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Socioeconomic segregation in European capital cities. Increasing separation between poor and rich

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ABSTRACT

Socioeconomic inequality is on the rise in major European cities, as are concerns over it, since it is seen as a threat to social cohesion and stability. Surprisingly, relatively little is known about the spatial dimensions of rising socioeconomic inequality. This paper builds on a study of socioeconomic segregation in 12 European cities: Amsterdam, Athens, Budapest, London, Madrid, Oslo, Prague, Riga, Stockholm, Tallinn, Vienna, and Vilnius. Data used derive from national censuses and registers for 2001 and 2011. The main conclusion is that socioeconomic segregation has increased. This paper develops a rigorous multifactor approach to understand segregation and links it to four underlying, partially overlapping, structural factors: social inequalities, globalization and economic restructuring, welfare regimes, and housing systems. Taking into account contextual factors resulted in a better understanding of actual segregation levels, while introducing time lags between structural factors and segregation outcomes will likely further improve the theoretical model.

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Socioeconomic segregation; inequality; capital cities; Europe; comparative research; census data

Introduction and questions

Increasing attention is being paid to inequality at the global, European, and national levels. This is evidenced by the huge attention given to 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 much debate over how to measure inequality, and whether to focus on income inequality or wealth inequality, or both. Recent research shows different results based on the country and period studied (Nolan, Salverda, Checchi, & Marx, 2014; Salverda, Nolan, Checchi, & Marx, 2014). Despite these debates, there seems to be consensus that social inequalities have increased significantly in many European countries since the mid-1970s. The rich have become richer and existing policies and institutions have been unsuccessful in tackling poverty (Atkinson, 2015).

The interest in inequality is partly driven by its spatial manifestation, which is often characterized by spatially separated concentrations of poor and rich, and by the fear

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that rising (spatial) inequality can lead to social unrest, rioting, increased crime, and a decrease in trust between separated societal groups (Malmberg, Andersson, & Östh, 2013). As a result, social inequality and socio-spatial inequality are high on national and European policy agendas (European Commission [EC], 2010). In this paper, we focus on socio-spatial inequality in particular, which we refer to as socioeconomic segregation, by which we mean residential segregation of population groups based on occupation, income, and/or education.

Although it is often claimed that socioeconomic segregation is increasing in European cities, no rigorous comparative and systematic research has been conducted into changing levels of this form of segregation (Tammaru, Musterd, van Ham, & Marcińczak, 2016a), and we understand relatively little about what drives these changes over time and between cities. Structural theory suggests that there are at least four key factors shaping socioeconomic segregation: social inequalities, changing economic structures and levels of global connectedness, welfare regimes, and housing systems. These factors overlap and interact over time. There is also increasing awareness that the factors and interactions play out differently in different national and local contexts, but how this functions is mostly unclear (Kemeny, 1995; Marcińczak, Musterd, van Ham, & Tammaru, 2016; Musterd & Ostendorf, 1998).

To fill this knowledge gap, this paper addresses two questions:

- (1) How has the level of socioeconomic segregation changed in the last decade in a selection of European capital cities?
- (2) What are the main structural, institutional, and contextual factors explaining (changing) levels of socioeconomic segregation and how can we understand the differences between cities?

The first question is an empirical one, addressing recent changes in socioeconomic segregation in 12 European capital cities: Amsterdam, Athens, Budapest, London, Madrid, Oslo, Prague, Riga, Stockholm, Tallinn, Vienna, and Vilnius. The empirical results presented originate from a book edited by the authors of this paper: *Socio-Economic Segregation in European Capital Cities: East Meets West* (Tammaru et al., 2016a).

To answer the second question, we applied a two-stage strategy. We first constructed a theoretical model based on structural and institutional factors that—in the academic debate—are widely regarded as crucial for the understanding of levels of and changes in socioeconomic segregation (stage 1). On the basis of this model, the expected levels of segregation were subsequently confronted with the “actual” levels of segregation. The deviations between “expected” and “actual” were further investigated through an in-depth analysis of three pairs of cities (stage 2). Contextual information pertaining to these paired cities was used to improve understanding of the actual levels of socioeconomic segregation. The three pairs were chosen either on the basis of general structural comparability (Amsterdam and Vienna), or on the basis of “reversed expectations” based on their structural position as shown in the stage 1 model (i.e. theoretically, we expected higher levels of segregation in Riga than in Tallinn, and higher levels in Oslo than in Stockholm, yet in both situations we actually saw the reverse).

