

Conclusion

6.1 Immigrants, Diversity and Urban Externalities

Cities are diverse in terms of firms and companies, the products that can be consumed, the architecture of the buildings, and the people living there. Over 40 years ago, Jane Jacobs argued that cities thrive when there is social and economic diversity (Jacobs, 1961, 1969). She explained that if heterogeneous people and activities are geographically clustered, exchanges of ideas from one firm or industry to another are likely to result, leading to new insights, ideas, and innovations. These agglomeration externalities lead to higher levels of productivity and higher wages in cities, making cities attractive work locations (see, for example, Glaeser et al., 1992; De Groot et al., 2015). Cities are similarly efficient in offering consumer amenities (Christaller, 1933). Because of the large size of cities, it is relatively easy for them to provide the infrastructure for public goods such as parks and other amenities like sports stadiums, music halls, theaters, and museums. Relatively recently there has been a growing interest in understanding the ways immigrants contribute to the heterogeneity of cities in the way that Jane Jacobs described (Ottaviano and Peri, 2005, 2006).

One prominent feature of many large cities is the presence of immigrants. In 2015, around 50 percent of the population of Amsterdam, Rotterdam, and The Hague, the three largest cities in the Netherlands, consists of either first- or second-generation immigrants.¹ In 2011, around 37 percent of the populations of both New York City and London were foreign-born. Foreign migrants contribute to the growing diversity in cities in different ways. As employees of firms, they increase the diversity of the labor force, and as consumers and producers they add to the differentiation of products. The effects of ethnic diversity on labor market outcomes

¹ These numbers are taken from CBS Statline.

and the returns on living and consuming in ethnically diverse cities are not immediately obvious. There is no consensus on whether ethnic diversity affects economic productivity and on the utility derived from immigrant-induced amenities, such as ethnic shops or restaurants.

There is ample evidence that culture affects beliefs and values (Guiso et al., 2006). Ottaviano and Peri (2005, 2006) are among the first to show that cities in the United States economically benefit from cultural diversity. Wages and rents are higher in cities that have experienced an increase in ethnic diversity since 1970. There is also evidence from Europe that regions with a higher population diversity in terms of nationality are more innovative (Ozgen et al., 2010). Möhlmann and Bakens (2015) show that the mechanisms by which diversity affects productivity and innovation, such as matching in labor markets or exchange of ideas and information, are more likely to materialize at the city level than within firms in the Netherlands. For Germany, however, Trax et al. (2015) find that diversity at the plant level increases firms' productivity. The effects that have been found in several studies, however, are relatively small compared to other mechanisms that determine wages, unemployment levels, and the like. Similar to the supply-side effect of immigrants on the labor market (Borjas, 1989; Card, 1990; Borjas, 1995, 2014; Card and Peri, 2016), the effect of ethnic diversity strongly depends on local labor market institutions and on the skill levels of immigrants. Recent experimental research from Levine et al. (2014) shows that diversity within teams can increase efficiency if diversity leads to more critical assessments of colleagues' work.

In different research areas in economics, it is hypothesized that consumers value product heterogeneity. Glaeser et al. (2001) argue that the heterogeneity of consumer goods plays a role in the attractiveness of cities, and a similar assumption leads to the 'love of variety' perspective in Dixit and Stiglitz (1977). The value of (heterogeneous) amenities also helps explain the high house prices in amenity-rich cities. Land prices in Amsterdam are 200 times higher than in the rural areas of the Netherlands (De Groot et al., 2010). This is partly because of the size and composition of the labor market in Amsterdam, but also because Amsterdam is considered to be a vibrant, amenity-rich place to live. Each of these two explanations accounts for about one-third of the price difference between Amsterdam and a relatively poor and isolated rural area, such as East Groningen in the north of the Netherlands.

Areas with many immigrants tend to have consumer products that are linked to the ethnic backgrounds of these immigrants, such as the products available in supermarkets, restaurants, and clothing stores. This type of international consumer environment is characteristic of large cities. Many cities have a Little Italy and a Chinatown along with American retail chains and upscale international designer stores. Although research shows that there is a relationship between the presence of immigrants and the type of products that are offered locally, there is very little research into the utility that is derived from immigrant-induced product diversity (Waldfoegel, 2008; Mazzolari and Neumark, 2012).

