I Z A

IZA DP No. 9603

Socio-Economic Segregation in European Capital Cities: Increasing Separation between Poor and Rich

Sako Musterd
Szymon Marcińczak
Maarten van Ham
Tiit Tammaru

December 2015

Socio-Economic Segregation in European Capital Cities: Increasing Separation between Poor and Rich

Sako Musterd
University of Amsterdam

Szymon Marcińczak
University of Łódź

Maarten van Ham
Delft University of Technology and IZA

Tiit Tammaru
University of Tartu

ABSTRACT

Socio-Economic Segregation in European Capital Cities: Increasing Separation between Poor and Rich[*]

Socio-economic inequality is on the rise in major European cities as are the worries about that, since this development is seen as threatening social cohesion and stability. Surprisingly, relatively little is known about the spatial dimensions of rising socioeconomic inequality. This paper builds on a study of socio-economic segregation in twelve European cities: Amsterdam, Athens, Budapest, London, Madrid, Oslo, Prague, Riga, Stockholm, Tallinn, Vienna, and Vilnius. Data are used from national censuses and registers for the years 2001 and 2011. The main conclusion is that socio-economic segregation in Europe has grown. This paper develops a rigorous multi-factor approach to understand segregation and links it to four underlying universal, partially overlapping, structural factors: social inequalities, globalization and economic restructuring, welfare regimes, and housing systems. The paper provides an in-depth discussion of these factors to come to a better understanding of the differences between the hypothesized and actual segregation levels measured. It is suggested that introducing time-lags between structural factors and segregation outcomes improve the theoretical model.

Corresponding author:

Sako Musterd
Centre for Urban Studies
University of Amsterdam
PO Box 15629
1001 NC Amsterdam
The Netherlands
E-mail: s.musterd@uva.nl

Introduction

There is increasing attention for inequality on the global, European, and national levels. This is evidenced by the huge attention for the recent book *Capital in the Twenty-First Century* by Piketty (2013), who argues that wealth inequality is on the rise in many countries. There is a lot of debate on how to measure inequality, and whether to focus on income inequality or wealth inequality, or both, and recent research shows different results based on the country studied, and the period studied (Nolan *et al.* 2014; Salverda *et al.* 2014). Despite the debates, there seems consensus that social inequalities have increased significantly in many European countries since the mid-1970s. Even in periods of sustained economic growth in the last two decades, socio-economic inequalities increased in several parts of Europe. In other words, the rich became richer and existing policies and institutions were not successful in tackling poverty (Atkinson 2015). The economic downturn and financial crisis since 2008 has intensified this process. The interest in inequality is partly driven by a fear that (rising) inequality can lead to social unrest, an increase in crime, and a decrease in trust between groups in society (Malmberg *et al.* 2013), and as a result, inequality is high on the national and European policy agenda's (EC 2010).

Social inequality likely is one of the most important factors causing socio-economic segregation. Within cities, poverty often concentrates in particular parts of cities and in disadvantaged neighborhoods. These 'internal urban peripheries' might be located in poor city regions, but also in otherwise thriving city regions. Similar processes of spatial separation characterize higher social strata that voluntarily split themselves from the rest of society, and concentrate in (upper) middle class enclaves (Atkinson and Blandy 2006). Although it is often claimed that socio-economic segregation is increasing in European cities, there is no rigorous comparative and systematic research into changing levels of this form of segregation (Tammaru *et al.* 2016a), and we understand relatively little about what explains the changes in socio-economic segregation over time and between cities. The segregation literature suggests that there are four key structural factors which shape socio-economic segregation: social inequalities, as already mentioned, welfare regimes and housing systems, changing economic structures, and the level of global connectedness (Hamnett 1994; Kemeny 1995; Marcińczak *et al.* 2015a; Musterd & Ostendorf 1998; Sassen 1991). These factors overlap and interact over time, and these interactions play out differently in different national and local contexts.

Other structural factors such as the level of *global connectedness* and *changing economic structures* should not pass unnoticed either. The best connected cities tend to attract high-salaried and low salaried people, while the less connected places do not (see for example Sassen 1991). Local economies, in which the service sector really gained a strong position has given new impulses to cities as well and imply major transformations of their professional structures. These changes too tend to lead to more inequality, also in the most egalitarian countries (Sachs 2012; European Commission 2010). They can have consequences for the spatial patterns in cities as well, because the new occupational compositions will create new spatial divisions, as is known from earlier segregation studies (Duncan and Duncan 1955, Ladányi 1989, Morgan 1975, 1980). Economic restructuring processes will therefore work out differently in different cities.

The role of *welfare regimes* in understanding socio-economic segregation has received ample attention in the literature. One of the first publications to stress the importance of welfare regimes for the understanding of urban inequality was the volume 'Urban Segregation and the Welfare State' (Musterd and Ostendorf 1998). In a more recent contribution, Maloutas and Fujita (2012) applied a wide segregation concept in a comparison of cases in their book

'Residential Segregation in Comparative Perspective'. Changing welfare regimes may be related to major political transformations, such as the dramatic ones experienced in Eastern Europe around 1990 (the Fall of the Wall, 1989; the demise of Soviet Union, 1991); but may also be related to ongoing liberalization of cities and states in Northern, Southern and Western Europe.

Housing systems often run parallel with certain welfare regime types, but may also have an independent effect on social urban configurations, as can easily be seen when we compare the rather similar welfare regimes of The Netherlands and Belgium, which appear to have very different housing systems; the Dutch being more de-commodified and the Belgian system highly commodified (Schwartz and Seabrooke 2008). Such processes have had strong impacts on social spatial distributions as well.

This paper will address two questions. The first is an empirical one: how has the level of socio-economic segregation changed in the last decade in a selection of European capital cities? The paper will address changes in Amsterdam, Athens, Budapest, London, Madrid, Oslo, Prague, Riga, Stockholm, Tallinn, Vienna, and Vilnius. The empirical results presented originate from a recent book edited by the authors of this paper: *Socio-Economic Segregation in European Capital Cities: East Meets West* (Tammaru *et al.* 2016a). The analytical part of the paper will give important insight in recent changes in socio-economic segregation. This paper will continue where the book stopped and will discuss in detail the differences between cities while trying to understand the changes in segregation in Europe. The second question is therefore: what are the main factors explaining (changing) socio-economic segregation and how can differences between cities be understood? To answer this question we will more closely examine three pairs of cities that are somewhat similar in terms of the welfare regime but exhibit different levels and trends of socio-economic segregation: Amsterdam and Vienna, Oslo and Stockholm, and Riga and Tallinn. By socio-economic segregation we mean residential segregation of population groups based on occupation, income, or education.

In the remainder of this paper we will further develop the multi-factor approach aimed at understanding segregation, based on the four factors identified above. Existing knowledge regarding each of these factors will briefly be discussed and we will present a theoretical ranking of the case study cities with regard to their expected level of socio-economic segregation based on the four factors. Next we will discuss data, methods and some methodological issues related to measuring socio-economic segregation, and especially related to an international comparison of segregation. Definitions of cities and urban areas, the spatial scale of administrative neighborhood data available, and measures of socio-economic status differ between countries and cities. The case studies presented in this paper will mainly use data from the census and register data (see also Tammaru *et al.* 2016a). In the next section we present the levels and patterns of socio-economic segregation in the 12 case study cities, and how they changed in the first decade of the 21st century. We will propose their theoretical ranking and we compare it with the actually measured levels of segregation. Finally, we aim to come to a better understanding of these differences by an in-depth discussion of additional *context specific* factors, development paths and contextual legacies, in the three pairs of seemingly similar cities. This will lead to conclusions and new perspectives and insights on socio-economic segregation in Europe.

Conceptualizing socio-economic segregation

Research on socio-economic segregation has been influenced by various academic approaches. Here we adopt a multifactor theoretical framework (Marcińczak *et al*. 2015, Tammaru *et al*. 2016a) that uses insights from behavioral, institutional, structural and contextual approaches. Below we will present these factors and their potential effects. These factors will feed the model of theoretically expected levels of segregation for the cities we studied by adding values that were attached to the theoretical positions of the cities on each of these factors.

Income inequality
At the heart of socio-economic segregation research we find the strong assumption that spatial distance follows social distance (Park 1924, Duncan and Duncan 1955). In the modern metropolis, this relationship is modified by several factors such as the location of work places (Scott 1988), and the involvement of the state in housing provision and the redistribution of income (Musterd and Ostendorf 1998). Nonetheless, it is usually taken for granted that high income (socio-economic) inequality goes hand-in-hand with a high degree of socio-economic segregation (Kempen 2007). This obvious relation between inequality and segregation has been confirmed in several empirical studies (Watson 2009, Reardon and Bischoff 2011). Yet, it is important to emphasize that even if income inequality is *sine qua non* a condition for the development of spatial divisions, there are strong reasons to assume that the link between the two depends on the institutional and spatial contexts of the city/region.

We adopt the Gini index to illustrate the scale of income inequalities in Europe (from the year 2010, Eurostat 2015). We attach the value 3 to cities where the Gini index is one standard deviation above the average of the 12 cities we researched; we attached the value 1 to those cities where the value is one standard deviation below the average. All other cities get the value 2. Classified this way, London, Riga, Madrid and Athens are seen as the most unequal cities, and Stockholm and Prague as the most equal cities (Table 1).

Globalization and economic restructuring
Economic restructuring has had a significant impact on social inequalities and spatial segregation. The restructuring did not only imply a transformation from Fordist to post-Fordist modes of production, and a larger weight of international connectedness, but the higher level of skills required in advanced economies also created a completely different professional structure and put a higher weight on creativity and knowledge. Scholars like Sassen (1991) have argued that the restructuring would result in more social polarization in cities, especially in so-called 'global' cities. Several others have criticized that thesis and argued that professionalization rather than polarization takes place in global cities (Hamnett 1994, Préteceille 2000). Burgers and Musterd (2002) stated that strong welfare states may assist the development of professionalization processes, but strong international connectivity combined with a continuously expanding service sector and a highly competitive environment might also produce more social polarization, even within strong welfare states. They also point at examples of cities that have had to cope with their historical legacy of being developed as a strong and relatively one-sided manufacturing industry center. They show that in comparison with cities with a diverse economic profile, such cities might become less polarized on the one hand. On the other hand, they are likely to suffer more from a mismatch between their inherited professional composition and the one that is required for the new service related urban economy of today and tomorrow.

