DISCUSSION PAPER SERIES

IZA DP No. 7126

Primum vivere... Industrial Change, Job Destruction and the Geographical Distribution of Unemployment

Francesco Pastore

January 2013

Forschungsinstitut
zur Zukunft der Arbeit
Institute for the Study
of Labor

Primum vivere… Industrial Change, Job Destruction and the Geographical Distribution of Unemployment

Francesco Pastore
Seconda Università di Napoli,
IZA and AIEL

Discussion Paper No. 7126
January 2013

IZA

P.O. Box 7240
53072 Bonn
Germany

Phone: +49-228-3894-0
Fax: +49-228-3894-180
E-mail: iza@iza.org

IZA Discussion Paper No. 7126
January 2013

ABSTRACT

Primum vivere… Industrial Change, Job Destruction and the Geographical Distribution of Unemployment

This paper aims to provide a frame of mind to understand the link between structural change and regional unemployment, and, based on it, to survey the most recent literature. An overly optimistic view on the ability of the adjustment mechanism to generate convergence in local unemployment rates has long neglected the question of how regional imbalances arise in the first place. The availability of new longitudinal data sets allows us looking again at this issue with a fresh look, starting from patterns of reallocation among labour market statuses. The main conclusion of recent research is that high unemployment regions have a higher, not a lower rate of reallocation; this suggests, in turn, that they do not suffer from low job creation, but, rather, from high job destruction, and this is because of the low competitiveness of any economic activity. Our findings sound as a renowned justification of the need for demand side policy, especially aimed at increasing the life expectancy of private businesses in high unemployment regions.

JEL Classification: J6, P2, R1, R23

Keywords: industrial change, job destruction, labour turnover, adjustment mechanism, regional unemployment

Corresponding author:

Francesco Pastore
Seconda Università di Napoli
via Mazzocchi 5
Santa Maria Capua Vetere (CE),
81055, Naples
Italy
E-mail: fpastore@unina.it

Introduction

With the explosion of the Great Depression, the risk is high that the already extraordinary gap in unemployment rates among regions of many European countries and of the European Union (EU) will further increase. Nonetheless, little attention is devoted to the issue of the possible impact of the economic crisis on the geographical pattern of unemployment. This paper aims to provide a frame of mind to think of this problem and, based on it, to survey the most recent literature. The underlying assumption of the paper is that regional unemployment differentials within the EU remain persistent, despite increasing interregional and intra-European migration flows. This suggests, in turn, that there are important factors at a local level that are able to cause regional unemployment differences to generate and persist over time. There may possibly be two lines of reasoning of why this might be the case.

First, there might be reasons why geographical labour mobility within a country is reinforcing rather than reducing regional differences in local unemployment rates, as assumed in traditional neoclassical models of regional unemployment (Marston, 1985). A growing body of literature (see, among others, Moretti, 2003, and the related literature on social externalities of human capital; and, within the New Economic Geography literature, Epifani and Gancia, 2005; Francis, 2009) suggests that economies to scale and positive externalities among complementary production factors might explain this, in turn. In other words, although moving from high to low unemployment regions, labour would be attracted where its return is higher, not because labour is less abundant, but the returns to capital is higher, which would reinforce the ability of wealthier regions to produce more than average, generating further divergence, rather than convergence. This means, however, that regional unemployment is not only a consequence of state failure, due to the proven inability of regional policy, also at the EU level, to cause convergence, but also a consequence of market failure.

Second, there might be reasons why more jobs are continuously destroyed in high unemployment regions, causing the spatial gap to persist over time. Also due to the failure of the adjustment mechanism depicted above, the factors causing a low competitiveness of high unemployment regions might tend to persist. A recent

contribution by Munich and Svejnar (2009), based on estimates of matching functions in six Central and Eastern European Countries (CEECs since now) from 1991 to 2005, shows that industrial restructuring is still in the mid-2000 a major cause of local (and national) unemployment in several cases, although in other cases low demand and inefficient matching are also important factors.

The higher degree of industrial restructuring of high unemployment regions is, in turn, possibly due both to temporary and permanent factors. The temporary factors include a greater openness to international trade by new competitors and the introduction of new technologies that replace the traditional productions. High unemployment regions typically have a more traditional production structure, often constituted of a large number of newly born, small sized firms operating in the traditional manufacturing sectors, which are the most exposed to competition from emerging market economies. The long term factors, which help explaining why some regions exhibit more weaknesses in the event of the same economic recession, and therefore less competitiveness and attractivity to foreign investment, include: a) a lower endowment of both physical and human capital; b) higher than average criminality rates (especially organized crime); c) reduced importance of migration flows as an adjustment mechanism; d) the economic dependence on more developed regions; e) the presence of poverty traps.

This paper only marginally discusses geographical labour mobility and rather focuses on the second line of reasoning: in fact, it studies the way industrial restructuring affects local unemployment and does so by looking at the local labour market dynamics. Newly available data with a longitudinal structure allow studying it with a detail that has never been available before. The data come both from sample surveys and administrative sources. This is an important pre-condition to study the impact of industrial restructuring on local unemployment. Related to this has been the flourishing of an increasing body of literature whose results this paper will try to summarise and interpret by proposing a theoretical framework that is often implicit in the empirical literature, but hardly made explicit and discussed in depth.

