary Social Issues*, Rahmanian A., Lepard B. D., (Eds.), Oxford, George Ronald, In Press.

Towfigh E., Vom Kopftuchverbot bis zum Ruf des Muezzin: Rechtliche Möglichkeiten und Grenzen freier Religionsausübung in Deutschland und ihre Praxis, *Zur Bedeutung der Religion in der Integrationspolitik: Die deutsche Islamdebatte*, Ucar, (Ed.), In Press.

Articles (not peer-reviewed)

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Beckenkamp M., Engel C., Glöckner A., Irlenbusch B., Hennig-Schmidt H., Kube S., Kurschilgen M., Morell A., Nicklisch A., Normann H., Towfigh E., *Beware of Broken Windows! First Impressions in Public-good Experiments*, issue 2009/21, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Morell A., Glöckner A., Towfigh E., *Sticky Rebates: Rollback Rebates Induce Non-Rational Loyalty in Consumers – Experimental Evidence*, issue 2009/23, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Towfigh E., *Komplexität und Normenklarheit – oder: Gesetze sind für Juristen gemacht,* issue 2008/22, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Reviews

Towfigh E., Carola Rathke, Öffentliches Schulwesen und religiöse Vielfalt, NWVBl. 2007 (issue 7), p. 283, *NdsVBl.*, no. 8, pp. 232, 2007.

Lectures and Seminar Presentations (since 2007)

Religion, Staat, Wertegesellschaft
[Religion, the State, and the Society of Values]
(together with the Chairman of the German Protestant Church Bishop Wolfgang Huber, former President of the German Parliament Rita Süssmuth et al.)
invited by the State of Brandenburg, Potsdam, Germany
7 October 2008

Sticky Rebates. Targeted All Unit Discounts under Uncertainty and Risk
(together with Alexander Morell, Andreas Glöckner)
(Christoph Engel, Bonn; Dieter Frey, München; Bruno Frey, Zürich; Margit Osterloh, Zürich) Workshop Behavioral Law & Economics, Munich University, Germany
28 November 2008

Recht + Markt
[The Law and the Market]
(together with H. Grefrath, A. Lange, S. Lutz-Bachmann, Dr. N. Petersen, Dr. K. U. Schmolke)
49. Assistententagung Öffentliches Recht, Bonn, Germany
10–13 March 2009

Regelbildung, Regelungstechnik und Regelwirkung
[Rule Formation, Regulation Technique, and Rule Effect]
(together with Jens Binder, Florian Möslein)
Colloquium, Bonn, Germany
23/24 July 2009

Klebrige Rabatte: Irrationale Konsumentenentscheidungen bei rückwirkenden Schwellenrabatten
[Sticky Rebates: Rollback Rebates Induce Non-Rational Loyalty in Consumers]
(together with Alexander Morell, Andreas Glöckner)
Symposium Entscheidungsforschung, Deutsche Gesellschaft für Psychologie (DGPs),
13. Fachgruppentagung Rechtspsychologie, Gießen, Germany
29 August 2009

Sticky Rebates: Rollback Rebates Induce Non-Rational Loyalty in Consumers – Experimental Evidence
(together with Alexander Morell, Andreas Glöckner)
European Association of Law and Economics, 25th Annual Conference 2009, Rome, Italy
17–19 September 2009

Entscheidungspsychologie und Recht
[Decision Psychology and Law]
Seminar (together with Andreas Glöckner), Justizakademie Nordrhein-Westfalen
[Academy of Judges of Northrine-Westphalia]
4 December 1009

Christian Traxler

Summary Report

My research over the last two years addresses questions in the domain of Public Finance and Law and Economics. In both areas, I incorporate insights from Behavioral Economics.

Public Economics

My work in public economics focuses on tax evasion. In one strand of research, I analyze tax evasion and avoidance in a framework of majority voting over taxes. In a paper recently published in *Public Choice*, I show that tax sheltering drives a wedge between the distribution of true market income and of taxed income and discuss the redistributive implications of this wedge. The decisive voters can differ from the median income receiver, and untypical coalitions (e.g., of rich and poor) may emerge. In a follow-up work, I studied the welfare implications of voting when tax avoidance is possible. One can show that more avoidance can mitigate the inefficiency associated with majority voting under a right-skewed distribution of true incomes.

Tax evasion is only possible because tax authorities face obvious constraints in their power to monitor and observe the true tax base. These constraints produce errors in taxation, which contribute to taxpayers' ambiguity about their effective tax liability. In cooperation with Joel Slemrod (University of Michigan), we studied the optimal level of observability (or noise) in the tax system. Our approach extends the optimal linear income taxation framework and highlights the role of errors for the optimal tax rate: a lack of tax accuracy limits the optimal degree of redistribution.

Differences in the extent of observability may also explain the empirical evidence, which points out a high degree of tax compliance among wage earners but a substantial amount of income underreporting among self-employed. This observation motivated a joint work with Rainald Borck (University of Passau). The project developed a model of occupational choice and tax evasion and analyzed optimal taxation and occupation specific tax enforcement. Our results suggest that the evasion patterns observed in reality differ substantially from the welfare optimal enforcement policy, in particular, if redistributive concerns are taken into account. My research on these later two projects was supported by a research stay at the Office for Tax Policy Research at the University of Michigan in spring/summer of 2009.

Linking my research interests in Public and Behavioral Economics, I worked on combining the theory of social norms with the classical theory of tax evasion. Building on the latter, I developed a simple model of tax morale and analyzed the interdependency of individual evasion decisions. The paper highlights the role of moral reference groups and shows

how 'belief management', i.e., the intended manipulation of perceptions regarding the behavior of others, may work as an alternative policy tool.

Law and Economics

My empirical work on the law and economics of non-compliance and deterrence mainly builds upon an intensive cooperation with FIS (Fee Information Service Co.), an Austrian authority that governs the collection and enforcement of TV license fees ('*Rundfunkgebühren*'). Using detailed micro-data on the enforcement activities of so-called TV licensing inspectors, we study how evaders of the fee respond to a temporary increase in the detection risk within their municipality. Exploiting local variation in field inspectors' efforts induced by snowfall, we find a striking response of households to increased enforcement in their vicinity, with compliance rising significantly among those who had no interaction with inspectors. As we can exclude other channels of information transmission, our finding establishes a substantial deterrent effect mediated by word of mouth. Our evidence further indicates that the effect is driven by local spillovers in geographically close neighborhoods. This research thus contributes to the growing literature on neighborhood effects by demonstrating the role of one specific mechanism – the role of information transmission via word of mouth – for social interactions in non-compliance.