In the remainder of this paper, we first present a section on the theoretical and conceptual aspects related to the four structural factors and show how they relate to socioeconomic segregation. Existing knowledge regarding each factor will be discussed, and we clarify how the theoretical model of segregation for the case study cities was constructed. This is followed by a brief theoretical discussion of local context factors that may also play a role. In the section following this, we discuss the data and methods applied, some methodological issues related to measuring socioeconomic segregation, and how to compare segregation levels from an international perspective. Definitions of cities and urban areas, the spatial scale of the available administrative neighborhood data, and measures of socioeconomic status differ between countries and cities; for the case studies presented in this paper, we mainly used census and register data. Thereafter, we present the first empirical section aimed at answering question one, about the levels of socioeconomic segregation in the 12 case study cities, and how they have changed in the first decade of the twenty-first century. In the second empirical section, we confront the theoretical model of socioeconomic segregation based on the four abovementioned factors with the actual segregation levels in 2001 and 2011, and examine the predictive power of each factor. This is followed by a section in which we aim to arrive at a better understanding of the differences through a discussion of additional context-specific factors, which we argue must be included in the analytical framework. This finally leads to the conclusions and an outline of the possible implications for European urban policy.

Theorizing and conceptualizing socioeconomic segregation

Research on socioeconomic segregation has been influenced by various academic approaches. Here we adopt a theoretical and analytical framework that highlights the importance of structural (and institutional) and contextual factors (Marcinićzak et al., 2015; Musterd & Ostendorf, 1998; Tammaru et al., 2016a). We first present the structural and institutional factors and their relationship to socioeconomic segregation. This information was used to construct the first stage model of the theoretically expected levels of segregation for the cities studied, by assigning particular values to the cities based on theoretical assumptions about their standing with regard to each of the factors. While discussing the role of each of the factors separately, we also reflect on the interrelations that exist between them. To prepare the second stage of the analysis, which aimed to understand changes in socioeconomic segregation, we also introduce the role of local context in a comparative perspective.

Social inequality

At the heart of socioeconomic segregation research, we find the strong assumption that spatial distance follows social distance (Duncan & Duncan, 1955; Park, Burgess, & McKenzie, 1925). Within cities, poverty often concentrates in particular areas and in disadvantaged neighborhoods, often due to lack of choice and the presence of easily accessible and affordable housing. Higher social strata also tend to concentrate, but they do so voluntarily, splitting themselves off from the rest of society and opting for (upper) middle-class enclaves (Atkinson & Blandy, 2006). The seemingly obvious relationship

between social inequality and segregation has been confirmed in several empirical studies (Musterd, 2005; Reardon & Bischoff, 2011). Yet, it is important to emphasize that even if social inequality is *sine qua non* a condition for the development of spatial divisions, there are strong reasons for assuming that the link between the two depends on the institutional and spatial contexts of the city/region. In the modern metropolis, the relationship is modified by several factors, such as the strength of family relations (Arbaci, 2007) and the involvement of the state in housing provision and the redistribution of wealth (Musterd & Ostendorf, 1998).

We adopted the Gini index to illustrate the scale of income inequality in Europe (from 2010). We attached a value of 3 to cities where the Gini index was one standard deviation above the average of the 12 cities we researched; we attached a value of 1 to those cities where the value was one standard deviation below the average. All other cities were given a value of 2. Classified in this way, London, Riga, Madrid, and Athens are seen as the most unequal cities, and Stockholm and Prague the most equal (Table 1).

Global connectedness and changing economic structures

Sassen (1991) has argued that the best connected cities—often control centers of international economic activity—attract many high-salaried employees in advanced business services as well as many low-salaried employees in consumer service industries. The first type of cities will therefore show more social inequality—also in the most egalitarian countries—than the second type. This will also be visible in their professional structures (Sachs, 2012). These inequalities may affect the level of socioeconomic segregation (Ladányi, 1989; Morgan, 1975, 1980). Burgers and Musterd (2002) have argued that Sassen’s globalization and polarization argument also applies to cities in countries with strong welfare regimes. They compared the cities of Amsterdam and Rotterdam and showed that Amsterdam was better connected and higher ranked as a global city than Rotterdam, and was indeed also more socially polarized. Amsterdam

Table 1. Four structural factors shaping socioeconomic segregation, corresponding theoretical values, and final theoretical model outcomes.