In this dissertation, we bring together these strands of research and investigate the effect of ethnic diversity on the urban economy. We build this dissertation around four research questions. The first two questions allow us to focus on the broader picture of the regional labor and housing market to describe the effects of ethnic diversity and immigrants on productivity and utility. The final two questions focus on local, intra-city neighborhoods, housing markets, and residential location choice to analyze the economic value of immigrant-induced consumer amenities and the role of ethnicity in the sorting of the population across neighborhoods in cities.

6.2 Economic Impacts of Ethnic Diversity

In Chapter 2, we answer the question of the economic impact of ethnic diversity on productivity and utility in the Netherlands. Because we are interested in whether cities that are more diverse show better economic performance, we take into account that the population (and sector) composition of one city can be substantially different from that of another city. This is because individuals (and firms) are not randomly allocated between different areas in a country. More highly educated workers, for example, tend to live in larger cities. This process of spatial sorting results in individuals with specific characteristics working and living in cities with specific characteristics. Sorting also applies to the location behavior of immigrants. While about 50 percent of the population in the largest cities of the Netherlands are either first- or second-generation immigrants, this is only the case for 21.7 percent of the population in the Netherlands as a whole. This indicates an extreme sorting of immigrants toward the largest cities, which is not a situation unique to the Netherlands.

By using the longitudinal micro-data of individuals in the Netherlands, we follow homeowners in the labor and housing markets. This allows us to build on the work of Ottaviano and Peri (2006) and control for spatial sorting based on the individual observed and unobserved characteristics of these homeowners. Micro-data for workers are provided by Statistics Netherlands² and are combined with house transaction data from the Dutch Association of Real Estate Agencies (NVM) to identify location choice and house prices. Our approach improves on the seminal papers by Ottaviano and Peri (2005, 2006), in which the effect of ethnic diversity on wages and rents in US cities is investigated without controlling for sorting. We find that the sorting of individuals indeed explains a substantial part of wage and house prices differentials across cities in the Netherlands.

Like Ottaviano and Peri (2006), we find that wages are higher in Dutch cities with a higher ethnic diversity. We find that ethnic diversity has a negative effect

² We use individual demographic data, including the country of birth of the individual and the country of birth of her parents, from the municipality registers (administrative municipality data from the GBA-dataset), and income and firm data (Sociaal Statistisch Bestand (SSB) and Algemeen Bedrijven Register (ABR) data sets).

on house prices, which is a different result to the findings of Ottaviano and Peri (2006). Although the Netherlands and the US are not fully comparable, much of our results depend on city size, and the positive and negative effects of ethnic diversity seem to be more apparent for large cities. The relationships between ethnic diversity and wages and between ethnic diversity and house prices show a complex interdependency with other city characteristics. Failing to control for important labor and housing market characteristics related to the presence of immigrants and ethnic diversity affects the results, especially in the housing market. Including immigrant-induced amenities, as measured by restaurant diversity, shows a positive and statistically significant effect on house prices in the largest cities in the Netherlands. Controlling for the quality of living in a city, which encompasses factors such as poverty, deprivation, house quality, and inequality, substantially decreases the size of the negative effect of ethnic diversity on house prices.

Nevertheless, after including these controls population diversity still has a small negative effect on house prices. This can be explained in different ways. One of the explanations is that predominantly native, homogeneous neighborhoods may be more attractive than heterogeneous ones (Krysan and Farley, 2002; Saiz and Wachter, 2011). As Saiz and Wachter (2011) point out, this is not necessarily related to foreignness per se, but can also be due to the socioeconomic status of many immigrants, of which the impact on a neighborhood is not fully captured in the data we use. However, the observed negative effect of ethnic diversity on house prices may be the result of discrimination in the housing market (Galster, 1991). Another explanation for the remaining negative effect of population diversity on house prices can be the composition of our sample, in which natives, who prefer to live among people who are like themselves, predominate (Bayer et al., 2014).

6.3 Heterogeneous Individuals

To answer the first research question, we control for the sorting of individuals across cities. Our results show that sorting based on individuals' observed and unobserved characteristics explains a large part of the wage differences between cities in the Netherlands, as was also shown for France by Combes et al. (2008). In the third chapter, we further explore the sorting process. We answer the question of the extent to which the economic valuation of immigrants and ethnic diversity is heterogeneous across individuals. Individuals differ in such characteristics as their age, education level, and sector of employment, but also in their residential preferences. These differences are important for explaining individual behavior as well as the economic performance of the cities in which these individuals live (see, for example, Glaeser and Mare, 2001; Glaeser and Resseger, 2010; Baum-Snow et al., 2014; De La Roca and Puga, 2016).