For the level of embeddedness in global networks we use the distinction between Alfa, Beta and Gamma cities, as developed by the Globalization and World Cities (GaWC) Research Network (Beaverstock *et al*. 2015). Alfa cities are the most important global control-and-command centers and, therefore, we attach a value of 3 to them; i.e. we expect more polarization and more segregation in such globally very important cities. Gamma cities are least global and receive value 1; for these cities we expect lower levels of segregation. The value 2 remains for Beta cities.

Welfare regime
Welfare regimes may stimulate or mitigate inequalities, and the form and character of the welfare-state are said to have a strong impact on levels of segregation (Musterd and Ostendorf 1998). Welfare regimes can take various forms (see Esping Andersen 1990 for a classic yet still functional typology). For the issues of segregation it is important to know whether and how the state intervenes in a range of domains, such as the income distribution (taxes), health care, social security, education and housing. Levels of redistribution of wealth and differences in terms of access to certain services, social benefits, and housing may strongly influence the social inequality and subsequent spatial expression of it, or may influence spatial inequalities directly. In general, more intervention, more redistribution, more social housing, more care for the relatively poor, and more equal access to services will reduce social and spatial inequalities (Musterd and Ostendorf 2012).

Compared to the U.S. and most other parts of the world, Europe is still characterized by relatively strong although declining, state intervention and redistributive practices (Musterd and Ostendorf 1998) but they do vary in the different regions and countries. There are still several social democratic, corporatist and liberal states in Western Europe, while in Eastern Europe we can distinguish between Visegrad countries such as the Czech Republic and Hungary with post-socialist corporatist regimes, and Baltic states as Estonia, Latvia and Lithuania, known as post-socialist liberal welfare regimes (Esping-Andersen 1990, Fenger 2007).

We use the three main types of welfare regimes of Esping-Andersen (1990), and we position the South European or Mediterranean regime within the corporatist type. Van der Wusten and Musterd (1998) and Arbaci (2007) have shown that liberal welfare regimes tend to correlate with higher levels of residential segregation, whereas corporatist and social-democratic welfare regimes tend to relate to lower levels of segregation. Arbaci (*ibid.*) also argues that the lowest levels of segregation evolve under corporatist welfare regimes. These regimes, which include Mediterranean states, are characterized by a large diversity of urban developers, which would create a more mosaic like outcome. On this basis, higher levels of segregation were expected in London, Riga, Tallinn and Vilnius (3 points were allocated to these cities), and lower levels in Amsterdam, Athens, Budapest, Madrid, Prague and Vienna (who received 1 point).

Housing regime
Welfare state arrangements and housing regimes are strongly related. With retrenching welfare states, market thinking has been introduced in the housing domain, with, among other things, effects on access to affordable housing (Kadi and Ronald 2014). The best example is the UK where in the 1980s they introduced the right-to-buy, which had important implications for segregation processes. Social housing was privatized and home-ownership promoted as the tenure of preference (Forrest and Murie 1988, Arbaci 2007, Kleinhans and Van Ham 2013). In UK cities social housing is often concentrated in certain neighborhoods and as social housing became increasingly residualized, the developments were also feeding increasing social spatial segregation (Murie 1998; van Ham and Manley 2010; Manley *et al*. 2013; Musterd 2014). Even

though the housing regime is a strong pillar of the welfare-state, welfare regimes and housing regimes are not necessarily corresponding with each other.

Assuming that more market involvement in housing contributes to a firmer relation between income disparities and segregation (Brown and Chung 2007), we hypothesize that higher levels of commodification of housing produces higher levels of segregation (Marcińczak *et al.* 2015a). Kemeny (1995) has shown that the most important division is that between dual and unitary housing systems. Market-based dual housing systems are expected to lead to stronger social spatial segregation in cities such as Budapest, London, Oslo, Riga, Tallinn and Vilnius, which received 3 points (Table 1). Lower levels of marketization and tenure-neutral housing policy in a unitary housing system are expected to result in lower levels of segregation. This would concern Amsterdam, Prague, Stockholm and Vienna (all received 1 point. As with the welfare regimes, we distinguish a South European housing regime in-between the two main types, with cities as Athens and Madrid as representatives.

Table 1. Key structural indicators that shape socio-economic segregation, and their corresponding values.

	Global connectedness		Gini index		Welfare Regime		Housing regime		Total
London	Alpha++	3	38	3	Liberal	3	Dual	3	12
Riga	Beta-	2	35	3	Liberal-PS*	3	Dual-PS	3	11
Madrid	Alpha	3	36	3	Mediterranean	2	Mediterranean	2	10
Vilnius	Gamma	1	34	2	Liberal-PS	3	Dual-PS	3	9
Tallinn	Gamma	1	32	2	Liberal-PS	3	Dual-PS	3	9
Athens	Beta+	2	35	3	Mediterranean	1	Mediterranean	2	8
Budapest	Beta+	2	29	2	Corporatist-PS	1	Dual-PS	3	8
Oslo	Beta	2	27	1	Social Democr.	2	Dual	3	8
Amsterdam	Alpha	3	30	2	Corporatist	1	Unitary	1	7
Vienna	Alpha-	3	28	2	Corporatist	1	Unitary	1	7
Stockholm	Alpha-	3	24	1	Social Democr.	2	Unitary	1	7
Prague	Alpha-	3	27	1	Corporatist-PS	1	Unitary-PS	1	6

* PS Post Socialist

History, local institutions and space
Structural economic factors, as the four we just discussed, do not solely determine the levels of segregation. Historically developed specific institutional and local spatial contexts play an important role as well. We already referred to the impact of the welfare regime and housing systems, which provide the most important institutional contexts, but we should take into account that the historically grown cities under investigation provide unique multi-layered contextual profiles as well (Kazepov 2005, Häussermann and Haila 2005, Maloutas 2012, Musterd and Kovács 2013). They comprise state-layers, economic layers, social layers, and physical or morphological layers. Together they form, as Bontje and Musterd (2008) call it: 'the multi-layered city'. In Europe, these layers are further refined by cultural differences. In Southern European cities, for example, family relations are much more important than in Northern European cities. This is also reflected in the housing arena, where housing has a different position in the two contexts (Arbaci 2007). As the historically developed institutional and spatial contexts may produce very different effects on the scale and form of socio-spatial divisions, we do not include them in the analytical framework designed to predict the level of

6

socio-economic segregation in Europe in the beginning of the 21st century (Table 1). However, we argue that these contexts should be included in the full analysis to reach a more complete understanding of the nature of socio-economic segregation in metropolitan Europe. We will illustrate its value in the second part of the empirical analysis presented in this paper, where we compare three 'couples' of cities.

Analytical model of segregation
To operationalize the multifactor analytical framework and then confront the theoretical model with the empirical findings, we quantified the hypothetical level of segregation by aggregating the points allocated to the cities on each of the factors described above which are expected to contribute to segregation (social inequality, global connectedness and economy, welfare regime, and housing regime). We calculated the sum of the four scores to obtain a general ranking of the cities. We expect the cities with higher scores to show higher levels of social spatial segregation. The result of this exercise allows us to introduce a theoretical ranking of cities. From high to low, as the model suggests, the levels would be: London (sum is 12 out of 12); Riga (11); Madrid (10), Vilnius and Tallinn (9); Athens, Budapest and Oslo (8); Amsterdam; Vienna and Stockholm (7); Prague (6). The scores are not weighted because the literature does not give us clear guidance on weights. So we have four theoretical components and a comprehensive model which we can confront with the empirically found levels of segregation. This exercise might seem overly simplistic, but it operationalizes the analytical framework underlying this study and, when viewed in a less deterministic way, allows us to bring forward the debate on how the various structural factors could be related to levels of socio-economic segregation, which then paves the way to additional analysis with more specific contextual information.

Data and methods

The 12 European capital cities included in this study have some important dimensions in common, i.e. they all have a lot of governmental services (except Amsterdam), are important centers of education, are important economic centers that provide much employment and international investments, and therefore often are important cultural centers and places of consumption as well. However, they do vary along the four structural factors generating segregation. The main spatial unit of analysis is a city and city region that is defined as the common housing and labor market. We divide cities into neighborhoods. This introduces the problems of how the neighborhoods have been precisely defined and what would have been outcomes when other neighborhood delineations would have been chosen (the modifiable area unit problem), as well as raises questions about how that impacts on measuring segregation (Fotheringham and Wong 1991, Manley 2015). The most common strategy to avoid such problems is to use small and homogeneous neighborhoods. We take this approach as well and we define the neighborhood (tract) as a homogenous area with around 1000 inhabitants.

Comparing socio-economic segregation in practice is not easy because different countries use different indicators for socio-economic status. We use occupational data based on the International Standard Classification of Occupations (ISCO; ILO 2015) for Athens, Budapest, Madrid, London, Prague, Riga, Tallinn and Vilnius; eight major categories are distinguished from each other: managers, senior officials and legislators; professionals; technicians and associate professionals; clerks; service and sales workers; craft and related trades workers; plant and machine operators, and assemblers; and elementary occupations. Income data (quintiles) are used for Amsterdam, Oslo and Stockholm; and education for Vienna. Detailed information

about the relationship between income, education and occupation can be found in Tammaru *et al.* (2016a) but the general message is that occupation and income are strongly correlated to each other. The empirical comparison is between the years 2001 and 2011[i], following the censuses.