The paper is structured as follows. Section One gives a simple theoretical framework with which to think of the link between structural change, worker reallocation and regional imbalances. Section Two reviews the empirical literature on the hypotheses

discussed in the previous section. Section Three discusses the policy implications of the main findings of the surveyed literature. Some summary remarks follow.

1. Theoretical framework

1.1. The link between local worker reallocation and unemployment

The flourishing literature on gross job and worker flows[1] has clarified many important aspects of the dynamics of the reallocation process. Nonetheless, very little attention has been paid to the dynamics of reallocation across and, even less, within geographical space. This has resulted in the lack of a comprehensive approach able to map the hypotheses brought to the fore in the literature. This paper aims to fill the gap, by providing a frame of mind to think of this problem, which we gain from reviewing the existing literature.

Different (testable) hypotheses can be formulated as to the relationship between worker reallocation[2] and the local unemployment rate:

H_1: worker reallocation is independent of regional unemployment;
H_2: worker reallocation correlates positively with regional unemployment;
H_3: worker reallocation correlates negatively with regional unemployment;

Building on the theoretical framework laid down in Ferragina and Pastore (2008), the first two hypotheses can be seen as essentially related to structural change. Accordingly, hypothesis H_1 can be seen as the result of the same aggregate shock that has yielded different employment effects in different regions. For instance, high unemployment regions have experienced an unsuccessful restructuring process, with a too high separation rate at some point, so that the unemployment rate exceeds its equilibrium level and becomes persistent. Only at a later stage separation rates converge

[1] Individual level data generally allow detecting worker flows, while firm level data allow detecting job flows.

[2] Note that the expression "worker reallocation" is the one generally used in the theoretical literature and denotes any change of status in and out of employment. From an empirical point of view, worker reallocation is measured in different ways, which we do not address here for the sake of shortness.

across regions. Individuals in the unemployment pool have little hope to find new jobs because there is little job creation in the more depressed labour markets.

According to H_2, instead, worker reallocation is higher where the local unemployment rate is also high: in other words, in high unemployment regions more jobs are destroyed and created at the same time. The literature provides different explanations as to what might explain H_2, which will be discussed at more length in the following section.

Ferragina and Pastore (2008) suggest that the above hypotheses configure an empirical law to detect the case when unemployment is due to some region-specific shock, namely when the high degree of labour turnover in high unemployment regions is caused by industrial restructuring, and when it is due to labour market rigidities in high unemployment regions that prevents job creation there.

The policy implications of these alternative hypotheses are different. Whilst a low job finding rate (H_1) essentially indicates the need for supply side policies in favour of the long-term unemployed, namely increasing labour market flexibility and/or educational reforms and active labour market policy on a large scale; H_2 also requires interventions on the demand side. For instance, assuming that the government is able to do so, it should reduce the rate of separation and/or increase the life expectancy of private businesses in the high unemployment regions. This might in turn require removing the sources of structural change in high unemployment regions. Last, but not least, if H_1 holds true, a strategy for reducing regional unemployment differentials, would require intervention aimed at removing labour market rigidities that impede job reallocation and, indirectly, also the ability of the labour market to minimise the frictional and mismatch components of local unemployment.

The third option, namely H_3, assumes that the higher is the degree of worker reallocation experienced in a country or in a given period of time, the lower is also its unemployment rate. From an empirical point of view, it implies that the rate of labour reallocation should be higher in low unemployment, boosting regions.

1.2. Theoretical explanations of H_3

There are at least two different theoretical explanations of why H_3 might hold true:

H_{31}: institutional rigidities generate asymmetric effects on the labour market causing greater frictional and mismatch unemployment in high unemployment regions (so-called regional Krugman hypothesis);

H_{32}: agglomeration economies generate more job creation in low unemployment boosting regions (New Economic Geography hypothesis).

The regional Krugman (1994) hypothesis (H_{31}) is based on the asymmetric role of labour market institutions, such as centralised wage bargaining, incomes policy, minimum wage, too high hiring and firing costs, and the like. These last are generally decided at a national level, but are biting more in high unemployment regions for a number of reasons depending on the type of institution. Just as an example, the minimum wage is biting more where real wages are lower. The existence of institutional rigidities will cause greater frictional and mismatch unemployment in high unemployment regions.

On the other hand, H_{32} can be seen as the outcome of agglomeration economies in the New Economic Geography (NEG) literature. Epifani and Gancia (2005) is one of the first NEG models to propose an explanation of regional unemployment differentials in terms of agglomeration economies and internal labour migration. The latter is causing convergence only initially, since it involves a reduction of the unemployment pool in high unemployment regions and an increase in low unemployment regions, as predicted in traditional neoclassical models. At a later stage, however, labour in-migration causes new jobs to emerge in low unemployment regions, by rising the productivity of any economic activity there, which in turn allows absorbing the excess supply of labour and reduce again the local unemployment rate below the national average.

More recently, building on Epifani and Gancia (op. cit.), Francis (2009) reaches the same conclusion, but it does so by endogenizing job separations: agglomeration induces in-migration, which causes both higher job creation and destruction rates in thicker markets. These last in turn trigger further in-migration, which causes real wages to increase generating a selection in the migration opportunities for high skill workers coming from high unemployment areas. Again, in-migration of high skill workers further increases productivity in low unemployment areas, favouring an increase in job

creation higher than that in job destruction, which maintains low the local unemployment rate.

