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Income Inequality & Economic Segregation

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Abstract

This paper aims at explaining the linkage between economic segregation and income inequality with a focus on Austria, particularly on Vienna. Using, *inter alia*, aggregated data from register-based census data as well as wage and income tax statistics, we find potential evidence for economic segregation in Vienna. This pattern seems to be related to income inequality as well as real estate prices in the districts. Although social housing tends to be more pronounced in lower income districts, it principally appears to be weaker spatially clustered. Moreover, in a recent study we show that a higher income inequality within Austrian municipalities is connected to higher outflows of Austrian municipalities, whereby the impact appears to be higher for the emigration rates of lower educated as well as lower income groups.

Keywords: Economic segregation, spatial clustering, income inequality, housing market.
JEL-codes: D31, R23, R31

1 Introduction

Economic and social cohesion between as well as within countries are crucial *European Commission* objectives. Social cohesion aims at promoting well-being of all society members and trust in institutions and society, creating a sense of belonging and fighting exclusion (see OECD, 2012). The issue of a *divided society* thus lists high on the agenda of the political and economic discussion (e.g. see Stiglitz, 2015).

Economic segregation represents not only a phenomenon in the United States, but is also increasing in European countries (see Florida, 2015). The residential segregation of population groups results in a socio-spatial division, separating high, middle and low socio-economic groups from each other. Since in addition income inequality has been on the rise, even in most egalitarian European countries (see Dabla-Norris et al., 2015) and reveals to be spatially clustered as well, the connection between economic segregation and income inequality attracts notice. When a society is divided, the spatial space tends also to be divided (see Van Kempen, 2007). Therefore, income inequality can be regarded as a necessary condition for economic segregation (see Reardon and Bischoff, 2011). The clustering of different income groups coupled with high levels of income inequality might lead to the spatial concentration of poverty (see Massey and Fischer, 2000) as well as inequalities of opportunities, social unrest, an increase in crime and a decrease in trust within societies (see Malmberg et al., 2013).

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In this analysis we address the interplay between income inequality and economic segregation. The first three sections will discuss the theoretical framework about this relationship, potential consequences of economic segregation as well as a short overview of the existing empirical research. Afterwards, in an empirical section we provide some empirical insights into the discussed connections focussing on Austria, particularly on the capital city Vienna.

2 Income Inequality and Economic Segregation

In general, the literature identifies structural key factors which are responsible for shaping economic segregation. In this regard, *income inequality* is assumed to be a main trigger for economic segregation. When a society is divided, the spatial space tends also to be divided (see Van Kempen, 2007). Next to this factor, *globalisation and economic restructuring* has influenced economic segregation. The general skill requirements have changed the professional structure resulting in new occupational compositions and subsequently in new spatial divisions. Furthermore, the *welfare state* principally mitigates economic segregation tendencies. Welfare state arrangements are, *inter alia*, related to a *social housing policy* in order to support particularly disadvantaged individuals. The retrenchment of welfare states across most developed countries and the accompanied cuts in universal housing subsidies have led to a higher commodification of housing, implying a higher market-orientation in the housing market. Since social housing is often spatially concentrated and lower-income groups are overrepresented in social housing, particularly in case of liberalised housing markets, housing market/policy developments might end up in a higher economic segregation (see Tammaru et al., 2016; Musterd et al., 2016). So, *globalisation and economic restructuring* (see IMF, 2017; Çelik and Basdas, 2010) as well as the *retrenchment of welfare states* (see Esping-Andersen and Myles, 2009) influence income inequality which might also translate into economic segregation. Thus, direct and indirect effects via income inequality emanate from these two factors.

However, income inequality alone is not sufficient to create economic segregation. In the presence of income inequality, income-correlated preferences are needed for economic segregation. According to Tiebout (1956) individuals *vote by feet*, insofar as individuals with the same income sort into neighbourhoods according to their distinct preferences for local utilities and taxes. Thereby, local amentities might refer to a good quality of schools, a pronounced endowments of public transport or hospitals as well as social and cultural amenities. This may also create hierarchies in communities' status distinguishing most desirable from least desireable communities. Moreover, affluent residents might generate positive externalities for their neibhours (e.g. see Durlauf, 1996; Wilson, 2012), whereby households prefer to have affluent neighbours. In contrast, advantaged neighbours might also be regarded as a disadvantage. Poorer individuals have to compete with more advantaged for jobs or social status (see Davis, 1959). In this respect, poorer individuals make comparison, particularly, with more advantaged individuals which might result in individual unhappiness and relative deprivation (see Runciman, 1966; Stark, 2006). If all else being equal, poorer individuals, therefore, will avoid having richer neighbours, implying a spatial sorting by income. Moreover, richer households might appreciate having poorer neighbours due to psychological benefits. Richer households might therefore bid out the price for housing in poorer neighbourhoods, crowding out more disadvantaged individuals (see Banzhaf and