We adopt a research strategy that includes two approaches: in the first approach we compare levels and changes of socio-economic segregation between the cities as strictly as possible by applying indices of dissimilarity (D) and segregation (IS). Even if these two indices might not be the best option to assess the level of income-based divisions (cf. Reardon and Bischoff 2011), for the sake of comparisons we apply these two traditional measures. Within the first approach we try to understand variations in socio-economic segregation by the level of inequality (using the Gini index); the type of welfare regime; the housing regime; and indicators expressing the global connectedness (also seen as representing the economic position). The second approach is to contrast similar cities with different segregation outcomes and also to try to explain the deviation between the theoretically expected and the actually measured outcome. We focus on the six paired case studies, 1) Oslo and Stockholm, 2) Amsterdam and Vienna and 3) Riga and Tallinn.

An empirical test of the theoretical multi-factor model of segregation

Previous studies on patterns of socio-economic segregation in North America reveal that higher social groups are commonly more segregated than lower ones (Duncan and Duncan 1955, Watson 2009, Bischoff and Reardon 2013). Such patterns have been found in Europe too (Morgan 1980, Ladanyi 1989). The results for the 12 capital cities in Europe support these findings to some extent; the better-off residents are more segregated from other social categories in many cities, but not in all (Figure 1). In Athens, Budapest, London and Prague lower social groups are actually more segregated from the remainder of the population. Also *changes* in the levels of segregation of the higher and lower social categories did not follow a uniform pattern. Irrespective of the growing income inequalities in much of Europe in the first decade of the 21st century, segregation of the extreme ends relative to the rest of the social spectrum did not result in higher levels everywhere. Segregation increased in Stockholm, Oslo, Madrid, Athens, Tallinn, Vilnius and Riga, but decreased in Amsterdam. In Vienna and Prague the segregation of the top socio-economic categories decreased a bit, but segregation of the lower social groups increased; in Budapest and London desegregation was limited to the lower social groups only. In other words, growing income inequality did not cause ubiquitous increase of residential segregation of each of the two ends of the socio-economic hierarchy. The findings also reveal that the segregation levels of the better-off and the worst-off are still lower in metropolitan Europe than in the largest metropolitan areas (MAs) in the USA[ii]. It is important to mention that even the ten least segregated MAs are more divided by socio-economic status than any European city in our study.

The index of dissimilarity illustrates the degree of segregation between the opposite ends of the social hierarchy (Figure 2). While in some European capitals there are signs of desegregation of either the higher or the lower social group, the spatial division *between* these two groups grew consistently across Europe. Only in Amsterdam the spatial gap between the two extreme categories somewhat decreased in the last decade; but, when adopting an extended time-frame, socio-economic segregation in the major Dutch metropolis can be regarded on the rise too (Musterd and van Gent 2016). Then, it is hard to escape the obvious conclusion that

metropolitan Europe is becoming more divided, with increasing income disparities accompanying growing spatial separation of the better-off from the poor.

Figure 1 IS of top (T) and bottom (B) social groups in European capitals, 2001 and 2011
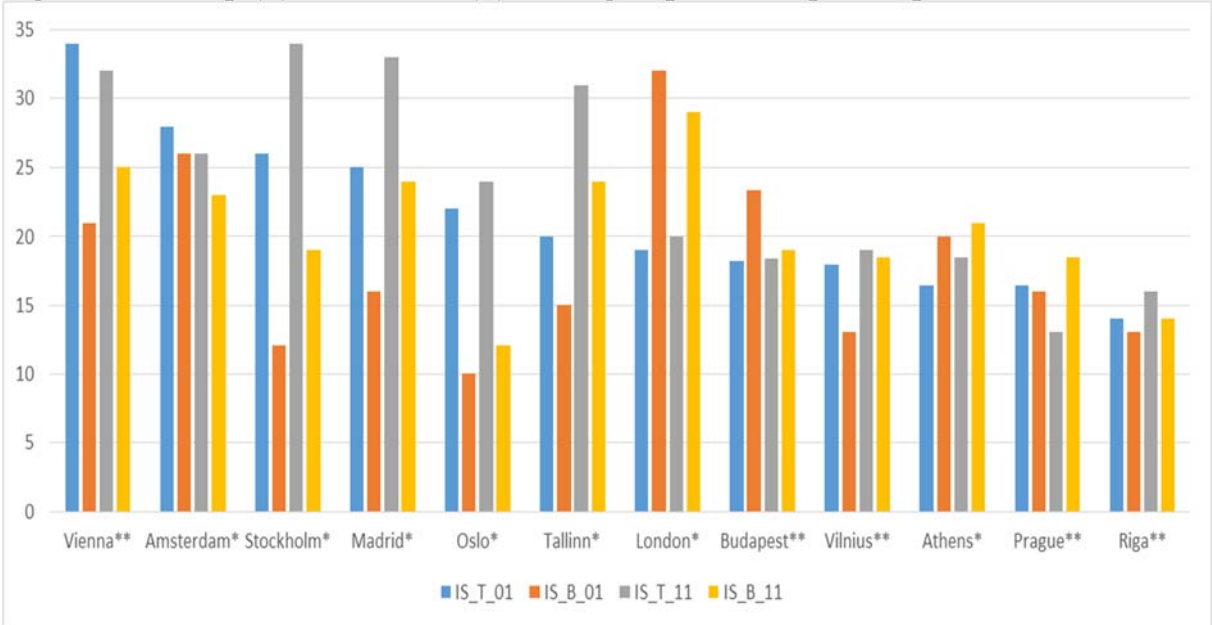
Source: Szymon Marcińczak, Sako Musterd, Maarten van Ham and Tiit Tammaru
Madrid, Tallinn, London, Budapest, Vilnius, Athens, Prague, Riga – managers and elementary occupations
Amsterdam, Oslo, Stockholm – highest and lowest income quintile
Vienna – university degree and compulsory education
* metropolitan region, **city

Figure 2 D top and bottom social groups, 2001 and 2011
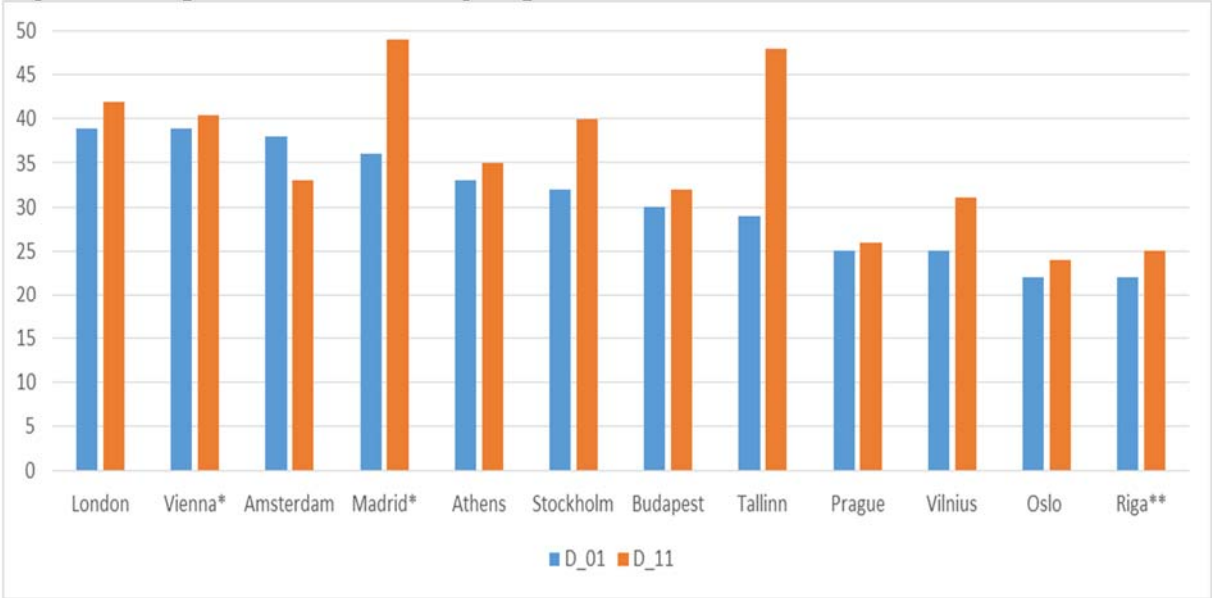
Source: Szymon Marcińczak, Sako Musterd, Maarten van Ham and Tiit Tammaru
Madrid, Tallinn, London, Budapest, Vilnius, Athens, Prague, Riga – managers and elementary occupations
Amsterdam, Oslo, Stockholm – highest and lowest income quintile
Vienna – university degree and compulsory education

How does the empirical reality match the theoretical multi-factor model? In Figure 3 we present the four theoretical models (one for each factor) and the combined model and relate these to the

actual level of segregation, as measured by the dissimilarity between the highest and lowest socio-economic groups. The associations are not straightforward. The theoretical model based on the total score seems to relate weakly positive to the D values for 2011 and weakly negative to the D values for 2001. This seems to be due to the negative relation between the model based on the housing regime and the D values for 2001. All other associations tend to be positive, but not very strong. Perhaps the model based on the position of the capital city in global networks is the best fitting model. Tallinn seems to be the clearest outlier, for which we have to find additional explanations (see next section). For most models mainly the Baltic capitals and sometimes also a Scandinavian city do not fit the theoretical prediction very well. Stockholm has a much higher D-value than expected on the basis of the Gini index; Riga and Vilnius have the opposite: lower D-values while the Gini index is rather high. Oslo and Riga appear to have relatively low D values, compared to what was expected on the basis of their welfare regime. Finally Oslo, Riga, Vilnius and Tallinn (the latter only in 2001) show much lower D values than expected on the basis of the rather market driven housing regimes. In 2011 Tallinn had a high D value, which is more conform expectations.