Within the same institutional context, I conducted a large-scale natural field experiment (together with Gerlinde Fellner, EconUniversity of Vienna, and Rupert Sausgruber, University of Innsbruck). The project was motivated by contributions of legal scholars, who stress the role of moral considerations and social norms for compliance. The fact that social norms also matter for the (non-)compliance with TV license fees was first documented in a survey study (with Joachim Winter, University of Munich). Our data indicate that a substantial fraction of Austrians is willing to impose social sanctions on license fee evaders. The institutional setup thus seemed ideal to test and evaluate alternative enforcement strategies. To do so, we sent mailings (in the name of FIS) to potential evaders and measured how many start to comply with their legal duty to pay fees. 50.000 individuals were randomly assigned to different mailing treatments: a legal threat stressed a high detection risk, a moral appeal emphasized that compliance is a matter of fairness, and a social information treatment highlighted the high level of compliance. An untreated control group did not receive any mailings. Our results document a huge effect from the mailing campaign. Among the mailings, we observed a strong deterrent effect of the legal threat. We can show that the effect is driven by an increase in evaders' perceived sanction risk. Neither the moral appeal nor the information treatment had any significant effect on aggregate. However, providing social information had a positive impact in municipalities where people initially expected compliance to be below the communicated level. Overall, the economic model of crime performs remarkably well in explaining our results. While social sanctions may contribute to a high overall level of compliance, specific law-enforcement tools that are targeted at cheaters seem to be best based on legal sanctions.

Together with Roberto Galbiati (CNRS and University of Paris X), I organized a workshop on 'The empirics of crime and deterrence', which took place in Paris, September 2009. The aim of the workshop was to foster the emergence of a European network of researchers working in this field (which used to be rather small on this side of the Atlantic). We managed to bring together some distinguished fellows from U.S. faculties (e.g., John Donohue, Yale; Jens Ludwig, Chicago; Stephen Raphael, UC Berkley) with several young economists from all over Europe. The two-day workshop stimulated many interesting discussions and might serve as a foundation for further interaction and cooperation.

Research Agenda

Empirical research typically finds relatively low labor income elasticities. In contrast, taxable income seems to be more responsive to tax incentives. Recent work by Raj Chetty highlights the implication of 'frictions' for this heterogeneity in the tax base elasticity: while taxpayers may face significant costs to adjust their labor supply (at least in a continuous way), tax-minimizing behavior may be less sticky and responds more quickly to tax changes. In turn, this implies empirical limitations for the identification and interpretation of long-run elasticities. Using data from the German SOEP (socio-economic panel) and micro-data on income taxation (Research Data Centre, Federal Statistical Office), I wish to assess the empirical foundations of frictions in behavioral responses to taxation. Moreover, I want to analyze theoretically the implications of structurally different motives that induce frictions (e.g., cognitive limitations versus 'real' transaction costs) for the optimal taxation of income.

Continuing my research agenda on crime and deterrence, I will analyze the evolution of crime rates in Prussia at the end of the 19th century. In this joint project with Carsten Burhop (a Heisenberg fellow at the institute), we aim to test whether different hypotheses that were derived from 'modern' data – e.g., on the link between income and crime – find support in historical data from a time where the societal interpretation of 'punishment' was substantially different from the perspective of nowadays.

Finally, I wish to extend my research on formal and informal law enforcement – the former relying on standard deterrence, the latter on social norm enforcement. In a series of experiments, which will be conduct together with Sebastian Kube (Max Planck Institute and University of Bonn), we want to consider the interaction of legal and social norm enforcement. In particular, we ask whether an increase in institutionalized enforcement crowds out the social enforcement of pro-social conduct. We will also address the role of 'mild' versus 'strict' laws (soft versus hard punishment) for this assessment.

In addition to this research work, Roberto Galbiati and I plan a follow-up to the joint workshop on the economics of crime (see above) for the summer of 2010. The second

workshop will focus on 'The Behavioral Economics of Crime' and will take place at the Max Planck Institute in Bonn.

Honors / Grants

06/2007 – 11|2007: Marie Curie Scholarship 'Experienced Researcher',
ENABLE (European Network for the Advancement of Behavioral Economics)

Austrian Nationalbank Grant (OeNB Jubiläumsfonds), Research Project: 'A Large-Scale Natural Field Experiment on the Evasion of Broadcasting Fees in Austria' (joint with Rupert Sausgruber and Gerlinde Fellner); Project duration: 12/2006 – 12/2009.

Publications (since 2007)

Articles in Peer-reviewed Journals

Traxler C., Social Norms and Conditional Cooperative Taxpayers, *European Journal of Political Economy*, In Press.

Trautmann S. T., Traxler C., Reserve prices as reference points – Evidence from auctions for football players at Hattrick.org, *Journal of Economic Psychology*, In Press.

Traxler C., Voting over taxes: the case of tax evasion, *Public Choice*, vol. 140, no. 1, pp. 43-58, 2009.

Preprints

Traxler C., Winter J., *Survey Evidence on Conditional Norm Enforcement*, issue 2009/03, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Rincke J., Traxler C., *Deterrence Through Word of Mouth*, issue 2009/04, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Traxler C., *Majority Voting and the Welfare Implications of Tax Avoidance*, issue 2009/22, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Fellner G., Sausgruber R., Traxler C., *Testing Enforcement Strategies in the Field: Legal Threat, Moral Appeal and Social Information*, issue 2009/31, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Traxler C., Reutter A., *Apportionment, Fiscal Equalization and Decentralized Tax Enforcement*, issue 2008/21, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

Working Papers – invited for resubmission

Rincke J., Traxler C., Deterrence Through Word of Mouth, preprint 2009/04, Max Planck Institute for Research on Collective Goods, 2009, invited resubmission at the *Review of Economics and Statistics*.

Traxler C., Spichtig, M., Social Norms and the Evolution of Conditional Cooperation, Munich Discussion Papers in Economics 2007-12, invited for resubmission at *Journal of Economics*.

Mimeos – working in progress

Tax Evasion, Tax Enforcement and Occupational Choice (with Rainald Borck), Mimeo.

Optimal observability and linear income taxation (with Joel Slemrod), Mimeo.

Interest Group Formation and Political Convergence – An Experimental Approach (with Ernesto Reuben and Frans van Winden), Mimeo.

Name Your Own Price! Micro Evidence from a NYOP Restaurant (with Gerhard Rienner, University of Essex), Mimeo.