Walsh, 2008). Furthermore, richer households might simply demand better housing, implying a higher price level. In case of a shortage of more expensive housing units, richer households might prefer to move to other places.
Economic segregation thus requires income-related residential preferences, an income-based housing market and/or housing policies that link incomes to residential location. However, that a preference-induced segregation can occur, a sufficient housing market/policy is required. Otherwise individual preferences might be insufficient to generate economic segregation (see Reardon and Bischoff, 2011). For instance, housing policies can constrain the options of poorer households. Consequently, on the one hand, a (social) housing policy may lead directly to economic segregation, and on the other hand it may regulate the impact of individual preferences on economic segregation.

3 Consequences of Economic Segregation

Economic Segregation might affect individual outcomes in several ways. With respect to economic segregation, neighbourhoods can principally affect the quality of opportunities, institutions as well as social networks of residents, eventually influencing individual well-being (see Solari, 2012). Poor neighbourhoods are generally characterized by a low level of investments, deteriorating infrastructure structure (e.g. roads, schools), increased crime and lack of political powers. A lower political participation may be affected by individual poverty or wealth, physical conditions of neighbourhoods, a geographical isolation of neighbourhoods (and social exclusion) as well as changing economic conditions in urban regions (see Widestrom, 2008). Consequently, economic segregation might result in an unbalanced political power towards neighbourhoods with more economic resources. In contrast, higher-income communities reveal more green places, better funded schools, better social and health services which eventually have an effect on quality of life. Moreover, richer neighbourhoods attract the accumulation of resources and allows to take advantage from this over time.
Living in a distressed area makes it further increasingly difficult for poor families to exit from poverty (see Jencks and Mayer, 1990). Since the structuring in neighbourhoods affects individual opportunities, the future status of next generations might be determined as well. Economic segregation thus might lead to a manifestation of a segregated society and reinforce interpersonal income inequality. An inequality in opportunities may negatively impact educational attainments of individuals and the quality of life in general. Lower-income communities are less likely to generate social and human capital in a beneficial way. The perception of a low level of social mobility impacts negatively the individual well-being.
Neighbourhoods generally define their sets of dominant norms, which implies rather homogeneous behaviour within a community. Due to a peer-influence individuals copy the behaviour of neighbours and orientate on society norms. The likelihood of antisocial or self-destructive behaviour increases in distressed neighbourhoods (see Jencks and Mayer, 1990). In more disadvantaged neighbourhoods, people reveal a behaviour and norms which deviate from those of mainstream society (see Friedrichs and Blasius, 2003). Therefore, living in profoundly disadvantaged neighbourhoods might be related to higher drop-outs at school, higher crime rates and a higher risk of disease as well as mortality (see

McKenzie and Rapoport, 2007). In contrast, more affluent neighbours might act as role models (see Wilson, 2012). It might be benefical, when poorer individuals perceive that success at work as well as in life is generally possible, if ones work hard enough. Then poorer individuals are comparatively more likely to believe in social mobility, which might increase the individual well-being and their quality of life. Affluent neighbours can also induce a better quality of institutions within a community, when they force them to set higher standards.

4 Literature Overview

Empirical research on economic segregation in European countries is scarce. We find a larger number of empirical studies for the US (e.g. see Reardon and Bischoff, 2011). However, in a recent study Marcińczak et al. (2016) explore the relationship between socio-economic segregation and income inequality in 13 major European cities, including Vienna. They conclude that segregation is relatively low in European countries, however, it is in addition to income inequality on the rise. Moreover, Bailey et al. (2017) explored segregation in Amsterdam and The Hauge from 1999 to 2006. Their results suggest that central cities and affluent suburbs are becoming richer, while outer areas are becoming poorer. Thereby, in Amsterdam this was to some extent related to social mobility, whereas in the The Hauge to actual residential mobility. Quillian and Lagrange (2016) show that higher income individuals are the most segregated group using data on French metropolitans from 2006-2010. In addition, government assisted housing is widely spread across many neighbourhood levels. Furthermore, Scarpa (2015) analysed the nexus between inequality and residential segregation in Malmö between 1991-2010. The increase in income inequality corresponds to an increase in neighbourhoods income inequality. However, this was rather mainly triggered by a higher overall income inequality, than by a higher homogeneity in population characteristics.