The policy implications of these different theoretical explanations are radically different. From a policy point of view, empirical evidence confirming H_{31} and linking the lower degree of job / worker reallocation in high unemployment regions to labour market rigidities at a local level would require removing such rigidities.

Policy implications of NEG models are complex. If the aim is reducing regional unemployment differentials, a policy tool would be to prevent the brain drain from peripheral to core regions. Traditional views according to which labour mobility is the key to generate convergence in unemployment rates are clearly challenged by this type of analysis. Indirectly, NEG models provide new support for policy aimed at increasing the capital and technological endowment of high unemployment regions.

1.2. The sources of worker reallocation

If H_1 holds true, namely if the rate of worker reallocation positively correlates with the unemployment rate, one should ask: What are the sources of worker or job reallocation? Why are they greater in high unemployment lagging regions? Several hypotheses have been raised in the literature:

H_{11}: different sectoral shifts across regions (Lilien hypothesis);

H_{12}: aggregate disturbances that cause spatially asymmetric effects (Abraham and Katz hypotheses);

H_{13}: the unemployed are crowded out by employed job seekers in low unemployment regions (Burgess hypothesis);

According to H_{11}, some sectors / regions experience a permanent reduction in labour demand that causes local unemployment. It is worth noting that this type of analysis does not refer to structural change in the sense of the growth literature, which implies a reallocation of workers across sectors, but rather to within sectoral reallocation. In fact, looking at the data on worker reallocation, it appears that the within-sector component is much greater than the between sectors component of job reallocation, the difference

depending on the degree of aggregation of the data (see, for instance, Essletzbichler, 2007, p. 22).

Lilien (1982) found a strong positive correlation over time between the aggregate unemployment rate and the cross-industry dispersion of employment growth rates in the USA. Indeed, the first issue to address when attempting to verify the Lilien hypothesis is the type of index used to measure industrial restructuring[3]. Most studies use some variation of the Lilien index, a measure of the variance in industry employment growth, despite the criticisms that it would be unable to disentangle sectoral shifts from aggregate disturbances (Abraham and Katz1986; Neelin 1987).

However, one underlying assumption of the Lilien hypothesis, namely that sectoral shifts can take place as independent sources of labour demand reduction, has been criticised by Abraham and Katz (1986). According to these authors, sectoral shifts are the consequence of the same aggregate shock which has a different impact on different sectors/regions: in other words, what we observe, namely a greater variance of employment shares in some regions, is the consequence of asymmetric effects of the same aggregate shock (so-called Abraham and Kats hypothesis or H_{12}). Different from Samson' (1985) study for Canada, Fortin and Araar (1997) find that aggregate disturbances were more important than sectoral shifts to explain short-term fluctuations in unemployment.

More recently, Burgess (1993) has hypothesised that worker reallocation is greater in high unemployment regions because of the lower job opportunities for unemployed job seekers in low unemployment regions (H_{13}). In these regions, in fact, the unemployed are crowded out by employed job seekers who are encouraged to search for better jobs. Consequently, one would observe a higher worker turnover in high unemployment regions simply because in these regions the unemployed who find jobs are a larger relative number with respect to their peers in low unemployment regions. Vice versa, job-to-job moves would be much greater in low unemployment regions.

[3] Armstrong and Taylor (1985) use different indices of cyclical and structural factors of unemployment in the UK, finding that they explain over 70% of the cross-regional variation of their male inflow rates into unemployment. Instead labour supply factors seem to explain only a minor part of the dependent variable.

1.3. The weakness of backward regions

The next obvious question arises as to why, if H_{11} holds true, some regions experience sectoral shocks more frequently or with greater intensity than others. There are sources of structural change that tend to be transitory and others that are permanent. The former include:

a) The opening up to international trade of new competitors;
b) The introduction of new technologies causing some productions to go out of market (Caballero and Hammour, 1994).

Due to their specialisation in low-skill intensive productions, high unemployment regions tend to be much more exposed than average to international competition arising from the opening up to international trade of emerging market economies. High unemployment, lagging regions, in fact, tend to have the same type of product specialisation as emerging market economies. In turn, this often implies that to survive international competition firms have to diversify their activities and delocalise important production phases from the least developed regions of advanced economies to the most advanced regions in emerging economies, with important labour market consequences in both areas.

There is no specific reason why technical change should be relatively more harmful for the employment prospects of backward regions, but the lower degree of product diversification of these regions. In fact, technical change is likely to generate less unemployment in those regions where the economic structure is heavily dependent on obsolete production. This argument is based on the aforementioned portfolio effect in the labour market (Simon 1988; Simon and Nardinelli 1992). In other words, technical change might generate more structural change in backward regions where economic activities are marginal and easy to exit from the market.

Considering these sources of structural change transitory does not mean that they happen only for a short period of time. For instance, the economic integration of CEECs productions on EU markets began in the late 1980s and is still on-going; the same also applies to the European integration of the so-called Chindia (a crasis of China and India). In turn, this means that the actual impact of transitory sources of structural

change depends ultimately on specific structural and permanent 'weaknesses' of high unemployment regions, namely their:

a) Low competitiveness and low local attractiveness to investment from abroad due to:
    a. Low human capital endowment;
    b. Low social capital endowment;
    c. High crime rate, including organised crime;
b) Weakening of adjustment mechanism of migration;
c) Their economic dependence on more developed regions;
d) Poverty traps.