Lectures and Seminar Presentations (since 2007)

2007

Testing Enforcement Strategies in the Field: Legal Threat, Moral Appeal and Social Information
(together with Gerlinde Fellner, Rupert Sausgruber)
Research Seminar, University of Vienna, Austria
January 2007

Deterrence through Word of Mouth
(together with Johannes Rincke)
Research Seminar, University of Dortmund, Germany
May 2007

Deterrence through Word of Mouth
(together with Johannes Rincke)
Research Seminar, FU Berlin, Germany
May 2007

Testing Enforcement Strategies in the Field: Legal Threat, Moral Appeal and Social Information
(together with Gerlinde Fellner, Rupert Sausgruber)
Economic Science Association – World Meeting, Rome, Italy
June 2007

Testing Enforcement Strategies in the Field: Legal Threat, Moral Appeal and Social Information
(together with Gerlinde Fellner, Rupert Sausgruber)
Economic Science Association – Asian/Pacific Meeting, Shanghai, China
July 2007

Social Norms and Conditional Cooperative Taxpayers
Annual Congress of the International Institute of Public Finance, Cyprus
August 2007

Testing Enforcement Strategies in the Field: Legal Threat, Moral Appeal and Social Information
(together with Gerlinde Fellner, Rupert Sausgruber)
The Dutch-Waseda Exchange Workshop, Waseda University, Tokyo, Japan
October 2007

2008

Testing Enforcement Strategies in the Field: Legal Threat, Moral Appeal and Social Information
(together with Gerlinde Fellner, Rupert Sausgruber)
European Symposium on Economics and Psychology, University of Amsterdam, Netherlands
March 2008

Survey Evidence on Conditional Norm Enforcement
(together with Joachim Winter)
Urrutia Elejalde Workshop on Social Norms, San Sebastian, Spain
July 2008

Political Economy Analysis of Tax Evasion and Occupational Choice
(together with Rainald Borck)
Annual Congress of the International Institute of Public Finance, Maastricht, Netherlands
August 2008

Testing Enforcement Strategies in the Field: Legal Threat, Moral Appeal and Social Information
(together with Gerlinde Fellner, Rupert Sausgruber)
IZA Workshop on Behavioral Labor Economics, Bonn, Germany
October 2008

Deterrence through Word of Mouth
(together with Johannes Rincke)
MPI Exchange, Max Planck Institute for the Study of Societies, Cologne, Germany
October 2008

Deterrence through Word of Mouth
(together with Johannes Rincke)
Public Finance Seminar, Universities of Innsbruck, Austria
November 2008

Deterrence through Word of Mouth
(together with Johannes Rincke)
Public Finance Seminar, Universities of Mannheim, Germany
November 2008

2009

Testing Enforcement Strategies in the Field: Legal Threat, Moral Appeal and Social Information
(together with Gerlinde Fellner, Rupert Sausgruber)
Workshop on Public Goods, ETH Zurich, Switzerland
February 2009

Testing Enforcement Strategies in the Field: Legal Threat, Moral Appeal and Social Information
(together with Gerlinde Fellner, Rupert Sausgruber)
EconomiX Seminar – Université Paris X, Nanterre, France
February 2009

Testing Enforcement Strategies in the Field: Legal Threat, Moral Appeal and Social Information
(together with Gerlinde Fellner, Rupert Sausgruber)
Public Finance Seminar – University of Michigan, Ann Arbor, U.S.A.
May 2009

The Interaction of Legal and Social Norm Enforcement
PET-Workshop on 'Public Economics: Theory and Experiments', Lyon, France
June 2009

Deterrence through Word of Mouth
(together with Johannes Rincke)
European Economic Association Meeting, Barcelona, Spain
August 2009

Testing Enforcement Strategies in the Field: Legal Threat, Moral Appeal and Social Information
(together with Gerlinde Fellner, Rupert Sausgruber)
National Tax Association, Annual Conference, Denver, U.S.A.
November 2009 (scheduled)

Deterrence through Word of Mouth
(together with Johannes Rincke)
American Economic Association Meeting, Atlanta, U.S.A.
January 2010 (scheduled)

Workshop Organizations

The Empirics of Crime and Deterrence
1st Bonn & Paris Workshop on Law and Economics (joint organization with Roberto Galbiati): University of Paris Nanterre, Paris, France
September 25–26, 2009

Philipp Weinschenk

Summary Report

I am a doctoral student and will finish this year (2009). Since September 2006, I am at the MPI. My main interests are contract theory, industrial organization, and behavioral economics. Over the last three years, I worked on the following papers:

"The Optimality of Simple Contracts: Moral Hazard and Loss Aversion." This paper is joint work with Fabian Herweg and Daniel Müller. It is a paper on contract theory which uses behavioral economics. The paper extends the standard principal-agent model with moral hazard to allow for agents having reference-dependent preferences according to Köszegi and Rabin (2006, 2007). We show that when loss aversion is the predominant determinant of the agent's risk preferences, the optimal contract for the principal to offer is a simple bonus contract, i.e., when the agent's performance exceeds a certain threshold, he receives a fixed-bonus payment. But when risk aversion becomes more important, the optimal contract also displays less complexity than predicted by orthodox theory. Thus, loss aversion introduces an endogenous complexity cost into contracting. This paper has been revised and resubmitted to the *American Economic Review*.

"Persistence of Monopoly and Research Specialization." This paper is on industrial organization. We examine the persistence of monopolies in markets with innovations when the outcome of research is uncertain. We show that for low success probabilities of research, the incumbent can seldom preempt the potential entrant. Then the efficiency effect outweighs the replacement effect. It is vice versa for high probabilities. Moreover, the incumbent specializes in "safe" research, and the potential entrant in "risky" research. We also show that the probability of entry has an inverted U-shape in the success probability. Since even at the peak entry is rather unlikely, the persistence of the monopoly is high.

"The technology of Skill Formation and Hidden Information." This paper is on the formation of human capital. Cunha and Heckman (2007) consider an economic model of child development, where the formation of human capital occurs in multiple stages via investments. They solve for the optimal intertemporal investment plan, which is important to derive policy implications. We extend their framework by assuming that children are differentiated in the sense that a child's type determines what type of investment is most productive for him/her, and that this information is not available when a child is young. That is, there is hidden information for the parents when the child is young. However, we assume that when a child is older its type is revealed. How does the optimal investment plan change due to hidden information? We show that hidden information weakens the

importance of early investments in children when inter-phase investments are easily substitutable, but strengthen them when substitution is difficult.

