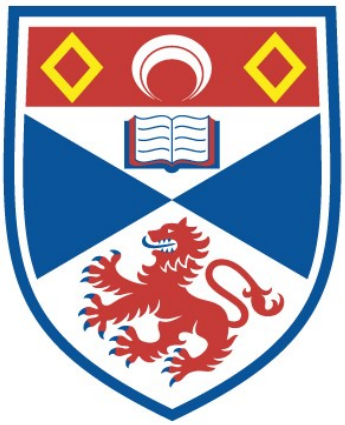
IMMIGRANT INTEGRATION AND THE GLOBAL RECESSION: A CASE STUDY USING SWEDISH REGISTRY DATA

Robert Allan Macpherson

A Thesis Submitted for the Degree of PhD
at the
University of St Andrews



2015

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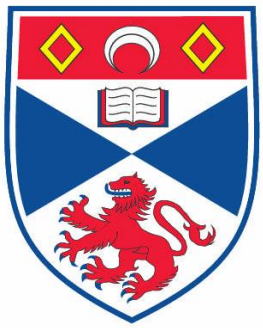

This thesis is submitted in partial fulfilment for the degree of PhD

at the University of St Andrews

August 2015

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Abstract

In many immigrant-receiving countries, the increased rate and diversification of immigration has placed immigrant integration high on academic and political agendas. Immigrant integration must also be understood within increasingly complex contexts due to the global recession and new geographies of immigrant settlement. The aim of this thesis is to deepen understanding of immigrant integration processes during the recession by using Sweden as an empirical lens.

Using Swedish register data, this thesis examines the registered population during the recent economic boom and bust to explore how the recession may have resulted in differential labour market and migration outcomes between immigrants and natives. The first empirical chapter highlights how long-term processes have produced a spatial, immigrant division of labour that results in differential risks of unemployment during the recession. The second empirical chapter examines internal migration to show that although cyclical patterns of the economy offer some explanation of the differences in experiences between immigrant and natives, long-term, deeper processes are more important in understanding geographies of immigrant integration. The final empirical chapter examines a recent immigrant cohort to show that labour market entry is by no means uniform across time, space and immigrant origin.

Conceptually, the thesis shows that existing theories of immigrant integration processes during recessions are underdeveloped and that processes taking place across other temporal and spatial scales offer deeper explanation for the differential outcomes between immigrants and natives. The thesis also reveals what is knowable from register data and how such data allows future research to present a more holistic picture of how various forms of immigrant integration play out across time (economic cycles, life-course, generations) and across space (urban, rural areas, old and new immigrant destinations). This methodological contribution is significant given that social scientists are currently evaluating the relative merits of population censuses versus administrative register data.

Acknowledgements

Completing this doctoral thesis has been a long, challenging, yet rewarding experience. I would not have been able to get this far if it were not for the valuable support of others.

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Undertaking a project between Scotland and Sweden would not have been possible without financial support. I am therefore very grateful to the Economic and Social Research Council who funded my studentship, the Graduate School of Population Dynamics and Public Policy at Umeå University for additional expenses over the years, and the Robertson Postgraduate Scholarship that assisted me with the final writing up of this thesis.

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Chapter 1
Introduction

1.1 Introduction

Migration is an important process shaping populations all across the globe. There are more people living abroad than ever before, making up an estimated 232 million (3.2 per cent of the world's population in 2012) in contrast to 154 million (2.9 per cent) in 1990 (United Nations, 2013). In OECD countries, migrants accounted for 40 per cent of the total population growth between 2001 and 2011 (OECD, 2013). Migrants can consist of many different types, ranging from labour migrants, refugee and asylum seekers, family reunification migrants, and also students. The causes and consequences of migration therefore span a range of social, economic, cultural and political domains.

Migration scholars are often said to study the origin country and the drivers of migration, or the destination country and the processes of migrant settlement and integration with other members of society (Schmitter Heisler, 2008; Castles and Miller, 2009). Together with this spatial distinction, a temporal distinction exists in the use of different terms such as the more traditional 'immigrant', implying permanent settlement, and the more contemporary 'migrant', implying temporariness through the possibility of return and onward migration (Castles *et al.*, 2002). This reflects changing understandings not only of the processes of migration but also of integration processes by migrants and their receiving societies.

This thesis researches the complex processes of integration. One of its key contributions is the analysis of how economic context influences integration. The 2008-2009 economic recession, that began in the US financial sector and spread globally, can be viewed as having a deeper and more global effect on people around the world than any previous economic recession in the post-World War II era (Martin, 2009). For this reason, researching this topic is particularly timely, and provides an opportunity to consider whether migration and integration processes have operated in the same way during the most recent economic recession as was the case in the past, or whether more rigorous conceptualisations are required.

During economic recessions, immigrants are often the most at risk both socially and economically, and through direct and indirect processes (Wright and Black, 2011). Three main factors have been associated with this in the past: firstly, immigrants are often concentrated in sectors that are sensitive to business cycle fluctuations (for example, construction, manufacturing and hospitality); secondly, immigrants have less secure employment because they often comprise temporary, seasonal, or even illegal employment; and thirdly, immigrants are subject to greater risks of layoffs and discrimination in the labour market (Fix *et al.*, 2009). As a consequence of increased labour market insecurity, migration behaviour may also change, both internationally and internally. Like labour market opportunities, migration is often seen as pro-cyclical and strongly connected to the business cycle (Milne, 1993). However, it has been argued that such a simple view does not fully explain the relationship between migration and business cycles (Findlay *et al.*, 2010), and that economic processes at a range of scales influence migration (Fielding, 2012).

Research concerning the recent economic recession is still in its infancy and will inevitably increase over the coming years. This research has generally been undertaken by economists who, unlike geographers, are generally not as focussed on examining the role of geography in relation to immigrant integration. Geography plays an important role in understanding the labour market integration and migration of immigrants, particularly as different regions may present different responses to recessionary shocks (Martin, 2012). Furthermore, migration scholars are increasingly exploring new immigrant destinations outside traditional gateways, where increasing numbers of immigrants are settling, and where the settlement experience and integration process can be quite different to that of their counterparts in other, more traditional gateways (Waters and Jiménez, 2005; Hugo and Morén-Alegret, 2008; Hedberg and do Carmo, 2012).

The term ‘integration’ is highly contested and can have multiple interpretations. In academia, integration is commonly considered to be a ‘two-way process of adaptation, involving change in values, norms and behaviour for both newcomers and members of the existing society’ (Castles *et al.*, 2002:118). However, in policy discourse, ‘assimilation’ and ‘multiculturalism’ may be considered synonyms or descriptions of ‘successful’ integration models (Farrugia, 2009). This is despite the fact

that former is commonly associated with the expectation that newly arrived immigrants become fully 'assimilated' into every aspect of life until they become indistinguishable from the 'majority' population, whereas the latter implies the socio-economic integration of immigrants but with the possibility of maintaining cultural differences. The complex definitions of integration can present difficulties in evaluating integration, but it is argued that the integration of immigrants and their respective societies includes social, economic, cultural, and political dimensions (Farrugia, 2009). These can be measured using indicators and benchmarks across core domains (Castles *et al.*, 2002; Waters and Jiménez, 2005; Ager and Strang, 2008). By undertaking a geographical study of immigrant integration processes with a particular focus on the labour market and internal migration, this thesis seeks to make a contribution not only to address literature on the relationship between economic processes and integration, but also how integration shapes the geography of immigrants. In particular, this thesis looks at these issues in the specific geographic context of Sweden. The following section highlights several reasons why this country selection is desirable for exploring the topic.

1.2 The Swedish Context

1.2.1 Data and Geography

The geographical settlement of immigrants and their subsequent migration (internally and internationally) has been well documented in Sweden (Edin *et al.*, 2000; Nekby, 2006; Andersson, 2012). However, there are research gaps that merit further attention - notably the effects of the recent economic recession and distinct geographical patterns evident in labour market integration and internal migration. A particular attraction of undertaking research in Sweden is the unique opportunity that researchers have in terms of data availability. Sweden is home to some of the world's best population data. This relates to the country's tradition of maintaining registers dating from early parish church registers through to today's world-renowned annual register databases (UNECE, 2007). These data have been used extensively by researchers in Sweden but have also increasingly been used in collaborative projects with international researchers due to the potential for addressing challenging research questions. While the longitudinal analysis capabilities of the data are particularly impressive, as a geographer, the geo-referencing of the data offers another important dimension to the analysis. Furthermore, given that it

is not a sample of the population but the total (registered) population, using such data enables researchers to study issues such as migration and labour market behaviour spatially and temporally without sacrificing one aspect for the other.

The geography of Sweden is also important. The population density is only 23 inhabitants per km^2 (Statistics Sweden, 2013j). Some 95 per cent of the area is rural and sparsely populated (Ceccato and Dolmen, 2011) while a large proportion of the population live in or around the three metropolitan areas of Stockholm, Gothenburg and Malmö located in the southern half of the country. It is not just the geography of Sweden or its exceptionally rich data structure that make it interesting as a location of study, but also its distinctive social history.

1.2.2 Immigration History

Sweden stands out as one of the most egalitarian, humanitarian and democratic countries in the world (Eger, 2009). According to the United Nations Development Programme (UNDP), Sweden has a Human Development Index (HDI), Inequality-adjusted HDI and Gender Inequality Index ranked seventh, third, and second respectively in the world (UNDP, 2013). Sweden has reached such high rankings through the development of its social democratic welfare state model, including virtually free (tax-financed) schools, childcare, healthcare, elderly care, and various other social services and economic social systems (Andersson *et al.*, 2010). This model was founded on the principle that Sweden was traditionally a country of net emigration and was ethnically, linguistically and religiously homogenous.

The Swedish population has changed dramatically through immigration during the post-World War II period. In 1945, the foreign-born population comprised only one per cent of the total population. By 2013, the foreign-born population had increased to 15 per cent and those with two foreign-born parents made up 20 per cent of the population (Statistics Sweden, 2014f). Sweden's rapid industrial expansion led to immigrant labour recruitment between the 1940s and 1960s. During this period, the majority of immigrants came from Northern Europe, particularly Finland and other Nordic countries, and later Southern Europe, particularly Greece, Yugoslavia and Turkey. Subsequent decades have brought asylum seekers, refugees and family-reunification immigrants from various world regions. For example, in the 1970s, the majority came from Chile, Poland and Turkey. In the 1980s, the majority came from

Chile, Ethiopia, Iran and other Middle Eastern countries. During the 1990s, this had changed to immigration from Iraq, the former Yugoslavia, and other Eastern European countries. Since the 2000s, immigrants have largely come from Iraq, Iran, the former Yugoslavia, and Somalia (Bevelander and Dahlstedt, 2012).

1.2.3 Immigration Policy

During the period of labour immigration, recruitment decisions were controlled by the Swedish Labour Market Board (*Arbetsmarknadsverket,* AMS), and also influenced by trade unions. Nordic immigration was facilitated by Sweden signing the Common Nordic Labour Market Agreement in 1954. Following a parliamentary inquiry after pressure from trade unions, the Swedish Government introduced a bill in 1968 to restrict immigration of non-Nordic labourers without work permits, specific jobs, and accommodation prior to arrival (Government Bill, 1968:142). In 1972 the unions completely stopped the recruitment of non-Nordic immigrants and the oil crisis of 1973 ultimately ended Nordic labour immigration too (Lemaître, 2007; OECD, 2011).

Despite restrictions on labour immigrants from non-Nordic countries, Sweden has been liberal in accepting refugees under a broad range of definitions. Under the 1951 United Nations Convention Relating to the Status of Refugees (which Sweden signed in 1954), Sweden has given asylum to 'convention refugees' established in the Swedish Aliens Act (Swedish Code of Statutes, 1954:193). In cooperation with the United Nations High Commissioner for Refugees (UNHCR), Sweden also admits 'quota' or 'resettled refugees'. Additional grounds of settlement have also been given through 'de facto refugees' and 'war-rejecters' status since 1976 (Swedish Code of Statutes, 1976:661), and 'refugees in need of sanctuary', 'humanitarian reasons', and 'temporary protection' since 1997 (Swedish Code of Statutes, 1997:191).

In addition to refugee and family-tied immigration, there has been a growth of other forms of immigration. For example, Sweden joined the European Union (EU) in 1995 and, like Ireland and the United Kingdom, authorised unrestricted access to free movement and labour from Central and Eastern European accession countries in 2004 and 2007. Immediate immigration from these countries was not as large in Sweden as elsewhere; however, immigration particularly from Poland and the Baltic states has grown substantially in recent years (Statistics Sweden, 2013f). International students have also formed a growing proportion of immigrants (Swedish Migration Board,

2014c). This can be linked to the growing number of degree programmes taught in English, and because tuition fees were only introduced as recently as 2011 (Swedish Code of Statutes, 2010:800). While introducing fees did lower incoming students from non-EU countries, the largest sending countries in 2013 have remained non-EU countries such as Pakistan, India, China, and Bangladesh (Swedish Migration Board, 2014b). Further immigration from non-EU countries has also been driven by the liberalisation of Sweden's labour immigration law in 2008 (Government Bill, 2007/08:147). This has allowed employers to recruit any non-EU third country national from abroad for any skill level, provided that they have advertised the position beforehand and that contractual conditions in that occupation are respected.

When breaking down granted first-time permits and rights of residence by classification and citizenship group (Table 1.1), the complexity of contemporary Swedish immigration is revealed. Those receiving their highest proportions of residency through refugee classification are from Africa and Asia. All groups, however, tend to receive a substantial amount of residency through family-reunification. Residency through labour market classification is highest among those from North America, Asia, and Oceania. Immigrants from North America, South America, and Oceania, are more likely to receive residency when classified as students. Those receiving residency as adopted children remains low across all groups. The last group, European Economic Area (EEA)-agreement, is, understandably highest among European citizens. However, foreign citizens can obtain residency in Sweden after having been allowed to work in other EEA countries.