5 Empirical Insights for Austria

In this section we will discuss empirical findings for Austria addressing the relationship between income inequality and economic segregation. Taking into account the theoretical background discussed above, we will address the following two research questions:

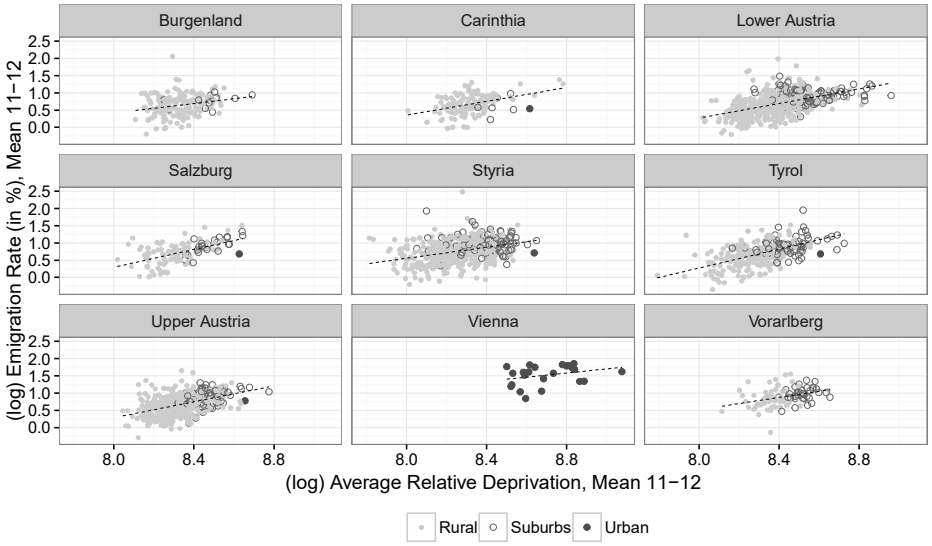
1. ***Is income inequality related to higher out-movements of specific social groups within local societies?***
   Having a lower income compared to other individuals results in a *relative deprivation* among individuals, pushing out individuals who are more relatively deprived (lower income, lower education).

2. ***Does the design of the housing market determine economic segregation and how is it related to income inequality in Vienna?***
   The general price level at the rental market as well as the real estate market influences economic segregation, since the choice of residence is mainly determined by the affordability of housing. Moreover, social housing may foster economic segregation, particularly when social housing is (per se) spatially clustered.

5.1 Income Inequality and Segregation

Moser and Schnetzer (2015) identified spatial patterns for absolute income as well as income inequality across Austrian municipalities. The question arises whether and how these patterns of income inequality are related to economic segregation. In a recent analysis Jestl et al. (2017) analyse the impact of income inequality on internal migration in Austria by using a unique dataset which comprises the total resident population of Austria for 2011 and 2012. Thereby, movements are captured between municipalities. They apply *relative deprivation* to measure income inequality within municipalities, as proposed by Yitzhaki (1979). Since it is assumed that individuals care about their relative position in the local income distribution and they have a distaste for income inequality, relatively deprived individuals, *ceteris paribus*, reveal a higher propensity to migrate. In case income inequality is related to outflows of particular social groups within a local society, income inequality may trigger segregation. Figure 1 shows the unconditional relationship between income inequality and the emigration rates of Austrian municipalities, grouped by the nine federal states. In general, we observe a positive correlation between the two variables.

Figure 1 – Emigration rate and relative deprivation, means 2011-2012

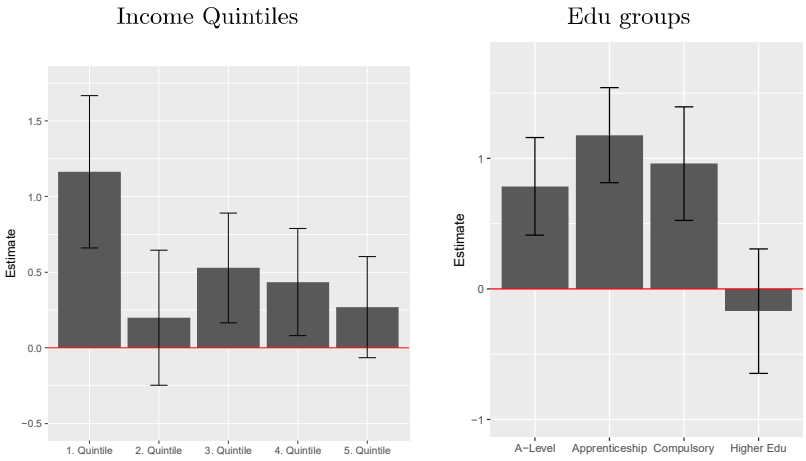


Source: Wage and income tax data, 2011-2012; Jestl et al. (2017).