"Entry and Incumbent Innovation." This is a paper on industrial organization. We explore how the threat of entry influences the innovation activity of an incumbent. We find that the incumbent's investment is hump-shaped in the entry threat. When the entry threat is small and increases, the incumbent invests more to deter entry, or to make it unlikely. This is due to the entry deterrence effect. However, when the threat becomes huge, entry can no longer profitably be deterred and the investment becomes small. Then the Schumpeterian effect dominates.

"Ambiguity in a Principal-Agent Model." This is a paper on contract theory which uses behavioral economics. We consider a principal-agent model with moral hazard where the agent's knowledge about the applied performance measure is ambiguous. We show that agent's ambiguity aversion leads to weaker incentives and a lower payoff for the principal, compared to the standard model without ambiguity and without ambiguity aversion. Moreover, when there is enough ambiguity the principal sets no incentives at all. Additionally, the Informativeness Principle is violated.

Furthermore, I am currently working on the following papers: (a) A paper about the strategic delegation of price setting, (b) a joint paper with Nora Szech on rebates, (c) a paper on rebates with loss-averse consumers, (d) a law and economics paper where we endogenous the buying decisions of subjects in an accident model, (e) a joint paper with Andreas Glöckner on law and psychology, (f) a joint paper with Nadine Bläser on innovation and competition law, (g) a joint paper with Alexander Morell on exclusive dealing, (h) a joint paper with Steffen Altmann, Sebastian Goerg, and Hilmar Schneider on private employment agencies and auctions.

Before joining the institute, I completed my studies in economics at the University of Konstanz in 2005, with distinction. I won the prize for best diploma of the faculty. In 2002 and 2003, I was tutor for two tutorials. For one of these, I received the prize for best tutor of the faculty. In October 2005, I joined the Bonn Graduate School of Economics. I was tutor in 2005 and 2006 at the Berufsakademie Stuttgart.

Publications (since 2007)

Articles in Peer Reviewed Journals

Herweg F., Müller D., Weinschenk P., Binary Payment Schemes: Moral Hazard and Loss Aversion, *American Economic Review*, In Press.

Preprints

Weinschenk P., *Persistence of Monopoly and Research Specialization*, issue 2009/11, Bonn, Max Planck Institute for Research on Collective Goods, pp. 27, 2009.

Lectures and Seminar Presentations (since 2007)

2007

Persistence of Monopoly and Research Specialization
Summer School on Contract Theory at Bronnbach, Germany
August 2007

Persistence of Monopoly and Research Specialization
Max Planck Institute for Research on Collective Goods, Bonn, Germany
November 2007

2008

Persistence of Monopoly and Research Specialization
Micro Workshop University of Bonn, Germany
January 2008

Persistence of Monopoly and Research Specialization
ZEW Conference on the Economics of Innovation and Patenting at Mannheim, Germany
June 2008

Persistence of Monopoly and Research Specialization
EEA Conference at Milan, Italy
August 2008

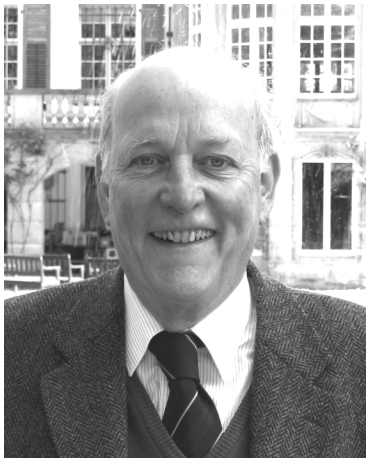
The Optimality of Simple Contracts: Moral Hazard and Loss Aversion
(joint work with Fabian Herweg and Daniel Müller)
Annual congress of the Verein für Socialpolitik at Graz, Austria
September 2008

2009

The Optimality of Simple Contracts: Moral Hazard and Loss Aversion
(joint work with Fabian Herweg and Daniel Müller)
Max Planck Institute for Research on Collective Goods, Bonn, Germany
February 2009

A Problem of Liability – How Strict Liability can Lead to Distortions and Redistribution
Bonn Law Econ Workshop, Germany
April 2009

Strategic Delegation and the Betrand Paradox
Third International Conference on Game Theory and Management in St. Petersburg, Russia
June 2009



Carl Christian von Weizsäcker

Summary Report

July 2007 – June 2009

My research was on the following topics:

1. Welfare Economics of Adaptive Preferences. In continuation of earlier research, I have investigated the topic specifically under the aspect that long-run demand may be path-dependent. This implies that for any given budget constraint, multiple equilibria exist which are on distinct long-run "quasi-inidfference surfaces". Thus, by my main theorem, there exist improvement paths from one equilibrium to another. There exist important policy implications from this result.

I have also developed an interpretation of the concept of "preferences": the distinction between preferences and constraints as factors determining human behavior is an attempt of economics to cope with the difficult concept of freedom and civil liberty within an axiomatic theory.

2. The "Meaning of Competition", to quote Hayek's important 1946 lecture, is still debated, particularly in the German-speaking part of the world. I have developed an interpretation of the concept of "Wettbewerbsfreiheit" ("freedom to compete") which relies heavily on a particular property of markets: their asymmetry between the supply side and the demand side. The implication of this interpretation is that there are no serious differences in practice between the "more economic approach" and the concept of "Wettbewerbsfreiheit".

3. Energy Policy. I have been involved as a policy advisor on issues of climate policy. This took quite a bit of my time. Also, as can be seen from my lectures and publications, I have been engaged in public debate on these issues of climate policy.

4. Applied Competition Policy. I have produced several papers on particular issues emerging in the area of antitrust. The emphasis there was on two-sided markets, on the relevant geographical market, and on barriers to entry.

Select Publications (since 2007)

Articles in Peer-reviewed Journals

von Weizsäcker C., Wettbewerb und Versorgungssicherheit, *Wettbewerb und Versorgungssicherheit*, vol. 2, pp. 9-13, 2007.

von Weizsäcker C., Die vorgeschlagene Novellierung des Kartellrechts und der Großhandelsmarkt für Strom, *Energiewirtschaftliche Tagesfragen*, vol. 57, issue 1-2, pp. 30-39, 2007.

von Weizsäcker C., Konsumentenwohlfahrt und Wettbewerbsfreiheit – Über den tieferen Sinn des "Economic Approach", *Wirtschaft und Wettbewerb (WuW)*, pp. 1078-1084, 2007.