Table 1.1 Granted first-time permits and rights of residence (by citizenship origin and classification) in Sweden, 2013

	Classification					
Citizenship	Refugees	Family reunification	Labour market	Students	Adopted children	EEA-agreement
Europe	2.2	23.7	7.6	2.4	0.3	63.6
North America	0.1	37.9	33.9	25.0	0.0	3.1
South America	6.7	50.9	16.1	20.6	0.0	4.7
Africa	32.2	58.1	3.0	1.9	0.2	3.9
Asia	32.2	31.9	26.4	8.1	0.3	1.2
Oceania	0.1	28.7	35.8	34.4	0.0	1.0

Source: Author's calculations of Swedish Migration Board (2014a).
Note: Row percentage of total first-time permits granted in 2013

1.2.4 Integration Policy

Until the mid-1970s, Sweden did not declare a specific immigrant integration policy. The unofficial stance was that immigrants were to become naturalised Swedish citizens. In 1975, Sweden was declared a multicultural society after passing a new bill for the 'Immigrant and Minority Policy' based around the three concepts of 'equality', 'freedom of choice' and 'cooperation' (Government Bill, 1975:26). 'Equality' underlined that immigrants should have the same opportunities, rights and obligations as the rest of the population. In addition to the Saami population, immigrants and their children were recognised as ethnic minorities and given statutory rights to practice their own language, cultural activities, and maintain contact with their country of origin. Furthermore, the state was to hold a neutral position with respect to individual identities. 'Freedom of choice' meant that everybody could make a choice with respect to assimilation or cultural pluralism. 'Cooperation' was primarily about reciprocal tolerance and solidarity between immigrant groups and the native population. Further policy reforms shortly followed, including immigrant rights to vote in local elections, and the right for immigrant children to take courses in their native language in both pre-school and primary school (Government Bill, 1975:76:23, 1975:118).

Less than ten years later, the government issued an inquiry into the situation of immigrants and reformed the policy to a less progressive position (Swedish Government Official Reports, 1984:58; Government Bill, 1985/86:98). The main factor behind this reconsideration concerned the third goal of 'freedom of choice'. Greater emphasis was to be given to 'Swedish values', including gender equality and the rights of children. It was not possible to accept customs that conflicted with these values. Furthermore, immigrants and their children were no longer given exclusive ethnic group-based rights that remained for the Saami population (Soininen, 1999).

Until the beginning of the 1980s, Sweden's model of immigrant integration was considered successful by international standards. This situation had worsened by the late 1980s and with the deep recession of the 1990s, immigrants in Sweden were increasingly marginalised. In an effort to counteract the exclusions of immigrants from the labour market, a new 'integration' policy was introduced in 1997, alongside the new Board of Integration (*Integrationsverket*) (Government Bill, 1997/96:16). Accordingly, this policy aimed at making new immigrants more 'self-sufficient', 'self-supporting',

and to encourage their 'participation' and 'joint responsibility' in social life, regardless of ethnic, cultural and social background (Soininen, 1999). This integration policy was reformed in 2010, with the intention of speeding up in the introduction of newly arrived immigrants into working and social life through encouraging them to become actively employed, clarifying the division of responsibilities between governmental agencies and improving the skills of new arrivals (Government Bill, 2009/10:60).

While early labour immigrants settled in small towns and cities relatively well dispersed across southern and central Sweden, refugees have tended to settle in ports of entry (such as airports and ferry harbours in southern Sweden) and this led to a growing concentration of refugees particularly in the three metropolitan areas. In 1985, another important moment in Swedish immigrant integration policy was the introduction of the '*Hela-Sverige Strategin*' (Whole of Sweden Strategy) refugee dispersal programme (Government Bill, 1983/84:124). This strategy was a response to concerns about the increasing immigrant residential segregation in Sweden's metropolitan areas of Stockholm, Gothenburg and Malmö (Swedish Government Official Reports, 1982:49). This strategy redistributed new refugees to municipalities throughout Sweden and placed them within language and labour market introduction programmes in an effort to integrate them more quickly into the labour market. While this strategy did produce multicultural localities throughout Sweden, it was abandoned in 1994 due to decreasing public support and failing to achieve its goals (Government Bill, 1993/94:94). The primary goal was labour market integration but very few were economically independent within three-to-four years of immigration. Even fewer had employment having passed through the 18-month introductory programme. Due to changes in the Swedish economy and mismatch of skills, and refugees coming from world regions with greater linguistic and cultural difference to Sweden, unemployment was very high (Swedish Government Official Reports, 1996:55).

Residential segregation of immigrants has remained an issue in Sweden and between 1998 and 2001 an area-based approach was introduced, focussing on 'distressed' (formerly known as 'immigrant-dense') neighbourhoods in metropolitan areas. The approach was called the Metropolitan Development Initiative (MDI) and aimed at 'breaking segregation' by investing heavily in these targeted neighbourhoods (Government Bill, 1997/98:165).

Introduction programmes have evolved within Sweden's integration policies. Between 2003 and 2005, the Swedish Labour Market Board engaged in a labour market programme called the 'Work Place Introduction' for immigrants (Swedish Government Official Reports, 2003:75). The particular group that this targeted were job seekers with sufficient Swedish language skills but problems due to the absence of work experience in Sweden. Key to this pilot was identifying job-seeker qualifications and aspirations, matching them with suitable employers, and providing assistant during the first stage of insertion into the workplace for up to six months. This pilot has been followed up by two new employment-related measures as part of the 2010 integration policy reform (Government Bill, 2009/10:60). 'Step-in' jobs have been created, including subsidised employment for unemployed newly arriving immigrants. The second measure has targeted employed immigrants in over-qualified positions. In order for more suitable occupational matches for these individuals, supplementary education is required is to be paid by the employer or the job centre. The establishment plan ceases to apply to the individual as soon as the relevant period of time indicated in the plan (maximum of two years) expires, the new arrival has achieved full-time employment for at least six months, or they are studying at university level and are provided assistance under.

Another key element to Sweden's political stance on immigrant integration concerns citizenship. Until the mid-1970s, applicants for Swedish citizenship had to fulfil a condition of Swedish language proficiency. Furthermore, while earlier citizenship acts did not allow dual citizenship, this was changed in 2001 (Swedish Code of Statutes, 2001:82). Today, Swedish citizenship may be obtainable for permanent residences of at least five years, four years for stateless person or refugees and two years for Nordic citizens. Sweden has also passed various laws against ethnic discrimination. In 1994, Sweden introduced the Act Against Ethnic Discrimination (Swedish Code of Statutes, 1994:134). This act was tightened in 1999 (Swedish Code of Statutes, 1999:130), and in 2009, combined with six other acts prohibiting different forms of discrimination and promoting equal rights and possibilities regardless of gender, transgender identity, ethnicity, religion or belief, ability, sexual orientation or age (Swedish Code of Statutes, 2008:567).

1.2.5 Changing Welfare and Integration Challenges

In addition to the immigration and integration policies evolving through time, there have been broader policy changes that have resembled a process of neo-liberalisation within Sweden's welfare systems. In terms of housing, this began in the early 1990s with the discontinuation of housing subsidies in 1993, the unrestricted selling of municipal public housing in 2007, property taxation reform in 2008, and other reforms (Hedin *et al.*, 2012). When considering that immigrants generally have lower economic positions, and suffer discrimination in the housing market (Ahmed and Hammarstedt, 2008), these reforms do not bode well for immigrants. Another area of welfare that has undergone similar changes is health care, and especially elderly and disabled care. Key reforms have been: the Health Care Act, initiating a process of decentralisation; the Ädel Reform (Elderly Reform), where long-term inpatient health care and social services were transferred from county councils to municipalities; and the Customer Choice Act, that has enabled municipalities to outsource to private providers through a customer-choice system (Bergmark, 2008). The latter act has been a contributing factor to growing private companies relying heavily on immigrant labour (Jönson and Giertz, 2013)

The recent changes in Swedish welfare reform beg the question: how do immigrants fare? According to the Migrant Integration Policy Index (MIPEX), Sweden has repeatedly ranked highest among a list of developed countries across all seven strands, including: labour market mobility, family reunion, education, political participation, long term residence, access to nationality, and anti-discrimination (MIPEX, 2013). However, among academic research, labour market disadvantage of immigrants has been very well documented, in terms of employment (Bevelander, 2001; Nekby, 2002; Bevelander, 2005; Lemaître, 2007; Bevelander and Pendakur, 2012), unemployment (Arai and Vilhelmsson, 2004), welfare dependency (Gustafsson and Palmer, 2002; Bergmark and Palme, 2003; Bergmark and Bäckman, 2004; Bask, 2005; Mood, 2011), earnings (Le Grand and Szulkin, 2002; Hammarstedt, 2003), occupation matching (Dahlstedt, 2011), and occupational mobility (Rooth and Ekberg, 2006; Helgertz, 2011).

Despite the 'Swedish model' having been seen as a model for the EU (Wiesbrock, 2011) there has been significant criticism and debate by scholars and political actors about the country's multicultural policies, and the perceived increased socio-economic exclusion of foreign-born residents and their descendants, and even the stigmatisation and stereotyping of minority groups (Green-Pedersen and Odmalm, 2008). Sweden's issues with immigration have also experienced the global media spotlight through the emergence of the far-right and anti-immigration political party - the Swedish Democrats (*Sverigedemokraterna*) - who in the 2010 general election won over five per cent of the vote to gain seats for the first time - and riots in May (2013) that began, and spread, from Stockholm's deprived and immigrant suburb of Husby (Higgins, 2013; The Economist, 2013). Following the recent general election held in September 2014, the centre-right 'Alliance for Sweden' coalition was replaced by a coalition between the Social Democrats and the Green Party in October (Government Offices of Sweden, 2014). However, this does not suggest that anti-immigrant sentiment has reduced because the Swedish Democrats have more than doubled their support in parliament since the 2010 elections.

Taking all the above factors into account and considering that Sweden was hit harder by the global economic recession in 2008-2009 than some other countries in the EU (Statistics Sweden, 2009b), with many immigrants (particularly of non-European origin) being adversely affected (Ekberg, 2011), Sweden presents a unique and exciting country case-study for examining immigrant integration processes in the context of recession.

1.3 Outline of Thesis

The main aim of this thesis is as follows:

- *To deepen understanding of immigrant integration processes in the context of recession using Sweden as an empirical lens*

To address this aim, this thesis is arranged into seven chapters (see Figure 1.1). Chapter 2 contains an in depth review of the existing literature, particularly concerning theorisations of immigrant labour market integration, and internal migration. Connected throughout these sections is the changing role of time and space at different scales, such as the conditions of the global and national economies, and differences between urban and rural areas. Most importantly, this chapter serves to develop the main research questions that the thesis will answer.

Chapter 3 provides details about the research design and methodology used to address the aim and research questions. This chapter begins by examining the main philosophical issues regarding quantitative methods in geographical research. Following this, the specific methods and data for each research question are discussed. The next section outlines how this thesis has a unique opportunity to analyse the relationship between labour markets, migration and recession by utilising Swedish register data. The measurement of key concepts is then given.

Chapter 4 presents the first of the empirical chapters. It focuses on the sectoral characteristics of the Swedish labour market to reveal how the division of labour may produce a distinct geography of immigrant groups over time and space. In particular, it explores how changes occur over longer-term processes such as economic restructuring and globalisation as well as short-term business cycle fluctuations. Spatial distinctions will be made between urban and rural labour markets in determining labour market concentrations of immigrants and natives over time.

Chapter 5 builds on the role of time and space through an examination of internal migration patterns of immigrants and natives. In particular, the chapter contributes to the literature by proposing a theoretical framework appropriate to the Swedish context. It is suggested that while the immediate impacts of the business cycle may slow migration flows, deeper structural factors explain why some migrants are affected more than others during recession.

Chapter 6 examines the employment entry of newly arrived immigrants to connect with issues raised in the previous two chapters, such as time, space, and labour market. This is achieved through a longitudinal analysis of a recent cohort of immigrants to Sweden. By taking such an approach, the analysis is able to take into account the labour and spatial mobility of the individuals to present a more accurate picture of how rural areas may offer different opportunities for immigrants than traditional metropolitan gateways. Finally in Chapter 7, the main findings of the thesis are discussed within the broader literature before drawing together the main conceptual, methodological and future research conclusions.

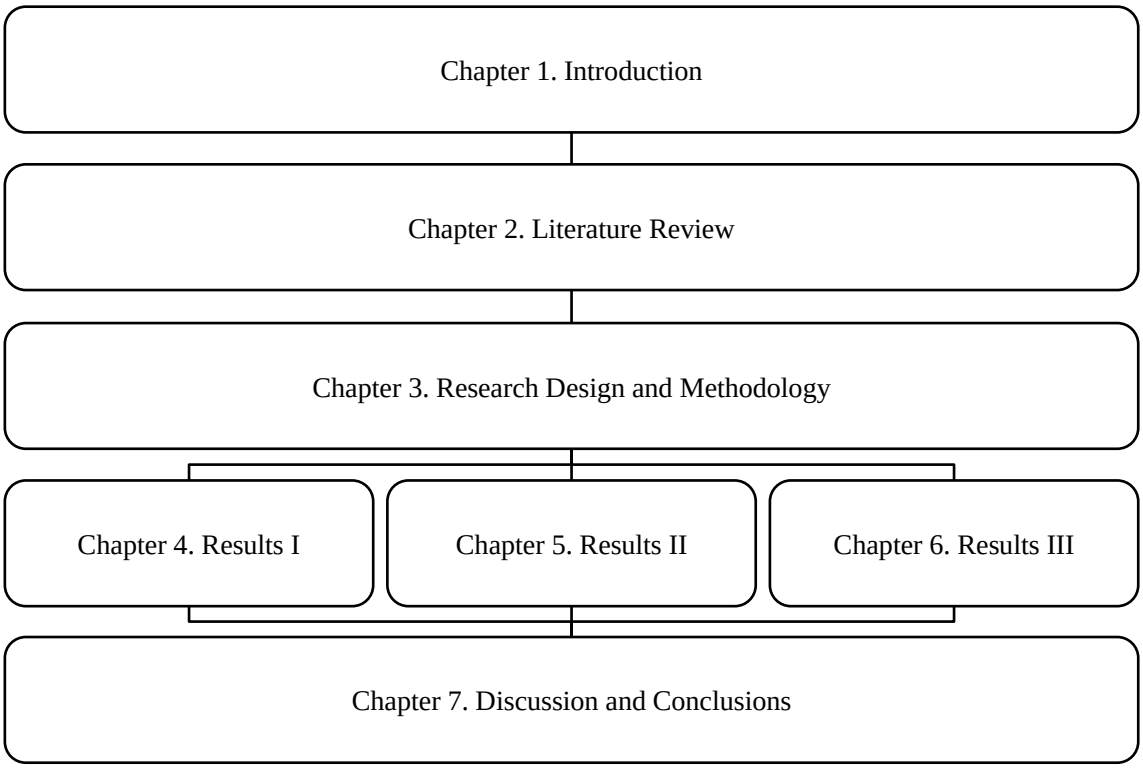

Figure 1.1 Thesis outline
Source: Author.