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

*PS Post socialist

Sources: Arbaci, 2007; Beaverstock et al., 2015; Esping-Andersen, 1990; Fenger, 2007; Kemeny, 1995

has obviously profited from an historically grown economic profile that better fits the post-Fordist diverse service economy than Rotterdam, a city that is still tied to a relatively one-sided manufacturing and port-related history (a Fordist profile) and an inherited professional composition that fits less well to the service-related urban economy of today and tomorrow. However, while differences between cities in terms of polarization may be manifest in the Dutch context, the country's overall welfare regime has also been shown to reduce the spatial effects of social inequality (Musterd, 2005).

To determine the 12 case study cities' level of embeddedness in global networks, we used the distinction between Alpha, Beta, and Gamma cities (and some refined categories in between), as developed by the Globalization and World Cities (GaWC) Research Network (Beaverstock, Smith, & Taylor, 2015). Alpha cities are the most important global control-and-command centers and therefore we attached to them a value of 3; that is, we expected more polarization and—*ceteris paribus*—more segregation. Gamma cities are the least globally connected/important and thus received a value of 1; that is, for these cities, we expected lower levels of segregation. The value of 2 was given to Beta cities that take a position in between Alpha and Gamma.

Welfare regime

One of the first publications to address the importance of welfare regimes for understanding urban inequality was the volume *Urban Segregation and the Welfare State* (Musterd & Ostendorf, 1998). In this volume, a range of authors showed that welfare regimes may stimulate or mitigate social inequality. In a more recent volume, *Residential Segregation in Comparative Perspective*, Maloutas (2012) applied a wide segregation concept for a comparison between cases. Changing welfare regimes may not only result from major political transformations, such as those experienced in Eastern Europe around 1990 (after the fall of the Berlin Wall in 1989 and the demise of the Soviet Union in 1991) but may also be related to the ongoing liberalization of cities and states in Northern, Southern, and Western Europe. Welfare regimes can take various forms, as Esping-Andersen (1990) has shown. For the issue of segregation, it is important to know whether and how the state intervenes in a range of domains, such as income distribution (taxes), health care, social security, education, and housing. Levels of wealth redistribution and differences in terms of access to certain services, social benefits, and housing may strongly influence social inequality and its subsequent spatial expression. In general, more intervention, redistribution, social housing, care for the relatively poor, and more equal access to services reduces social and spatial inequalities (Musterd & Ostendorf, 2012).

Compared with the United States (and most other parts of the world), Europe is still characterized by relatively strong, though declining, state intervention, and redistributive practices (Musterd & Ostendorf, 1998; Musterd & Ostendorf, 2012), but this does vary between 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 such as Estonia, Latvia, and

Lithuania, known as post-socialist liberal welfare regimes (Esping-Andersen, 1990; Fenger, 2007).

Using the three main types of welfare regime of Esping-Andersen (1990), we position the Southern European or family-focused Mediterranean regime within the corporatist type, because it supports status differences and aims to maintain the most important institutions including the church and family. Van der Wusten and Musterd (1998) and Arbaci (2007) have shown that liberal welfare regimes tend to have higher levels of residential segregation, whereas social democratic welfare regimes tend to relate to lower levels. Arbaci (2007) found that corporatist regimes show the lowest levels of residential segregation. On this basis, higher levels of segregation were expected in London, Riga, Tallinn, and Vilnius (each of which was allocated 3 points), and the lowest levels in Amsterdam, Athens, Budapest, Madrid, Prague, and Vienna (which each received 1 point). Stockholm and Oslo were in between.

Housing regime

Welfare state arrangements and housing regimes are often strongly related. In the case of retrenching welfare states, this usually implies more market-oriented thinking in the housing domain—which includes the selling off of social housing, its demolition and replacement by owner-occupied housing and also the deregulation of the private rental sector—which has, among others, an effect on access to affordable housing (Kadi & Ronald, 2014). A good example is the United Kingdom, where in the 1980s, the government introduced the Right to Buy scheme, giving tenants of social housing the legal right to buy their homes, which had important implications for segregation processes. Social housing was privatized and home ownership promoted as the tenure of preference (Forrest & Murie, 1988; Kleinhans & van Ham, 2013). In the UK cities, social housing is often concentrated in certain neighborhoods, and as social housing became increasingly residualized, these developments fed increasing socio-spatial segregation (Manley, van Ham, Bailey, Simpson, & Maclennan, 2013; Murie, 1998, van Ham & Manley, 2009, 2012).

Furthermore, speculative housing investment and the financialization of rental housing also seem to play a large role in creating more inequality in current housing markets and further contributing to marketization processes (Fields & Uffer, 2016). Welfare and housing regimes do not necessarily always correspond with one another. This can be shown when we compare the rather similar welfare regimes of the Netherlands and Belgium, which nevertheless appear to have very different housing systems, with a more de-commodified system in the Netherlands and a commodified system in Belgium (Schwartz & Seabrooke, 2008).