Figure 3 Relation between segregation D top-bottom, 2001, 2011 (vertical axis) and theoretical level (horizontal axis), sorted on:

a. Total (ranked from low to high, 6 till 12)
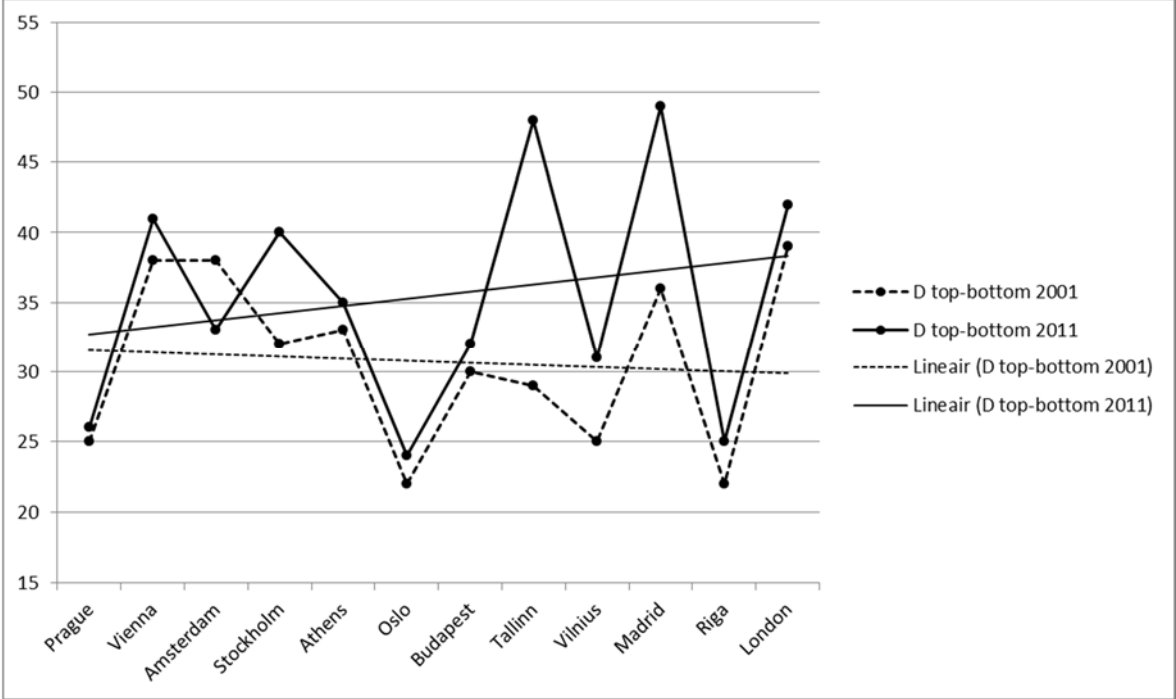
b. Inequality; Gini index (from 24 till 38)
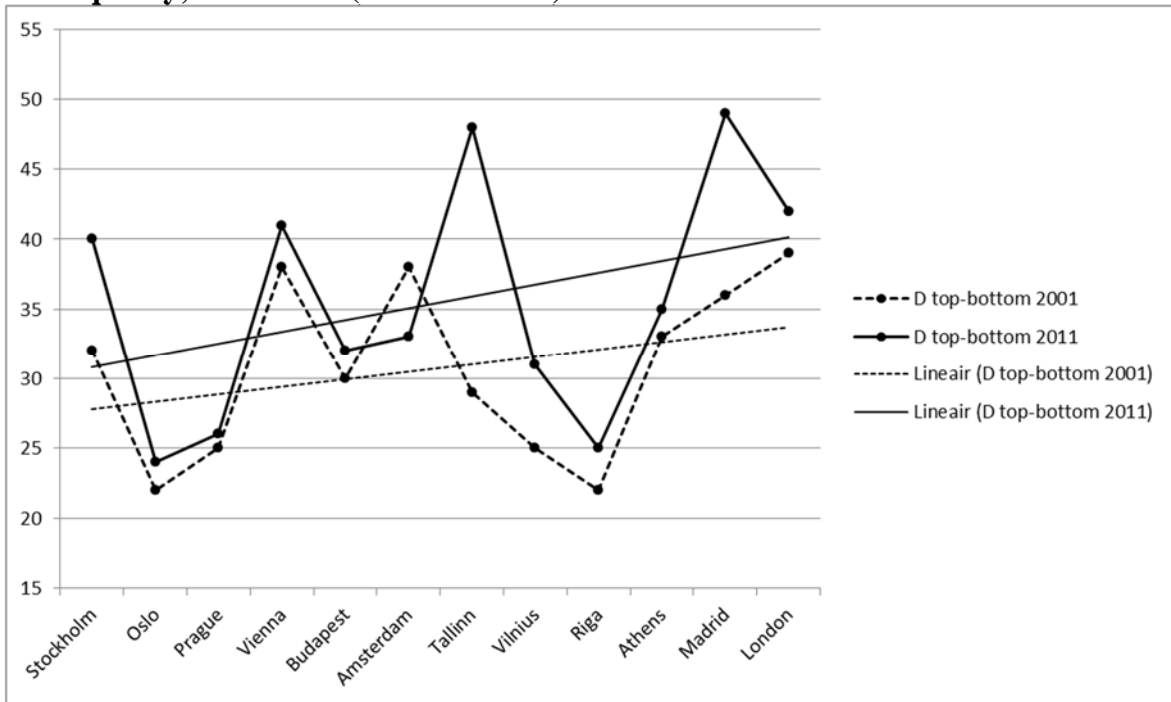
c. Global Connectedness (ranked from low to high, seven values)
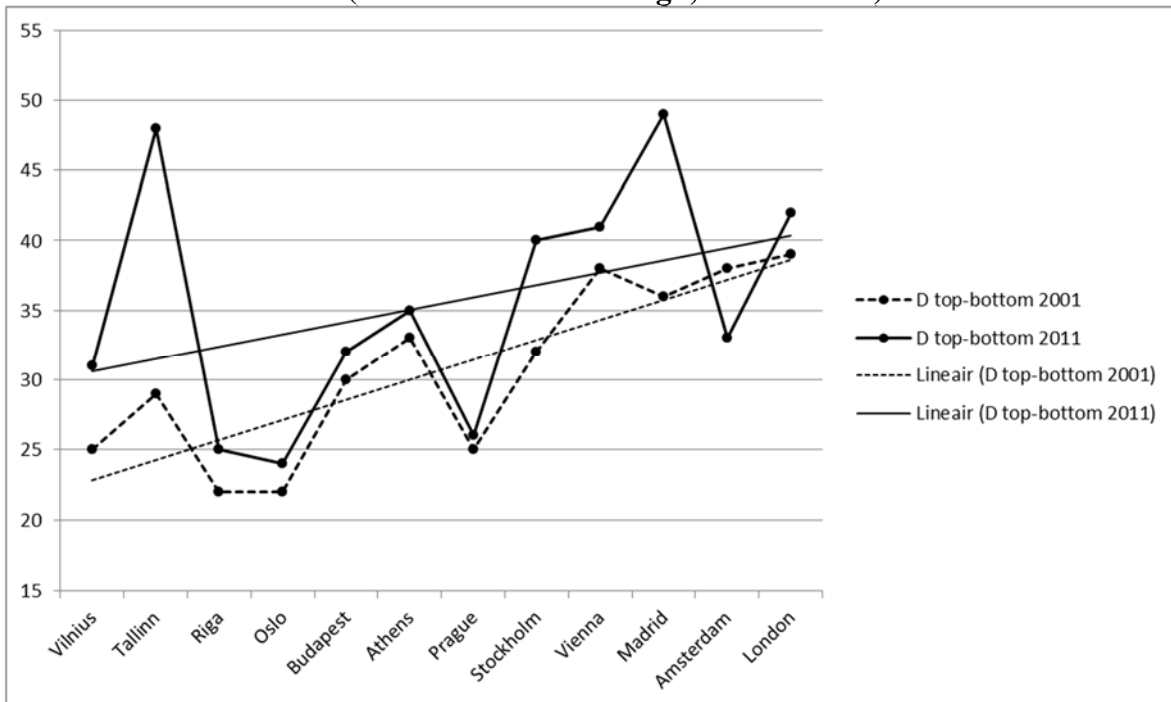
d. Welfare regime (ranked from 1 till 3)
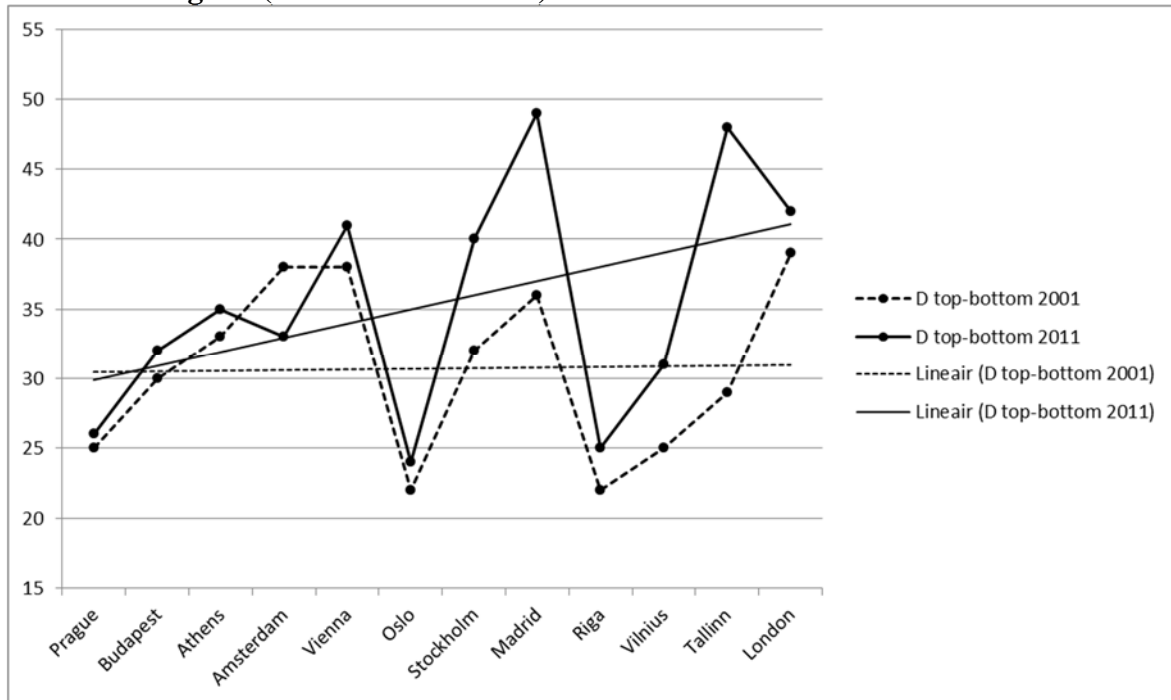
e. Housing regime (ranked from 1 till 3)
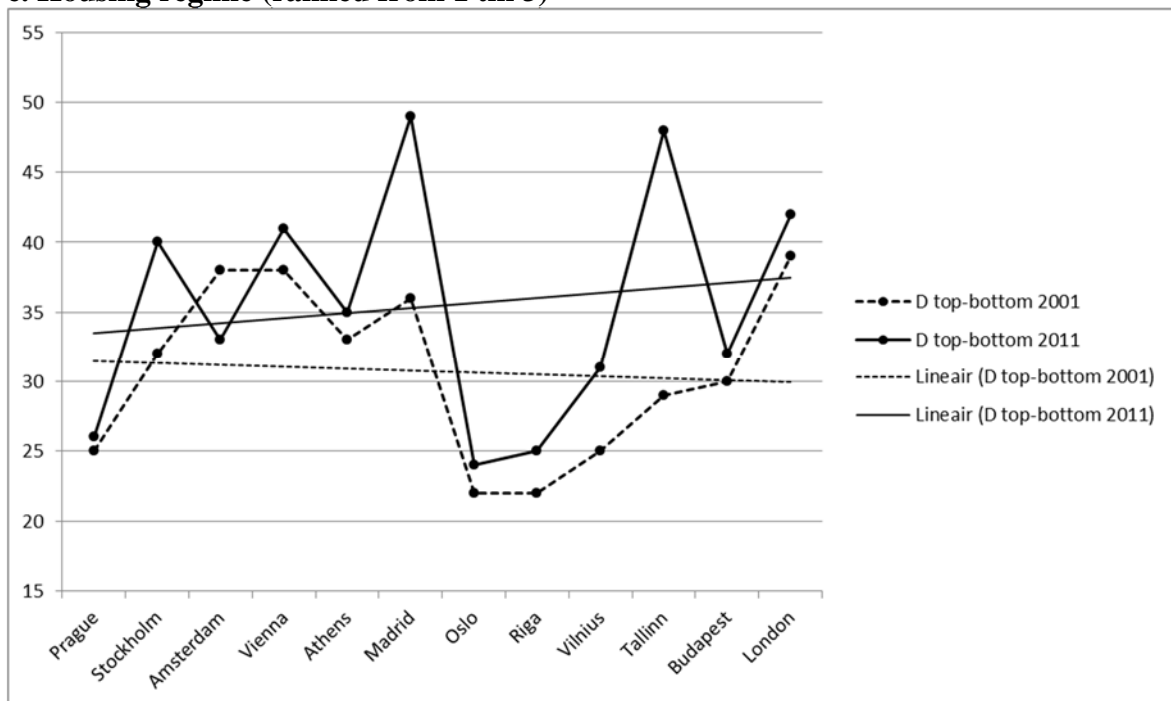
It is evident that the theoretical models, based on structural conditions, do not fully explain the levels of segregation, as measured through the D-values. This may be due to the other dimension we referred to in the theoretical section: the historically grown contextual conditions. But the incomplete match between the theory and empirical reality may also have its roots in the 'time' factor that may play an important role. Physical change of cities and residential mobility processes require some time before they are sufficiently voluminous to have social and socio-spatial impacts in cities and city regions. With knowledge about these two factors,