Because individuals are different, it is not likely that everyone derives the same utility from immigrant-induced amenities and enjoys the same productivity effects

from ethnic diversity. Identifying the differences in effects between individuals shows the expediency of using average effects, as in, for example, Chapter 2. We implement a latent class model approach, in which we allow individuals to be divided into groups based on their observed characteristics and their choice of labor and residential location. Very few studies are able to implement heterogeneity in effects because the data needed to identify differences between individuals are not available.

We estimate behavior in the labor and housing markets simultaneously following Roback (1988). The essence of the model suggested by Roback (1982, 1988) is a regional equilibrium, in which all individuals are equally well off. Because regions are different in terms of the endowment of amenities, obtaining equilibrium requires adjustments in wages and house prices depending on whether local amenities are productive or amenable. The presence of immigrants and ethnic diversity can be considered a regional amenity. The estimation strategy in this chapter incorporates the fact that utility and productivity effects (measured as wages), which are translated into house prices, are interrelated. Each worker makes a joint decision regarding where to work and where to live.

In Chapter 3, we find that for most individuals in our data, a joint interpretation of the labor and housing market effects suggests that the presence of immigrants has a statistically significantly positive productivity effect. This result implies a trade-off mechanism in which people are willing to accept higher house prices in cities with a higher shares of immigrants because productivity and therefore wages are also higher in those cities. A back-of-the-envelope calculation of the implicit price of the presence of immigrants shows that most people in our data set would be willing to pay one to two percent of their yearly income to reduce the share of immigrants in the city where they live. If workers can choose to work in a different city than where they live, this trade-off might be easier to accomplish at the cost of commuting. We find descriptive evidence that this commuting patterns exists in the Netherlands and that this leads to spatial sorting patterns. These sorting patterns can be described based on education and preferences related to income, which in turn translate into house prices. Only for a small group in the data do the results indicate that the presence of immigrants and immigrant-induced consumer goods has a statistically significant positive utility effect.

6.4 Living Apart Together

The analysis of the joint effect of immigrant-induced amenities on wages and house prices calls for a more detailed picture of this effect at the local level. In Chapter 4, we shift our focus towards the differences between neighborhoods within cities to answer the question of the economic value of the presence of immigrants in Amsterdam. In Chapters 2 and 3, we stress the importance of evaluating the utility and productivity effects of immigrants and ethnic diversity in an interrelated regional

labor and housing market. When we are interested in intra-city effects, we assume that the labor market does not differ across neighborhoods within a city so that we can focus on the utility effects only (which are measured through the housing market).

If city dwellers enjoy a large, heterogeneous selection of urban amenities, there might be a role for immigrants in contributing to this diversity (Waldfogel, 2008; Mazzolari and Neumark, 2012; Schiff, 2015). One way to measure this contribution is by looking into the accessibility and heterogeneity of ethnic restaurants. Immigrant-induced consumer goods may have a positive effect on utility, but the presence of many immigrants in a neighborhood is generally correlated with lower evaluations of that neighborhood. We hypothesize that there is a trade-off between the utility derived from the presence of immigrants in neighborhoods, and the access to an immigrant-induced consumer goods.

We use all restaurants in Amsterdam and deduce the ethnicity of their cuisine based on the firm data from the municipality of Amsterdam (provided by the Department of Research, Information, and Statistics (OIS) of the Municipality of Amsterdam). Because we know the exact location of these amenities and the exact location of houses from the NVM data set, we are able to construct a data set that shows the location of ethnic amenities in relation to house prices. Because we tend to observe certain aspects in tandem, it is difficult to distinguish the effect of the presence of immigrants on, for example, house prices from the other observable and particularly unobservable characteristics of a local area. In these circumstances, it is difficult to convincingly argue that causality runs from immigrant density to house prices. Because the micro-data set we use includes many of the individual characteristics of a dwelling and its surroundings, we implement the econometric technique of propensity score matching. Matching compares the prices of houses for which the local environments differ in terms of immigrant population and immigrant-induced amenities, controlling for all the other observable aspects for which the houses are different. We empirically implement a rather new generalization of the standard propensity score matching by estimating the joint effect of the immigrant population and immigrant-induced amenities on house prices. Using this multiple continuous treatment approach, the trade-off between living and consuming in areas with high levels of immigrants can be estimated.