In addition, a pooled-cross sectional regression analysis points to the positive impact of income inequality on the outflows of municipalities. In order to evaluate whether income inequality has a distinct impact on different social groups within a society, the emigration rate of social subgroups is analysed separately. In Figure 2 we observe the (conditional) impact of income inequality on the emigration rates across income quintiles and education groups. The bars correspond to the estimated coefficient of income inequality in a regression analysis, whereas the whiskers mark the 95% confidence interval. With exception of the second quintile, we find a declining impact of income inequality on the emigration rate of the respective social group. The lowest income group reveals the highest impact of income inequality. By contrast, the emigration rate of the highest income group seems to be unaffected by

income inequality. Furthermore, we find a significantly positive impact for the emigration rate of lower educated groups. For the emigration rate of the highest educated individuals income inequality seems to be irrelevant. Based on these results, we conclude that especially individuals at the lower part of the distribution and lower educated individuals are more prone to income inequality. Thus, income inequality might lead to economic segregation, since a higher income inequality leads to movements of lower income groups out of regions. Although the housing market has generally settled to some extent in the meanwhile (see Schneider et al., 2017), the overall price level (including rental prices as well as real estate prices) is still high. Consequently, we can assume that in particular low income groups are forced to move to regions that are characterised by lower price levels, subsequently resulting in economic segregation.

Figure 2 – Impact of Income Inequality on Emigration Rates of Subgroups

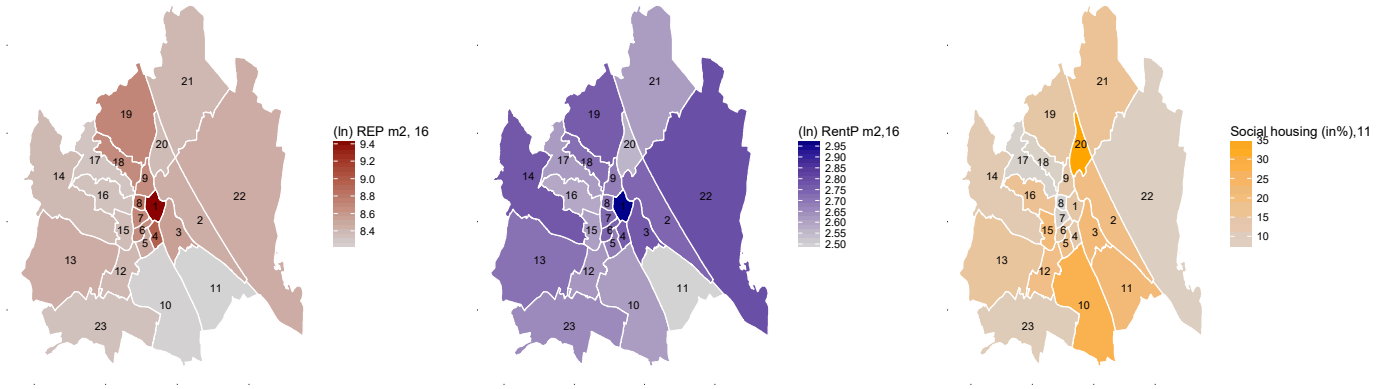


Source: Wage and income tax data, 2011-2012; Jestl et al. (2017).

5.2 Economic Segregation in Vienna

The second research question outlined above addresses the design of the housing market and its interplay with economic segregation as well as income inequality. In this analysis we are mainly focused on the districts of Vienna, since we are not only interested in the role of real estate prices and rental prices, but also in the influence of social housing. In Austria a large proportion of the dwelling regards social housing, whereas this number is particularly high in capital of Austria. In Vienna several social housing programmes have been conducted by the *Social Democrats* in order to build the so-called *"Red Vienna"*. Liberalisation of social housing as well as the housing market in general, however, have been put forward in recent years, which has led, *inter alia*, to increased inequalities between and within the federal states (see Reinprecht, 2014). The next figures illustrate the pattern of *real estate prices* and *rental prices* for 2016 as well as the *share of social housing* for 2011 across Viennese districts.