we will – in the next section – try to explain some of the residuals from the analysis as shown in Figure 3.

Similar but different: explaining residuals with context and time

To further illuminate the differences between the predictions of the theoretical multi-factor model, and the empirical outcomes, we will now discuss three pairs of seemingly similar cities and analyze why these have different segregation outcomes: 1) Oslo and Stockholm, 2); Amsterdam and Vienna; and 3) Riga and Tallinn. The dyads have the same or very similar macro-structural milieus, but substantially different segregation levels. The six selected cases are also the ones with the 'highest' residuals; these urban areas significantly deviate from the theoretical model.

Stockholm and Oslo
Stockholm and Oslo are good examples of cities developing within a strong welfare-state. The income disparities in both Scandinavian countries are among the lowest in the world. The two cities house a significant number of immigrants. The housing systems vary a lot though. After rapid liberalization in the 1980s, private ownership dominates Oslo; however, there are extensive safety-nets and housing benefits available for those with lower income (Wessel 2016). Despite gradual liberalization of the housing systems that has started already in the 1990s, the share of public housing in Stockholm is still among the highest in Europe (Andersson and Kährik 2016).

Our analytical framework predicts modest levels of socio-economic segregation in Oslo, and an even lower scale of socio-spatial divisions in Stockholm. The empirical findings do not corroborate with this expectation. Not only is Stockholm more segregated than Oslo, the city currently is among the most segregated capital cities in Europe. The relatively deep spatial divisions in Stockholm are surprising. Andersson and Kährik (2016) assure us that steadily increasing socio-economic segregation in the capital of Sweden is the effect of the withdrawal of the public sector from neighborhood social mix policies, and the reduction of housing subsidies in the 1990s. Wessel (2015) argues that the evolving patterns of socio-economic segregation in Oslo should be read as a 'contingent outcome' of many structural factors rather than as an effect of a single process, let it be globalization, employment change, or growing income inequality. It also seems that the potentially segregation-generating effect of the commodified housing system is compensated by the strong welfare system that rests on the Norwegian revenues from natural resources.

The results from the two Scandinavian cities also point to the importance of planning policies. While Oslo generally avoided concentrations of multifamily public housing into certain areas of the city (Wessel 2016), large scale public housing estates are much more common in Stockholm where, since the Million Housing Programme, they cover many suburban areas. Bearing in mind the residualization of public housing and increasing real-estate prices in Sweden during the last two decades, blocks of flats from the 1960s and the 1970s, areas that are the least desirable on the local housing market, accumulated lower income social categories and non-Western immigrants (Andersson and Kährik 2016). It thus seems that even if some of the structural factors are still in place, effects of local housing and planning regime changes may have a decisive impact on levels of segregation. In other words, in specific contexts, such as Oslo, high levels of housing commodification may actually go side by side with low levels of segregation if coupled with specific urban planning and a strong welfare regime in other

domains. In contrast, in other contexts, with higher levels of housing de-commodification, such as Stockholm, housing and planning regime changes may bring about higher levels of segregation. Finally, the case of Oslo shows that the rise of income inequality does not always involve an immediate increase of segregation. However, that may still occur, with a time-lag. As Wessel (2016) rightly argues, symbolic values and housing prices do not change overnight.

Amsterdam and Vienna
Segregation levels are slightly higher in Vienna than in Amsterdam. This may be attributed to the time Vienna was the center of the Austrian Hungarian Empire. It established major economic, political and cultural functions in the inner city and created a more evident social and cultural divide between that part and the rest of the city. In Amsterdam urban restructuring expressing the city's 'grandeur', like what happened in Vienna (and Paris, Rome and Budapest), was never realized and the Amsterdam inner city as we know it today still has the same structure as eight centuries ago and a substantial volume of social housing. Yet, the more recent development of both cities appear to be more similar. This suggests that segregation *processes* could be more similar. Nevertheless we see more contrast. How can this be understood?

We argue that this finding could be merely a temporary anomaly. In Amsterdam the decreasing segregation between the lowest and highest income deciles seems to be caused by two temporary and coincidental processes. The post-2008 crisis hit Amsterdam hard because of its relatively large financial sector, and had a big impact on the housing market of the Amsterdam Metropolitan Area as well. In fact, housing demand in that market collapsed and only recovered from 2013/14 onwards. This implied that few new housing has been developed and residential mobility almost came to a standstill. Those who had planned to move because their income development gave rise to that stayed put and this contributed to a temporary reduction of the level of segregation. In other words, social mobility has not translated into spatial mobility (yet). This crisis was more moderate in Vienna.

A second process that might have had some different effects in both cities is the process of gentrification. New gentrification initially causes more social mix. As higher income groups move into low income neighborhoods, or as in situ low-income gentrifying households raise their incomes the level of segregation may initially decrease, but with a time-lag, or when gentrification has become more mature, segregation will start to increase again, especially when a development towards a higher share of high-income households continues (Hochstenbach *et al.* 2014). Structural – mainly neo-liberal – transformations facilitate such a process (for more details, see Musterd and Van Gent 2016). The stage in which a gentrification process finds itself, is important to the understanding of the development of socio-spatial inequality.

As said, soon we assume a more similar trajectory of both cities because of current conditions. Both cities' are characterized by a strong and large de-commodified housing market and a still relatively generous welfare regime. Yet both also show signs of re-commodification due to more market promoting policies. Starters in both cities experience difficult access to housing association housing. We also see residualization of the social housing sector as a whole. While Austrian housing policy showed greater stability over a long period of time, and while social housing was among the most elaborate in Europe (Hatz *et al.* 2016), the city is undergoing changes. For example, the construction of new social housing was terminated in 2004, and the private rental sector has recently been de-regulated as well (Kadi 2014). In Amsterdam we see a reduction of social housing and further re-commodification as well. Both cities experience ongoing influx of new immigrants, but the volume is bigger in Vienna, which by Hatz *et al.* (2016) is seen as another cause for higher levels of segregation.

Tallinn and Riga

These two post-socialist cities used to be part of the Soviet Union but exemplify the 'fast-track' transition from state socialism to neo-liberal capitalism. Unlike most East European capitals, both Tallinn and Riga house a large share of mainly Russian-speaking minority population inherited from the Soviet period. Whereas in the other post-socialist European countries the systemic transition was usually more gradual, in the Baltic states the pace of change was much more dramatic than in Central Eastern Europe, and so was the rise in income inequalities and the retrenchment of the welfare-state (Marcińczak *et al.* 2015). After the first decade of systemic social and economic change and a massive increase in income inequality, the two cities were characterized by low levels of socio-economic segregation but high levels of ethnic segregation in the end of the 1990s. By the end of the 2000s, however, and irrespective of the very similar levels of income inequality, a comparable share of Russian-speaking minority, as well as the other structural factors, Tallinn became one of the most segregated cities in Europe, while Riga is the most equal.