2. Empirical evidence

2.1. Testing the direction of worker reallocation

Older studies typically looked at labour market stocks – employment, unemployment and inactivity – and their determinants to understand regional differentials in labour market performance. The recent availability of individual level data with a longitudinal dimension at a regional level is behind the flourishing of a completely new strand of literature that is providing a fresh perspective on labour market outcomes at a local level. Most studies attempt to search for geographical regularities in the relationship between labour market dynamics and labour market performance. The quality of the data has improved under many dimensions, including the time dimension, which is covering periods of increasing length, and the degree of spatial aggregation, which is becoming more and more detailed. The latter dimension ranges from NUTS2 to NUTS3 and in some cases include also travel to work areas or local labour systems.

The new data allow to compute different indicators of labour market dynamics at a local level with a detail that was not available only few years ago. Typically, the studies based on the new data look at the correlation between the local labour market dynamics and the local unemployment rate.

The evidence about this relationship available in the most recent literature tends to line towards the H_1 hypothesis, although there are also some exceptions. Looking at the post-transition dynamics of formerly socialist countries, some authors (such as Boeri and Scarpetta 1996; Boeri 2000; the World Bank 2001; Rutkowski 2003) interpret the low rate of worker reallocation of high unemployment regions during the transition from plan to market as a consequence of low labour market dynamism and insufficient job creation (Hypothesis H_2). Nonetheless, their studies were based on the early administrative data available after the transition from plan to market. There are few other recent examples of a null or negative correlation.

Interestingly, Naticchioni, Rustichelli and Scialà (2006) expect that H_3 be verified in the Italian case: in fact, they assume that rigid labour markets may be behind the bad performance of Southern regions. However, using the ISFOL panel based on ISTAT Labour Force Survey data they find a positive correlation. The evidence they provide lines towards providing support for H_2 not only in terms of the unconditional gap, but also after controlling for compositional differences of the samples of low and high unemployment regions that might line towards expecting a higher degree of worker reallocation in high unemployment regions because of, say, the higher share of young workers employed in small-sized firms.

Similarly, although not discussing H_2 explicitly, Robson (2001, Figure 1) provides evidence that confirms the existence of a positive correlation between the rate of turnover meant as the sum of the inflow to and outflow from unemployment and the unemployment rate across the UK macro-regions during the decade 1984-1994. In fact, this is in line also with what Armstrong and Taylor (1985) found for the same country focusing on male unemployment monthly inflow data from Manpower Services Commission at Employment Offices and Jobcentres.

Newell and Pastore (1999; and 2006) also confirm H_2 by using labour force survey data to compute annual gross worker flows; they find a statistically significant correlation between the job separation rate and the unemployment rate of 0.76 during the period 1994-1997, soon after the transition from plan to market, a period of dramatic structural change. Pastore and Tyrowicz (2012) confirm the existence of strong positive correlation in the case of Poland by using registry level data relative to the years from 2000 to 2008.

Again with respect to Italy, Contini and Trivellato (2006) confirm the evidence contained in Naticchioni, Rustichelli and Scialà (2006), finding the highest turnover rate in the traditionally high unemployment regions of Mezzogiorno. Using Local Labour Systems (LLSs) data, Basile *et al.* (2012) also report a strong positive correlation between worker reallocation and unemployment across LLSs. Mussida and Pastore (2012) support H_2 with reference to the annual flow computed using the longitudinal files of the Italian labour force survey over the years from 2004 to 2010.

To sum up the findings regarding the empirical literature on the first set of hypotheses, there seem to be overwhelming evidence that H_2 prevails over its alternatives in almost all studies. This is an important conclusion because it allows excluding, or at least putting aside, the idea, which is very common indeed, that in high unemployment regions there is a problem of inability to create new jobs. The evidence provided suggests that in high unemployment regions it is not particularly hard to establish new firms or to hire new workers, but rather to make the existing jobs survive. This explains also the title of this paper: *primum vivere* … Last, but not least, NEG theoretical models should take into account that the hypothesis H_3 that they tend to take for given is far from holding true. Now it is time to ask: What is driving a higher rate of turnover in high unemployment regions?

2.2. Determinants of worker turnover

Samson (1985) was among the first studies to confirm Lilien analysis for the case of Canada. Early analysis did not consider explicitly the need to correct for the contemporaneous impact of aggregate disturbances, as Abraham and Katz (1986) and Neelin (1987) noted. To overcome this criticism, the ensuing research in the field has pursued the objective of finding empirical ways of disentangling sectoral shifts and aggregate disturbances. Using a macroeconomic approach, Neumann and Topel (1991) develop a model where the equilibrium level of unemployment in a region depends on its exposure to the risk of within-industry employment shocks and on their degree of industrial diversity: in fact, if the covariance of labour demand shocks between industries is low, then workers are able to counter the adverse effect of local demand

shocks through inter-sectoral mobility. Their approach has stimulated further research (see, for instance, Chiarini and Piselli 2000; and Robson 2009).