We indeed find such a trade-off in Amsterdam. We find affirmative evidence for the positive effect of immigrant-induced amenities on house prices, as is hypothesized in work by Ottaviano and Peri (2005, 2006). As was expected, a higher density of immigrants in a neighborhood has a negative effect on house prices in Amsterdam. Glaeser et al. (2001) state that cities are attractive because they offer a high number of amenities. The negative effect of immigrants in a neighborhood can be compensated by access to ethnic restaurants. The effect of the access to ethnic restaurants on house prices is much stronger than that of the diversity of ethnic restaurants, although higher levels of restaurant diversity have a positive effect on house prices as well. The compensating effect of the access to ethnic

restaurants on the presence of immigrants diminishes if the immigrant population is very diverse.

6.5 Neighborhood Relocation and Ethnicity

From Chapters 2, 3, and 4 it is clear that as far as residential location is concerned, there is a consistent tendency for house prices to be lower in neighborhoods with many (diverse) immigrants. In Chapter 5, we answer the question of the importance of ethnic neighborhood composition in spatial sorting of the population across neighborhoods. There is a long tradition in the social sciences of research on ethnic neighborhood segregation (see, for example, Schelling, 1971; Clark, 1986; Massey and Denton, 1987, 1988). Within the context of this dissertation, it is important to examine the role that preferences for specific neighborhoods play in sorting because the tendency for similar people to cluster in specific areas is a phenomenon observed in many different contexts.

We use the full municipality registration to build a data set that contains all relocations within the cities of The Hague and Amsterdam. This data set has the advantage that we can use the information on the characteristics of the neighborhoods that residents both leave and move into to build a gravity model of neighborhood relocations. Gravity models are often used to describe trade or migration flows at aggregate spatial levels, but they are seldom used to describe local mover flows. The data allow us to explore the ethnic connectedness, or the ethnic barriers to mover flows, between neighborhoods across a single city because the decision to relocate within a city is based on relative neighborhood characteristics.

The gravity analysis of mover flows in Amsterdam and The Hague shows that mover flows of an ethnic group are higher into neighborhoods that have a higher share of that ethnic group than the neighborhood of origin. This suggests a geographical clustering of ethnic groups, and this effect is rather significant compared to other factors that might impact relocations. These findings are in line with research conducted in the US that shows that people of the same ethnic group have a tendency to cluster (Krysan and Farley, 2002; Saiz and Wachter, 2011; Bayer et al., 2014). The underlying cause is not only the similar socioeconomic position of people within an ethnic group, but also the preference of members of an ethnic group for other people of the same ethnic group. Compared to, for example, cities in the US, Amsterdam and The Hague have many small ethnic minority groups rather than a few large groups. Hence it is difficult to predict whether the observed patterns lead to segregation, à la Schelling (1971), because diversity and ethnic clustering are not mutually exclusive in this setting. We also find that, given the presence of a specific ethnic group, a higher ethnic diversity in neighborhoods in terms of all the other ethnic groups is a pull factor for mover flows.

The strength of this analysis is that a city's neighborhoods are considered to be part of a system or network in which residents consider the comparative characteristics of a neighborhood. This is a fairly realistic setup because residents will

compare different neighborhoods in a city when making a decision to relocate. The relative attractiveness of neighborhoods in such a system is likely to be impacted by, for example, urban renewal projects in deprived neighborhoods that change the ethnic composition of a neighborhood. If the characteristics of a neighborhood are changed exogenously, by, for example, housing policies, and these neighborhoods disproportionately attract Dutch residents, these neighborhoods can become less attractive for other ethnic groups, not because of the Dutch per se, but because of the low level of diversity of the neighborhood population or the low share of those specific ethnic groups.

6.6 Social Relevance and Future Research

The research questions discussed above provide new insights into the effects of ethnic diversity on the utility and productivity associated with living and working in areas with immigrants. Throughout this dissertation, we find that ethnic diversity has statistically significant effects, both positive and negative, on economic outcomes. Although the research in this dissertation does not focus on policies and yielding policy recommendations is beyond the scope of this dissertation, our results offer a relevant contribution to the ongoing social discussions about several of the main topics we cover. Using the results from the research in this dissertation, we may put the discussion on some relevant issues into perspective, which is of importance, for example, for the current political climate in Europe related to immigration.