Assuming that more market involvement in housing contributes to a firmer relationship between social disparities and segregation, we hypothesized that higher levels of commodification of housing produce higher levels of segregation. Kemeny (1995) has shown that the most important division is that between dual and unitary housing systems. Market-based dual housing systems were expected to lead to stronger socio-spatial segregation in cities such as Budapest, London, Oslo, Riga, Tallinn, and Vilnius, which received 3 points (Table 1). Lower levels of commodification and tenure-neutral housing policy in a unitary housing system were expected to result in lower levels of

segregation; this would concern Amsterdam, Prague, Stockholm, and Vienna (which all received 1 point). We distinguished a Southern European housing regime in between the two main types, with the cities of Athens and Madrid serving as representatives. Here, family networks and institutions such as the church provide support to those who cannot afford to rent a dwelling on their own.

A theoretical model of segregation

To establish a multifactor theoretical model that can be confronted with the empirical findings, we quantified the hypothetical level of segregation for each city by aggregating the points allocated to the cities for each of the factors described above, factors which are expected to contribute to segregation.

We calculated the sum of the four scores to obtain a general ranking of the cities. We expected the cities with higher scores to show higher levels of socio-spatial segregation. The result of this exercise allowed us to introduce a theoretical ranking of cities. From high to low, as the model suggests, the levels would be: London (with a sum of 12 out of 12); Riga (11); Madrid, Vilnius, and Tallinn (9); Athens, Budapest, and Oslo (8); Amsterdam, Vienna, and Stockholm (7); and Prague (6). The scores are not weighted because the literature does not offer clear guidance on weights. While this exercise might seem overly simplistic, 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 socioeconomic segregation, which then paves the way for additional analysis with more specific contextual information.

Contextual factors: history, local institutions, and space

Structural and general institutional factors, such as the four discussed above, do not determine segregation levels alone. Historically developed specific institutional and local spatial contexts also play an important role, and the 12 cities under investigation provide unique, multilayered, historically contextual profiles (Häussermann & Haila, 2005; Kazepov, 2005; Maloutas, 2012; Musterd & Kovács, 2013). The city profiles comprise economic, social, and physical or morphological layers, in addition to specific local governments and institutions. Together they form, as Bontje and Musterd (2008) have called it, “the multi-layered city.” In Europe, these layers are further refined by cultural differences. As the historically developed institutional and spatial contexts may produce very different effects on the scale and form of socio-spatial divisions, we did not include them in the analytical framework designed to build the theoretical model of segregation in the first stage (Table 1). However, we argue that these contexts should be included in the full analysis and in a full theoretical model, in order to reach a more comprehensive understanding of the nature of socioeconomic segregation in metropolitan Europe. We illustrate the value of context in the empirical analysis presented in this paper, where we compare the three pairs of cities.

Data and methods

The 12 European capital cities included in this study have some important dimensions in common: they are all important centers of education, important economic centers

that provide many employment and international investment opportunities, and are therefore often important cultural centers and places of consumption as well. We selected capital cities to create some homogeneity as a base. However, the cities vary along the four structural factors generating segregation. The main spatial unit of analysis was a city or city region, defined as a continuous built-up area that forms a common housing and labor market. In sprawled cities, this is usually the urban region (such as the Greater London Council area or the Amsterdam Metropolitan Region); while in less sprawled urban settings (such as Riga and Prague) this is often the city. We divided the cities into relatively small and homogenous neighborhoods (tracts) with around 1,000 inhabitants.

Comparing socioeconomic segregation in practice is not easy because different countries use different indicators for socioeconomic status. We used 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: 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) were used for Amsterdam, Oslo, and Stockholm; and education data 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 was between 2001 and 2011,¹ following the censuses. For some cases, integral register data were used. For the contextual analysis, we selected three pairs of cities for which we obtained more detailed local information on additional factors that were expected to impact segregation.

We compared levels of and changes in socioeconomic segregation between the cities as strictly as possible by applying indices of dissimilarity (D) and segregation (IS), bearing in mind the critique that these two traditional measures might not always be the best option for assessing the level of social division (cf. Reardon & Bischoff, 2011). The analysis included the construction of the theoretical model (see former section), and the confrontation of this model with the “actual” levels of segregation (hereafter, the “empirical test”).

