Looking back at the previous five chapters, we find little evidence in support of negative effects of increased international and regional division of labor, while several chapters find evidence pointing in the opposite direction. There is a long tradition in the economic literature – starting with Smith, Ricardo and Mill – that emphasizes the benefits for the average citizen of the increased division of labor that is made possible by agglomeration and free trade. Less attention, however, was devoted to the transitional or distributional effects that these trends could have for different groups of workers – not the least because of a lack of means. The micro data that are used in this thesis allowed us to address this issue.

Wage inequality
In retrospect, the start of this thesis already set the tone for the chapters to come. Chapter 2 showed that between 2000 and 2008 – despite some drastic changes in the economic landscape – aggregate wage inequality in the Netherlands changed little. In 2000, computers and the use of the internet had just started the conquests of our offices. By 2008, new information and telecommunication technologies had brought considerable change in many professions.

During the same period, the share of imports from the BRIC countries in total Dutch imports increased from just 5 percent in 2000 to 13 percent in 2008. Even though these trends changed both the domestic and the international division of labor, the 90th to 10th percentile wage differential increased by only 3 percent. However, at the same time the findings showed that the flatness of the aggregate distribution hides the dynamics for different groups on the labor market. While Chapter 2 attributed this mostly to the composition of the labor market, we also observed a slight increase in the return to education (resulting in higher inequality because high skilled employees have relatively high incomes). The chapter thus showed that there could be some truth in theories predicting that technological progress and globalization are relatively more beneficial for higher skilled workers, but its effect is not large.
From a policy perspective, this has some important implications. If we had found wage inequality to be significantly increasing, there would at least be something low-wage workers could be protected against. Though it still would not be clear whether that something was globalization, agglomeration, or maybe something else entirely, and although it would be uncertain whether the government could intervene without causing additional disturbances, there would at least be a potential for government intervention. However, if there is nothing to protect against, the only thing we can expect from policy measures are the disturbances they might or might not cause.

**Agglomeration economies**

In Chapter 3, we shifted our attention from wage inequality in general to the regional dimension of inequality: wage differences between regions. In this chapter, we find that firms in larger agglomerations pay a wage premium to workers, after correcting for observed worker characteristics. Using population density of 1840 to instrument for current density, we find that doubling the employment density of a NUTS-3 area (which approximates the size of a local labor market) is associated with a 4.8 percent higher productivity. Furthermore, we find a positive effect of specialization. Doubling the relative share of an industry in a region is related to a 2.9 percent higher wage level. The amount of specialization and agglomeration that is offered by cities is thus associated with considerable productivity advantages for workers.

This has some important implications for policies that aim to regulate the dispersion of people across space, investment in infrastructure, as well as policies that aim at reducing commuting. The lesson to be learned from Chapter 3 is that the location where an individual works matters a great deal. If we pick a random individual from the countryside, and move him or her to Amsterdam or one of the other larger Dutch cities, Chapter 3 shows that we may expect a wage or productivity premium in excess of 10 percent. Having workers employed at the location where they are most productive is not only beneficial to themselves, but it also increases the budget we have to pursue other valuable goals.

Housing market regulations increase the difficulty for individuals to work closer to a productive job. In fact, the most productive cities in the Netherlands are among the municipalities with the most regulated housing markets, and are
characterized by a high share of social renting houses that are occupied by individuals to whom the productivity advantages of the cities where they live do not matter much. The individuals that would have lived there if the allocation of housing would have been left to the market, are now faced with the option of either commuting a longer distance or working at a less productive location.

Commuting

It is not difficult to see how increasing the costs of commuting further reduces the incentives of workers to work at the most productive locations. Because the decisions of individuals to work in a job with a certain productivity level (or maybe not work at all) have implications for tax revenues and social security expenses, the outcomes of these decisions result in externalities that go far beyond the individual.

Chapter 4, which analyses heterogeneity in commuting patterns between workers with different levels of education, finds that highly educated workers commute further than lower educated, both in terms of time and distance. This is often explained by labor market and housing market rigidities that are relatively high for higher educated workers. Compared to lower educated workers, higher educated workers are also far more likely to commute towards the larger agglomerations and the more productive regions, which implies that the productive advantages offered by densely populated areas are particularly large for higher educated workers.

Housing market regulations have on the one hand reduced the supply of the kind of housing that is in demand by higher income households in some of the largest Dutch cities, while on the other hand taxes have resulted in relatively high transaction costs of buying a new house (although these costs have been considerably reduced in recent years). As higher educated individuals are more likely to own rather than rent a house, this affects them relatively strong. On the labor market, search frictions are likely to be larger for higher educated workers, because they are more specialized. The probability of finding an optimal match close to the current residence of a worker is therefore relatively low for a higher educated worker.