Chapter 2
Literature Review

2.1 Introduction

The purpose of this chapter is to critically review the academic literature relevant to this thesis and identify gaps that can frame the research questions investigated in later chapters. Since the thesis was motivated by an interest in how the integration of immigrants is affected by economic variation in general, and by economic recession in particular, the review starts by presenting an evaluation of how geographers have conceptualised migration in relation to economic change over time-space. This therefore provides a wider context within which to nest more detailed discussions about integration, understandings of complementary and substitutional labour, analysis of the immigrant division of labour, as well as specific geographical propositions about the relation between human mobility and regional development.

The first section of this chapter explores Tony Fielding's (2012) proposition that migration can be meaningfully analysed in relation to three scales of economic change. This is placed at the start of the literature review, not only because it provides a useful time-space context for other more specific concepts, but also because it is a key framework that the thesis seeks to advance as a result of the empirical and theoretical contributions reported later in the thesis. The next section of the review locates the literature on immigrant integration in the labour market relative to wider economic trends. Discussion then progresses to considering the nature of internal migration by immigrants and what is understood about the geographies of immigrant settlement. The penultimate section reports on how wider concepts apply to the specificities of the Swedish experience. The final section concludes the chapter and summarises the major research questions and subsidiary research questions relative to the gaps identified in the existing research literature.

2.2 Migration and Differential Economic Processes in Space-Time

2.2.1 Conjuncture

Studies concerning the effects of the recession on immigrant populations have often focussed on international migration (Dobson *et al.*, 2009; Fix *et al.*, 2009; Papademetriou and Terrazas, 2009; Rendall *et al.*, 2011). According to Fielding (2012), the recent recession has largely been interpreted as the result of a severe downturn in the short-term business cycle. It is therefore unsurprising that research on the impacts of the recession have drawn on knowledge of how migration varies with the business cycle. Challenging this view, Fielding (2012:99) has posed the provocative question: 'what if we are witnessing at the same time, the effects of two other sets of economic processes - processes that operate over time-scales that are very different from the business cycle?' By this, Fielding is referring to 'restructuring' and 'deep structural' processes. Restructuring typically takes place between two and four times the length of the business cycle. Deep structural processes reflect long-term shifts in the underlying geographies of wealth and power. These processes result in different sub-flows of migration with different compositions. Figure 2.1 schematically presents how these three economic processes might intersect with migration effects in high-income regions/countries over the period 1950-2010.

Prior to critiquing the schema, it is useful to describe its contents in a little more detail. At the first level of Figure 2.1, economic processes produce almost instantaneous changes in migration, such as business and housing cycle fluctuations ('Conjuncture'). At the start of the business cycle (Stage 1), in-migration/immigration is low but rising, out-migration/emigration is high but falling, house prices are rising, unemployment falling, and there is net in-migration/immigration. By the second stage of the cycle (Stage 2) in-migration/immigration reaches a peak, out-migration/emigration bottoms out, with new construction, low unemployment, and high net in-migration/immigration. By the third stage (Stage 3), in-migration/immigration is high but falling, out-migration/emigration is low but rising, house prices begin to fall, unemployment begins to rise, and there is net out-migration/emigration. In the final stage of the cycle (Stage 4), in-migration/immigration bottoms out, out-migration/emigration peaks, there is little new construction, unemployment is high, and there is high net out-migration/emigration.

2.2.2 Restructuring

Perspectives within the top layer are considered oversimplified and '[t]he real world is rather more complicated' (Fielding, 2012:102). What Fielding meant by this was that national economies have become increasingly connected through globalisation, and that business cycles in different regions have become synchronised. It is no longer the case that an economic recession in one region is in isolation of another region. Thus, when an individual becomes unemployed in one region, they are less likely to move to another region because unemployment may have been rising there too.

The second level involves economic processes comprising slower changes, typically restructuring. Between WWII and 1970 (Stage 1), a Fordist mode of production took place, resulting in mass migration from rural agricultural and 'old industrial' regions towards expanding high-growth metropolitan city-regions. Adding an international dimension, the scheme could be applied to migrants from peripheral European countries moving towards industrial countries of North West Europe. The spatial division of labour here is described as a 'regional sectoral specialization' as each region specialised in producing goods and services close to natural resources, locational advantages, and skill. Between 1955 and 1990 (Stage 2), a 'new spatial division of labour' emerged as companies grew into multi-location, multi-product, and multi-national corporations and organisations. Head offices moved towards global cities such as London, New York, and Tokyo. This division spilled over international borders to achieve cheaper production costs, becoming the 'new international division of labour'.

From 1975 to 2010 (Stage 3) the sub-national level marked a 'regional functional disconnection' of areas like the London/South East Economy which have had a dominant role as the UK's global financial centre with conditions more like those of a different country engaged in neo-liberal globalisation processes. From 1995 (Stage 4), the final period of this level has been marked by the commodification and financialisation of social relations (for example, care), changing from individual and community provision to corporate ownership. There has also been a renewed importance of rent-seeking behaviour and high-risk financial products ('casino capitalism') concentrated in a relatively small number of global cities.

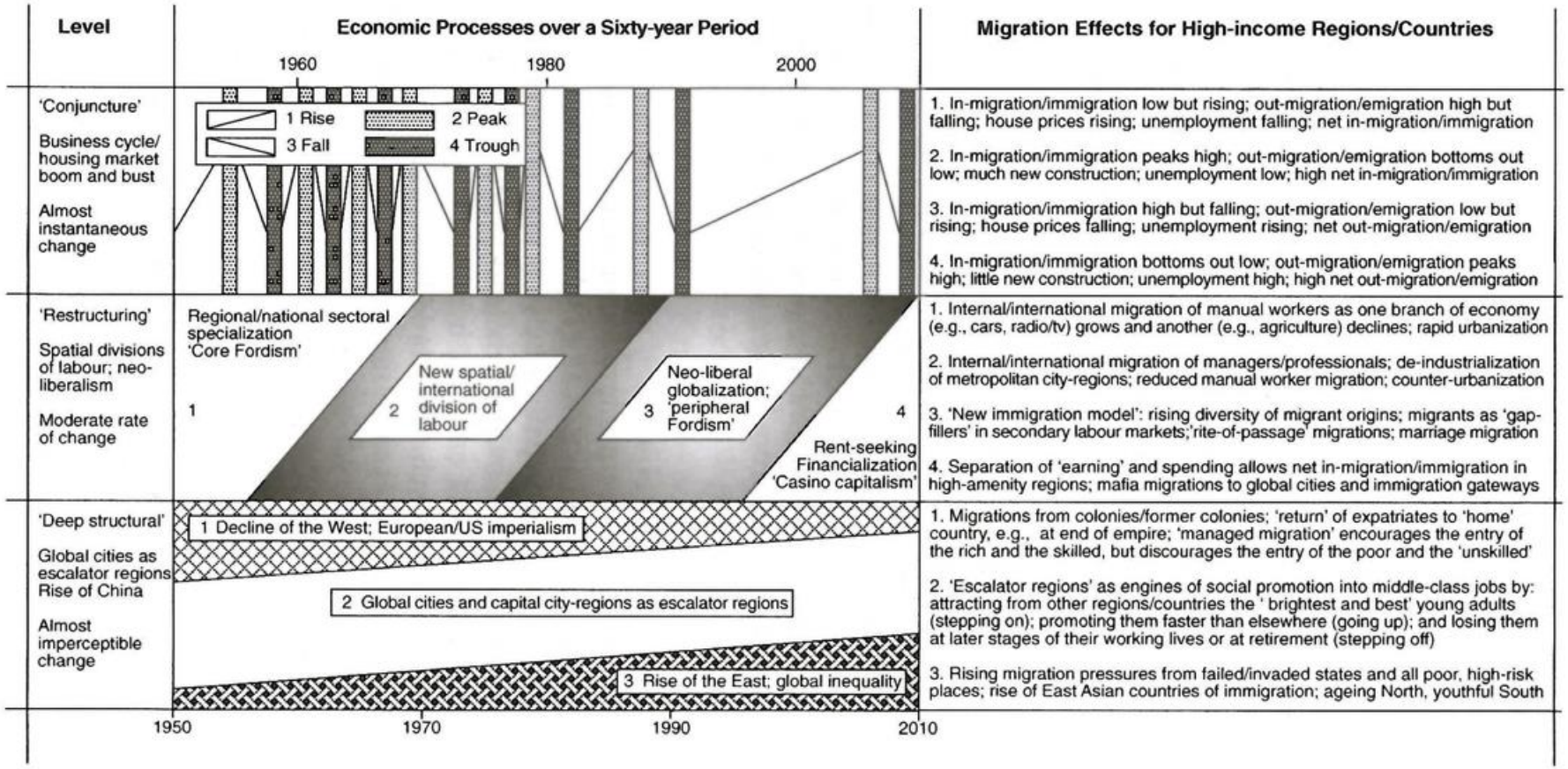

Figure 2.1 A conceptual framework for analysing the economic forces affecting migration (applied to the South-East of England), 1950-2010
Source: Fielding (2012:101).

2.2.3 Deep Structural Processes

The lowest level of Figure 2.1 consists of deep structural forces. This has historically been shaped by colonial and quasi-colonial links between wealthy countries of Europe, North America, Africa, South Asia, and Latin America (Stage 1). Incentives to migrate from risky, low-income countries, to safe, high-income countries, have been increasingly matched by immigration controls. However, efforts to limit migration to the highly skilled have been only partially successful because there exists too much low-skilled and low-paid employment associated with the black economy requiring labour supply. Throughout this time period, there has been one migration constant among the socially upwardly mobile population to areas associated with such social trajectories – a concept Fielding has coined the 'escalator region' (Stage 2). Escalator regions usually contain metropolitan cities (for example, global cities such as London, New York, and Tokyo) that act as 'engines' of promotion to middle- and upper class employment. Lastly, there has been gradual rising pressures from failed/invaded states and all poor, high-risk places, together with a rise of East Asian countries of immigration and ageing north and youthful south (Stage 4).

While this framework has sometimes been referred to as a 'simple conceptual framework' (Fielding, 2010), it is highly complex in its attempt to deal with so many different aspects of migration and economic processes simultaneously. This is both a strength and weakness. One criticism acknowledged by Fielding was that economic processes are separated out in a very rigid way. Nonetheless, this does not necessarily mean there are no interactions between the levels of economic process. For example, while migration trends are largely driven by long-term determinants, economic crises can have long-term effects if they trigger changes in government policies, structural economic changes, or short-run migrations that become long-term migrations as a result of network effects (Fielding, 2010). Another criticism relates to the sheer scale and ambition of Fielding's framework. Regarding this, the following statement from King and Skeldon (2010:1640) is relevant: '[a]ny attempt to build a single overarching theory of migration for all types of migration, for all parts of the world, developed and less developed, and for all periods of time, is illusory'. The following sections will discuss in more depth the theories most relevant to labour market integration and internal migration in the context of the understandings implied by Fielding's schema.

2.3 Integration of Immigrant Labour in Uncertain Times

2.3.1 Differentiating 'Immigrants' from 'Natives'

There is a truly astonishingly large academic literature on immigrant assimilation and integration (Alba and Nee, 1997; Castles *et al.*, 2002; Alba and Nee, 2003; Brubaker, 2003; Joppke and Morawska, 2003; Kivisto, 2004; Waters and Jiménez, 2005; Ager and Strang, 2008; Erdal and Oeppen, 2013). Studying all aspects of assimilation and integration is well beyond the scope of this thesis, and focus is instead specifically on labour market integration of immigrants during uncertain economic times with booms and economic recessions, rather than in a static, gently growing, economic environment. This is a useful point of entry to the literature since according to Lemaître (2007:10), labour market integration is 'arguably the single most important thing that can be done to contribute to the integration of immigrants'.

Labour market integration of immigrants implies that, gradually over time, immigrants will show the same range of labour market outcomes as the native population (Lemaître, 2007). While academic and political discourse on immigrant integration has moved between the historically dominant term of 'assimilation' to the more commonly used term 'integration', when understood structurally, as the 'socioeconomic equalization of life-chances between immigrants and the native population (in employment, income, education, etc.)', assimilation has remained the 'normative horizon of immigrant integration' (Joppke and Morawska, 2003:6).

Immigrants are generally defined as individuals who cross international borders with the intention of a long-term or permanent stay (Castles *et al.*, 2002). Immigrants are often identified through being foreign-born or holding foreign citizenship. Natives are often identified through being native-born or holding citizenship of the country in discussion. However, the term immigrant is often extended to include the descendants of foreign-born population, raising the question of when is an immigrant still an immigrant? Immigrants are often perceived as the classic 'other' who do not belong (in their new society) because of attributes including their legal status, physical appearance, perceived cultural and religious differences, social class, or a combination of these 'identities' or 'signifiers' (Penninx, 2005).

Two concepts often discussed closely in relation to immigrants are 'race' and 'ethnicity'. Race has been used to divide the human population into biological races based on anatomical characteristics, such as skin colour and specific facial characteristics. Ethnicity is more oriented towards the cultural characteristics of people and how they are categorised by others, or how they categorise themselves from others. Racial and ethnic classifications are social constructions that are used in creating distinctions between 'us' and 'them'. A concept related to such categorisations is that of 'difference'. Constructs of difference have received considerable attention largely beyond the scope of this thesis. However, a main thread linking across those studies is summarised by Kobayashi (1997:3), who stated that 'difference allows the social creation of categories of people subordinate to a dominant norm, and allows the continuation of cultural practices that re-inscribe differences as differential values placed upon human life'.

The relevance of the concept of difference to the present context lies in its underpinning theoretical understandings of immigrants' integration with other 'non-immigrant' members of society, often labelled as the 'native' or 'majority' population. In the context of labour market integration, natives are often used as a benchmark against which immigrant populations are assessed in terms of labour market positioning and performance. By using categorisations that divide people into 'natives' or 'immigrants', researchers can often become guilty of treating immigrants as a homogenous group and natives as having a unitary identity and culture (Bråmå, 2006a). Nonetheless, in sharing many of the same points with regards to categorisations of race in the US (Ellis, 2009), and because of their continued use in government and academic literature (Government Bill, 1985/86:98; Bäcklund, 2003), this thesis will maintain the categorical distinction between natives and immigrants, and sub-groups of immigrants based on national origins. Having highlighted how the population may be differentiated into natives and immigrants, as well as other categorisations such as race and ethnicity, the following section returns the focus towards how immigrant labour demand may be differentiated across different scales.