The above discussion shows the existence of a clear link between Lilien's argument and Simon (1988) and Simon and Nardinelli's (1992) hypothesis of a *portfolio effect* in the labour market. The hypothesis is that the higher the degree of industry diversification, the lower the impact on the local production structure of a sectoral shift and the higher the probability for dismissed workers to find employment in other sectors. They found evidence of a portfolio effect in the US labour market using the Herfindahl index to measure the degree of industry concentration in estimates of the determinants of States unemployment. Other studies relative to advanced market economies and economies in transition from plan to market also find a strong correlation between the Herfindahl index and various measures of local labour market distress (see for surveys Elhorst 2003, p. 735; and Ferragina and Pastore 2008, p. 91).

Hyclak (1996, p. 655) proposed another index to disentangle sectoral shifts and aggregate disturbances. The peculiarity of his index is that it is based on gross job flows computed on establishment level data. He reports estimates relative to a sample of 200 US metropolitan areas over the years 1976-1984 and finds a negative correlation of -0.72 between sectoral shifts and net job growth. In addition, in panel estimates of the determinants of the local unemployment rate, he finds a positive statistically significant impact of sectoral shifts, but not of frictional job turnover, concluding that it was the sectoral rather than the cyclical component of the shocks to affect the local unemployment rate.

Holzer (1991) proposes an alternative measure of sectoral shifts, namely the sales growth rates, used to disentangle shifts *between* and *within* local markets. The econometric analysis shows that the former have a much greater impact than the latter.

A new wave of studies on the impact of structural change on regional unemployment is related to the transition from plan to market. Newell and Pastore (2006) provide similar evidence of the impact of the Lilien for voivodship unemployment in Poland. Krajnyàk and Sommer (2004) find similar evidence for the Czech Republic over the years 1998-1999, when restructuring actually started. Based on Berg (1994), Barbone, Marchetti and Paternostro (1999) decompose the labour productivity growth of various two-digit sectors of industry, finding that structural determinants of the recovery

outweighed cyclical ones during Polish transition. Lehmann and Walsh (1999) suggest a possible explanation of why sectoral shifts are associated with higher unemployment, arguing that labour turnover is linked to the level of human capital: where human capital is interchangeable, workers do not oppose restructuring, which takes place generating unemployment, but also fast output recovery.

Robson (2009, p. 282) computes the Lilien index for the UK regions during the years from 1975 to 2001 and finds a positive correlation with the unemployment rate in panel estimates, once controlling also for the portfolio effect. Nonetheless, he reckons that the effect is small. Basile *et al.* (2012) find that sectoral shifts and the degree of specialization exert a negative role on unemployment dynamics at the level of LLSs in Italy in semiparametric additive panel estimates, also controlling for spatial dependence.

Mussida and Pastore (2012) find that worker turnover across NUTS1 and NUTS2 units correlates positively with structural change, as measured by the Lilien index, and negatively with the degree of industrial concentration, as measured by the Herfindahl index. The finding relative to the portfolio effect is probably due to the focus on large geographical units. In the latter case, as also Marshall noted, the availability of a greater number of specialised districts could partly offset the diseconomies of specialisation in terms of greater exposure to external shocks.

Some authors find results that are in apparent contrast with the Lilien hypothesis. Garonna and Sica (2000) find a negative association between the Lilien index of structural change and the unemployment rate in Italy: in particular, sectoral and interregional reallocations in Italy would reduce unemployment, rather than increasing it. Böckerman (2003) finds a negative (not a positive) correlation of these variables with the local unemployment rate and takes this result as evidence of the Schumpeterian "creative destruction" hypothesis.

A number of studies aim to test the Burgess hypothesis. Van Ours (1995) finds only partial evidence of competition between employed and unemployed job seekers in the Netherlands in the first half of the 1980s. Broersma (1997) finds similar evidence in the flexible UK and rigid Netherlands. For the UK, Robson (2001) finds evidence of employed job seekers crowding out the unemployed especially in low unemployment regions. Burgess and Profit (2001) find that high unemployment levels in neighbouring areas raise the number of local vacancies but lower the local outflow from

unemployment. Eriksson and Lagerström (2006) study the Swedish Applicant Database and find evidence that in Sweden unemployed job seekers face a lower contact probability, and receive fewer contacts, than an employed job seeker.

In line with what we have called the regional Krugman hypothesis, a number of studies test whether in high unemployment regions the composition of workers is such that there are more workers with a higher probability of losing their job due to the spatially asymmetric impact of labour market institutions. Moreover, extensive literature highlights, among other things, the role of rigid wages and legislation protecting employment, non-employment subsidies and early retirement schemes (see, among others, Boeri 2000; World Bank 2001; Rutkowski and Przybila 2002; Funck and Pizzati 2002; 2003).

In conclusion of this section, we may note that structural change is often found to be an important factor of regional unemployment. Often measured by the Lilien index or some variation of it, structural change is positively associated to worker reallocation and negatively with the degree of specialization. The degree of specialization is also associated with the spatial distribution of unemployment, with a positive sign when we look at small labour market and a negative sign when labour markets are bigger.

2.3. Adjustment through migration?

In the early 1990s, a number of influential contributions re-launched the role of internal migration as a tool to achieve convergence in unemployment rates. Blanchard and Katz (1992) find that labour mobility, as driven by the need to escape unemployment in depressed areas, rather than by higher wages in booming regions, has been decisive in achieving regional convergence in unemployment rates across the United States. However, Decressin and Fatas (1995) suggest that in old EU member states (if any) unemployment convergence across regions was achieved through an increase in inactivity rates in high unemployment regions.