The mismatch between growing inequalities and decreasing segregation in the 1990s calls for an explanation that emphasizes the factor 'time'. Essentially, in the first decade of transition the rapid increase of income inequality had difficulties to manifest in space, as was also the case in the other post-socialist countries (Marcińczak *et al.* 2015). The supply side of housing was underdeveloped, and a massive privatization of the housing stock to sitting tenants ossified inherited socio-spatial structures. In the second decade of systemic changes the supply side (housing for the better off) caught up with the demand – rapid suburbanization and gentrification in Tallinn being the most important cases in point (Tammaru *et al.* 2013; Tammaru *et al.* 2016b). Similar changes in social and spatial mobility took place in Riga (Bērziņš *et al.* 2016). In other words, the post-socialist dyad further confirms that the relationship between inequality and segregation may involve short time paradoxes and time-lags.

The local context and historical and economic legacies are equally important in explaining differences between seemingly similar cases. In Estonia, socio-economic division lines parallel ethnic divisions. Estonians are much more segregated from the Russian-speaking minority than the Latvians are. As Estonians are overrepresented on the top of the social hierarchy and the minorities concentrate in lower echelons, it is clear that ethnic divisions significantly amplify socio-economic segregation in Tallinn. In other words, patterns of ethnic and socio-economic segregation increasingly overlap with each other. Bearing in mind the shared socialist past and immigration history, we can only suggest that the socio-cultural distance between Estonians and Russians is much bigger than between Latvians and immigrants from the former Soviet republics. Other legacies also play an important role in shaping socio-spatial divisions. In Tallinn, much more than in Riga, the Russian-speaking minority and lower social strata tend to cluster in large housing estates from the socialist period, places that the better-off leave for suburban living (Tammaru *et al.* 2016b).

While West European countries experience immigration, emigration is the case in East Europe. The emigration is more intense in Latvia (Hazans 2013) compared to Estonia (Anniste and Tammaru 2015 and this might have some spatial implication as well. For example, a group of 'mortgage refugees' did emerge in Latvia during the 2008 economic crises, referring to wealthier people who bought a new apartment in the housing boom in the mid-2000s, but who were unable to continue to make their payments during the crises and moved abroad for a better job (Apsite *et al.* 2012). Finally, although both countries have a dual housing system, the hyper-

ownership oriented local level housing policy in Latvia (more than 95 per cent of housing is in private ownership) seems to contribute to the reduction of housing segregation. Relatively generous housing benefits for the less affluent residents and rent regulations contribute to higher levels of social mix and reduce the intensity of gentrification (Bērziņš et al. 2016). Hence, Tammaru et al. (2016b) argue for the extensive 'market experiment' unfolding in Tallinn as an important factor behind the most rapid growth in socio-economic segregation within the pool of our case study cities. Furthermore, both in Tallinn and Riga, social housing was built on large homogenous greenfield sites during the Soviet period like elsewhere in East Europe. That potentially paves a way to high levels of segregation also in the future, given what we learn from the Stockholm experience.

Conclusions

Socio-economic inequalities have been on the rise on both sides of the Atlantic for the last four decades. Whereas in North America the link between inequality and segregation has been studied recently (Fischer 2004, Watson 2009, Bischoff and Reardon 2013), the evolving patterns of socio-economic segregation in metropolitan Europe have received less scholarly attention. The aim of this paper was twofold: to assess the levels of socio-economic segregation in metropolitan Europe in the first decade of the 21st century, and to offer possible explanations for the evolving patterns of segregation. We collected the results of diligent studies on socio-economic spatial divisions in 12 European capital cities (Tammaru et al. 2016a), and presented a theoretical model that rests on four contributory (macro)structural factors (income inequalities, globalization and economic restructuring, welfare regimes, and housing systems).

Regarding the changing levels of socio-economic segregation, it is clear that metropolitan Europe became a more unequal place. Essentially, the increasing spatial divisions between the top and the bottom of the social hierarchy parallel growing income inequality and global connectedness, as well as the region-wide retrenchment of the welfare state and liberalization of housing systems. Interestingly, even though we find evidence for desegregation of either the higher or the lower social groups in some capital cities, the growing gap between the poor and the rich is consistent all over Europe. But, the same as two decades ago (Musterd 2005), Europe is still less divided by socio-economic status than North America. The levels of socio-economic segregation in large European cities vary a lot though; the most divided cities (Madrid and Tallinn) are roughly two times more segregated than the most equal ones (Oslo and Prague).

The other main conclusion of our study is that the actual levels of segregation do not perfectly match the theoretical ranking. It appears that the four structural factors are not enough to accurately predict the scale of socio-economic spatial divisions. However, we find a firm, albeit general, relationship between particular factors and socio-economic segregation. As expected, higher income disparities and more liberal forms of welfare regimes bring about stronger segregation. But the relationship is not simple and linear. The same applies to the link between globalization and socio-economic separation; even if this factor is a significant predictor of segregation. Indeed, in cities that link major economic regions and states to the world economy (*Alpha* cities), the rich and the poor are more divided than in cities less embedded in the global economy. The mismatch between the theory and empirical reality also emphasizes the salient role of two other, less unambiguous, factors: a local institutional and spatial context, and time (time-lags).

The lessons from the six case cities, three dyads, further illuminate the importance of the two contextual factors in explaining the patterns of socio-economic segregation. The chief role of local contexts, historically developed socio-economic profiles and spatial structures, in shaping the patterns of socio-economic segregation has been often accentuated (Burgers and Musterd 2002, Bontje and Musterd 2008, Maloutas 2012, Marcińczak *et al*. 2015). The results of our comparative study provide further evidence for the significant effect of 'space' and historically developed morphological, social and cultural structures. The legacies of the former local housing and planning regulations, as exemplified by the pairs Oslo-Stockholm and Amsterdam-Vienna, can override the effects of structural processes. But other local aspects may also come to the fore. Irrespective of similar institutional environments, modern history, and morphological structures, the cultural distance between the hosts and Russian-speaking minorities, as well as housing preferences of these two groups, seems to bring about much stronger socio-economic spatial divisions in Tallinn than in Riga.

The last conclusion of this study is that the time-dimension is crucial to understand patterns of socio-economic segregation development. The results of our work provide a few examples of how such temporal effects might work out. The first example continues with the paradox of post-socialist transition: increasing social inequality can lead to decreasing segregation. This paradox might, as suggested, be a temporary phenomenon. Some scholars predicted that the larger inequalities that are related to the transformation will translate in housing and space as well (Marcińczak *et al*. 2012, 2013, Sýkora and Bouzarovski 2012), which actually took place in many post-socialist cities in the second decade of the 21st century. The inner city gentrification processes, ignited by the new middle class, as well as suburbanization of the middle class show strong parallels with what has been experienced in Western Europe before. The initial reduction of segregation quickly turned into increasing segregation that we can observe in all our case study cities and most notably in Estonia where the role of the public sector in balancing market forces in shaping urban change is the weakest (Tammaru *et al*. 2016b).

Such processes, however, are not uniquely East European. In West European cities similar paradoxes may be found. Rapid changes in society and economy, as in Oslo after the fast housing privatization in the 1980s, need time to exert spatial effects. By the same token, in neighborhoods where gentrification is still in its initial phase, it is likely that levels of social spatial inequality are decreasing. Higher level socio-economic categories will move to relatively homogeneous lower income level inner city areas and thus reduce segregation. Empirical support is available for several European capital cities (Leal and Sorando 2016, Musterd and van Gent 2016). Not just migration will trigger such processes; also *in situ* social change can contribute to an initial reduction of segregation in a neighborhood (Hochstenbach *et al*. 2014). When people do not move, but gain position and reach higher socio-economic levels, or when they inherit housing from parents, they may increase the social mix in the area and reduce the level of segregation. This applies to cities all over Europe (also see Maloutas 2016, Petsimeris and Rimoldi 2016).

The results from Europe also reveal that, in contrast to the USA (Reardon and Bischoff 2011), spatial segregation processes may occur with a time lag after other developments have taken place, especially if different forms of crisis are involved. Some of the processes discussed may take a while before they can take off. Deviations of the general process of increasing socio-economic segregation may be partly due to insufficiently taking into account these time-related insights. In other words, social inequality and market-oriented housing system have to be in place for a while to facilitate a transformation of social disparities into spatial divisions. Some

processes of segregation decline may be sensitive to the fluctuations of the economy, and desegregation may only be a temporary irregularity, in an otherwise stable segregation trends. A reduction of residential mobility may produce (temporarily) less segregation. Will segregation increase again, when mobility catches up again? This seems to depend on the type of migration. An increase in residential mobility may also bring down socio-economic segregation when higher social strata move into lower social status neighborhoods as happens in gentrifying areas. But is there support for the argument that when the gentrification process enters mature stages, segregation will increase again? One needs an extended time-framework to answer these questions, a framework that should be more widely adopted in future comparative studies on socio-economic segregation.

Literature

Andersson, R. and Kährik, A., 2016, Widening gaps: segregation dynamics during two decades of economic and institutional change in Stockholm. In T. Tammaru, S. Marcińczak, M. van Ham and S. Musterd, editors, *Socio-Economic Segregation in European Capital Cities. East meets West*, London: Routledge, 110-131.

Anniste, K. and Tammaru, T., 2014, Ethnic differences in integration levels and return migration intentions: A study of Estonian migrants in Finland. *Demographic Research* 30(13), 377–412.

Apsite, E., Krisjane, Z. and Bērziņš, M., 2012, Emigration from Latvia under economic crisis conditions. *IPEDR* vol. 31. Singapore: IACSIT Press.

Arbaci, S., 2007, Ethnic segregation, housing systems and welfare regimes in Europe. *International Journal of Housing Policy* 7(4), 401–33.