2.3.2 Niched, Complementary, and Substitutional Labour

According to neo-classical economic theory, migration is caused by geographical differences in the supply and demand for labour. At the macro-level, regions with an abundant supply of labour relative to capital have a low equilibrium market wage whereas regions with limited supply of labour relative to capital have high market wage (Massey *et al.*, 1993). This resulting differential in wage causes migration from low-wage regions to high-wage regions. At the micro-level, individuals (native or immigrant) are rational actors who decide to migrate because a cost-benefit calculation leads them to expect a positive net return, typically monetary, from migration (Sjaastad, 1962).

Immigrant labour demand can be differentiated into different forms depending on sectors reflecting different characteristics of the labour market being studied. According to Wang and Pandit (2007), industrial sectors reflect the structural features of the economy (for example, whether individuals are employed in agriculture and natural resource exploitation, the production of goods, or the provision of services) and occupational sectors reflect the nature of the work and the skill levels required. In many instances, immigrants may be more concentrated in some sectors than others. High concentrations of immigrants in particular sectors are often referred to as 'niches' (Wang, 2004).[1]

To add complexity to the relationship between immigrant labour supply and demand, a further consideration is not only considering what immigrants do in the labour market but what they do to the labour market (Borjas, 1987). A question often raised is whether immigrants represent a substitutional or complementary labour supply? In other words, are immigrants competing for the same employment as natives? On the one hand, immigrants may represent complementary labour when there is high demand for labour that is not met by the local labour supply (native or existing immigrants). This can result in the increase of wages among the existing labour supply. On the other hand, immigrants may represent substitutional labour when they offer cheaper labour than the existing labour supply. This can result in direct competition with the local labour force, possibly undercutting their wages and displacing them.

[1] Distinctions can be made between entrepreneurial niches, requiring immigrant business ownership, and worker-dominated niches, signified by concentration regardless of business ownership (Hudson, 2003). This thesis focuses on the latter.

Literature on labour complementarity and substitution is limited in that it tends to focus largely on low-skilled, low-income employment, and the results from empirical studies offer contrasting conclusions depending on the context studied and the methods used (Okkerse, 2008). Nonetheless, the theoretical distinction between these forms of labour is important for understanding how demand for labour can be differentiated.

2.3.3 Income Assimilation and Human Capital

The human capital model and its role in explaining income assimilation, is considered the dominant paradigm in immigrant labour market integration research (Kogan *et al.*, 2011). In a seminal study in the US, Chiswick (1978a) found that immigrant men initially experienced lower earnings than natives of the same ethnic origin, but after 10 to 15 years, they not only matched their counterparts but exceeded them. The main explanation behind this income assimilation was human capital theory.

Human capital theory concerns the investment in development of skills and talents, and its influence on future income (Becker, 1975). These investments include education, labour market experience (with specific or general on-the-job training), health (mental or physical), and knowledge of the labour market. Employers are interested in employing individuals with high levels of human capital as it results in higher production. Employees are interested in finding employment that maximises returns of their human capital. As a result, individuals with increased human capital will enter the labour market faster and receive higher earnings. However, the return of the existing human capital of immigrants may be low because of the lack of transferability of that capital in destination countries. Therefore, immigrants need to re-accumulate country-specific human capital through spending greater time in their new country.

Human capital theory explains initial disparities in income assimilation because immigrants experience a u-shaped trajectory proceeding from a lack of occupational matching according to formal education, before transferable and occupational matching and mobility are achieved (Chiswick, 1978b). Human capital theory offers one explanation as to why demand for labour, in particular areas of the labour market, is more likely to be met by immigrants than natives, and some particular types of immigrants more than others (for example, newly arrived immigrants compared to more established immigrants).

2.3.4 Cyclical Fluctuation in Immigrant Labour Demand

Economies are not always static, gently growing, economic environments. Instead, economies fluctuate between periods of economic growth and decline, boom and bust, peaks and troughs. Indeed, the 2008-2009 recession marks the period of severe economic decline that followed an economic peak or boom of period of unprecedented economic growth in may countries. What then happens to demand in immigrant labour during such fluctuations? By only conceptualising differentiated labour demand between immigrants and natives, demand for immigrant labour should be high during periods of economic boom and low during periods of economic bust (Figure 2.2).

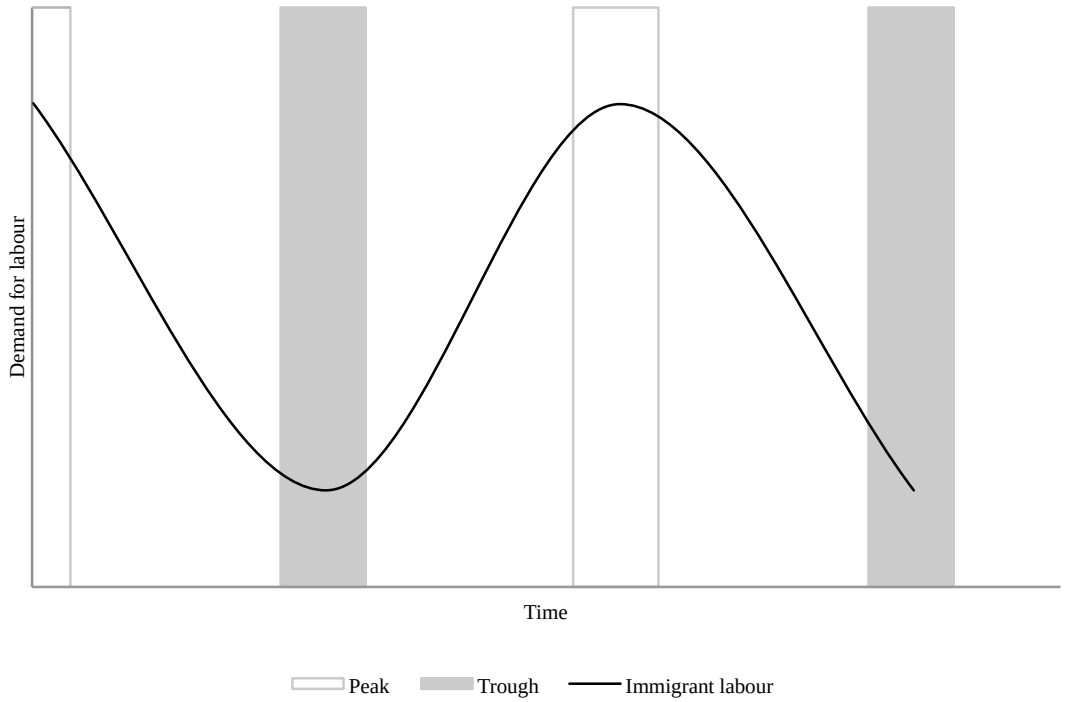

Figure 2.2 Theorised variation in demand for immigrant labour over the business cycle
Source: Author's adaptation of Findlay *et al.* (2010:302).

It is often the case that immigrants niche in industrial sectors that are typically more sensitive to business-cycle fluctuations, such as construction, wholesale, export-oriented manufacturing, and hospitality (Fix *et al.*, 2009). However, other sectors in which immigrants niche (for example, health care, domestic service, and education) have experienced growth during the recent recession, suggesting that, in some instances, immigrants may be less vulnerable than natives during recession (Awad, 2009). While the question of whether or not immigrants represent complementary or substitutional labour is not the primary focus of this thesis, this distinction offers one explanation as to why certain immigrants may experience greater labour market stability or instability during business cycle fluctuations. According to Findlay *et al*. (2010), complementary immigrant labour may be expected to maintain a relatively consistent demand in relation to native labour, whereas substitutional immigrant labour will only be in higher demand than native labour during periods of economic boom (Figure 2.3).

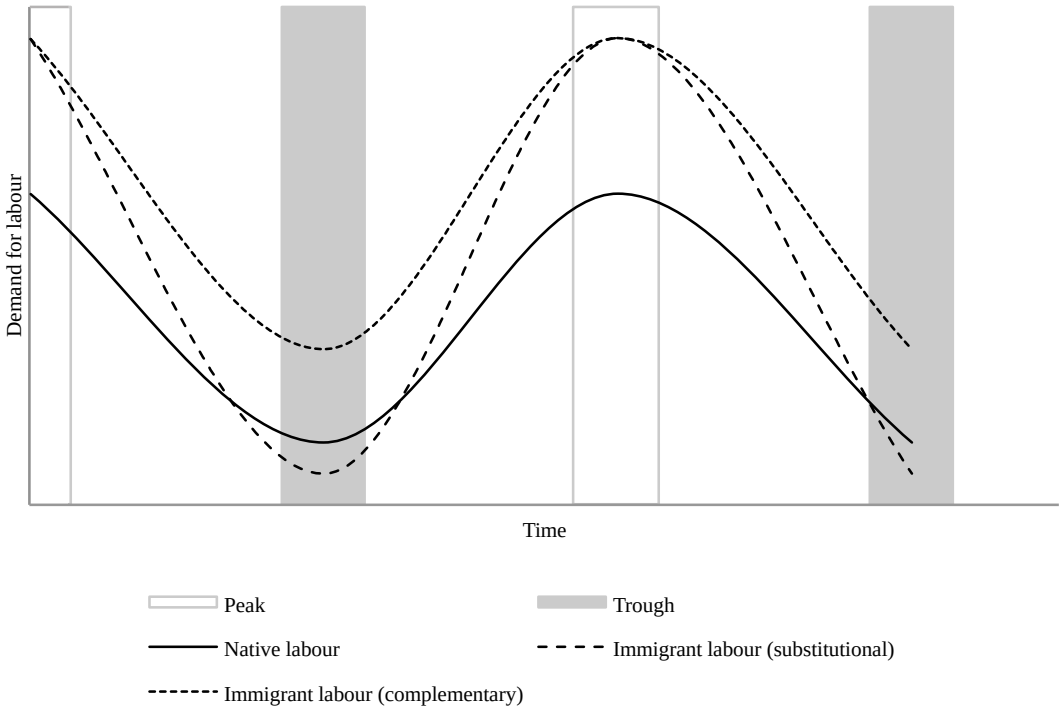

Figure 2.3 Theorised variation in demand for 'complementary' and 'substitutional' labour over the business cycle
Source: Author's adaptation of Findlay *et al*. (2010:317).

2.3.5 Micro-Dynamics of Labour Market (In)security

Fluctuation in the demand for labour implies fluctuation in the hiring and firing of employees. The importance of human capital differences between immigrants and natives may become more prominent during such changes. According to the 'last hired, first fired' rule, those more capable of obtaining desired forms of human capital are positioned more highly in hiring queues as growth begins in the business cycle and therefore enjoy greater protection from layoffs because of their seniority when a recession begins (Couch and Fairlie, 2010). Considering the challenges that immigrants face in accumulating country-specific human capital, they are more likely to be the last hired and first fired.

Neo-classical economic perspectives suggest that immigrants are positively self-selected, and that they will move to new regions in search of real or expected opportunities to maximise their earning potential (Chiswick, 1978a). Therefore, the expectation is that most immigrants arrive in a new country during a period of economic growth as it reflects better labour market opportunities for them. There are two reasons where immigrants may arrive in a new country during a period of economic decline. On the one hand, they may be the most positively self-selected and expect to experience economic gains regardless of the macro-economic conditions. On the other hand, they may be less positively self-selected (for example, refugees), and be driven by non-economic factors. In the latter case, arriving in a new country during a period of economic recession presents another aspect of labour market vulnerability for immigrants, such as long-term scarring effects (Chiswick *et al.*, 1997).

In the same way that Fielding (2012) states that the world is more complicated than short-term fluctuations in the business cycle, the same could be said with regards to labour market integration. According to neo-classical economics, the supply and demand for immigrant labour is a natural outcome of market forces involving rational decisions of employers and employees (Wang, 2004). However, what if people are not rational actors, and what if labour market supply and demand is not a perfect model of equilibrium, with 'all things being equal'? To address this question, the following section explores the more social and structural forces that shape immigrant labour market integration and how this plays out in relation to recession.

2.3.6 Labour Market Segmentation

In contrast to neo-classical economics, labour market segmentation theory suggests that there are important differences in the demand side of labour that are not explained by individual employee characteristics (such as human capital). Furthermore, the labour market may not be unified with those buying and selling labour being in open competition with each other. Instead, labour markets may be separated into different segments with little transferability between them. The most basic distinction, according to dual labour market theory, is that there are primary 'capital intensive' and secondary 'labour intensive' labour markets (Piore, 1979). Immigrants are often found in the latter and instead of experiencing high-skilled employment with high-earning and upward occupational capabilities and stability they are trapped in low-skilled employment with low-earnings and little or no opportunities for occupational mobility.

Dual labour market theory introduces the idea of social class structure to understanding immigrant labour market experiences. Shortages of low-skilled, 'blue-collar' labour may not simply be due to a lack of native labourers to recruit, but more because they no longer want to work in low-skilled occupations due to them being associated with lower 'working-class' social status, and instead seek employment in 'white-collar', high-skilled occupations associated with the 'middle-class' social status. It may be the case that immigrants, like natives, do not desire working in particular sectors of the labour market but still appear to do so despite taking into account human capital characteristics. This is sometimes referred to as the 'ethnic penalty' and is associated with discriminatory practices blocking occupational mobility (Heath and Cheung, 2006).

Discrimination can occur because of employers having a 'taste for discrimination', deliberately avoiding employing certain groups (Becker, 1957). More commonly 'statistical discrimination' based on stereotypical images of particular groups has been suggested as the main explanation (Rydgren, 2004). For example, if a group has a generally lower employment rate and higher unemployment rate on average, an individual will be associated with such trends regardless of his or her individual characteristics. A further example of discrimination is institutional discrimination that is associated with indirect and unintentional discrimination through structural factors impacting everyday life.

2.3.7 The Immigrant Division of Labour

Structural processes play an important role for explaining sectoral divisions of labour. In US literature, studies have shown that immigrants enter the economy in large metropolitan gateways by filling vacancies left by native Whites who have retired, out-migrated, or moved sectors (Waldinger, 1988; Wright and Ellis, 1996, 1997). In addition to this immigrant or ethnic 'succession' within the labour market being a result of supply and demand, according to 'queuing' theory an imaginary queue is formed by racial, ethnic, or origin hierarchies (Hodge, 1973; Model and Ladipo, 1996). The succession of immigrants within particular labour market sectors not only occurs at the metropolitan labour market level, but at larger scale global processes resulting in the international and 'new international division of labour' (Fröbel *et al.*, 1980; Mittelman, 1995) and also new 'spatial divisions of labour' at the intra-national level (Massey, 1995). In the same way that these processes have been driven by transnational corporations independent from the state, according to the 'global city hypothesis' (Sassen, 2001) a number of cities (such as New York, London, and Tokyo) have emerged as key sites of 'command and control' in the new global economy following global economic restructuring. A shift from manufacturing to financial and business service employment is said to have marked an income and occupational polarisation with absolute growth at the top and bottom of the labour market, with the 'falling out' of the middle.