Real Estate Prices (2016) Rental Prices (2016) Social Housing (2011)

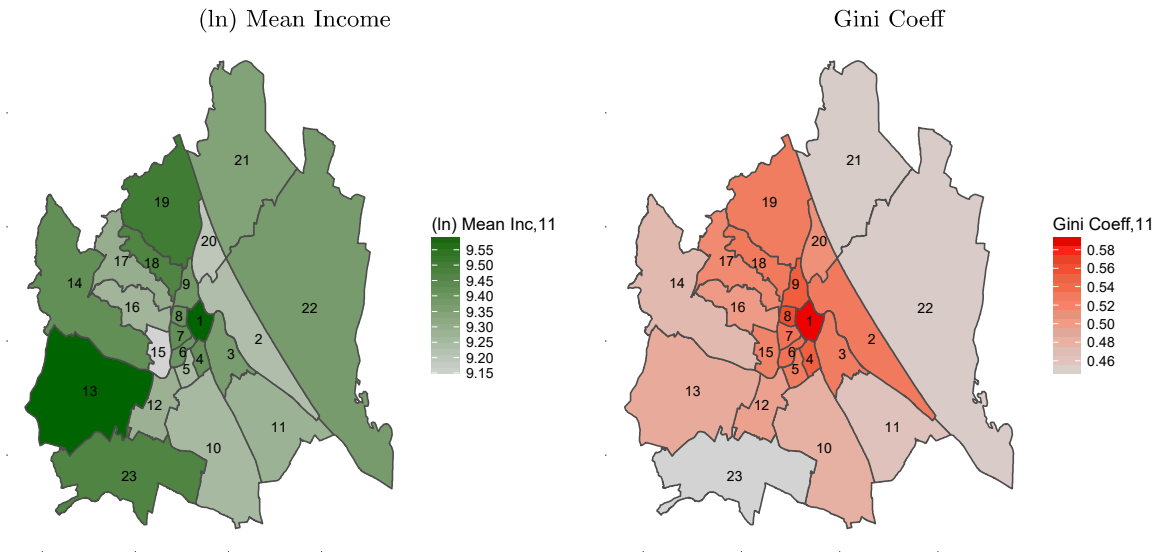


Source: http://immopreise.at/Wien/Wohnung/Miete (2016);
https://www.wien.gv.at/statistik/verkehr-wohnen/wohnen/ (2011).

Not surprisingly, we find the highest real estate prices in the inner centre of Vienna (the 1^{st} district with the highest price) and in the North of the capital city, whereas the districts in the South are characterised by lower real estate prices. For rental prices we can identify a similar pattern. The correlation between these two price levels yields 0.796. The inner centre of Vienna depicts higher overall rental prices. However, we also find higher rental prices in the outlying areas in the East (22^{nd} district) and West (14^{th} district). The districts in the South show again a relatively lower overall price level, where the 11^{th} district reveals the lowest rental price level.

When we take a look at the social housing shares (2011), we observe more or less the reverse picture. Interestingly, the range of the share of the social housing dwelling range from 10% up to 35%. Thus, in some districts nearly one third of the dwelling aims at supporting affordable housing in Vienna. We find lower shares in the centre, however higher proportions in the outlying areas. For the correlation between social housing and real estates prices as well as rental prices, however, we only discover -0.391 and -0.443, respectively. The highest shares can be identified in the 20^{th} as well as 10^{th} district, where we have low real estate prices and low rental prices as well.