Changing levels of segregation

Previous studies on socioeconomic segregation in North America have revealed that higher social groups are commonly more segregated than lower ones (Duncan & Duncan, 1955; Reardon & Bischoff, 2011). This has also been found in Europe (Ladányi, 1989; Morgan, 1980). The results for the 12 European capital cities in our study support these findings to some extent; better-off residents are more segregated from other social categories in many cities, but not all (Figure 1). In Athens, Budapest, London, and Prague, lower social groups are actually more segregated from the remainder of the population. Furthermore, *changes* in the levels of segregation of 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 twenty-first century, segregation of the extreme ends relative to the rest of the social spectrum did not result

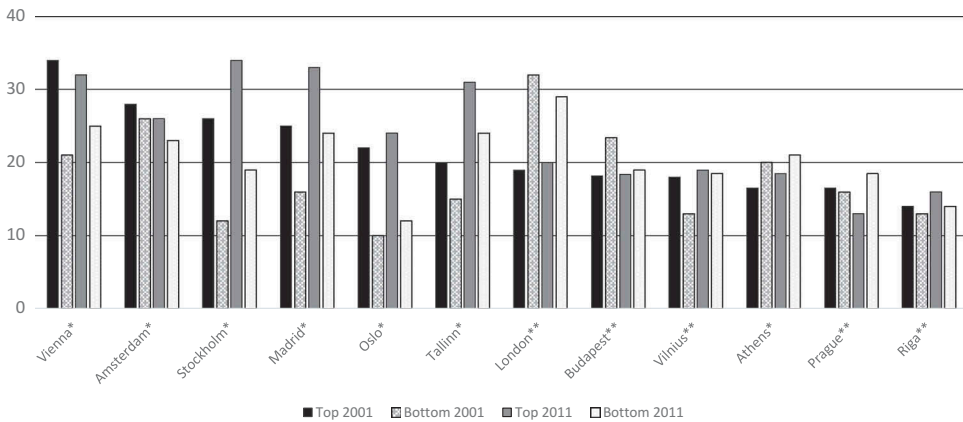


Figure 1. Index of segregation of highest (Top) and lowest (Bottom) classes of social groups in European capitals, 2001 and 2011.

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.

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 socioeconomic 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 a ubiquitous increase of residential segregation at each of the two ends of the socioeconomic 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 in the United States.² Indeed, it is worthwhile mentioning that even the 10 least segregated US metropolitan areas are more divided by socioeconomic 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 segregation *between* these two groups grew consistently across Europe. Only in Amsterdam did the segregation between the two extreme categories decrease somewhat in the last decade; but when adopting an extended time frame, socioeconomic segregation in the Dutch metropolis can also be regarded as on the rise (Musterd & van Gent, 2016). It is therefore 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.

An empirical test of the theoretical multifactor model of segregation

How does the empirical reality match the theoretical multifactor model? In Figure 3, we present the four theoretical models (one for each factor) and the combined model, and

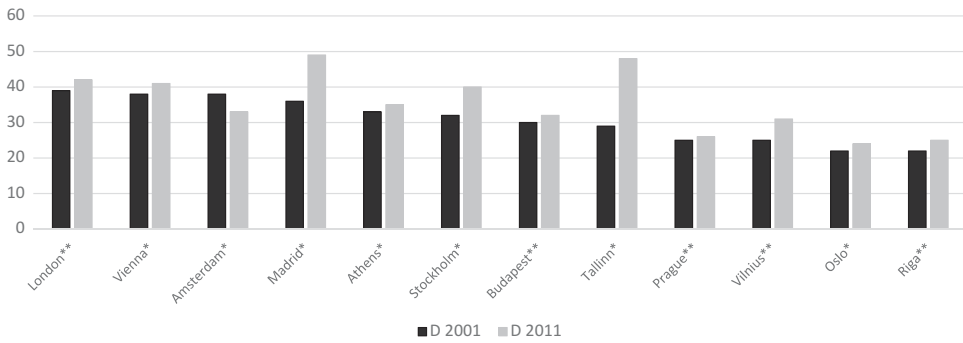


Figure 2. Index of dissimilarity (D) between the top and bottom of the social groups, 2001 and 2011.

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

* Metropolitan region, **city.

relate these to the actual levels of segregation, as measured by the dissimilarity between the highest and lowest socioeconomic groups. The associations are not straightforward. The theoretical model based on the total score seems to have a weakly positive relation to the D -values for 2011 and a weakly negative relation to the D -values for 2001. This seems to be due to the negative relation between the model based on 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 offers the best fit. Tallinn seems to be the clearest outlier, for which we had to find additional explanations (see next section). For most of the models, it is mainly the Baltic capitals and sometimes also a Scandinavian city that do not correspond very well with the theoretical predictions. 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 regimes. Finally, Oslo, Riga, Vilnius, and Tallinn (the latter only in 2001) show much lower D -values than expected on the basis of their rather market-driven housing regimes. In 2011, Tallinn had a high D -value, which conforms more to expectations.