The period before the recent economic recession has been identified as having had unusually high economic growth, coinciding with high levels of immigration from increasingly diverse country origins and neo-liberalisation of welfare states. Contemporary research in the UK, especially London, has re-examined Sassen's global city hypothesis and argued that there is now a new 'migrant division of labour' (Wills *et al.*, 2010).[2] Unlike the original global city hypothesis, the new immigrant division of labour is seen as a product of semi-autonomous actions, not only by employers, but also by employees and the state. The process of subcontracting has been at the forefront of a neo-liberal project to marketise service sector work. This has resulted in the removal of direct employer responsibility in both public and private sectors. Changing immigration

[2] For purpose of consistency in terminology, the term 'immigrant division of labour' will be used when referring to what Wills *et al*. (2010) label the 'migrant division of labour'.

policies have also created a super-diverse immigrant population with some immigrants lacking residency status or access to social benefits. At the same time, according to a 'dual frame of reference', immigrants feel better paid than their counterparts back 'home'. Thus, while gendered, racial and ethnic divisions of labour have been well-established in London and elsewhere, immigration status is now said to 'trump' these older distinctions (Wills *et al.*, 2010).

2.3.8 Immigrant Division of Labour across Time and Space

Literature on the new immigrant division of labour offers a useful way of understanding how the role of employers, employees, and the state, help shape immigrant labour market integration in contemporary societies. Nonetheless, the majority of research on the immigrant division of labour has been limited to the period of economic growth building up to the global recession. This raises the question: has the recession changed the immigrant division of labour? To reach an answer to this question, it is worth considering what scenarios may be presented to immigrants during the recession. Rogers *et al*. (2009) outlined the following scenarios regarding the supply and demand-side of low-wage immigrant labour during recession. As the vast majority of literature on the immigrant division of labour focuses on low-skilled, low-wage labour, many of these scenarios are relevant.[3]

In terms of supply, exiting the labour market or leaving the country is one option. This corresponds with the model of economic equilibrium where immigrant labour is expected to correspond to a 'shock-absorber' for native labour in low-skilled sectors. A second form of exit strategy is to exit the particular region, occupation, or sector. In contrast to both the previous suggestions, an alternative is 'staying put and hanging on'. In other words, if given a choice, immigrants may choose to remain where they are for social reasons (such as having children in local schools). In some cases they may not have a choice and are forced to endure worsening employment and housing conditions and not have enough money to migrate to another region (national or international). In terms of the demand-side, there is the possibility of labour replacement or displacement resulting from direct competition between immigrants and

[3] While the most recent theoretical and empirical literature on the immigrant division of labour does focus primarily on low-skilled, low-paid employment, a considerable volume of literature has been published on high-skilled migratory 'elite'.

natives, and different types of immigrants for employment in the secondary labour market. In some cases, natives may replace immigrants. In other cases, recent immigrants may replace more established immigrant groups due to a range of social or economic factors (such as discrimination based on race, ethnicity or origin, or cheaper labour costs). As a result of replacement of immigrants as a result of the economic pressures of recession, there may be a shuffling and sorting of labour, such as employment to self-employment, permanent employment to casual employment.

These scenarios relate to the earlier discussion on whether immigrant labour is complementary or substitutional. Research on low-skilled, low-paid labour in London has suggested that, during the period building up to the recession, immigration status 'trumped' previous divisions of labour based on gender, race, and ethnicity (Wills *et al.*, 2010). This would suggest that immigrant labour is substitutional, at least with regards to other immigrants. However, literature focusing in more rural-based sectors of the labour market, such as agriculture, has shown that employers rely heavily upon immigrant labour and that this remains constant even during recession – signifying complementary labour (Findlay *et al.*, 2010). This raises the important role geography has in understanding the immigrant division of labour and labour market integration of immigrants during recession more generally.

Most research on the immigrant division of labour has focussed on global cities or other metropolitan regions that act as 'gateways' for immigrants. Nonetheless, as was highlighted by earlier literature on the spatial division of labour, variations in labour supply and demand are not exclusive to metropolitan regions. Regions in close proximity to natural resources or with distinctive economies (such as agriculture) may rely on immigrant labour in positions that are either subject to labour shortages or shunned by natives. During recession, competition may increase in such employment and result in a changing geography of immigrants due to the changing composition of the sectors in which they are employed. Therefore, another important question is: is there a geographical change to the division of labour over the course of these economic processes? Depending on which sectors have been most negatively impacted by recession, and the reliance on immigrant labour, the division of labour is expected to change differently depending on the context in which it is studied. This geographical theme continues in the subsequent sections of this chapter.

2.4 Internal Migration and Integration

2.4.1 Recession and Linked Migration Systems

The previous section outlined how the effects of the economic recession on labour market integration may be one part of several levels of process involving changing regional demands for labour that fluctuate with the business cycle, as well as processes of restructuring with labour market segmentation and migrant division of labour. The recession can have varying degrees of direct and indirect impacts on immigrants (Wright and Black, 2011). As Rogers *et al*. (2009) highlighted, having to migrate is a possible scenario for many immigrants during the event of recession. While migrating is not purely driven by economic factors it is worth considering King's (2012:148) statement:

> '[M]uch migration remains at base an economic phenomenon, driven by economic motives and forces, linked to economic systems, and with powerful economic effects – on the destination places of migrants, migrant source areas, and the migrants themselves'

Early empirical studies published on the effects of the global economic recession on immigrants have not only focussed on the labour market positions of immigrants, but how their migration behaviour may have changed (Dobson *et al.*, 2009; Fix *et al.*, 2009; Papademetriou and Terrazas, 2009). Internal migration, like international migration, can be highly affected by recession. Despite this, academic attention has largely focussed on international migration. Several scholars have identified this imbalance in the literature and presented similar suggestions (Skeldon, 2006; King and Skeldon, 2010; Ellis, 2012). The main points are best described by Ellis (2012) that: firstly, there should be more work on linked migration systems that investigates the connections between internal and international flows; secondly, that questions asked about immigrant social, cultural, and economic impacts and adaptations should be asked of internal migrants; and thirdly, that researchers should discard the assumption that international migration is more important than internal migration.

According to King and Skeldon (2010:1640) '[t]o consider one form of migration without the other, as has so often happened in the past, is to look at only one part of the story, and results in a partial and unbalanced interpretation'. However, by empirically focusing on internal migration and the recession, with specific attention to

immigrant populations, this thesis is ideally situated to address the issues already highlighted as it will study the continued migration of immigrants and is readily applicable to the question of how the international migrant experience is transferred to the national level (Finney and Catney, 2012b).

2.4.2 Internal Migration and the Business Cycle

Neo-classical economics was presented as a typical start point for understanding the dynamics of immigrant labour market experiences in the context of recession (2.3.3). Theorising internal migration during recession can be approached in a similar manner. Like labour supply and demand, aggregate-level migration is expected to be pro-cyclical with high rates during the peak of the business cycle, as a reflection of employment opportunities, and low rates during recessions, when employment is scarce (Milne, 1993). Individual-level migration can be explained by human capital theory. Accordingly, individuals are rational actors who decide to migrate because of a cost-benefit calculation leading them to expect a positive net return (Sjaastad, 1962). In the case of recession, an individual may choose to migrate if better opportunities arise elsewhere, or remain where they are and wait until the economy recovers if that offers better economic returns than moving. Therefore, there are two hypotheses that could be presented with regards to migration choices and the effects of the recession (Westerlund, 1997): on the one hand, migration should be slight as a result of low aggregate demand for labour due to a lower degree of job-search activity among the employed population; and on the other hand, a recession generates higher unemployment that can positively affect the total amount regional and inter-regional job-search.

Relevant to the discussion of the effects of business cycle fluctuation on migration is the timing of such effects. According to the 'causal' approach, outcomes are time-dependent but so too are causal effects of outcomes. In theory, an effect on an outcome can produce a range of different effects including: almost instantaneous effects that are time constant; effects with a certain time-lag that is then time-constant; almost immediate effects that increase continuously; almost immediate effects that rise monotonically and then decline and finally disappear; or effects that occur almost immediately and oscillate over time (Blossfeldt and Mills, 2001). In the case of internal migration and recession, it may be hypothesised that loss of employment is a result of

recession and that results in migration. However, not only does the effects of recession on loss of employment differ over time, so too does the effects of loss of employment on migration.

Most research on the effects of the recent recession on internal migration has come from the US. There has been a marked decrease in internal migration and according to Frey (2009) three particular events have contributed to this: firstly, a housing 'bubble' that developed in many parts of the country during the mid-2000s due to overbuilding and easily available credit; second, the financial crisis that led to sharp deductions in credit that resulted in potential buyers having difficulty obtaining mortgages and potential sellers seeing reductions in the values of their homes; and thirdly, the financial crisis greatly intensified by the national recession that reduced employment availability in most regions. The combination of these forces has made it risky for would-be-homebuyers to find finances, would-be-sellers to receive high values for their homes, and potential long-distance movers to obtain employment in areas that had a previous abundance.

Effects of the recession on US internal migration have presented distinct patterns in the geography of migration. States that grew fastest during the mid-decade 'bubble' experienced the greatest downturns in recent in-migration. Meanwhile, metropolitan areas that experienced greatest recent migration declines were those that reaped the most internal migrants during the mid-decade housing bubble. Migration to exurban and newer suburban counties dropped substantially while it brought unexpected 'windfall' gains in many large urban cores (Frey, 2009).

Further research in the US has argued that in addition to the decline in internal migration being due to the economic recession, migration has been in a long-term decline as a reflection of 'secular rootedness' driven by factors such as growing dual-worker couples, increased household indebtedness, and the widespread use of information communication technologies (Cooke, 2011, 2013). In other words, internal migration patterns are shaped by severe downturns in the short-term business cycle as well as long-term structural changes within economies, and society more generally. These ideas reflect many of those presented earlier in Fielding's (2012) conceptual framework and particularly his escalator region hypothesis (Fielding, 1992).

2.4.3 Economic Processes, Escalator Regions, and Geographies of Internal Migration

Like much of Fielding's conceptual framework (Figure 2.1), Fielding's ideas about escalator regions are highly schematised. According to Fielding (1992:3-4), escalator regions must have the following conditions:

1) They should attract young people at the start of their working lives, specifically those with promotion potential with qualifications, those seeking such qualifications, and those prepared to relocate themselves for the sake of personal advancement. This is stage one – 'stepping on the escalator'

2) They should provide a context in which in-migrants, alongside those already born and living in the region, to achieve accelerated upward social mobility through movement within the regions labour and housing markets. This is stage two – 'being taken up by the escalator'

3) They should lose through a significant proportion of those who had experienced this upward social mobility due to out-migration. Out-migration should be higher among those in the middle or later stages of their working lives, or in or near retirement. Out-migration enables individuals and families to 'cash in' assets gained during their social mobility in the escalator region. This may be achieved through selling such assets as suburban housing in exchange for lower costs of living beyond the escalator region. This is stage three – 'stepping off the escalator'.

The most valuable element of the escalator region hypothesis is its ability to add a spatial component to research on the relation between internal migration (composed mainly of the citizens of a country) and social mobility (something previously neglected until geographers became in interested in the phenomenon). For those researchers interested in immigrant and minority populations, the escalator region hypothesis is also important since the internal migration of international migrants can be rather different from movements by the native population (Andersson, 2012). These differences reflect not only the socio-demographic characteristics of the immigrant population but also the uneven structural effects of national labour markets on immigrant communities. The relationship between social and spatial mobility could be one arena for valuable research, but equally important is using the escalator region hypothesis to better understand how regional economic structures produce differential spatial migration patterns between immigrants facing cyclical fluctuations in labour market demand.

Fielding (1993) illustrated how these processes are interlinked with his case study of migration flows between the London city-region and the rest of England and Wales during 1970-90. Flows from the South East varied greatly through the business cycle, with high flows during boom years, and low flows during recession. Flows to the South East, in contrast, varied to a lesser degree – rising marginally during boom years but falling only slightly during recession. This resulted in a paradox whereby during the boom years, when London's economy produced high national economic growth, the South East was a net loser from migration. In contrast, during the recession it experienced gains from migration (Figure 2.4). This paradox makes more sense when considering differential economic processes. Those who were young, well-educated adults starting out on middle-class careers moved to the South East region and their migration was seemingly almost unaffected by fluctuations in the labour and housing markets. This presented a long-term 'deep structural' escalator region process shaping the social mobility of the middle-class. Those leaving this region were, on average, older and more middle-class. During the peak of the economy, individuals sold their properties to gain maximum returns but experienced lower mobility during the recession because either they did not sell their houses at all or were forced to accept lower prices.

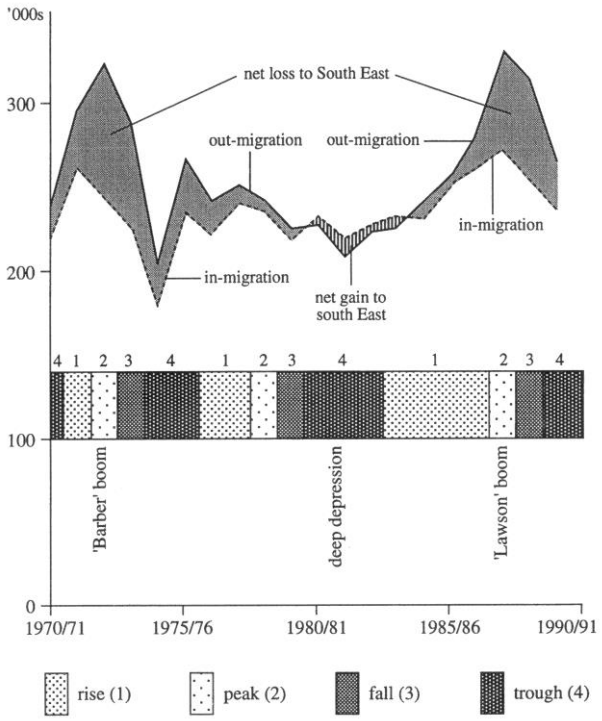

Figure 2.4 Inter-regional migration to and from the South East region of England and stage in the business cycle, 1970-1990
Source: Dunford and Fielding (1997:274).