Beaverstock, J, Smith, R. and Taylor, P., 2015, *Global City Network*. http://www.lboro.ac.uk/gawc/ (last accessed 2 November 2015).

Bertaud, A. and Renaud, B., 1997, Socialist cities without land markets. *Journal of Urban Economics* 41(1), 137–151.

Berry, B. and Kasarda, J., 1977, *Contemporary urban ecology*. New York: Macmillan.

Krišjāne, Z., Bērziņš, M. and Kratovitš, R. 2016. Occupation and ethnicity: patterns of residential segregation in Riga two decades after socialism. In T. Tammaru, S. Marcińczak, M. van Ham and S. Musterd, editors, *Socio-Economic Segregation in European Capital Cities. East meets West*, London: Routledge, 287–312.

Bodnár, J, and Böröcz, J., 1998, Housing advantages for the 1300 better connected? Institutional segmentation, settlement type, and social network effects in Hungary's late state socialist housing inequalities. *Social Forces* 76(4), 1275–1304.

Booth, C., 1887, The inhabitants of Tower Hamlets (School Board Division), their condition and occupations. *Journal of the Royal Statistical Society* 50(2), 326–401.

Bontje, M. and Musterd, S., 2008, The Multi-Layered City; The value of old urban profiles. *Tijdschrift voor Economische en Sociale Geografie*, 99 (2), 248–255.

Burgers, J. and Musterd, S., 2002, Understanding Urban Inequality A model based on existing theories and an empirical illustration. *International Journal of Urban and Regional Research* 26(2), 403–413.

Dangschat, J., 1987, Sociospatial disparities in a 'socialist' city: The case of Warsaw at the end of the 1970s. *International Journal of Urban and Regional Research* 11(1), 37–60.

Deacon, B., 2000, Eastern European welfare states: The impact of the politics of globalization. *Journal of European Social Policy* 10(2), 146–161.

Duncan, O. and Duncan, B., 1955, Residential distribution and occupational stratification. *American Journal of Sociology* 60(5), 493–503.

Dewilde, C. and Lancee, B., 2013, Income inequality and access to housing in Europe. *European Sociological Review* 29(6), 1189–1200.

Esping-Andersen, G., 1990, *The Three Worlds of Welfare Capitalism*. Cambridge: Polity Press.

European Commission, 2010, *Why Socio-economic Inequalities Increase? Facts and Policy Responses in Europe*. Luxembourg: Publication Office of the European Union.

Fenger, H., 2007, *Welfare regimes in central and Eastern Europe: Incorporating post-communist countries in a welfare regime typology*. http://journal.ciiss.net/index.php/ciiss/article/viewPDFInterstitial/45/37 (last accessed 15 January 2015).

Forrest, R. and Murie, A., 1988, *Selling the Welfare State. The Privatisation of Public Housing*. London and New York: Routledge.

Fotheringham, A. and Wong, D., 1991, The modifiable areal unit problem in multivariate statistical analysis. *Environment and Planning A* 23(7) 1025–1044.

Gentile, M. and Sjöberg, Ö., 2013, Housing allocation under socialism: The Soviet case revisited. *Post-Soviet Affairs* 29(2), 173–195.

Gentile M., Tammaru, T. and Van Kempen, R., 2012, Heteropolitanization: Social and spatial change in Central and Eastern Europe. *Cities* 29(5), 291–299.

Hamnett, C., 1994, Social Polarisation in global cities: Theory and evidence. *Urban Studies* 31(3), 401–424.

Hatz, G., Kohlbacher, J. and Reeger, U., 2016, Socio-economic segregation in Vienna: A social-oriented approach to urban planning and housing. In T. Tammaru, S. Marcińczak, M. van Ham and S. Musterd, editors, *Socio-Economic Segregation in European Capital Cities. East meets West*, London: Routledge, 80-109.

Hazans, M., 2013, *Emigration from Latvia: Recent trends and economic impact in Coping with Emigration in Baltic and East European Countries*. Paris: OECD Publishing.

Hirt, S., 2103, Whatever happened to the (post) socialist city? *Cities* 32(1): 29–38.

Häussermann, H. and Haila, A., 2005, The European city: A conceptual framework and normative project. In Y. Kazepov, editor, *Cities of Europe: Changing Contexts, Local Arrangements, and the Challenge to Urban Cohesion*. Oxford: Blackwell Publishing, 43–64.

Hegedüs, J., 2013, Housing privatisation and restitution. In J. Hegedüs, N. Teller and M. Lux, editors, *Social Housing in Transition Countries*. New York: Routledge, 33–49.

Hochstenbach C., Musterd, S. and Teernstra, A., 2014, Gentrification in Amsterdam: Assessing the importance of context. *Population, Space and Place* (published online DOI: 10.1002/psp.1854).

ILO, 2007, *Updating the International Standard Classification of Occupations (ISCO)*. Geneva: International Labour Organization.

ILO, 2012, *International Standard Classification of Occupations*. Geneva: International Labour Organization.

ILO, 2015, *International Labour Organization Webpage*. http://www.ilo.org/global/lang--en/index.htm. Last accessed 2 November 2015.

Janson, C-G., 1980, Factorial social ecology: An attempt at summary and evaluation. *Annual Review of Sociology* 6, 433–456.

Jones, C. and Murie, A., 2006, *The Right to Buy*. Blackwell Publishing, Oxford.

Kazepov, J., 2005, Introduction. In Y. Kazepov, editor, *Cities of Europe: Changing Contexts, Local Arrangements, and the Challenge to Urban Cohesion*. Oxford: Blackwell Publishing, 3–42.

Kemeny, J., 1995, *From Public Housing to the Social Market: Rental Policy Strategies in Comparative Perspective*, London: Routledge.

Kesteloot, C., 2005, Urban socio-spatial configurations and the future of European cities. In Y. Kazepov, editor, *Cities of Europe: Changing Contexts, Local Arrangements, and the Challenge to Urban Cohesion.* Oxford: Blackwell Publishing, 123–148.

Kadi, J., 2014, The neo-liberal restructuring of urban housing markets and the housing conditions of low-income households: an international comparison. PhD Thesis. Amsterdam: University of Amsterdam.

Kadi, J. and Ronald, M., 2014, Market-based housing reforms and the 'right to the city': the variegated experiences of New York, Amsterdam and Tokyo. *International Journal of Housing Policy, 14* (3), 268–292.

Kish, L., 1954, Differentiation in metropolitan areas. *American Sociological Review* 19(4), 388–398.

Kleinhans, R. and van Ham, M., 2013, Lessons learned from the largest tenure mix operation in the world: Right to buy in the United Kingdom. *Cityscape: A Journal of Policy Development and Research* 15(2), 101-118.

Kornai, J., 1992, *The socialist system: The political economy of communism,* New Jersey: Princeton University Press.

Kovács, Z., 2009, Social and economic transformation of the historical neighborhoods in Budapest. *Tijdschrift voor Economische en Sociale Geografie* 100(4), 399–416.

Kovács, Z., and Herfert, G., 2012, Development pathways of large housing estates in post-socialist cities: An international comparison. *Housing Studies* 27(3), 324–342.

Kovács, Z. and Szabó, B., 2016, Urban restructuring and changing patterns of socio-economic segregation in Budapest. In T. Tammaru, S. Marcińczak, M. van Ham and S. Musterd, editors, *Socio-Economic Segregation in European Capital Cities. East meets West*, London: Routledge, 238–260.

Ladányi, J., 1989, Changing patterns of residential segregation in Budapest. *International Journal of Urban and Regional Research* 13, 555–572.

Leal, J. and Sorando, D., 2015, Economic crisis, social change and segregation processes in Madrid. In T. Tammaru, S. Marcińczak, M. van Ham and S. Musterd, editors, *Socio-Economic Segregation in European Capital Cities. East meets West*, London: Routledge, 214–237.

Malmberg, B, Andersson, E, and Östh, J., 2013, Segregation and Urban Unrest in Sweden. *Urban Geography* 34(7), 1031-1046.

Maloutas, T., 2012, Introduction. In T. Maloutas and K. Fujita, editors, *Residential Segregation in Comparative Perspective. Making Sense of Contextual Diversity* Farnham, UK: Ashgate, 1–36.

Maloutas, T., 2016, Socio-economic segregation in Athens at the beginning of the 21st century In T. Tammaru, S. Marcińczak, M. van Ham and S. Musterd, editors, *Socio-Economic Segregation in European Capital Cities. East meets West*, London: Routledge, 156–185.

Manley, D. and Johnston, R., 2104, London: A dividing city, 2001–11? *City* 18(6), 633–643.

Manley, D., van Ham M., Bailey, N., Simpson, L. and Maclennan, D., editors, 2013, *Neighborhood Effects or Neighborhood Based Problems? A Policy Context*, Dordrecht: Springer.

Manley, D., Johnston, R., Jones, K. and Owen, D., 2016, Occupational segregation in London: A multilevel framework for modelling segregation. In T. Tammaru, S. Marcińczak, M. van Ham and S. Musterd, editors, *Socio-Economic Segregation in European Capital Cities. East meets West*, London: Routledge, 30–54.

Marcińczak, S., Gentile, M., Rufat, S. and Chelcea, L., 2014, Urban geographies of hesitant transition: Tracing socio-economic segregation in post-Ceausescu Bucharest. *International Journal of Urban and Regional Research* 38(4), 1399–1417.

Marcińczak, S., Gentile, M. and Stępniak, M., 2013, Paradoxes of (post)socialist segregation: Metropolitan sociospatial divisions under socialism and after in Poland. *Urban Geography* 34(3), 327–352.

Marcińczak, S., Tammaru, T., Novák, J., Gentile, M., Kovács, Z., Temelová, J., Valatka, V., Kährik, A. and Szabó, B., 2015, Patterns of socio-economic segregation in the capital cities of fast-track reforming postsocialist countries. *Annals of the American Association of Geographers* 105(1), 183–202.