As was expected, 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 dimension of the historically developed contextual conditions, as referred to in the theoretical section. But the incomplete match between the theory and empirical reality may also have its roots in the fact that processes are often only related to one another when taking a certain time lag into account. Physical change in cities and residential mobility processes do not occur overnight, but require some time before they are sufficiently voluminous to have social and socio-spatial impacts in cities and city regions. Taking these two factors into account, in the next section, we 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 discuss three pairs of seemingly similar cities and analyze why they 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 macrostructural milieus but substantially different segregation levels, or they were expected to have different levels of segregation (one higher, one lower) but the reverse actually proved to be the case. The six selected cases are the cities with the “highest” residuals; these urban areas significantly deviated from the theoretical model.

Stockholm and Oslo

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

Our analytical framework predicted modest levels of socioeconomic segregation in Oslo, and an even lower scale of socio-spatial division in Stockholm. The empirical findings, however, show that Stockholm is more segregated than Oslo; indeed, surprisingly, Stockholm is currently among the most segregated capital cities in Europe. Andersson and Magnussen Turner (2014) argue that steadily increasing socioeconomic segregation in the Swedish capital is the result of the withdrawal of the public sector from neighborhood social mix policies, and the reduction of housing subsidies in the 1990s. Wessel (2016) argues that the evolving patterns of socioeconomic segregation in Oslo should be read as a “contingent outcome” of many structural factors rather than as an effect of a single process, whether it is 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 Norwegian revenues from natural resources.

The results from the two Scandinavian cities also point to the importance of planning policies. While Oslo generally avoided concentrating 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 Homes Programme that ran from the mid-1960s to the mid-1970s, they cover many suburban areas. Bearing in mind the residualization of public housing and increasing real estate prices in Sweden over the last two decades, lower income social categories and non-Western immigrants accumulated in these large apartment blocks in the least desirable areas in the local housing market (Andersson & Kährrik, 2016). It thus seems that even if some of the structural factors that theoretically mitigate inequality and segregation are still in

place, the 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 policies and a strong welfare regime in other domains. In contrast, in contexts with higher levels of housing de-commodification such as Stockholm, housing and planning regime changes may nevertheless 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 in segregation. However, this 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 when Vienna was the center of the Austro-Hungarian Empire. It established major economic, political, and cultural functions in the inner city and thus created a more evident social and cultural divide between the center and the rest of the city. In Amsterdam, urban restructuring expressing the city's "grandeur"—such as that took place 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, as well as a substantial volume of social housing. The more recent development of both cities appears to be more similar, suggesting that segregation *processes* could be more similar. Nevertheless, we still see contrasts. 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. In fact, housing demand collapsed and only recovered from 2013/2014 onwards. This implies that little new housing was developed and residential mobility almost came to a standstill. Those who had planned to move because their income development would have allowed it instead stayed put, and this contributed to a temporary reduction in the level of segregation. In other words, social mobility has not (yet) translated into spatial mobility. These effects of the crisis were more moderate in Vienna.

A second process that might have had different effects in both cities is gentrification. New gentrification can initially cause more social mixing: when higher income households move into relatively low-income neighborhoods with gentrification potential, or when so-called marginal (low-income) households raise their incomes in situ in such neighborhoods, social mixing in the neighborhood will increase. This will—*ceteris paribus*—result in a temporary decrease in the level of segregation in the entire urban system. However, when gentrification matures and a higher share of high-income households compared with low-income households emerges, the neighborhood will eventually become a more homogeneously affluent place, which will contribute to a higher level of segregation (Hochstenbach, Musterd, & Teernstra, 2015). Structural—mainly neoliberal—transformations facilitate such a process (see

also Musterd & van Gent, 2016). The stage which a gentrification process is in is thus important to understand the development of socio-spatial inequality.

As said, we assume that in the near future, both cities will experience a more similar trajectory 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 difficulties in accessing social housing. We also see residualization of the social housing sector as a whole. While Austrian housing policy has shown greater stability over a long period of time, and while its social housing was among the most elaborate in Europe (Hatz, Kohlbacher, & Reeger, 2016), Vienna is undergoing changes. For example, the construction of new social housing by the council was terminated in 2004, and the private rental sector was recently de-regulated (Kadi, 2015). In Amsterdam, we see a reduction of social housing and further re-commodification as well. Both cities are experiencing an ongoing influx of new immigrants, but the volume is larger in Vienna, which is seen by Hatz et al. (2016) as another cause for the city's higher levels of segregation.