Fielding's escalator region hypothesis has been tested in different country contexts (Newbold and Brown, 2012; van Ham *et al.*, 2012) but the place it has been examined from an ethnic or immigrant perspective is Sweden. Attention will return to Swedish-specific studies in section 2.6. In Fielding's (2012) conceptual framework, there was some indication of how migration patterns may differ by population categories such as social class, national origin, and legal status. Nonetheless, with the exception of social class, little indication is given as to how patterns differ when considering immigrant populations. To address this issue, the following sections will introduce theories linked to the internal migration of immigrants.

2.4.4 Internal Migration and Spatial Assimilation

Most studies concerning the internal migration of immigrant populations draw on spatial assimilation theory. Like assimilation theory or human capital theory, spatial assimilation remains a 'benchmark' model against which real world experiences can be evaluated (Myles and Hou, 2004). Spatial assimilation implies that immigrants initially settle or 'congregate' in urban 'ethnic enclaves' upon arrival to a new country and '[a]s social status rises, therefore, immigrants attempt to convert their socioeconomic achievements into an improved spatial position, which usually implies assimilation with majority groups' (Massey and Denton, 1985:94). Studies have since expanded the initial proposition of the theory to incorporate aspects of inter-marriage (Ellis *et al.*, 2006), segmented socio-economic trajectories (South *et al.*, 2005), and 'heterolocalism' whereby immigrants experience a wide range of geographical destination choices either through clustering or dispersal over intra-metropolitan, and inter-regional scales (Wright *et al.*, 2005; Ellis and Goodwin-White, 2006; Hall, 2009; Sabater *et al.*, 2012).

According to Zax (1994), inter-regional migration and intra-regional migration are behaviourally distinct because the former allows a change of residence without any relocation of the workplace whereas the latter is more likely to involve a change in both residence and workplace. During recession, increased unemployment risk may result in increased migration due to employment searching (Westerlund, 1997). It is more likely that inter-regional migration will reflect recession effects for this reason. This thesis will therefore focus specifically on longer-distance inter-regional migration, despite the majority of literature on immigrant internal migration focusing on intra-regional migration or residential mobility. Where spatial assimilation is useful to this thesis is its

ability to explain how, in comparison to natives, immigrants may have different initial geographical patterns in a country but use migration as a way of reflecting their improved socio-economic status. Furthermore, it offers a conflicting and more immigrant-specific theoretical perspective to the escalator region hypothesis presented by Fielding (1992).

2.4.5 Internal Migration and the Life-Course

The life-course of individuals and their families has an important to role to play in understanding migration at all scales. It has long been acknowledged that migration behaviour is highly connected to what stage an individual and their family members may be within their life-course (Rossi, 1955). For example, migration propensity may increase when starting employment or higher education, the making/breaking of relationships, the birth of a child, and even retirement. Most recently, improvements in data have allowed researchers to study the affects of life-course trajectories on migration. This 'life-course turn' has convinced population researchers to move beyond analysis based on simplified assumptions like the homogeneity of sub-populations (Kulu and Milewski, 2007).

According to Wingens *et al*. (2011), a conceptual difference exists between the life-course perspective applied in population studies and the sociological life-course approach. The former was initially conceived in terms of age grading and the lifecycle, whereas the latter conceives the life-course in terms of sequences of age-related status configurations that refer to individuals' participation in societal fields, such as labour market, education, and family. Sequences are embedded in social structures so therefore the sociological life course approach provides a stronger focus on the complex interplay between biographical actors and institutional arrangements in which societies structure life courses. While it is understood that many of these stages in the life-course may have the same influence on migration regardless of immigrant origin or ethnic group, compositional effects of such groups may differ resulting in different rates of migration (Finney, 2011). Adopting a sociological life-course approach would offer greater depth to the differentiated effects of the recession on the internal migration of immigrants (and labour market integration for that matter). However, this thesis is limited to analysis and interpretation more closely linked to the life-course perspective applied in population studies.

2.4.6 Internal Migration and Cohort Effects

Internal migration behaviour linked to changes throughout the life-course can sometimes be captured by identifying particular birth cohorts over time (Plane and Jurjevich, 2009). In addition to different birth cohorts capturing different stages of the life-course, cohorts can also capture other temporal trends that may offer additional context. For example, in the 1970s many western industrialised countries experienced an era of counter-urbanisation (Champion, 1989), captured in the second stage of 'restructuring' in Fielding's (2012) framework. Particular immigrant cohorts may produce different rates of internal migration for a number of reasons. In terms of capturing a structural policy effect, an example is how immigrants (especially refugees) arriving during a period of a compulsory resettlement may be more migratory than previous cohorts who had the choice of where they could initially settle. Examples of such resettlement policies can be found in the UK, Netherlands, and Sweden (Robinson *et al.*, 2003).

Studies of the recent global economic recession have suggested that, compared to labour immigrants, refugees and family-tied immigrants are less likely to be affected by the recession (Fix *et al.*, 2009; Fielding, 2010). Neo-classical economic theory would suggest that compared to labour immigrants, refugees are less positively self-selected and therefore will not place as much emphasis on economic gains with migration (Chiswick, 1978a). Therefore, labour immigrants may be more affected by changes in the economy, such as recession. However, in response to the earlier call to inter-link international and internal migration (Skeldon, 2006; King and Skeldon, 2010; Ellis, 2012), an interesting point of discussion to raise is whether the same assumptions could be made of internal migration of immigrants? Given a long duration in a destination country, is there reason to believe that immigrants originating from countries associated with refugees will show different patterns to those originating from countries associated with labour immigration?

The lack of research on internal migration of immigrants has recently begun to receive more academic attention (Finney and Catney, 2012a) yet few studies have been able to examine internal migration of immigrants and the recent recession. In Spain, Sabater *et al*. (2012) suggested that the overrepresentation of immigrants in sectors vulnerable to recession may explain why internal migration flows decreased during the

recession. In the US, Ellis *et al*. (2014) found that immigrants and natives have become less migratory during and after the recession than they were a decade earlier, and that the allure of so-called 'new immigrant destinations' of the late 1990s and early 2000s weakened with the recession. Furthermore, the patterns of immigration and internal migration of immigrants remained stable during and after the recession.

Until now, this chapter has highlighted gaps in the literature with regards to how the recent recession may have changed the labour market and migration outcomes for immigrants. Furthermore, it has highlighted that, by addressing this gap, this thesis can reveal to some extent whether or not the recession has changed the geography of immigrant groups. The theoretical framework has been heavily influenced by thinking about the effects of the recession as one layer representing the severe downturn in the short-term business cycle, in addition to more structural factors that take place relative to a longer time period (Fielding, 2012). The last conceptual area in which this thesis aims to engage is both structural and agency-based, and builds on the interconnections between new immigrant destinations, labour market integration, and the life-course approach.

2.5 Changing Geographies of Immigrant Settlement

2.5.1 New Immigrant Destinations

As a natural continuation of the discussions on how economic processes at different levels may be producing a changing geography of immigrants within labour market and migration outcomes, as a geographer, further consideration should be given to whether labour market integration of immigrants in rural areas differs to that in other areas. Non-metropolitan, and specifically rural, areas may provide some important differences in terms of the immigrant division of labour and whether immigrant labour is complementary or substitutional (Findlay *et al.*, 2010). Due to the unique and complex role of escalator regions in producing net gains to non-metropolitan regions (Fielding, 1992, 1993), it is important to consider the implications of such migration to regions typically less associated with smaller immigrant populations.

It has long been noted that immigrants tend to arrive in 'ports of entry' or 'gateways' that typically have been large metropolitan areas. Also, it has been highlighted that over time, immigrants may geographically disperse away from their initial points of arrival to areas of lower concentrations of immigrants at the intra-regional (Massey and Denton, 1985) and inter-regional level (Ellis and Goodwin-White, 2006). A relatively recent trend that is central to this thesis concerns the implications of growing immigrant presence in new destinations. This is evident in a rapidly growing literature prompted by the new pattern of immigrant destinations emerging in the 1990s US, with significant flows of immigrants shifting from traditional areas of settlement to places with little history of immigration (Singer, 2004). Maintaining the US focus, Waters and Jiménez (2005:107) have argued that: '[e]mpirically, it is time to move away from city-based studies in traditional gateways and look at the transformation of the South, the Midwest, and small cities, towns and rural areas, and suburban areas as sites of first settlement'.

New sites of first settlement may depart from more established immigrant gateways in a number of regards. Whereas the latter have a long history of immigration that may entrench class, racial and ethnic hierarchies, the former often do not, and therefore offer greater freedom to define positions. In addition, many of the newer sites are not only smaller centres than more traditional gateways but where isolation differs as well. This is due to an absence of enclaves and consequently it may be that the

interaction between groups will take place more often in the newer locations. A further point is that new destinations may not have the institutional arrangements (for example, language schools) to assist new arrivals in contrast to well-established areas (Waters and Jiménez, 2005).

Such interest in new patterns of immigrant settlement has been more than a US-specific phenomenon: similar types of change have been identified in other (high-income) countries as well. In a special issue of the journal *Population, Space and Place*, Hugo and Morén-Alegret (2008) refined the justification for changing focus to study the settlement of immigrants in non-metropolitan areas (other than signifying an increase in overall scale of in-migration). They too argued that immigration plays an increasingly important role in the demographic and socio-economic transformations of non-metropolitan areas, and that the settlement experience and integration process of immigrants in non-metropolitan areas is possibly quite different to that in other areas. They also argued that the impact of immigrants in non-metropolitan areas is likely to be augmented due to the smaller populations in such areas, resulting from outmigration of the local residents.

It is important to pause at this point, in order to consider what meanings of geographical terms there are. As Hjort (2009:40) noted, 'most studies of cities and urban processes never discuss space – what urban is. The city, or the urban, under analysis is in no need of definition'. In contrast, studies of rural space and processes have gone to great lengths to discuss what rural spaces are and how such spaces may be defined. Cloke (2006:21) observed that conceptualisations of rural have evolved over time, with a movement away from a more 'functional' perspective of the 1970s, where rural was a fixed space through the identification of distinctive functional characteristics, towards 'political-economic' perspectives, and then 'socially constructed' perspectives since the 1990s, where the importance of 'rural' lies in the fascinating world of social, cultural and moral values that have become associated with rurality, rural spaces and rural life'.

Much of the empirical research on new immigrant destinations has tended to draw attention to the more functional aspects of rural locations, overlooking the more socially constructed perspectives of the rural. However, Hedberg and do Carmo's (2012) *Translocal Ruralism* has challenged some of the more conventionally-held

assumptions about rural spaces, that they have stagnating economies based around agriculture, populations which are in decline and ageing, and that they are isolated from national and global processes. Instead they have argued that contemporary migration relations, both rural-urban and rural-rural in character, as well as operating at both national and international scales, produce 'translocal' rural spaces.

As literature on labour market segmentation and the immigrant division of labour highlighted, social networks play an important role in the labour market integration. However, when considering new areas of immigrant destinations, many new questions can be raised such as:

> 'How effective are strong social or ethnic ties in facilitating access to employment in areas with few coethnics and weak labor demand? If immigrants are less able to draw on social resources provided by coethnics, do they draw on other social resources to access employment? How important is human capital relative to different forms of social capital under these circumstances?' (Pfeffer and Parra, 2009:249)

Finding the answers to all these questions is beyond the scope of this thesis but reinforces the purpose of examining the role of geography more closely. In order to understand why geography matters in the labour market integration of immigrants, and more specifically why differences in rural and other areas matter, the following section examines labour market entry.

2.5.2 Labour Market Entry and the Life-Course

Most studies of immigrant labour market integration studies have focussed on income assimilation. This is understandable given that earnings can be viewed as a form of capital as a return in investment for migrating and investing in country-specific skills (Chiswick, 1978a). Nonetheless, entering the labour market, in order to earn capital, is an equally important process that is often overlooked in the literature. Some immigrants quickly make a single transition into steady employment while for others it can be more complicated, involving a series of events or transitions between various potential states unfolding over time (Fuller, 2011). According to Kogan *et al*. (2011) entering the labour market is a central event in the life course of an individual. Immigrants might experience this event several times in different societal contexts. Therefore, understanding how this event might vary across immigrant origins and socio-economic groups is an important aim for migration-related life-course research.

According to Wingens *et al*. (2011) applying a life-course approach constitutes a promising conceptual start point for overcoming the crucial micro-macro problem in social research by allowing researchers to analyse the dynamic inter-relationship between structure and agency. At the start of this chapter, a conceptual framework was presented to introduce how economic processes taking place on different temporal and spatial scales may influence immigrant integration (Fielding, 2012). In light of the above discussions, more discussion could be given to the dynamic inter-relationship between structure (economic processes) and agency (decisions of immigrants). For example, is the reason why one immigrant is slower to enter the labour market than another due to a personal reluctance to find employment (agency) or discrimination (structure)? This is something that theoretically and methodologically can be addressed using a sociological life-course approach.

The sociological life-course approach must not be confused, or identified, with a longitudinal micro-analytical perspective (Wingens *et al.*, 2011). However, the sociological life-course approach methodologically calls for longitudinal individual-level data and dynamic microanalyses embedded in multi-level models of social processes. Longitudinal data offers huge potential in analysing dynamics of labour market entry. While longitudinal data have already been used to study immigrant labour market integration, the full potential of the data have often been significantly under exploited (Fuller, 2011).

The time in an immigrant's life (individual time, generational time, and historical time) upon arrival in a new country is important in explaining their economic trajectory, in addition to their personal attributes (Wong, 2013). Missing from most literature on the longitudinal labour market entry of immigrants is the role of geography. This thesis can contribute to immigration scholarship by connecting the growing literature of new immigrant destinations to longitudinal perspectives on immigrant labour market entry.

The following section of this chapter moves slightly away from the broader theoretical literature to provide some context about Swedish-specific empirical literatures.

2.6 The Swedish Context

2.6.1 Immigrant Labour Demand in Sweden

Many patterns of immigrant labour market integration in Sweden reflect changing economic processes highlighted in Fielding's (2012) conceptual framework and additional theoretical discussions regarding immigrant labour divisions and labour complementarity and substitution. In terms of cyclical effects, there was a positive effect of the Swedish business cycle on changes in immigration for the period of post-WWII until the early 1970s (Bengtsson *et al.*, 2005). During the post-WWII period, Sweden followed a Fordist mode of production whereby low-skilled manual labour was recruited from neighbouring Nordic countries as part of the Common Nordic Labour Market Agreement, followed by bilateral agreements with other northern and southern European countries.