These findings have been uttered in recent research relative to other advanced economies (for surveys of this literature, see Elhorst 2003, p. 727-729; and Caroleo and Pastore, 2010, section 5.2). Also following the theoretical results of the NEG models, the most recent research has become increasingly critical about the ability of labour

migration to reduce regional unemployment (see, among others, Basile, Girardi and Mantuano, 2012; Niebuhr et al., 2012). Interestingly, this strand of literature focuses on regional unemployment in EU countries.

The empirical evidence seems to support only one of the main conclusions of the NEG models, namely that regarding the role of in-migration as a factor reinforcing, rather than mitigating geographical differences in unemployment rates, while refuting the prediction regarding the alleged greater labour market dynamics of low unemployment regions.

2.5. Poverty trap mechanisms

Poverty trap mechanisms might also be behind the backwardness of peripheral regions in advanced economies. In new growth theories, in fact, regional divergence may arise as a consequence of the hypothesis of increasing returns to scale in the advanced regions or sectors, also assuming frictionless labour markets. Instead of convergence, then, there are multiple equilibria, since backward regions or sectors might experience persistently lower growth rates.

Carillo et al. (2008) explore different mechanisms that might lead to poverty traps with reference to regional development. For instance, Capasso (2008) proposes a theoretical model of a credit market with asymmetric information where firms prefer to invest in traditional, low profit businesses for which access to credit is easier; in backward regions, where credit markets show greater information asymmetries, only the least innovative business are financed, with apparent consequences on the local growth rate. In Carillo (2008) threshold effects generate from the different incentive effects that the search for social status has on the decision to invest in human capital accumulation in low and high growth regions.

Papagni (2008) aims to test for the presence of multiple equilibria in Italy due to the inability of the regions of Mezzogiorno to overcome several threshold effects. First, he finds evidence that the Southern regions are on a different growth path from the Northern regions. Second, he finds that positive externalities tend to reduce production costs only when they are sufficiently high, which is not the case of Southern regions.

3. Policy implications

The literature now surveyed renovates the traditional theoretical justifications for industrial policy in favour of high unemployment, peripheral regions. Following the line of reasoning brought to the fore in this paper, industrial policy would trigger geographical convergence in unemployment rates not so much if it fosters job creation, but rather if it prevents job destruction. In fact, if H_2 holds true, high unemployment regions do not lack the ability to create new jobs, but rather the greater than average number of jobs created there suffer from low competitiveness, as also voiced in Essletzbichler (2007).

It goes without saying that increasing the factor endowment of backward regions, especially that in terms of physical and human capital, would be an important pre-condition for firms located there to survive.

Human capital should not be conceived simply as education, but also as work experience, gained, for instance, in medium and big firms to import from advanced to backward regions, where the production structure is essentially based on small businesses. Under this respect, special policy intervention should be foreseen to reverse the brain drain and allow the high skill workforce migrated in advanced regions to go back to their sending regions.

In addition, policy in favour of convergence should target the temporary and permanent factors, discussed in section 1.3. In order to resist the competition from emerging market economies, also peripheral regions should join the knowledge based economy and shift production from low to high technological sectors, the least exposed. Again, increasing the local endowment of high skills in the peripheral areas would be an important pre-condition.

The theoretical an empirical literature on NEG models suggests, instead, that migration may be a factor reinforcing regional unemployment differences and favouring the regions that are already more developed.

Concluding remarks

This paper provides a frame of mind to think of geographical differences in labour market dynamics and relate them to the geographical distribution of unemployment rates. This is a topic of growing interest with the diffusion of longitudinal data able to measure with a detail and accuracy which was rarely possible before, the degree of worker reallocation also at the level of NUTS 2 or at a finer level of aggregation, such as travel to work areas or local labour systems. This has triggered the development of a new literature on regional unemployment differentials. The fact of being relatively novel of this literature explains its tendency to develop in different directions, which generates some dismay in the scholars that address this topic for the first time. It is therefore useful to map the different hypothesis followed in the literature and take stock of the first available findings.

There are very different hypothesis as to the relationship between worker reallocation and regional unemployment – positive, negative or independent – depending on the type of theoretical approaches followed. Each relationship may be explained in a specific way. A negative relationship may depend either on institutional rigidities that hinder labour mobility among labour market statuses in high unemployment rate regions (so-called regional Krugman hypothesis) or on agglomeration and in-migration of workers from high to low unemployment regions (New Economic Geography approach). A positive relationship, in turn, may depend on other factors, such as: a) a higher degree of industrial restructuring (Lilien hypothesis); b) asymmetric effects of aggregate disturbances (Abraham and Katz); c) a larger number of job-to-job moves in low unemployment regions (Burgess hypothesis).

The empirical literature brings quite a substantial body of evidence in support of the hypothesis that worker reallocation is higher in high unemployment regions and is associated with a high degree of industrial change. Moreover, labour migration seems to increase, rather than reducing the geographical unemployment gap. Third, a large literature highlights the existence of a number of 'weaknesses' of high unemployment regions that might explain their greater exposure to industrial restructuring: a lower endowment of human and social capital, the high crime rate, the presence of organised crime, poverty trap mechanisms.