Highly educated workers are thus particularly affected by the trade-off between accepting a less productive job (if they do not find a good match close to
their home location), incurring high costs of buying a house closer to a productive job, or commuting longer distances. Due to the externalities associated with using the available human capital in a country as productively as is possible, it makes no sense from a policy perspective to *ceteris paribus* discourage commuting. Rather, the findings of the Chapters 3 and 4 suggest that substantial externalities (in terms of worker productivity) are associated with having housing markets that allow workers to live and work at the location where they are the most productive, and to reduce commuting costs such that workers are able to work at a location where they are relatively more productive while living somewhere else. If commuting is not an option, the way to go from a policy perspective is thus to make housing markets more flexible: particularly markets for housing that is attractive to high skilled workers in the largest and most productive cities.

This does not mean that all housing market regulation, taxation of commuting, or open space preservation policies should be completely abandoned – the advantages of these policies to the wellbeing of people could generate externalities that are beyond the scope of this dissertation – but rather that is it important that the inefficiencies that result from such policies are sufficiently taken into consideration. Further research may be needed to identify to what extent commuting is associated with more people working in productive jobs.

### Unemployment, trade, offshoring and multinationals

In Chapter 5, we analyze the effects of three different dimensions of globalization on unemployment: exporting behavior of firms, working for a foreign owned firm, and offshorability of occupations. We find that variation in unemployment incidence is largely explained by personal characteristics. For example, females have a *ceteris paribus* almost fifty percent higher probability of getting fired, as have foreign workers from advanced countries, while foreign workers from lower and middle-income countries are more than twice as likely to be fired. Older workers, in contrast, have a lower probability of getting fired. Once unemployed, however, it takes a longer time for older workers to find a job again. The transition of females back to a job is similar to that of males. Foreign workers do not only face a higher risk of becoming unemployed, it takes also longer for them to find a new job. Contrary to popular belief, education does not matter much for both the risk of getting unemployed and finding a new job. While there is a very
strong relation between level of education and wages, this relation is largely absent for unemployment.

Of all firm and job characteristics that were taken into account, only firm size has a substantial effect on unemployment. Workers employed at larger firms are less likely to become unemployed. Exports, working for a foreign firm, or offshorability of jobs are not related to higher unemployment incidence. In fact, our results associate offshorability of jobs to \textit{less} rather than \textit{more} unemployment. The findings thus imply that offshoring is unlikely to have a negative effect on unemployment incidence and duration.

In view of the consensus about the positive long-term effects of increased international specialization, even if globalization would have short term negative effects for some groups on the labor market, it would make no sense to shelter domestic workers from an economic perspective. A far more efficient solution would be to redistribute some of the gains from those who benefit from globalization to those who lose. However, the findings of both Chapter 2 and 5 indicate that – even in terms of short-term transition effects – we have little to fear from increased international specialization. In fact, given its history as a center of international trade and its position as a gateway to Europe, the trend of increased internationalization offers the possibility to further specialize in the creation of value through orchestrating international value chains.

From a policy perspective, this means that it is unlikely to be helpful in any way to take measures when individual jobs are lost to other countries. If a foreign firm downsizes its Dutch activities, this is likely to be part of normal business dynamics. Even though this may have negative effects in terms of wages or unemployment for those who got fired, many hundreds of thousands of individuals find new jobs each year in the Netherlands. As the Netherlands is rather successful in attracting and retaining foreign firms (for example, the share of employees that works for a foreign owned firm is increasing), it is not unlikely that more foreign jobs are lost in other countries and relocated to the Netherlands than the other way around. Government intervention aimed at retaining employment at these firms is likely to result in rent seeking behavior of firms, and misallocation of resources as these help programs reduce the incentive to use employees and capital into more productive activities.
Rather than protecting jobs, adapting some elements of the Danish *flexicurity* system, which combines a relatively low level of employment protection with generous unemployment benefits and active labor market policies, could be an option for the Netherlands (De Groot et al., 2006; OECD, 2012). Active labor market policies – such as training schemes – could improve the transition to a new job of workers who are fired. At the same time, a more flexible labor market will speed up the transition towards more productive activities.

As was noted in the introduction, unemployment is not the outcome of the number of jobs that are destroyed, but rather the outcome of labor market clearing. One of the most important determinants of (long-term) cross-country differences in unemployment is the quality of labor market institutions. Besides preventing labor markets from becoming overly rigid, and getting the incentives to work right, a useful policy goal should be to prevent school dropouts and encourage adolescents to at least achieve higher secondary education (HAVO or VWO) or the intermediate levels of tertiary education (MBO4). While having more individuals with higher tertiary education – particularly university graduates – is likely to generate substantial externalities in terms of productivity, it does not matter much for unemployment.

Minimum wage arrangements and social transfers have a relatively strong impact on the incentives to work for the lowest educated workers (particularly those with only primary education). There are possibilities to improve these incentives somewhat, for example, by arranging social benefits in such a way that the decision to work enables individuals to increase their consumption bundle – including all benefits in kind – by at least a few hundred euros. However, some disincentives are probably unavoidable given the desire to provide minimum standards of living to all. In view of that desire, it is the more important to encourage individuals to acquire a minimum level of education.