Labour immigrants were often recruited for a specific job, in a specific firm, in a particular city or town. This resulted in growing immigrant numbers in major cities as well as smaller urban sites, predominantly in southern or central Sweden (sites relying on textile, pulp or paper, mechanical, and/or iron- and steel production) (Andersson and Solid, 2003). During the 1950s and 1960s, immigrant labour market participation was higher than natives for both men and women (Wadensjö, 1973; Ohlsson, 1975; Ekberg, 1983). Since the 1970s, the employment rate of immigrants has continued to fall and this has been associated with the transformation of the Swedish economy from manufacturing to services (Bevelander, 1999, 2001, 2005). Therefore, due to restructuring, it appears that complementary immigrant labour had become substitutional.

Economic restructuring in Sweden has also represented, to some extent, a new spatial division of labour whereby Swedish companies grew to a point in which head offices moved to metropolitan regions such as Stockholm. While Stockholm may not be considered a global city, it is considered part of a post-industrial development where an expanding service sector is offering low cost goods and services within an (in)formal economy partly underpinned by the labour of (un)documented immigrants (Gavanas, 2010). Attracting higher-skilled occupations in service-based industry while traditional manufacturing occupations were either transformed through automation or outsourcing abroad represents the new international division of labour.

2.6.2 The Immigrant Division of Labour in Sweden

There is growing evidence that Sweden has undergone various neo-liberal processes that create conditions typically associated with the new immigrant division of labour, such as labour sub-contracting, privatisation, and the dismantling of welfare services (Bergmark, 2008; Hedin *et al.*, 2012). Growing empirical evidence has also suggested that there is an immigrant division of labour. Immigrants have tended to be more competitive with natives in labour market sectors associated with lower levels of education (Andersson, 1996). The restaurant sector has been highlighted as a sector in which immigrants formerly employed in manufacturing have created a niche since earlier economic crises (Wahlbeck, 2007). Immigrant managers are overwhelmingly more likely to exist in the restaurant sector and recruit fellow immigrants to a higher extent than natives (Åslund *et al.*, 2009). Immigrants who have been employed by self-employed immigrants of the same nationality are also more likely to be employed in the near future but the forms of employment are associated with lower incomes. Many also continue to be employed by co-nationals or become self-employed themselves (Andersson Joona and Wadensjö, 2012).

Specifically looking at the domestic services sector, Gavanas (2010) found that, like in London, people from very diverse backgrounds (geographically, racially, socio-economically) have been employed as cleaners in peoples homes across Stockholm. Furthermore, despite tax deductions for domestic services contributing to an expanding formal sector with increased rights and benefits, demand for informal domestic services has still thrived. The conclusion has been that Stockholm's formal and informal domestic service sector is part of an international division of labour where some immigrant labourers are partially excluded from social rights and formal labour market access and constitute a cheap and flexible 'reserve army' for the 'included' middle-class.

As Sweden's population continues to age at an increasing rate, including the immigrant population (Bengtsson and Scott, 2011), the role of immigrant labour in elderly care has become an area of significant academic attention (Hedberg and Pettersson, 2011; Jönson and Giertz, 2013). Increasing numbers of immigrant women have been setting up businesses in the elderly care sector, not simply as a survival strategy but through a process of ethnic and gender sorting and a wish to gain

independence (Hedberg and Pettersson, 2011). The care sector is associated with low-status and low-paid employment, and an expectation is that immigrant employees may be more disadvantaged than natives. However, while many care workers have reported having problematic working conditions, immigrant care workers have not stood out as being any more disadvantaged than natives (Jönson and Giertz, 2013).

A relevant question then is whether or not the immigrant division of labour has changed as a result of recession or other economic processes? The limited research on immigrant labour and the recession has shown that the employment gap between natives and immigrants born in Europe changed very slightly while non-European immigrants fared the worst (Ekberg, 2011). It has been noted that Sweden's manufacturing sector fared the worst while the service sector fared the best (Statistics Sweden, 2011e). It is therefore worth examining the sectoral niching of immigrants in relation to natives in order to fully understand whether or not the recession produced differential risks of unemployment between immigrants and natives, and whether this changed the overall structure of the immigrant division of labour.

Where does this leave the role of geography? Manufacturing sector employment among immigrant men and women has been shown to be particularly visible in rural and small-scale localities. High shares of immigrant men in hotels and restaurants were not as dominant in rural areas. Immigrant women were also overrepresented in manufacturing in rural and small-scale localities (Hedberg, 2010). Furthermore, given the fact that the ageing of Sweden's population has been more evident in rural areas, and based on global trends within this sector (Awad, 2009), it might be expected that the division of labour, with immigrant niches in all three of these sectors, presents very different geographies during recession. For example, the manufacturing sector may produce a much lower representation of immigrants due to the nature of their employment being more substitutional. Therefore, there may be a lower representation of immigrants in smaller urban and rural localities. The hotels and restaurants, and elderly and disabled care sectors may result in different outcomes because although immigrants in both sectors seemingly appear to provide a complementary labour force, the greater stability of the latter, and its more rural geography, may suggest that the immigrant division of labour may be reshaped within the urban-rural spectrum.

2.6.3 Internal Migration in Sweden

In contrast to countries like the US, where there is very little welfare security, in Sweden the welfare system enables both mobility and immobility (Westerlund, 1998). On the one hand, individuals may remain in unemployment but choose not to move because their welfare allowance enables them to wait until the economy recovers and suitable employment opportunities arise. On the other hand, the economic risks of migration can also be reduced for individuals in vulnerable situations since they can rely on the same welfare allowance until they are able to establish themselves in a new labour market setting. This raises the question of: do internal migration flows show temporal variations in line with economic trends? Previous studies have shown that internal migration is associated with unemployment (Fischer and Malmberg, 2001; Eliasson *et al.*, 2003). Yet, cyclical fluctuations in the business cycle have been shown to have a strong positive association with internal migration (Westerlund, 1997).

When changing economic scales beyond the short-term business cycle, other factors have clearly shaped internal migration in Sweden. As section 2.4.3 highlighted, Fielding's (1992) escalator region hypothesis offers a useful way in which differential effects on internal migration, and the geography of internal migration, can be understood. This hypothesis has been examined by several studies in Sweden (Andersson, 1996; Nilsson, 2003), yet these studies have focused more on the social and spatial mobility aspect of the hypothesis, than the temporal aspects (for example, how flows differ depending on stages within business and housing cycles (Fielding, 1993; Fielding, 2012). Based on this gap in the literature, a second relevant migration-related research question is: do internal migration flows show temporal-spatial variations consistent with the conceptual framework advanced by Fielding? In other words, do the core metropolitan regions of Sweden experience net losses through migration during economic boom and net gains during economic bust?

Compared to the UK or the US, Sweden's housing market has more rental housing that is associated with higher turnover than owner-occupied housing (Bråmå and Andersson, 2010). Fielding's hypothesis may be less pronounced in Sweden than in the UK, although a reason to suggest why Fielding's hypothesis may hold some relevance to the Swedish context is that other deeper social and structural drivers of internal migration that have been observed in the UK have also been observed in

Sweden. For example, Stockholm does appear have a similar role to Sweden as London has to the UK. Furthermore, in Sweden, a migration 'turnaround' trend or '*gröna vågen*' ('the green wave') was also observed and in addition to demographic and structural processes, reflected changing attitudes towards urban and rural living (Borgegard *et al.*, 1995; Lundholm, 2007b).

Returning the emphasis to immigrants in Sweden, another important consideration is whether similar patterns emerge, or are different internal migration patterns observed when internal migration flows are disaggregated by immigrant origin? The initial and subsequent migration patterns of immigrants in Sweden have presented interesting results depending on the spatial scale at which they have been examined. For example, studies of intra-urban migration have found that with time, immigrants and natives will migrate from neighbourhoods associated with high concentrations of immigrants and lower economic status, to areas of lower concentrations of immigrants and higher socio-economic status (Andersson and Bråmå, 2004; Bråmå, 2006b, 2008; Macpherson and Strömgren, 2013). In other words, migration patterns have shown social and spatial mobility in accordance with the spatial assimilation hypothesis. In contrast, studies of inter-regional migration have shown that immigrant and co-ethnic populations in destinations present strong predictors of immigrant internal migration (Rephann and Vencatasawmy, 2000; Åslund, 2005). Therefore, co-ethnic and immigrant populations more generally, present push and pull factors that present different patterns depending on the scale of analysis.

In terms of understanding internal migration of immigrants and the effects of recession, Boman's (2011) study of migration following job displacements during the 1990s recession showed that immigrant internal migration was not significantly different to natives. However, immigrants were shown to have been significantly more likely to migrate than natives after taking into account those residing in an enclave and interacting that with residing in cities. This finding reflects an earlier study that found that immigrants are less likely to migrate when residing in municipalities with high concentrations of co-nationals (Åslund, 2005). Furthermore, another interesting finding was that the probability of migration was highest in years closest to the timing of job displacement and that migration probability declined over time.

Particular cohorts of immigrants may present differential migration patterns in relation to the recession. The original motive to migrate internationally may not only determine the initial settlement in a new country, but also subsequent interregional moves. As noted in Chapter 1, between 1985 and 1994, the Swedish Migration Board introduced a compulsory resettlement programme for asylum seekers and refugees ('Whole of Sweden Strategy'). The purpose of the programme was not only to counteract segregation in Sweden's metropolitan cities but also repopulate the ageing and shrinking populations in the periphery, especially the north of Sweden. Early research on the dispersal programme suggested that the strategy increased internal migration rates of immigrants through secondary migration away from areas of resettlement towards metropolitan regions where stronger co-ethnic networks exist (Andersson, 1996, 1998; Borgegård *et al.*, 1998; Andersson and Solid, 2003). However, more recent research has suggested that migration rates of refugees would have been higher than previous immigrant cohorts regardless of whether they had been resettled or not (Åslund, 2005; Andersson, 2012). From this literature, two expectations can be made with regards to disaggregated internal migration flows in relation to the recession. Firstly, internal migration is higher among immigrants than natives. Secondly, because immigrants fare worse during recession, they will be more mobile than natives during recession, even though both immigrants and natives will present overall declines in migration.

The remaining question of this section is what is expected of the spatial-temporal patterns suggested by Fielding's conceptual framework after taking into account immigrant differences? Fittingly, the only studies that appear to have examined Fielding's (1992) escalator region hypothesis from an immigrant/ethnic perspective are Swedish. Andersson (1996) studied the inter-regional migration of immigrants and natives to the Stockholm region to find that although Stockholm may have acted as an escalator region for natives (by increasing their earnings) it may not have done so for immigrants. In contrast to common expectations, highly educated immigrants were underrepresented among those who succeeded in Stockholm, while upwardly mobile immigrants having low education levels were overrepresented compared to native Stockholm residents. This suggested that labour market competition for highly educated individuals was higher outside Stockholm and that the relative success of immigrants

with lower education in Stockholm might have been an effect of the relative overrepresentation in low paid service sector employment. Expanding on this, Nilsson (2003) studied migration to all three metropolitan areas (Stockholm, Gothenburg, and Malmö) to reveal that after adjusting for socio-economic and origin characteristics of individuals and their parents, few significant differences remained between natives and immigrants of different origin groups.

Both these studies have contributed to discussions on escalator regions but they neglect the important role the escalator region can have in relation to the business cycle and whether this produces variations in native and immigrant interregional migration propensity (Fielding, 1993; Fielding, 2012). In addition to the hypotheses regarding immigrant internal migration during recession, more generally, specific factors may present different patterns between immigrants and natives. For example, immigrants are over-represented in rental housing in Sweden but research has also shown evidence of ethnic discrimination in the rental housing market (Ahmed and Hammarstedt, 2008). Therefore, while migration patterns may not fluctuate the same due to the lower level of owner-occupancy, migration to particular areas may be inhibited due to discrimination.

2.6.4 Timing and Geography of Labour Market Entry in Sweden

The length of time it takes for newly arrived immigrants to enter the labour market has been an issue of concern in Swedish government policy for several decades (see 1.2.4 for details). Different findings have been found across different studies depending on the time period examined, and the way in which the immigrant population has been disaggregated. For example, Statistics Sweden (2009a) found that among immigrants who arrived in Sweden during 1997, 2000, and 2003, 70 per cent of men and roughly 60 per cent of women were employed after 10 years. Variations between immigrants showed that asylum seekers were employed to a lesser degree, particularly during the first two years in Sweden. Bevelander (2009, 2011) found that during the first five years of living in Sweden, around a quarter of resettled refugee men had gained employment and around a third of convention refugees, and over half of relatives had found employment. The figures for women showed that resettled refugees had the lowest employment rate in the first five years (10 per cent), compared to refugees (20 per cent) and relatives (30 per cent). However, differences between groups (and gender) narrowed after 16-20 years in Sweden.

Hedberg and Tammaru (2013) found that after 10 years in Sweden, one third of the immigrant cohort that they followed from 1993 never entered the labour market. Moreover, they found that an immigrant origin hierarchy existed in terms of who were more likely to enter the labour market after adjusting for other human capital characteristics. At one end of the spectrum, Western Europeans had the highest odds of employment entry, followed by Eastern Europeans. At the opposite end, those from West Asia and the Middle East had the lowest odds, followed by Africans. Based on these studies, it is evident that the labour market entry of newly arrived immigrants in Sweden is not only dependent on the type of immigrant studied, but also the origin of the immigrant.

Another point of interest is whether geography matters in labour market entry. Immigrant labour market integration reflects geographical variations across local labour market structures, as well as social-demographic structures. Immigrants have been shown to have higher employment probabilities in municipalities with a large private sector and where there is a lot of manufacturing activity, such as the entrepreneurial district in Småland (including municipalities such as Gnosjö, Gislaved and Vaggeryd) (Bevelander and Lundh, 2007). Rural and small-scale localities have been associated with higher employment probabilities for immigrant men and women (Hedberg, 2010). Compared to Stockholm, refugee men and women living in smaller settlements and the countryside had higher probabilities of employment, even after taking into account admission status (Bevelander, 2009, 2011).

By following one immigrant cohort over a 10-year period, Hedberg and Tammaru (2013) were able to measure the effects of residing in different neighbourhoods (segregated versus non-segregated) and cities (Stockholm versus Malmö) on labour market entry. The results showed that although labour market entry increased with time across all groups (with non-Western origins having the lowest odds), and that residing in neighbourhoods with high immigrant concentration produced lower odds of employment entry as well as residing in Malmö, an interaction between the variables revealed that the latter geography was more important than the former. This highlights that despite the large volume of literature on residential segregation and labour market outcomes (‘neighbourhood effects’), broader geographical effects, such as ‘city effects’, may be more important. Therefore, the final empirical goal of this

thesis will be to build on Hedberg and Tammaru's (2013) work by further broadening the geographical lens to include city regions (typically associated with ports of entry for many immigrants), as well as other cities, and rural areas in order to address the growing emergence of immigrants in these areas (Hedberg, 2010).