From a policy point of view, the literature surveyed in this paper suggests that fostering internal migration does not necessarily lead to regional unemployment

convergence, just the opposite. The common believe that the weaknesses of lagging, high unemployment regions can be counterbalanced by favouring the adjustment process is not supported by empirical evidence, at least in the European Union. As recent literature highlights, labour and capital mobility are factors of endogenous development, as labour and capital resources tend to concentrate in advanced regions. This is not because of state failure or rigid labour market institutions, but rather because of the higher returns enjoyed by labour and capital in advanced regions where they tend to pool. In other words, regional divergence is a consequence of market failure.

A more effective policy would be to remove the weaknesses of high unemployment regions. Primum vivere … if high unemployment regions have a higher, not a lower rate of reallocation, then they do not suffer from low job creation, but, rather, from high job destruction, and this is because of the low competitiveness of any economic activity. Our findings sound as a renowned justification of the need for demand side policy, especially aimed at increasing the life expectancy of private businesses in high unemployment regions.

References

Abraham, K. G. and Katz, L.F. (1986). Cyclical Unemployment: Sectoral Shifts or Aggregate Disturbances?. *Journal of Political Economy*, 94(3): 507-522.

Armstrong, H. and Taylor, J. (1985). Spatial Variations in the Male Unemployment Inflow Rate. *Applied Economics*, 17(1): 41-54.

Barbone, L., Marchetti, D. J. and Paternostro, S. (1999). The Early Stages of Reform in Polish Manufacturing. Structural adjustment, Ownership and Size. *The Economics of Transition*, 7(1): 157-177.

Basile, R., A. Girardi and M. Mantuano (2012), "Migration and Regional Unemployment in Italy", *The Open Urban Studies Journal*, 5: 1-13.

Basile, R., A. Girardi, M. Mantuano and F. Pastore (2012), "Sectoral Shifts, Diversification and Regional Unemployment: Evidence from Local Labour Systems in Italy", Empirica, 39 (4), 525-545.

Berg, A. (1994). Does Macroeconomic Reform Cause Structural Adjustment? Lessons from Poland. *Journal of Comparative Economics*, 18(3): 376-409.

Blanchard, O. J. and Katz, L.F. (1992). Regional Evolutions. *Brookings papers on Economic Activity*, 1: 1-75.

Böckerman, P. (2003). Unraveling the Mystery of Regional Unemployment in Finland. *Regional Studies*, 37(4): 331-340.

Boeri, T. (2000). *Structural Change, Welfare Systems, and Labour Reallocation. Lessons from the Transition of Formerly Planned Economies*. Oxford: Oxford University Press.

Boeri, T. and Scarpetta, S. (1996). Regional Mismatch and the Transition to a Market Economy. *Labour Economics*, October, 3(3): 233-254.

Broersma, L. (1997). Competition between Employed and Unemployed Job Searchers: is there a Difference between the UK and the Netherlands?. *Applied Economic Letters*, 4(3): 199-203.

Burgess, S. M. (1993). A Model of Competition between Unemployed and Employed Job Searchers: An Application to the Unemployment Outflow Rate in Britain. *The Economic Journal*, 103(420): 1190-1204.

Brugess, S.M. and Profit, S. (2001). Externalities in the Matching of Workers and Firms in Britain. *Labour Economics*, 8(3): 313-333.

Caballero, R. J. and Hammour, M. L. (1994) The Cleansing Effect of Recessions. *American Economic Review*, December, 8(5): 1350-1368.

Capasso, S. (2008). Costi di erogazione del credito, sviluppo tecnologico e crescita economica. In Carillo, M.R. et al. (Eds.), *op. cit.*

Carillo, M.R. (2008). Qualità del capitale umano, status sociale e innovazione tecnologica. In Carillo M.R. et al. (Eds.), *op. cit.*

Carillo, M.R., Moro, B., Papagni, E. and Vinci, S. (2008, Eds.), *Dualismo, nuove teorie della crescita e sviluppo del Mezzogiorno*. Bologna: Il Mulino.

Caroleo, F. E. and Pastore, F. (2010), "Structural Change and Labour Reallocation across Regions. A Review of the Literature", in Caroleo, F. E. and F. Pastore (Eds.), *The Labour Market Impact of the EU Enlargement. A New Regional Geography of Europe?*, Physica Verlag, Heidelberg.

Chiarini, B. and Piselli, P. (2000). Unemployment, Wage Pressure and Sectoral Shifts: Permanent and Temporary Consequences of Intersectoral Shifts. *Journal of Policy Modelling*, 22(7): 777-799.

Contini, B. and Trivellato, U. (2006). *Eppur si muove. Dinamiche e persistenze nel mercato del lavoro italiano*. Bologna: Il Mulino.

Decressin, J. and Fatàs, A. (1995). Regional Labour Market Dynamics in Europe. *European Economic Review*, 39(9): 1627-1655.