Book Chapters

von Weizsäcker C., Das Regime des Freihandels als Weltinnenpolitik, *Weltinnenpolitik – Handeln auf Wegen in der Gefahr*, Bartosch U., Wagner J., (Eds.), Berlin, pp. 182-202, 2008.

von Weizsäcker C., Institutionelle Kreativität, *Kreativität ohne Fesseln – Über das Neue in Wissenschaft, Wirtschaft und Kultur*, von Graevenitz G., Mittelstraß J., (Eds.), Konstanz, pp. 57-74, 2008.

von Weizsäcker C., Internationale Energiepolitik, *Die Zukunft der Energie – Die Antwort der Wissenschaft. Ein Report der Max-Planck-Gesellschaft*, Gruß P., Schüth F., (Eds.), München, pp. 49-70, 2008.

von Weizsäcker C., Rosenkranz G., Streitgespräch: Energiewende – was bedeutet das?, *Sichere Energie im 21. Jahrhundert*, Petermann J., (Ed.), Hamburg, pp. 51-59, 2008.

von Weizsäcker C., Discounting ist nicht die Zukunft der Wirtschaft, *Jahrbuch Markentechnik 2008/2009*, Frankfurt am Main, pp. 231-246, 2008.

von Weizsäcker C., Morlock J., Freudloser Sozialstaat – Freudloses Wachstum: Glauben wir noch an den Fortschritt?, *Der Freiheit verpflichtet – Beiträge zum 80. Geburtstag von Otto Graf Lambsdorff*, Stuttgart, Lucius & Lucius, pp. 209-213, 2007.

von Weizsäcker C., Soziale Marktwirtschaft als Utopie, oder: Zeit und Gerechtigkeit, *Utopie heute I – Zur aktuellen Bedeutung, Funktion und Kritik des utopischen Denkens und Vorstellens*, Sitter-Liver B., (Ed.), Fribourg/Stuttgart, pp. 153-181, 2007.

Articles (not peer-reviewed)

von Weizsäcker C., Climate Protection without Borders, *MaxPlanckResearch*, vol. 1, pp. 66-72, 2009.

von Weizsäcker C., Climate Protection without Borders, *Environmental Policy and Law, The Journal for Decision-Makers*, vol. 39, no. 3, 2009.

von Weizsäcker C., Klimaschutz ohne Grenzen, *MaxPlanckForschung*, vol. 4, pp. 66-72, 2008.

Reviews

von Weizsäcker C., B.M.S. van Praag and A. Ferrer-i-Carbonell, Happiness Quantified, Oxford University Press 2007, *Journal of Economics*, vol. 96, pp. 289-293, 2009.

Newspaper Articles

von Weizsäcker C., Rationale Klimapolitik, *Frankfurter Allgemeine Zeitung*, pp. 12, 2.1.2009.

von Weizsäcker C., Elegant absahnen (Interview), *Die Welt online*, 8.12.2008.

von Weizsäcker C., Wie Zwangsernährung (Interview), *Wirtschaftswoche*, pp. 51, 14.4.2008.

von Weizsäcker C., Von Engeln und Teufeln – eine einseitige, aber informative Kritik der Globalisierung –Book Review of H. Schumann, C Grefe, Der globale Countdown. Gerechtigkeit oder Selbstzerstörung – die Zukunft der Globalisierung, *Süddeutsche Zeitung*, pp. 8, 26.5.2008.

von Weizsäcker C., Ein Vorschlag zur Konjunktursteuerung, *Frankfurter Allgemeine Zeitung*, pp. 12, 18.12.2008.

von Weizsäcker C., Blankart C. B., Böhringer C., Breyer F., Buchholz W., Requate T., Schmidt C. M., Weimann J., Die Energielüge, *Cicero*, pp. 94-95, 12/2008.

Preprints

von Weizsäcker C., *Asymmetrie der Märkte und Wettbewerbsfreiheit*, issue 2009/07, Bonn, Max Planck Institute for Research on Collective Goods, 2009.

Discussion Papers

von Weizsäcker C., *Laudatio Amartya Sen*, Discussion Paper 14 Pages, Bonn Max Planck Institute, November 2007.

von Weizsäcker C., *Transaction Cost Induced Externalities Among Payment Platforms and their Antitrust Implications*, Discussion Paper 13 Pages, Bonn Max Planck Institute December 2007.

von Weizsäcker C., *A SSNIP-Test for the Relevant Geographic Market*, Discussion Paper 15 Pages, Bonn, Max Planck Institute, March 2008.

von Weizsäcker C., *Interaction of Externalities in the Payment Sector and of Externalities in the Rest of the Economy*, Discussion Paper 15 Pages, Bonn Max Planck Institute, March 2008.

von Weizsäcker C., *Supplementary Notes to the Paper "The Welfare Economics of Adaptive Preferences"*, Discussion Paper, Bonn Max Planck Institute, November 2008.

von Weizsäcker C., *Antitrust Problems of Four Party Credit Card Systems*, Discussion Paper 30 Pages, Bonn Max Planck Institute, February 2009.

von Weizsäcker C., *Notizen zum Thema: "Demokratie als Quelle der Kommerzialisierung des Lebens."* Discussion Paper, 8 Pages, February 2009.

von Weizsäcker C., *Public Debt – Just in Case,* Discussion Paper, 41 Pages, Bonn, Max Planck Institute, May 2009.

Lectures and Presentations (since 2007)

2007

Roundtable on Global Environmental Policy
Düsseldorf, Germany
1 February 2007

Speech on the Future Price of CO_2-Emission Licenses
RWE-Trading, Essen, Germany
6 February 2007

Speech on the proposed § 29 GWB
Berlin, Germany
29 March 2007

Liberale Sozialpolitik
[Social Policy From a Liberal Point of View]
Sozialpolitischer Kongress der FDP-Nordrhein-Westfalen, Düsseldorf, Germany
17 April 2007

Meeting of the ARGE, "Investitionen in der Energiewirtschaft"
[Investment Requirements in the Energy Sector]
Berlin, Germany
19 April 2007

Institutionelle Kreativität
[Institutional Creativity]
Tagung Konstanzer Wissenschaftsforum zum Generalthema Kreativität, Berlin, Germany
19 April 2007

Wie könnte ein Welt-Klima-Abkommen aussehen?
[Characteristics of a Possible World Climate Agreement]
University of Mainz, Germany
26 April 2007

Preisbildung und Marktmacht auf dem Großhandelsmarkt für Elektrizität
[Price Formation and Market Power on Electricity Wholesale Markets]
Gesellschaft der Energie-Ökonomen (GEE), Berlin, Germany
9 May 2007

Roundtable on Energy Policy and Environmental Policy
Jahresversammlung VDEW, Berlin, Germany
23 May 2007