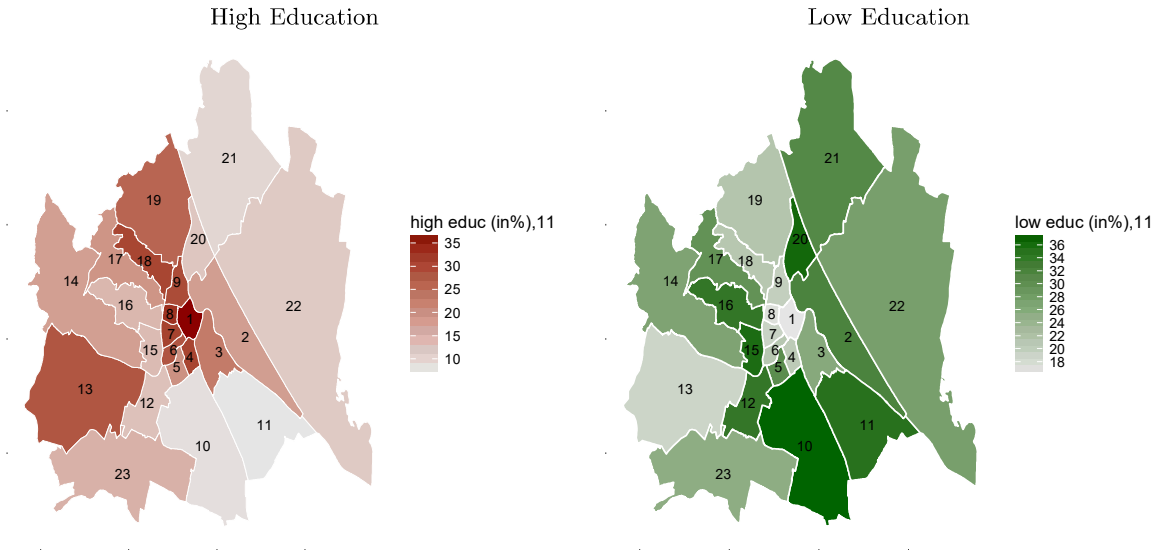
In the next step, we explore the pattern of the *mean income* as well as the *income inequality* (within each district, measured by the Gini coefficient) across Viennese districts. The left panel shows the mean income. We can detect a similar picture as compared to rental prices, illustrated above (correlation: 0.673). Districts with a higher overall rental price, are likely to reveal as well a higher average income level. This is not surprising, since a higher income is needed to afford higher rental prices. In addition, higher rental prices may push out lower income groups, leaving rather high income groups in those regions. Moreover, it seems that districts with a higher share of social housing, disclose generally lower absolute income levels (e.g. 20^{th}, 10^{th} and 11^{th}). The corresponding correlation is -0.578. In contrast, income inequality (right panel – Gini Coeff) seems to be spatially clustered in the centre and in the North of Vienna. Although it is not related to the social housing (correlation: -0.176), it is correlated with rental prices (0.500) as well as real estate prices (0.788).



Source: Wage and income tax data, 2011.

Economic segregation is defined as the spatial clustering and separation of lower, medium and higher income groups. Since income is highly correlated with education, segregation is determined as well by spatial clustering of education groups.

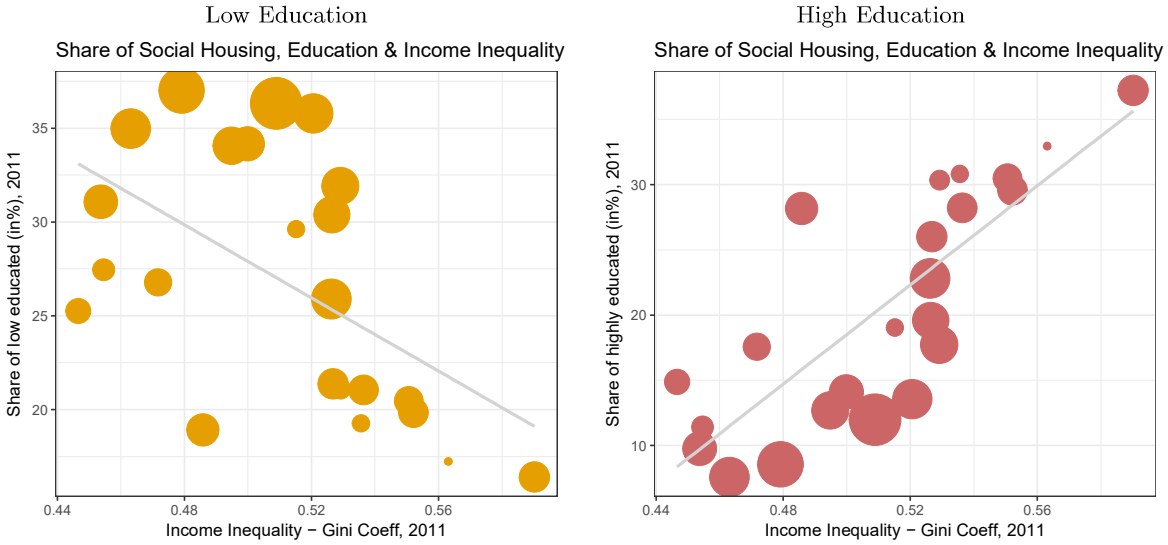
The next figures, therefore, contrast the share of high educated people and the share of low educated people within each district (2011). High education comprises *Kollege*, *Hochschule* and *Uni/Fachhochschule*, whereas low education covers *Pflichtschule* or less. The highest shares of highly educated people are basically displayed again in the inner centre and North of Vienna. We can also find a high share in the 13^{th} district, which corresponds to the high absolute income, however, not to one of the housing market indicators. By contrast, lower educated people are more concentrated in South and centre-surrounding districts. These two figures illustrate the remarkable positive correlation between the absolute income and education. The correlation between education and income inequality is, however, somewhat unclear. Nevertheless, based on the distribution of different education levels, it appears that economic segregation prevails to some extent in Vienna, indicating that lower income and higher income groups are generally spatially concentrated. That could imply the existence of (economically) poorer neighbourhoods. Musterd et al. (2016) argue that economic segregation in Vienna prevails since the Austro-Hungarian Empire, where a social and cultural separation of the center from the rest of the city took place.