Tallinn and Riga

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

The mismatch between growing inequality and decreasing segregation in the 1990s calls for an explanation that emphasizes the factor of “time.” Essentially, in Tallinn and Riga in the first decade of the transition, the rapid increase in income inequality did not immediately manifest itself in space; this was also the case in the other post-socialist countries (Marcinčzak 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 change, the supply side (housing for the better-off) caught up with the demand—with rapid suburbanization and gentrification in Tallinn being the most clear illustrations (Tammaru, Kährik, Mägi, Novák, & Leetmaa, 2016b; Tammaru, van Ham, Leetmaa, Kährik, & Kamenik, 2013). Similar changes in social and spatial mobility took place in Riga (Krišjāne, Bērziņš, &

Kratovits, 2016). In other words, the post-socialist dyad 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, however, socio-economic division lines parallel ethnic divisions: Estonians are much more segregated from the Russian-speaking minority than Latvians. As Estonians are overrepresented at the top of the social hierarchy and the minorities concentrate in the lower echelons, it is clear that ethnic divisions significantly amplify socioeconomic segregation in Tallinn. Bearing in mind the shared socialist past and immigration history, we can only suggest that the sociocultural distance between Estonians and Russians is much larger than between Latvians and immigrants from the former Soviet republics. Other legacies also play an important role. 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 Western European countries experience immigration, emigration is the case in Eastern Europe. The emigration is more intense in Latvia (Hazans, 2013) compared with Estonia (Anniste & Tammaru, 2014), and this might also have some spatial implications. For example, a group of “mortgage refugees” emerged in Latvia following the 2008 economic crisis, referring to wealthier people who had bought new apartments in the housing boom in the mid-2000s, but were unable to continue to make their payments during the crisis and moved abroad to find better jobs (Apsite, Krišjāne, & Bērziņš, 2012). Finally, although both countries have a dual housing system, the hyper ownership-oriented local-level housing policy in Latvia (more than 95% of housing is in private ownership) seems to contribute to the reduction of housing segregation. Relatively generous housing benefits for less affluent residents and rent regulations contribute to higher levels of social mixing and reduce the intensity of gentrification (Krišjāne et al., 2016). Hence Tammaru et al. (2016b) argue that the extensive “market experiment” unfolding in Tallinn is an important factor behind the most rapid growth in socioeconomic segregation within the pool of our case study cities. Furthermore, in both Tallinn and Riga, social housing was built on large homogenous greenfield sites during the Soviet period, as elsewhere in Eastern Europe. This potentially paves the way for high levels of segregation in the future, given what we learn from the Stockholm experience.

Conclusions

The aim of this paper was twofold: to assess the levels of socioeconomic segregation in metropolitan Europe in the first decade of the twenty-first century, and to offer possible explanations for these evolving levels of segregation.

Regarding the changing levels of socioeconomic segregation, it is clear that metropolitan Europe has become 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 the liberalization of housing systems. Interestingly, even though we find evidence for desegregation of either the higher or lower social groups in some capital cities, the

growing gap between the poor and the rich is consistent all over Europe. But as with two decades ago (Musterd, 2005), Europe is still less divided by socioeconomic status than North America. Moreover, the levels of socioeconomic segregation in large European cities vary significantly; the most divided cities (Madrid and Tallinn) are roughly two times more segregated than the most equal (Oslo and Prague).

The other main conclusion of our study is that the actual levels of segregation do not perfectly match the theoretical rankings based on a model applying four structural factors known to affect segregation. However, we did find a firm relationship between particular factors and socioeconomic segregation. As expected, higher income disparities and more liberal forms of welfare regime bring about higher levels of segregation but the relationship is not simple. The same applies to the link between globalization and socioeconomic 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 poor are more divided than in cities less embedded in the global economy.

The lessons learned from the three city pairs that we further elaborated on illuminate the importance of two contextual factors in explaining the levels of socioeconomic segregation. First, the role of local contexts, historically developed socioeconomic profiles, and spatial structures in shaping levels of socioeconomic segregation has often been stressed (Burgers & Musterd, 2002; 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 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 their similar institutional environments, modern history, and morphological structures, in Tallinn and Riga the cultural distance between the hosts and Russian-speaking minorities, as well as the housing preferences of these two groups, seems to bring about much stronger socioeconomic spatial divisions in the former than in the latter.