Versachlichung der Klimawandel-Diskussion
[A More Rational Discussion on Climate Change]
Vereinigte Bergische Unternehmerverbände, Wuppertal, Germany
5 June 2007

Energie-Versorgungssicherheit und Marktwirtschaft – Überlegungen anhand des Beispiels Schweiz
[Energy Security of Supply and Market Economy – Reflections with Special Reference to Switzerland]
ETH Zurich, Switzerland
14 June 2007

Soziale Marktwirtschaft: Blick auf ein gelobtes Land
[Social Market Economy: A View on the Promised Land]
Ludwig Erhard Stiftung, Erste Ludwig-Erhard – Vorlesung, Bonn, Germany
19 June 2007

Über den Fortschritt
[On Progress]
Conference on the Future of the Social Market Economy, University of Freiburg, Germany
22 June 2007

Innovation and Regulation
Opening Address of the Academic Year, MERNI, Bonn, Germany
19 September 2007

Price Mechanisms in Climate Policy
Potsdam Institute on Climate Policy; Panel Discussion, "Nobel Laureates Symposium on Climate Policy", Potsdam, Germany
9 October 2007

Tour de Raison – Fiskalischer Föderalismus
[Tour de Raison – Fiscal Federalism]
Herbert Giersch Stiftung, Berlin, Germany
17 October 2007

Qualitätswettbewerb und Preiswettbewerb
[Quality Competition and Price Competition]
Bauerfeind Customer Meeting, Neuss near Düsseldorf, Germany
18 October 2007

Freihandel und "faire" Preise bei Kaffee
[Free Trade and "fair" Coffee Prices]
Cologne, Germany
24 October 2007

Presentation on the proposed § 29 GWB
Wirtschaftsausschuss des Deutschen Bundestags, Berlin, Germany
5 November 2007

Sonderkartellrecht für die Energiewirtschaft – Chance oder Risiko für den Wettbewerb?
[Special Cartel Legislation for the Energy Sector – Possibility or Risk for Competition?]
Conference organised by RWE AG, Berlin, Germany
7 November 2007

Aktuelle Entwicklungen in den Wirtschaftswissenschaften
[Current Developments in the Economic Sciences]
Wissenschaftskolleg, Berlin, Germany
27 November 2007

Laudatio Amartya Sen
[Laudation for Amartya Sen]
Speech on the occasion of Amartya Sen Receiving the "Meister Eckardt Preis" of the Identity Foundation, Cologne, City Hall, Germany
28 November 2007

Welcome Speech: Creating Sustainable Growth in Europe
Conference of the Anglo-German Foundation, Auswärtiges Amt, Berlin, Germany
29 November 2007

Transaction Cost Induced Externalities Among Payment Platforms and their Antitrust Implications
Paper at Workshop on the Law and Economics of Competition Policy, Max Planck Institute, Bonn, Germany
6 December 2007

Investitionen in die Energieinfrastruktur – zwischen Kartellrecht und Finanzwirtschaft
[Investing in Energy Infrastructure – Between Cartel Law and Public Finance]
Presentation to a Group of Members of the German Bundestag, Forum für Zukunftsenergien, Berlin, Germany
12 December 2007

2008

Adaptive Präferenzen – Ein Brückenschlag zwischen Welfare Economics und den übrigen Sozialwissenschaften?
[Adaptive Preferences – Building a Bridge between Welfare Economics and the other Social Sciences?]
University of Konstanz, Germany
16 January 2008

Energie und Klima
[Energy and Climate]
Freising near Munich, Germany
18 January 2008

Entry Conditions in the Gas Transport Business
Presentation on behalf of BEB AG, Bundesnetzagentur, Bonn, Germany
12 February 2008

Rohstoffe und der Klimaschutz
[Resources and Climate Protection]
Frankfurt, Germany
12 February 2008

Relevant Geographic Market for Industrial Products in Europe
Presentation of Main Results of an Expert Report Commissioned by the Kartellgericht, Vienna, Germany
20 February 2008

Normative Orientierung der Wirtschaftspolitik, wenn die Werte von den Fakten beeinflusst werden
[Normative Orientation of Economic Policy, when Values are Influenced by Facts]
Paper im Ausschuss Wirtschaft und Ethik des Vereins für Socialpolitik, Hanover, Germany
29 February 2008

Ein Weltklimaabkommen?
[A World Climate Treaty?]
Cologne, Germany
11 March 2008

Freiheitsrechte, Präferenzen, bedingte Compossibility
[Rights of Individual Liberty, Preferences, Limited **Compossibility**]
Discussion Group on Law and Economics, University of Bonn, Germany
12 April 2008

Wohlstands- und Verteilungswirkungen der Globalisierung
[Wealth and Distribution Effects in Globalisation]
Lucerne University, Switzerland
7 May 2008

Emissionshandel – Allheilmittel oder Ablasshandel?
[Emissions Trading – Cure-all or Selling of Indulgences?]
University of Bonn
31 May 2008

Welfare Economics when Tastes are Influenced by Actions
Nuffield College, Oxford, U.K.
12 June 2008

Präferenzen, Freiheit, Effizienz
[Preferences, Liberty, Efficiency]
Colloquium on Philosophy and Economics, University of Cologne, Germany
30 June 2008

A SSNIP-Test for the Relevant Geographic Market
Paper at EARIE Annual Conference, Toulouse
4 September 2008

Interaction of Externalities in the Payment Sector and of Externalities in the Rest of the Economy
Paper at EARIE Annual Conference, Toulouse, France
6 September 2008

Der räumlich relevante Markt bei Industriegütern ist (fast) immer größer als das nationale Absatzgebiet
[The Spacially Relevant Market with Industrial Goods is (almost) Always Larger than the Normal Market Area]
Paper at the Annual Conference of Verein für Socialpolitik, Graz, Austria
25 September 2008

Briefing on Economics of Climate Policy for Chancellor Merkel
Bundeskanzleramt, Berlin, Germany
29 September 2008

Sicherheit der Energieversorgung
[Security of Energy Provision]
Speech at a Conference on Security of Energy Supply, Stiftung Marktwirtschaft, Berlin, Germany
14 October 2008

Kernenergie in Deutschland – Ungeliebt, aber nötig
[Nuclear Energy in Germany – Not Popular, but Necessary]
Speech at a Conference on Nuclear Energy in Germany, Atomforum, Berlin, Germany
15 October 2008

Marktwirtschaftliche Energie- und Klimapolitik
[Market-based Energy and Climate Policy]
Public Lecture, Andernach, Germany
27 October 2008

Energieversorgung und Energiesicherheit im europäischen Kontext
[Energy Provision and Security in the European Context]
Public Lecture, Petersberg near Bonn, Germany
28 October 2008