Marcińczak, S., Musterd, S., van Ham, M. and Tammaru, T., 2016, Inequality and rising levels of socio-economic segregation: Lessons from a pan-European comparative study In T. Tammaru, S. Marcińczak, M. van Ham and S. Musterd, editors, *Socio-Economic Segregation in European Capital Cities. East meets West*, London: Routledge, 358–382.

Marcuse, P. and Van Kempen, R., 2000, Introduction. In P. Marcuse and R. Van Kempen, editors, *Globalizing Cities: A New Spatial Order?* Oxford: Blackwell Publishing, 1–21.

Massey, D. and Denton, N., 1988, The dimensions of residential segregation. *Social Forces* 67(2), 281–315.

Massey, D. and Denton, N., 1993, *American Apartheid: Segregation and the Making of the Underclass*, Harvard: Harvard University Press.

Morgan, B., 1975, The segregation of socio-economic groups in urban areas: A comparative analysis. *Urban Studies* 12(1), 47–60.

Morgan, B., 1980, Occupational segregation in metropolitan areas in the United States, 1970. *Urban Studies* 17(1), 63–69.

Murie, A., 1998, Segregation, Exclusion and Housing in the Divided City. In S. Musterd and W. Ostendorf, editors, *Urban Segregation and the Welfare State: Inequality and Exclusion in Western Cities.* London: Routledge, 110–125.

Musil, J., 1987, Housing policy and the socio-spatial structure of cities in a socialist country: The example of Prague. *International Journal of Urban and Regional Research* 11(1), 27–36.

Musterd, S., 2005, Social and ethnic segregation in Europe: Levels, causes and effects. *Journal of Urban Affairs* 27(3), 331–348.

Musterd, S., 2014, Public Housing in an Era of Neo-Liberalism. *Housing Studies.* 29(4), 467–484.

Musterd, S. and Ostendorf, W., editors, 1998, *Urban Segregation and the Welfare State: Inequality and Exclusion in Western Cities.* London: Routledge.

Musterd, S. and Kovács, Z., 2013, *Place-making and Policies for Competitive Cities.* Oxford: Wiley-Blackwell.

Musterd, S. and van Gent, W., 2016, Changing welfare context and income segregation in Amsterdam and its metropolitan area. In T. Tammaru, S. Marcińczak, M. van Ham and S. Musterd, editors, *Socio-Economic Segregation in European Capital Cities. East meets West*, London: Routledge, 55–79.

Nolan, B., Salverda, W., Checchi, D., Marx, I., McKnight, A., György Tóth, I., and Van de Werfhorst, H., editors, 2014, Changing Inequalities and Societal Impacts in Rich Countries; Thirty Countries' Experiences. Oxford: Oxford University Press.

Ouředníček, M., Pospíšilová, L., Špačková, P., Kopecká, Z. and Novák, J., 2016, The velvet and mild: socio-spatial differentiation in Prague after transition. In T. Tammaru, S. Marcińczak, M. van Ham and S. Musterd, editors, *Socio-Economic Segregation in European Capital Cities. East meets West*, London: Routledge, 261–286.

Park, E., Burgess, E. and McKenzie, R., 1925, *The City: Suggestions for Investigation of Human Behavior in the Urban Environment.* Chicago: University of Chicago Press.

Peach, C., 2009, Slippery segregation: Discovering or manufacturing ghettos? *Journal of Ethnic and Migration Studies* 35(9), 1381–1395.

Petsimeris, P. and Rimoldi, S., 2016, Socio-economic divisions of space in Milan in the post-Fordist era. In T. Tammaru, S. Marcińczak, M. van Ham and S. Musterd, editors, *Socio-Economic Segregation in European Capital Cities. East meets West*, London: Routledge, 186–213.

Préteceille, E., 2000, Segregation, class and politics in large cities. In A. Bagnasco and P. Le Gales, editors, *Cities in Contemporary Europe.* Cambridge, UK: Cambridge University Press, 74–97.

Piketty, T., 2013, *Capital in the 21st Century,* Harvard University Press, Harvard.

Reardon, S. and Bischoff, K., 2011, Income inequality and income segregation. *American Journal of Sociology* 116(4), 1092–1153.

Rex, J. and Moore, R., 1967, *Race, Community and Conflict*, Oxford University Press, Oxford.

Sachs, S., 2012, *The Price of Civilization. Reawakening Virtue and Prosperity after the Economic Fall.* London: Vintage.

Sassen, S., 1991, *The Global City: New York, London, Tokyo.* Princeton: Princeton University Press.

Salverda, W., Nolan, B., Checchi, D., Marx, I., McKnight, A., György Tóth, I., and Van de Werfhorst, H., editors, 2014, Changing Inequalities in Rich Countries; Analytical and Comparative Perspectives. Oxford: Oxford University Press.

Schwartz, H. and Seabrooke, L., 2008, Varieties of Residential Capitalism in the International Political Economy: Old Welfare States and the New Politics of Housing. *Comparative European Politics*, 6, 237–261.

Sennett, R., 2003, *Respect in a World of Inequality.* New York: W.W. Norton and Company.

Słomczyński, K., and Shabad, G., 1996, Systemic transformation and the salience of class structure in East-Central Europe. *East European Politics and Societies* 11(1), 155–89.

Smith, D., 1996, The socialist city. In G. Andrusz, M. Harloe, and I. Szelenyi, editors, *Cities after Transition.* Oxford: Blackwell, 70–99.

Smith, A. and Timár, J., 2010, Uneven transformations: Space, economy and society 20 years after the collapse of state socialism. *European Urban and Regional Studies* 17 (2), 115–25.

Szelényi, I., 1996, Cities under socialism – and after. In G. Andrusz, M. Harloe, and I. Szelenyi, editors, *Cities after Transition.* Oxford: Blackwell, 286–317.

Sztompka, P., 1996, Looking Back: The year 1989 as a cultural and civilizational break. *Communist and Post-Communist Studies* 29(2), 115–129.

Stanilov, K., editor, 2007, *The post-socialist city: Urban form and space transformations in central and Eastern Europe after socialism,* Dordrecht, The Netherlands: Springer.

Sýkora, L., 2009, Post-socialist cities. In R. Kitchin and N. Thrift, editors, *International Encyclopedia of Human Geography.* Oxford: Elsevier, 387–395.

Sýkora, L. and Bouzarovski, S., 2012, Multiple transformations: Conceptualising the post-communist urban transition. *Urban Studies* 49(1), 43–60.

Tammaru, T., van Ham, M., Leetmaa, K., Kährik, A. and Kamenik, K., 2013, Ethnic dimensions of suburbanisation in Estonia. *Journal of Ethnic and Migration Studies* 39(5) 845–862.

Tammaru, T., Musterd, S., van Ham, M. and Marcińczak, S., 2016a, A multi-factor approach to understanding socio-economic segregation in European capital cities. In T. Tammaru, S. Marcińczak, M. van Ham and S. Musterd, editors, *Socio-Economic Segregation in European Capital Cities. East meets West,* London: Routledge, 1–29.

Tammaru, T., Kährik, A., Mägi, K., Novák, J. and Leetmaa, K., 2016b, The 'market experiment': Increasing socio-economic segregation in the inherited bi-ethnic context of Tallinn. In T. Tammaru, S. Marcińczak, M. van Ham and S. Musterd, editors, *Socio-*

Economic Segregation in European Capital Cities. East meets West, London: Routledge, 333–357.

Turkington, R., van Kempen, R. and Wassenberg, F., editors, 2004, *High-rise Housing in Europe: Current Trends and Future Prospects. Housing and Urban Policy Studies.* Delft: Delft University Press.

Valatka, V., Burneika, D. and Ubarevičienė R., 2016, Large social inequalities and low levels of socio-economic segregation in Vilnius. In T. Tammaru, S. Marcińczak, M. van Ham and S. Musterd, editors, *Socio-Economic Segregation in European Capital Cities. East meets West*, London: Routledge, 313–332.

van Ham, M. and Manley, D., 2009, Social housing allocation, choice and neighbourhood ethnic mix in England. *Journal of Housing and the Built Environment* 24, 407–422.

van Ham, M. and Manley, D., 2012, Neighborhood effects research at a crossroads. Ten challenges for future research. *Environment and Planning A* 44(12), 2787–2793.

van Kempen, R. and Murie, A., 2009, The new divided city: Changing patterns in European Cities. *Tijdschrift voor Economische en Sociale Geografie* 100(4), 377–398.

van der Wusten, H. and Musterd, S., 1998, Welfare state effects on inequality and segregation: Concluding remarks. In S. Musterd, and W. Ostendorf, editors, *Urban Segregation and the Welfare State: Inequality and Exclusion in Western Cities.* London: Routledge.

Verdery, K., 1996, *What Was Socialism and What Comes Next?* Cambridge: Cambridge University Press.

Węcławowicz, G., 1979, The structure of socio-economic space in Warsaw in 1931 and 1970: A study in factorial ecology. In R. French and F. Hamilton, editors, *The Socialist City: Spatial Structure and Urban Policy.* Chichester: John Willey and Sons, 387–424.

Wessel, T., 2016, Economic segregation in Oslo: polarisation as a contingent outcome In T. Tammaru, S. Marcińczak, M. van Ham and S. Musterd, editors, *Socio-Economic Segregation in European Capital Cities. East meets West*, London: Routledge, 132–155.

Wolpert, J., 1965, Behavioral aspects of the decision to migrate. *Papers in Regional Science* 15(1), 159–169.

Wong, D., 2003, Spatial decomposition of segregation indices: A framework toward measuring segregation at multiple levels. *Geographical Analysis* 35(3), 179–194.

ii The information on the levels of segregation of the rich and the poor, as measured by the index of segregation, in the largest metropolitan areas (MAs) in the USA was derived from Florida (2014 a, b, c). In 2010, the average level of segregation of the rich in the ten most segregated MAs was 0.559; in the ten least segregated MAs the average level was 0.436. For the poor the levels were 0.434 and 0.320 respectively. Interestingly, college graduates in the largest MAs in the USA are less segregated than the rich. The average level of segregation of the most-educated Americans in the ten most segregated MAs was 0.398; in the ten least segregated MAs the average value of IS was 0.298.