Source: Wage and income tax data, 2011.

In order to shed more light on the relationship between economic segregation (measured by the shares of different education groups) and income inequality as well as housing market indicators, we link the shares of low educated and highly educated people to income inequality and social housing as well as real estate prices.

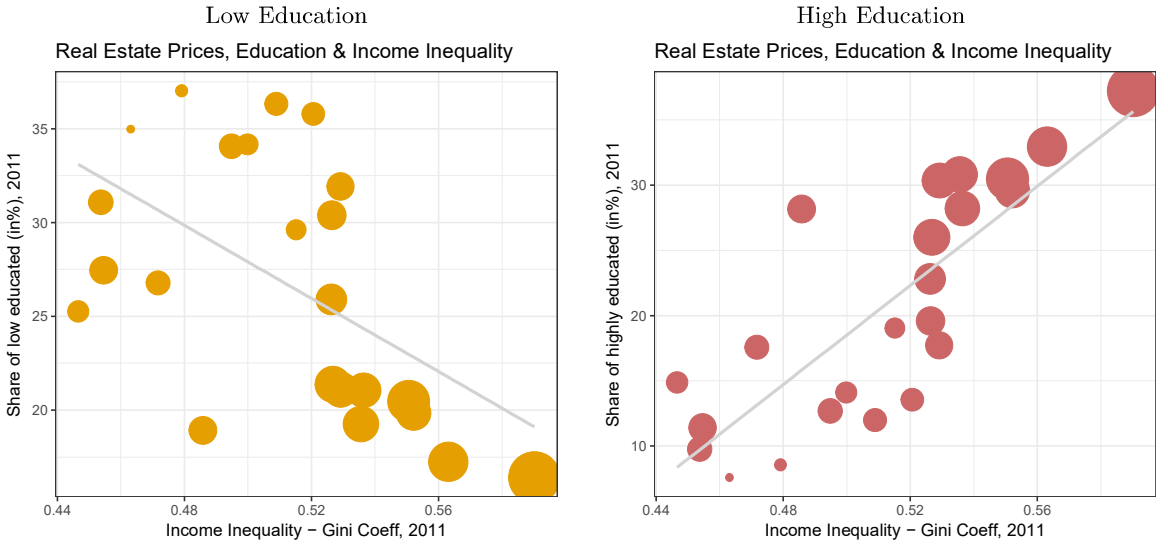
The left panel concerns the share of low educated people, whereas the right panel refers to the highest educated people, on the y-axis, respectively. The x-axis illustrates the income inequality measures. The bubbles indicate the share of the social housing dwelling. For low educated people we find a negative correlation with income inequality, whereas highly educated people reveal a positive correlation with income inequality. Thus, on average, higher (lower) income groups are located rather in locations with a higher (lower) income inequality. Thereby the relationship generally looks more pronounced for highly educated individuals. This principally would fit with the implications of Davis (1959) as well as Runciman (1966), as lower income groups and therefore lower educated individuals attempt to avoid living in neighbourhoods characterised by a high income inequality. There is a sharp drop of the share of lower educated people around the a Gini coefficient of 0.52. This might also be a sign for economic segregation, because this drop indicates a crucial change in the composition of education groups within local neighbourhoods. Moreover, we can identify a slight trend of a lower level of social housing dwellings in districts with a higher income inequality. We, however, find as well a relatively high share of social housing in districts with a high income inequality and a low share of lower educated individuals as well as high share of highly educated individuals. Based on these facts, social housing seems principally to be designed to dampen segregation development in Vienna.