Gleichgewicht der energiewirtschaftlichen Zieltrias – Ist Deutschland auf dem richtigen Weg?
[Equilibrium of the Three Principal Energy Goals – Is Germany on the Right Track?]
Wirtschaftsbeirat der CSU, Munich, Germany
30 October 2008

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Economics Department ETH, Zurich, Switzerland
10 November 2008

Freiheitliche Klimapolitik ist zugleich effiziente Klimapolitik
[Liberal Climate Policy Means Efficient Climate Policy]
Public Lecture, Liberales Institut, Zurich, Switzerland
13 November 2008

Asymmetrie der Märkte und Wettbewerbsfreiheit
[Asymmetry of Markets and Freedom of Competition]
Paper at a conference organised by the Walter-Eucken Institut and the Economics, in memory of Prof. Hoppmann, Department of the University of Freiburg/Brsg., Germany
21 November 2008

Logik der Globalisierung
[The Logic of Globalisation]
Public Lecture, Industrie- und Handelskammer, Braunschweig, Germany
25 November 2008

Global Imbalances and the Crisis
Herbert Giersch Stiftung, Frankfurt, Germany
17 December 2008

2009

Demokratie als Quelle der Kommerzialisierung des Lebens
[Democracy as a Source of Commercializing Life]
Studium Generale, University of Passau, Germany
20 January 2009

Panel Discussion on Lignite Coal Policy in Germany
Frankfurt, Germany
2 March 2009

Wie lange dauert die Krise?
[How Long Will the Crisis Last?]
Arbeitsgemeinschaft Selbständiger Unternehmer (ASU), Cologne, Germany
25 March 2009

Chancen durch mehr Marktwirtschaft auch in der Klimapolitik
[Chances through More Free-market Economy in Climate Policy]
Friedrich Naumann Stiftung, Speech at a Meeting of the Board of Trustees of the Foundation, Babelsberg near Berlin, Germany
2 April 2009

Theoretisches zur Bewältigung der Weltwirtschaftskrise
[Theories on Overcoming the World Economic Crisis]
Akademie, Düsseldorf, Germany
24 April 2009

The Blind Alleys of Climate Policy
Paper at the 8th Munich Economic Summit with the Topic "Climate and Energy",
CES-Ifo, Munich, Germany
28 May 2009

Comment on Che and Choi, Shrink-Wraps. Who Should bear the Cost of Mass Market Contract Terms?
Conference "Frontiers in the Economic Analysis of Contract Law", University of Bonn, Germany
5 June 2009

Public Debt – Just in Case
Economics Department, University of Dortmund, Germany
15 June 2009

Die Zukunft der Weltenergiewirtschaft
[The Future of World Energy]
Elektrizitätswerk Mittelbaden, Offenburg, Germany
17 June 2009

Ist die Energieversorgung ohne Kernenergie sinnvoll?
[Does Electricity Provision Make Sense Without Nuclear Energy?]
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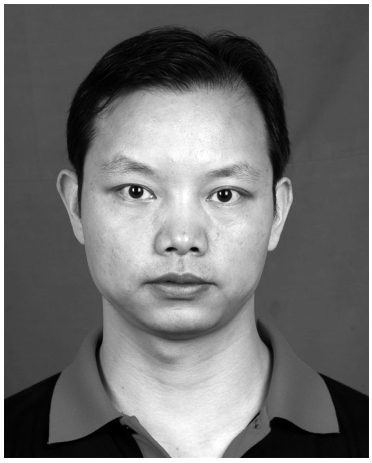
19 June 2009



Gaoneng Yu

Summary Report

Bribery legislation, the Object of crime, and criminal illegality have been my research interests in the last three years. In 2008, I published an article, entitled "The 'Trading Model' of Bribery: Power, Interest and Trilateral Structure", during my visit at the Centre for Criminal Law and Criminal Justice at the Law School of Durham University. Through careful examination of the five influential models in defining the elements of bribery offences, the paper holds that 'breach of duty' as the core concept of these models is ineffective in defining bribery offences. As a special kind of trade which involves exchanges between different kinds of interest with power as their medium, bribery is a relational concept concerning three parties and three pairs of relationships. Meanwhile, it is power, not duty, which is utilized during the trade; bribery is always misuse or abuse of power. 'Breach of duty' theory only explains one single side of one of the three relationships and fails to target power as the key element of bribery. By taking the 'essence and harm approach', the article elaborates the essence of bribery and develops a new effective model for bribery legislation. After this, in another paper entitled "Characteristics and inspirations: a Brief Analysis on the Bribery Law of Hong Kong", I did a comparative study on the elements of bribery offences between the laws of Chinese mainland and Hong Kong.

As one of the four fundamental elements of crime in Chinese criminal law theory, the Object of crime has been challenged in recent years by more and more scholars. Two of my papers contributed to this subject, one in 2006 (Rethinking of Legal Status of the Object of Crime) and the other in 2008 (Reflection on Fundamental Issues of the Object of Crime). The distinction between fact-finding and value judgment appeared to be the origin of the controversy and thus my major concern. Different ideas and methodology regarding the constitution of crime theory between the civil law, common law, and socialism law system were also discussed considerably.

Criminal illegality drew my attention as well. This is reflected in my three articles published in 2006 (Criminal Illegality as the Essence of Crime), 2007 (Reasonable Construction of the Theory of Criminal Illegality) and 2008 (The Principle of Legality in the Criminal Law of the U.S.A.). Traditionally, social harm is considered to be the essence of crime in Chinese academia. The principle of legality had not been formally recognized until the revision of the criminal code in 1997. Consequently, criminal illegality is thought to have only formal, but not substantial, significance. In my articles, criminal illegality rather than social harm is held to be the essence of crime.

In 2005, I contributed one chapter discussing economic crime to a criminal law textbook for law students in western China, which has been accepted since then.

Research Agenda

As a PhD student at the MPI in Bonn, my thesis will focus on an experimental study on punishment strategies towards bribery parties. This is motivated by my observation on the existence of two different punishment strategies in western countries and China. In western countries like the UK, the U.S.A., and Germany, criminal law provides equal punishment to both the bribe giver and the bribe receiver. In China, on the other hand, much less punishment is reserved for the bribe giver by the criminal code. What is more, a special clause in the Criminal Code of China clearly guarantees ex-ante leniency to the bribe giver if he or she makes a self-report.