*Foreign workers*

Chapter 6 shows that foreign workers who were born in advanced countries are on average equally productive as natives, while at the same time they are not equally productive in *all* firms. After controlling for an extensive set of worker characteristics, including education and occupation, we find that they are slightly less productive in smaller firms and Dutch owned firms, but relatively more
productive than natives in large and foreign owned firms. In contrast, foreign workers from lower and middle-income countries earn substantially lower wages across all firms.

The finding that there are differences in observed wages between natives and similar foreign workers may simply reflect productivity differences due to unobserved heterogeneity (in which case they are not that similar after all). However, it is also likely that foreign workers are less productive in many occupations and firms because of their lack of language skills. In the opposite direction, there are theoretical reasons why there might be externalities from having a heterogeneous work force to some firms. The finding that foreign workers from advanced countries earn somewhat more than natives in large and foreign owned firms, while slightly less in small and Dutch owned firms cannot be fully accounted for by unobserved worker heterogeneity. It is not clear, however, whether foreign workers are relatively more productive in larger and foreign firms because of the value of their knowledge and skills for these firms, or because it is less of a problem that they (for example) do not speak Dutch.

If the presence of high skilled foreign workers would result in externalities through knowledge spillovers, this could result in higher productivity and wages of natives. Indeed, we find rather strong evidence for the existence of a positive relation between the share of foreign workers from advanced countries and the wages of natives in these firms. This is particularly the case for high skilled natives. Even though there could thus be a truth in theories predicting that the presence of high skilled foreign workers results in externalities due to the available of more heterogeneous knowledge, some of the evidence we found was inconsistent with this view. For example, we find that working in an exporting firm is in fact more positive for natives than it is for foreign workers from advanced countries. Furthermore, we find that a diverse composition of the group of foreign workers in firms does not matter for the wages of natives. This is again inconsistent with the “value of diversity” hypothesis, as more heterogeneous knowledge implies more opportunity for knowledge spillovers.

**Future research**

Even though the use of micro data offers unprecedented possibilities to describe the dynamics that underlie trends in aggregate wage inequality that were observed
in Chapter 2, it does not provide a full-fledged explanation for those observed trends. Future research can use the findings of the present study to further theorize, and ultimately integrate theory and empirical evidence on the determinants of wages. A further question of interest is what explains cross-country differences in (trends in) wage inequality.

Chapter 3 studies agglomeration economies in relative isolation, albeit explicitly taking sorting processes into account. A valuable topic for further research is analyzing agglomeration economies, amenities, housing prices, and the decisions of individuals about their residence, where they work, and their commuting behavior in an integrated manner. This way, agglomeration economies (Chapter 3) and commuting behavior (Chapter 4) could be analyzed using an integrated framework. In addition to this, more research is needed to the specific channels through which agglomeration externalities work. For example, it remains unclear whether it is the work location or the residence location of individuals that matters.

Another topic that should be addressed by future research is the importance of knowledge spillovers for regional productivity. Such spillovers are not only one of the explanations behind the productivity advantages of cities, they also have implications for the wages of workers with different characteristics. As regions differ substantially in the composition of the work force, it is important to know how this composition is related to spillover effects. For example, if lower educated workers would benefit from the presence of higher educated workers, this would have implications for regional wage inequality.

Chapter 4 focused mostly on the productivity advantages offered by cities as a driving force behind commuting behavior. Amenities could, however, also be an important determinant of the location behavior of individuals (De Groot et al., 2010). Future work can address how trends in the spatial sorting of individuals are related to amenities offered by cities. A further topic that is of interest is the effect of (costs of) commuting on employment and the productivity level of employees.

While this dissertation addresses both agglomeration and globalization, more research is needed to analyze how these two processes are interrelated. For example, the revival of cities during the last decades remains – to a large extent – unexplained. Furthermore, it remains unclear whether future advancements in
transaction and transportation costs will result in more or rather in less agglomeration.

While Chapter 5 shows that highly educated foreign-born workers from advanced countries are more likely to work in the type of firms where highly educated natives are relatively productive, it remains possible that this relation is mostly the result of something else than the positive externalities from the presence of foreign workers. Future research will need to increase our understanding about what explains the positive relation between firm level productivity and the presence of skilled foreign workers.

Because of the limited access to micro data in other countries, studies that compare countries using comparable micro data – whether it is on inequality, commuting behavior, or unemployment – are relatively scarce. At the same time, it is precisely this type of data that can help to explain the large differences between countries in, for example, trends in wage inequality or commuting distance. As the methodology of data collection has been to a large extent harmonized within the European Union, the solution to this problem boils down to improving accessibility of data.