Elhorst, J. P. (2003). The Mystery of Regional Unemployment Differentials. Theoretical and Empirical Explanations. *Journal of Economic Surveys*, 17(5): 709-748.
Epifani, P. and G.A. Gancia (2005), "Trade, Migration and Regional Unemployment", *Regional Science and Urban Economics*, 35(6): 625-644.
Eriksson S. and Lagerström, J. (2006). Competition between Employed and Unemployed Job Applicants: Swedish Evidence. *Scandinavian Journal of Economics*, 108(3): 373-396.
Essletzbichler, J. (2007), "The Geography of Gross Employment Flows in British Manufacturing", *European Urban and Regional Studies*, 14(7): 7-26.
Ferragina, A.M. and Pastore, F. (2008). Mind the Gap: Unemployment in the New EU Regions. *Journal of Economic Surveys*, 22(1): 73-113.
Fortin, M. and Araar, A. (1997). Sectoral Shifts, Stock Market Dispersion and Unemployment in Canada. *Applied Economics*, 29(6): 829-839.
Francis, J. (2009), "Agglomeration, Job Flows and Unemployment", *Annals of Regional Science*, 43(1): 181-198.
Funck, B. and Pizzati, L. (2002, Eds.). *Labour, Employment and Social Policy in the EU Enlargement Process. Changing Perspectives and Policy Options*. Washington, D.C.: World Bank.
Funck, B. and Pizzati, L. (2003, Eds.). *European Integration, Regional Policy and Growth*, Washington, D.C.: World Bank.
Garonna, P. and Sica, F. (2000). Intersectoral Labour Reallocations and Unemployment in Italy. *Labour Economics*, 7(6): 711-728.
Holzer, H.J. (1991). Employment, Unemployment and Demand Shifts in Local Labour Markets. *Review of Economics and Statistics*, 73(1): 25-32.
Hyclak, T. (1996). Structural Changes in Labour Demand and Unemployment in Local Labour Markets. *Journal of Regional Science*, 36(4): 653-663.
Krajnyàk, K. and Sommer, M. (2004). *Czech Republic*, IMF country Report, n. 4/265, August.
Krugman P. (1994), "Past and Prospective Causes of High Unemployment", *Economic Review*, Federal Reserve Bank of Kansas City, pp. 23-43.
Lehmann, H. and Walsh, P. P. (1999). Gradual Restructuring and Structural Unemployment in Poland: A Legacy of Central Planning. *LICOS DP*, n. 78, Katholieke Universiteit Leuven.
Lilien, D. M. (1982). Sectoral Shifts and Cyclical Unemployment. *Journal of Political Economy*, 90(4): 777-793.
Marston, S. T. (1985), "Two Views of the Geographic Distribution of Unemployment", *The Quarterly Journal of Economics*, 100(1): 57-79.
Moretti, E. (2003). Estimating the Social Return to Higher Education: Evidence From Cross-Sectional and Longitudinal Data. *Journal of Econometrics*, 121(1-2): 175-212.
Munich, D. and Svejnar, J. (2009). Unemployment and Worker-Firm Matching: Theory and Evidence from East and West Europe. *The World Bank*, Policy Research Working Paper, n. 4810.
Mussida, C. and F. Pastore (2012), "Is There a Southern-Sclerosis? Worker Reallocation and Regional Unemployment in Italy", IZA discussion paper, n. 6954.
Naticchioni, P., Rustichelli, E. and Scialà, A. (2006). Employment Protection and Regional Labour Market Flows. *Economia Politica*, 23(3): 453-474.
Neelin, J. (1987). Sectoral Shifts and Canadian Unemployment. *Review of Economics and Statistics*, 69(4): 718-723.
Neumann, G. R. and Topel, R.H. (1991). Employment Risk, Diversification, and Unemployment. *Quarterly Journal of Economics*, 106(4): 1341-1365.
Newell, A. and Pastore, F. (1999). Structural Change and Structural Unemployment in Poland. *Studi Economici*, 69(3): 81-100.
Newell, A. and Pastore, F. (2006). Regional Unemployment and Industrial Restructuring in Poland. *Eastern European Economics*, 44(3): 5-28.

Papagni, E. (2008). Industrializzazione, esternalità e sviluppo del Mezzogiorno. In Carillo et al. (Eds.), *op. cit.*

Pastore, F. and J. Tyrowicz (2012), "Labour Turnover and the Spatial Distribution of Unemployment. A Panel Data Analysis using Employment Registry data", IZA discussion paper, n. .

Robson, M. (2001). Regional Variations in the Competitiveness of Unemployed Job-Seekers and the Rate of Outflows from Unemployment. *Oxford Bulletin of Economics and Statistics*, 63(1): 61-90.

Robson, M. (2009). Structural Change, Specialization and Regional Labour Market Performance: Evidence for the UK. *Applied Economics*, 41(3): 275-293.

Rutkowski, J. (2003). Rapid Labour Reallocation with a Stagnant Unemployment Pool: The Puzzle of the Labour Market in Lithuania. *World Bank*, Policy Research working paper series, n. 2946.

Rutkowski, J. and Przybila, M. (2002). Poland: Regional Dimensions of Unemployment. In B. Funck and L. Pizzati (eds.), *op. cit.*, (pp. 157-175).

Samson, L. (1985). A Study of Impact of Sectoral Shifts on Aggregate Unemployment in Canada. *Canadian Journal of Economics*, 18(3): 518-530.

Simon, C. J. (1988). Frictional Unemployment and the Role of Industrial Diversity. *Quarterly Journal of Economics*, 103(4): 715-728.

Simon, C. J. and Nardinelli, C. (1992). Does Unemployment Diversity always Reduce unemployment? Evidence from the Great Depression and After. *Economic Enquiry*, 30(2): 384-397.

Van Ours, J.C. (1995). An Empirical Note on Employed and Unemployed Job Search. *Economics Letters*, 49(4): 447-452.

World Bank (2001). *Poland-Labor Market Study: The Challenge of Job Creation.* World Bank Country Study, March.