My thesis research will depart from a comparison of bribery laws among different countries and be based mainly on the result of bribery experiments both from other experimenters and from my own experimental research. The research question is whether there is any significant difference between the two punishment strategies upon bribery decision making. It consists of two sub-questions:

1. Will different punishment strategies affect the receiver's decision on whether to perform reciprocally or behave opportunistically?
2. Will different punishment strategies affect the payer's decision on whether to self-report or not when the receiver behaves opportunistically?

Initially, I have three hypotheses:

1. Leniency, or mild behavior, towards the payer strategy tends to induce more confession from the payer, but may also promote reciprocity.
2. Equal punishment tends to produce more opportunism.
3. The effect of asymmetric punishment can be enhanced when combined with leniency.

The major work is to design and conduct a bribery experiment (perhaps more than one) with three different punishment strategies as treatment variables:

1. Symmetric punishment (equal punishment to both parties).
2. Asymmetric punishment (less to the payer).
3. Asymmetric punishment plus ex-ante leniency to the payer if she self-reported.

Besides the thesis research, I would like to do some experimental research on punishment strategies towards the parties of joint crime as well. Similar to the situation in bribery offences, different punishment strategies also exist with the parties of joint crime. Actually, bribery is regarded as a special kind of joint crime by Chinese legal scholars.

Publications (since 2007)

Articles in Peer-reviewed Journals

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North East Region of the Royal Society of Arts in Newcastle, U.K.
19 May 2008

E. Conferences and Workshops

E. Conferences and Workshops organized by the Max Planck Institute for Research on Collective Goods

2007

Workshop on Commons Theory for Young Scholars
Max Planck Institute, in collaboration with the Center for Internet & Society at Stanford Law School
7–9 May 2007

Better Than Conscious?
together with Wolf Singer
Inaugural Ernst Strüngmann Forum, under the auspices of the Frankfurt Institute for Advanced Studies, Frankfurt/M., Germany
10–15 June 2007

Mechanism Design and the Law
25th Seminar on the New Institutional Economics
jointly organized with Urs Schweizer, Bonn Faculty of Economics
Prague
21–23 June 2007

Workshop with Professors Bruno Frey and Dieter Frey
University of Zurich, Switzerland
28 November 2007

Workshop on the Law and Economics of Competition Policy
Max Planck Institute for Research on Collective Goods, Bonn, Germany
06–07 December 2007

2008

IMPRS Thesis Workshop
Max Planck Institute for Research on Collective Goods, Bonn, Germany
19–21 February 2008

Coordination in the Absence of Sovereignty
26th Seminar on the New Institutional Economics
Jointly organized with Urs Schweizer, Universität Bonn, Germany
Lübbenau, Germany
12–14 June 2008

Public Goods, Public Projects, Externalities (PGPPE) Workshop
Public goods and public policy: Competition, Regulation, Incentives, Governance
in collaboration with European Science Foundation, Bonn, Germany
20–22 October 2008

Workshop with Professors Bruno Frey and Dieter Frey
University of Munich, Germany
27–28 November 2008

2009

IMPRS Thesis Workshop
University of Jena, Germany
16–18 February 2008

Workshop on "Incentives, Efficiency, and Redistribution in Public"
jointly organized with Hausdorff Center for Mathematics, University of Bonn
22–24 May 2009

Jurimetrics
27th Seminar on the New Institutional Economics
Jointly organized with Urs Schweizer, University of Bonn
Kloster Eberbach, Germany
10–13 June 2009

Causes and consequences of the german financial crisis of 1931 in national and international perspective
with financial support by the Fritz-Thyssen-Foundation
17–18 September 2009

1st Bonn & Paris Workshop on Law and Economics: "The Empirics of Crime and Deterrence"
jointly organized with University of Paris Ouest, Nanterre, France
25–26 September 2009

Workshop with Professors Bruno Frey and Dieter Frey
Max-Planck-Institut zur Erforschung von Gemeinschaftsgütern, Bonn, Germany
29–30 October 2009

F. Publications

F. Publications

F.I Book Series of the Institute

2007

Elke Fiebig-Bauer
Ressourcenschonung durch das KrW-/AbfG
Eine juristisch-ökonomische Analyse
(Common Goods: Law, Politics and Economics – Gemeinschaftsgüter: Recht, Politik und Ökonomie, Bd. 16) Baden-Baden, Nomos, 200 p.

Michael Stolleis/Wolfgang Streeck (Eds.)
Aktuelle Fragen zu politischer und rechtlicher Steuerung im Kontext der Globalisierung
(Common Goods: Law, Politics and Economics – Gemeinschaftsgüter: Recht, Politik und Ökonomie, Bd. 17) Baden-Baden, Nomos, 286 p.

Christoph Engel/Fritz Strack (Eds.)
The Impact of Court Procedure on the Psychology of Judicial Decision Making
(Common Goods: Law, Politics and Economics – Gemeinschaftsgüter: Recht, Politik und Ökonomie, Bd. 18) Baden-Baden, Nomos, 150 p.

2008

Christoph Engel
Die verfassungsrechtliche Zulässigkeit eines Entflechtungstatbestands im Kartellgesetz
(Common Goods: Law, Politics and Economics – Gemeinschaftsgüter: Recht, Politik und Ökonomie, Bd. 19) Baden-Baden, Nomos, 92 p.

2009

Felix Höffler
Engpassmanagement und Anreize zum Netzausbau im leitungsgebundenen Energiesektor. Wirtschaftstheoretische Analyse und -wirtschaftspolitische Handlungsempfehlungen
(Common Goods: Law, Politics and Economics – Gemeinschaftsgüter: Recht, Politik und Ökonomie, Bd. 20) Baden-Baden, Nomos, 98 p.

F.II Preprint Series of the Institute

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published in: *Journal of Public Economics*, vol. 91, pp. 1449-1477, 2007.

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2007/05: Schmidt D., *Mitigating the shadow of conflict – The role of social and human capital for the reduction of conflicts*

2007/06: Engel C., *Incentives for Process Innovation in a Collusive Duopoly*

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2007/10: Maier-Rigaud F. P., Beckenkamp M., *Purchase Decisions with Non-linear Pricing Options under Risk – Experimental Evidence*

2007/11a: Ostmann A., *Aggregate und Repräsentationen ihrer Teile*

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2008/22: Towfigh E., *Komplexität und Normenklarheit – oder: Gesetze sind für Juristen gemacht,* issue 2008/22, Bonn, Max Planck Institute for Research on Collective Goods, 2008.

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2008/27: Broadberry S. N., Burhop C., *Resolving the Anglo-German Industrial Productivity Puzzle, 1895–1935: A Response to Professor Ritschl*

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