Source: Wage and income tax data, 2011.

Note: Bubbles indicate the share of social housing dwellings (2011).

In addition to social housing, the real estate prices (as well as rental prices[†]) may have an impact on economic segregation. A higher price level might crowd-out lower income as well as lower educated groups (see Banzhaf and Walsh, 2008) resulting in a spatial clustering of higher and lower income/educated groups. Therefore, we consider real estate prices instead of social housing in the next two figures.



Source: Wage and income tax data, 2011.

Note: Bubbles indicate the real estate prices (2016).

[†]We only consider *real estate prices* due to the relatively high correlation – see page 7.

For the real estate price bubbles we obtain a somehow clearer pattern as compared to social housing. Districts with higher income inequality and lower shares of lower educated as well as higher shares of highly educated individuals, depict as well a higher real estate price level. Although the housing market in Vienna is still characterised by a relatively low market-orientation, the prices levels for housing appear to determine economic segregation to a certain extent. Furthermore, the price levels for housing are likely to be an important determinant particularly for the location choice of new residence in Vienna (e.g. from other Austrian municipalities), as it is illustrated in the two figures in the appendix. This might reinforce segregation developments and foster the manifestation of the spatial clustering of certain social groups.

6 Conclusion

Economic segregation implies the spatial concentration of individuals with similar socio-economic characteristics, such as income or education. A highly segregated society might lead to social exclusion of specific societal groups and eventually to social unrest. Poor and/or rich neighbourhoods might separate from each other resulting in so-called *"divided cities/regions"*. In this respect, income inequality is generally regarded as a necessary condition for economic segregation. This study addresses the link between income inequality as well as economic segregation. In addition to theoretical arguments, we provide some empirical insights for Austria, in particular for the capital city Vienna.

In a recent paper, we show that income inequality is related to the outflows of Austrian municipalities, especially for lower income and lower educated individuals, indicating overall segregation developments. Moreover, a descriptive analysis for Vienna points to spatial concentration of lower educated and highly educated individuals. This spatial pattern is further linked to overall rental as well as real estate price levels. Although social housing is to some extent concentrated in districts with higher shares of lower educated individuals, its spatial clustering is lower pronounced. This highlights generally a more equalising role against segregation. Inflows from 2009 to 2013 from other Austrian federal states suggest a manifestation of the economic segregation patterns in Vienna.

Although there exists a strong social housing system in Vienna, new constructions have not been undertaken in the last decade. Furthermore, the private rental market has been started being deregulated (see Musterd et al., 2016). We therefore can expect a higher polarisation in the housing market in the future, which might foster further segregation developments. The location choices of most recent incoming individuals to Vienna imply a manifestation and even reinforcement of the prevailing economic segregation in Vienna.

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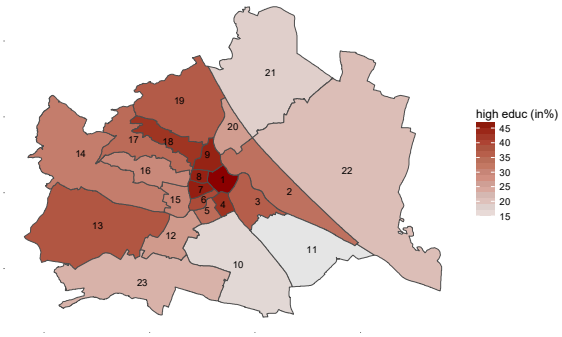
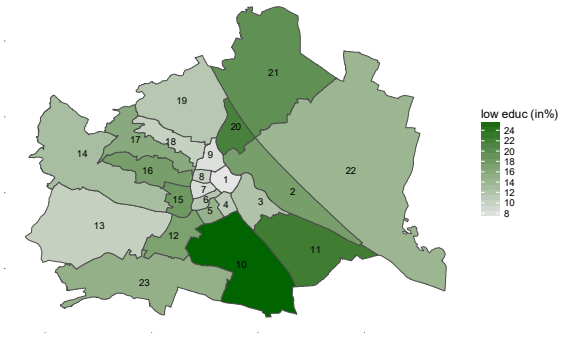
Appendix

Inflows of Education Groups to Vienna, 09-13

High Education



Lower Education



Source: Wage and income tax data, 2009-2013.

Note: Shares are based on the total inflows in the respective districts.