Our results confirm that there is no one-size-fits-all answer to the question of the effect of ethnic diversity and the presence of immigrants on economic outcomes. This is a rather obvious statement, but it is often overlooked in debates on immigration and in discussions about the (un)desirability of ethnic neighborhood segregation and sorting. The effects we find in our research typically depend on the characteristics and institutions that shape local labor and housing markets and the characteristics of workers and residents, including immigrants, in these markets. Ethnic diversity, for example, is predominantly an issue that is relevant in large cities. In large cities with a larger immigrant stock, an increase in the number of immigrants will impact labor and housing markets through an increase in diversity. In smaller cities, an increase in immigrants is predominantly established as a level effect. As we describe above, outcomes differ between both cases.

The heterogeneity in the results presented in this dissertation may be underestimated. One source of heterogeneity that can influence the differences in effects of ethnic diversity on economic outcomes that we do not account for in this dissertation is that of homeowners versus (social) renters. Using homeowners in economic analyses has the advantage that house prices reflect the willingness to pay for the characteristics of a dwelling and its local environment which incorporates the effects of ethnic diversity on utility. This type of analysis is not feasible for workers

and consumers in the Dutch rent-controlled market because these rents do not reflect the market price for the location of the dwelling. The resulting selection bias leads to research results that apply to homeowners who on average have higher incomes, are higher educated, tend to have different preferences, and have different types of jobs in different sectors than renters in social housing. Evidently, including the workers and consumers of the social rent market would increase insights into the described mechanisms and is a challenge for future research.

At the level of regional labor and housing markets, the effects of ethnic diversity and the presence of immigrants are, by and large, rather small in comparison to the other factors that impact these regional markets. The skill composition of the labor force, the density of the job market, the presence of consumer amenities, and sorting explain a much larger part of regional differences in house prices or wages. The role of ethnic diversity and the presence of immigrants becomes much more relevant if we focus on location decisions within cities.

The presence of immigrants has a persistent negative effect on house prices. Even if we control for other local characteristics and income levels, there remains a small negative effect in all of the research presented in this dissertation. There are two lines of argument to explain these findings at the neighborhood level, both of which need to be taken into account when considering neighborhood dynamics. First, although omitted variable bias in the estimations may explain part of the remaining negative effect, discrimination might also play a role. More research needs to be aimed at explaining the persistent negative effect of immigrants on house prices at the neighborhood level.

The other line of argument is that of sorting. One's own ethnicity in relation to the ethnic composition of one's neighborhood plays a non-negligible role in sorting across neighborhoods. This means that, controlling for economic factors, we observe substantial spatial sorting based on the presence of particular ethnic groups in neighborhoods. This is often overlooked in debates on the negative consequences of segregation and is likely to become more important with the growing number of ethnic groups in many Dutch cities. Bayer et al. (2014), for example, show that segregation is likely to increase in the US when socioeconomic inequalities between ethnic groups decrease. Ethnic minority groups may prefer to cluster as well in more affluent neighborhoods. If ethnic sorting is strong, a more relevant question is whether, in the context of the Netherlands, policies to intervene in this rather strong sorting mechanism are effective and optimal (Bakens et al., 2014). At this point, concerns over the negative externalities of the clustering of poverty, which is often related to the clustering of ethnic minority groups, are relevant and important too. A related question concerns the overall connectedness of neighborhoods within cities. What level of spatial sorting or mixing is optimal from a social welfare point of view, given the need for both the bonding and bridging of ethnic groups (Neal and Watling Neal, 2014)? These are very relevant research questions that remain unanswered.

In addition to the distribution of ethnic groups across a city's neighborhoods, the urban fabric of residential areas and commercial areas is obviously impor-

tant for the utility of city dwellers. We find a trade-off between cities' residential and commercial functions, which shows that attractive neighborhoods are homogeneous in terms of population composition, but also have access to diverse consumer goods. Whether these results hold for different kinds of cities across different countries is something that remains to be seen from future research, as are the social costs of the incompatibility of these functions within neighborhoods. Understanding how the physical as well as the socioeconomic and the demographic internal structure of cities contributes to economic growth and social welfare of cities is and will remain an important topic for future research on the economics of cities.