Second, we have shown that the time dimension is crucial for understanding changes in socioeconomic segregation. The results of our work provide examples of how such temporal effects might work. The first example refers to the paradox of post-socialist transition: increasing social inequality can lead to decreasing segregation; though this paradox might only be a temporary phenomenon. Some scholars have predicted that the growing inequalities related to the post-socialist transformation will also translate into housing and spatial inequalities (Marcińczak, Gentile, & Stępnia, 2013; Sýkora & Bouzarovski, 2012; Marcińczak, Musterd, & Stępnia, 2012), something that has already started to take place in many post-socialist cities in the last decade. Inner city gentrification processes ignited by the new middle class, as well as suburbanization of the middle class, show strong parallels with what has already been experienced in Western Europe. The initial reduction in segregation quickly turned into increasing segregation, which we observed in all of our Eastern European case study cities, most notably in Tallinn, where the role of the public sector in balancing market forces and shaping urban change was the weakest (Tammaru et al., 2016b).

Such processes are, however, not uniquely Eastern European. In Western European cities, similar paradoxes may be found. Rapid changes in society and economy, as in

Oslo after the intensive housing privatization of 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 socio-spatial inequality first decrease and only later increase. Empirical support is available for several European capital cities (Leal & Sorando, 2016; Musterd & van Gent, 2016). And it is not only migration that triggers such processes; *in situ* social change can also contribute to an initial reduction of segregation in a neighborhood (Hochstenbach et al., 2015). When people reach higher socioeconomic levels but do not change neighborhoods, or when they inherit housing from parents, they may increase the social mix in an area and reduce the level of segregation in the city as a whole. This applies to cities all over Europe (see also Maloutas, 2016; Petsimeris & Rimoldi, 2016).

In short, deviations from the general process of increasing socioeconomic segregation may be partly due to an insufficient accounting for time-related insights. Social inequality and market-oriented housing systems have to be in place for a while before they facilitate a transformation of social disparities into spatial divisions. Some processes of declining segregation may be sensitive to the fluctuations of the economy, and desegregation may only be a temporary irregularity in otherwise stable segregation trends. A reduction of residential mobility may produce (temporarily) less segregation.

To conclude, this study has at least two conceptual implications. It has shown not only that well-known structural and institutional factors play a role in understanding levels of and changes in socioeconomic segregation but also that the theory is insufficient without more detailed local contextual knowledge. Second, we should be aware of the fact that some changes only have an impact after a certain period of time. Taking such time lags into account may significantly improve our theoretical understanding of variations in socioeconomic segregation.

The findings also have important political and policy implications. Our study supports the view that the more liberal societies become, the higher the levels of segregation will be (perhaps with a time lag). Local contexts may also have an impact, but the examples we referred to have not always been sufficiently strong to neutralize the effects of increasing social inequality and globalization, the move toward more liberal welfare regimes, and the further commodification of housing systems. If these trends continue across Europe, there may be convergence between European and North American cities—which are often used as the frame of reference—in terms of larger gaps between rich and poor. This will likely translate into increasing urban problems and more distance between social groups, potentially resulting in, for example, greater social unrest and estrangement, feeding conflict and riots, and producing no-go areas and the disaffiliation of the affluent. Why would Europe want to let this happen? We must keep in mind that Europe is still more diversified than the United States (which is itself not a homogenous entity). Cultural and language differences, among others, help to sustain the differences. This might also result in new movements arising in some states, with claims for stronger welfare regimes, more equality, and more inclusive housing systems. When this happens, segregation may decline once again, restoring the inclusive and open image that the “European city” once had.

Notes

1. During this period, the ISCO classification changed from ISCO-08 to ISCO-88. Most of the changes took place within the major categories we distinguished, but some jobs were also shifted from one major category to another (correspondence tables can be found at ILO, 2015). Most importantly, managers of small organizations without a sophisticated hierarchical structure, such as small shops, restaurants, cafes, and similar establishments, were shifted from the group of managers to service and sales workers. This had an effect on cities with many such small establishments, especially in Southern Europe.
2. The information on the levels of segregation of the rich and poor, as measured by the index of segregation, in the largest metropolitan areas (MAs) in the United States was derived from Florida (Florida, 2014 a, b, c). In 2010, the average level of segregation of the rich in the 10 most segregated MAs was 0.559; in the 10 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 United States are less segregated than the rich. The average level of segregation of the most educated in the 10 most segregated MAs was 0.398; in the 10 least segregated MAs, the average value was 0.298.

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