2.7 Conclusion

Given the literature on how economic processes impact on immigration, labour market integration, and internal migration, it is clear that there are multiple areas that could be investigated in further detail. This thesis restricts itself to focusing on only a small number of time-space issues. Time impacts can be captured within the life stage, immigrant generation (1st, 1.5, and 2nd), cohort and period effects for different groups (labour immigrant, refugee, family-tied), and economic context (economic cycles, restructuring, and deep structural change). Intertwined with time is space – reflected in terms of differences in processes taking place in metropolitan regions (associated with a long history of immigration, and booming economies), and non-metropolitan regions, particularly rural areas (associated with a short but growing history of immigration, and economies often seen as stagnant and disconnected). Throughout the theoretical part of the literature review, various research questions have been proposed that have highlighted these time-space dimensions of labour market integration and internal migration, and in particular the conceptual avenues that might be explored to understand how they relate to one another (Fielding, 2012). Together, these complex issues have raised three major research questions that will be addressed by the thesis:

A) How have the recession and other economic processes changed the labour market and migration outcomes for immigrants in Sweden?

B) Has the recession produced a changing geography of immigrant groups?

C) To what extent does labour market integration of immigrants in rural areas differ to that in other areas?

Answering these questions provides the basis for the thesis to contribute a conceptual advance in understanding how economic and social processes produce changing labour market outcomes and migration (as summarised in Chapter 7). To achieve this wider goal, the research had to ask nine 'subsidiary' research questions. Each of the empirical chapters addresses three of the subsidiary research questions. It is important to note that these empirical chapters do not map directly onto the three major research questions (A-C). Instead, the subsidiary research questions arise from what is knowable from specific data in each chapter.

The first empirical chapter (Chapter 4) examines the Swedish labour market and explores how the positions of immigrants are influenced by sectoral, temporal, and spatial changes. This draws on the theoretical discussions concerning the labour market niching (Wang, 2004), new immigrant division of labour (Wills *et al.*, 2010), and complementary and substitutional labour (Findlay *et al.*, 2010). In particular, this chapter asks the following questions:

1) Is there an immigrant division of labour in Sweden?
2) Has the division of labour changed as a result of recession or other economic processes?
3) Is there a geographical change to the division of labour over the course of these economic processes?

The second empirical chapter (Chapter 5) focuses more specifically on the internal migration behaviour of immigrants and how they may or may not differ from natives over different temporal and spatial scales. This engages with theoretical discussions on migration and business cycles (Milne, 1993), differential economic processes (Fielding, 2012), and compositional and spatial differences in immigrant internal migration (Andersson, 2012; Sabater *et al.*, 2012). This is examined through three more research questions:

1) Do internal migration flows (prior to disaggregation by immigrant origin) show temporal variations in line with economic literature?
2) Do internal migration flows (prior to disaggregation by immigrant origin) show temporal-spatial variations consistent with the conceptual framework advanced by Fielding?
3) Do similar patterns remain, or are different internal migration patterns observed when such flows are disaggregated by immigrant origin?

The final empirical chapter (Chapter 6) then looks specifically at one new immigrant cohort and follows them through time and space to provide a more dynamic approach to understanding immigrant labour market integration. This engages with theoretical debates concerning new immigrant destinations (Waters and Jiménez, 2005), the sociological life-course approach (Kogan *et al.*, 2011), and differences between immigrants in Sweden (Hedberg and Tammaru, 2013). The following questions are addressed:

1) How long does it take for new immigrants to enter the employment?
2) Which new immigrants are more likely to enter employment?
3) Where are new immigrants most likely to enter employment?

As Figure 2.5 illustrates, the answers for the major research questions A and B are made possible through answering the subsidiary research questions in Chapters 4 and 5. The third and final major research question is largely answered through addressing the subsidiary research questions of Chapter 6 and the final subsidiary research question of Chapter 4.

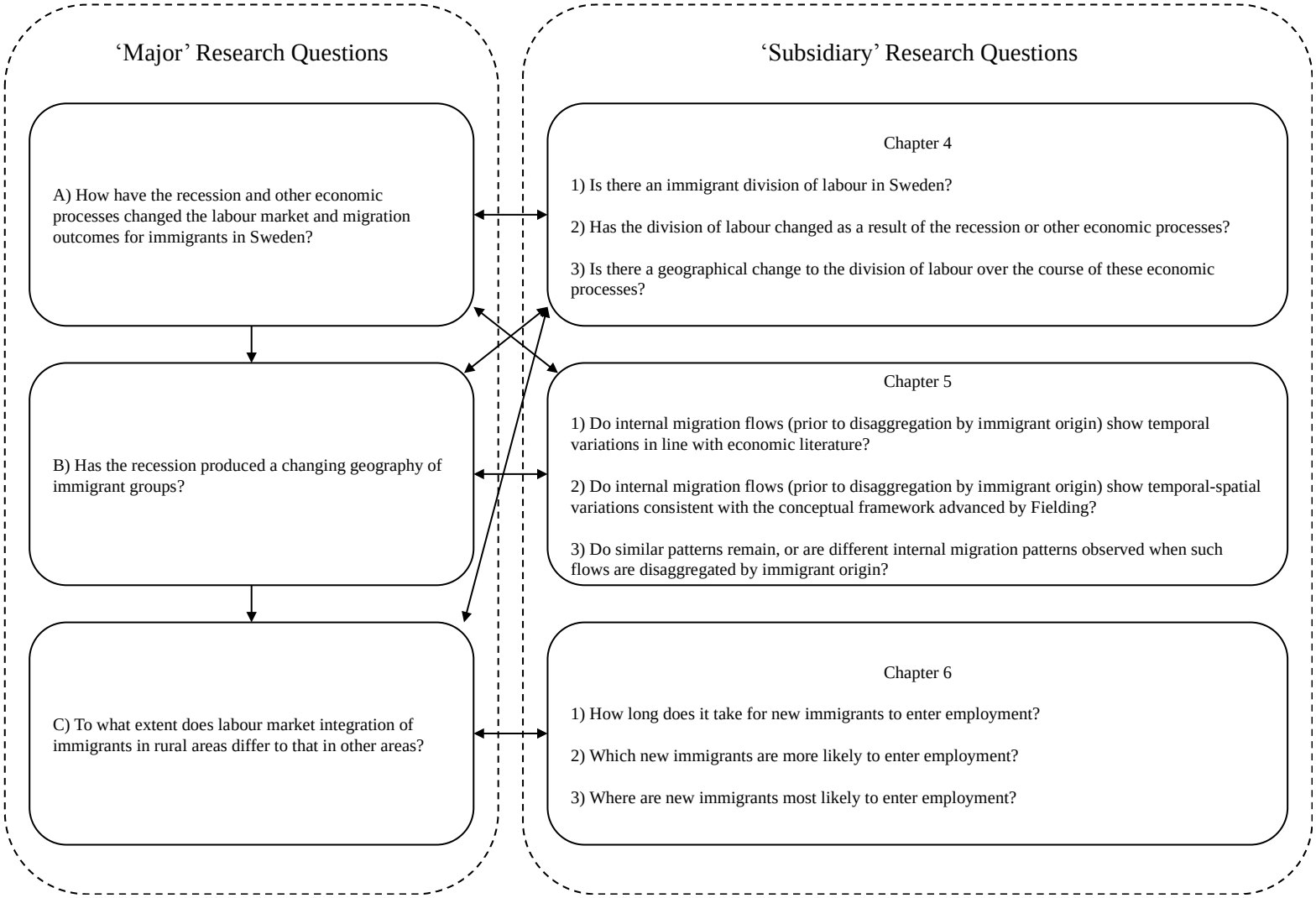

Figure 2.5 ‘Major’ and ‘subsidiary’ research questions
Source: Author.

Chapter 3
Research Design and Methodology

3.1 Introduction

The purpose of this chapter is to discuss the research design and methodology used to address the main aim and research questions highlighted in Chapters 1 and 2. This begins by firstly engaging with epistemological discussions regarding quantitative methods within geographical research. Secondly, an argument is presented as to why quantitative methods are considered appropriate for the analysis in this thesis. This includes details on how the research questions identified in Chapter 2 are addressed through three empirical chapters with their own subsidiary research questions and respective methods (Figure 2.5). The third section then discusses why Swedish register data presents a unique opportunity to apply these methods and provides details of the specific register databases used in this thesis. The fourth section provides details of the measurement of the key concepts, including the defining of dependent and independent variables. Lastly, a concluding section reflects on the strengths and limitations of the chosen research design and methods used in this thesis.

3.2 Epistemological Considerations

3.2.1 Quantitative Approaches and Common Criticisms

A researcher's theoretical position regarding the nature of existence (ontology) and the philosophy, or philosophies of knowledge that they embrace (epistemology), is intricately connected to the methods adopted in their pursuit of knowledge (Findlay and Li, 1999). Research concerning migration, or migrants, is undertaken by scholars across a range of disciplines, such as anthropology, economics, demography, geography, and sociology (Brettell and Hollifield, 2008). Ontological and epistemological perspectives can therefore differ across these disciplines, within their sub-disciplines, and over time too. This thesis, while using statistical methods to examine ideas, would claim nevertheless to be post-positivist in its stance. This is because the research questions are theory-driven and the purpose of reflecting on the experiences of immigrants in Sweden

is to build social theory rather than to establish empirical generalisations. This of course begs the question of what is knowable from using numerical data and statistical methods. Consequently, before advancing to thinking about research questions in more detail, it is useful to reflect briefly on quantitative methods and how they are used in this dissertation.

Quantitative methods were first introduced to geography in the 1950s and 1960s in a movement now commonly referred to as the 'quantitative revolution'. This new approach aimed to make the discipline more scientific by using the basic ideals of logical positivism: that only one scientific method exists, that knowledge is neutral, and that the standards of accuracy and precision in the physical sciences offered the only genuinely explanatory framework for the generation of scientific knowledge (Robinson, 1998:2). During the 1960s and 1970s, a number of criticisms were mounted against the use of quantitative methodologies in geography by critical geographers, particularly humanist, Marxist, feminist, poststructuralist, postcolonial, antiracist, and queer geographers (Kwan and Schwanen, 2009). One of the main criticisms roots back to quantitative geography's principles of positivism and empiricism based on scientific objectivity, value neutrality, and the search for universally applicable generalisations (Sheppard, 2001; Poon, 2005). Due to quantitative methods depending on forms of quantifiable attributes of the phenomena under study, they are sometimes not considered to be capable of representing the complexities of human experiences or social realities because personal experiences cannot be expressed by numbers and are therefore unquantifiable (Kwan and Schwanen, 2009). Quantitative data and methods have also been considered 'disembodied' as live connections with research participants are often lost and make it difficult to contextualise a holistic understanding of complex everyday processes and experiences (McLafferty, 1995). Furthermore, criticisms have been raised over assigning individuals' experience to rigid categories that hinder understanding socio-spatial processes (Kwan and Schwanen, 2009).

3.2.2 Developments and the Critical Return of Quantitative Methods

Many criticisms of quantitative methodologies have been valid and necessary, but there have also been some misrepresentations and a lack of acknowledgement with regards to recent developments. A common misrepresentation has been that quantitative geography must be positivist and as Carter notes 'the term *positivism* has become an

expletive hurled by some critical geographers to brand and denounce those who practice quantification' (2009:496, emphasis in original). Similarly, quantitative methods have been inaccurately equated to neoclassicism because neoclassicism is quantitative and mathematical. Others have argued that since radical geography is against neoclassicism, it should be against quantitative methods and mathematics (Barnes, 2009).

Not all quantitative researchers make sweeping generalisations of entire study areas or populations (Kwan and Schwanen, 2009). There has also been a 'retooling' of quantitative research through the availability of improvements in data and technological and methodological advancements in analysis (Poon, 2004). For example, the 'ecological fallacy' - caused when the relationship between two variables at an aggregate level is due to aggregation rather than any real association - can now be overcome by using micro-level data (Davies Withers, 2001). The availability of longitudinal linked census and register data has also enabled a greater ability to infer causality than with previous cross-sectional data (Findlay, 2003).

While statistical methods are not suitable for all social research, and cannot substitute critical thinking about causal mechanisms, they are a presentation of theorised causal representations (Ellis, 2009). Statistics are social constructions and when they are abandoned, the opportunity to shape and mobilise these constructions for progressive purposes is given up (Wyly, 2009). A point stressed by many geographers is that statistics are valuable for society as they are used for surveillance of the actions of politicians and key decision makers, and provide a language used by neighbouring disciplines and by policy decision makers (Sheppard, 2001; Findlay, 2003; Ellis, 2009; Wyly, 2009). In defence of quantitative methods, Ellis (2009:308) has argued that quantitative methods yield 'vital statistics' on population well-being, inequality, deprivation, and discrimination, and that:

> 'Assaults on data collection and analysis and on the use of established tools of statistical inference are, in my mind, attacks on the information necessary for an informed citizenry to effectively resist oppression, whether it comes from the state or the corporate plutocracy. Numbers and the methods we use to estimate them shape how clearly and extensively we see injustice and inequality; I cannot imagine how human geography can be critical if it does not embrace this fact'

In reflection of these comments, this thesis adopts a post-positivist epistemological approach that is both quantitative and critical. Knowledge is not considered to be obtainable through objectivity, value neutrality and universally applicable generalisations. However, statistics can be applied to complex theoretically informed research questions of this thesis. The next section discusses which quantitative approaches are appropriate given the research questions of the thesis.

3.3 Research Questions and Methodological Approach

3.3.1 Aim, Research Questions, and Empirical Chapters

The overall aim of this thesis, as stated on page 12, is '*to deepen understanding of immigrant integration processes in the context of the recession using Sweden as an empirical lens*'. To address the overall aim of the thesis, three empirical chapters are presented with their own subsidiary research questions. While qualitative and mixed methodologies have been effectively used for the study of immigrant divisions of labour (May *et al.*, 2007; Wills *et al.*, 2009), internal migration (Halfacree and Boyle, 1993; Findlay and Li, 1997), and immigrant integration in rural labour markets (Kasimis, 2008; Cvetkovic, 2009), quantitative methods were applied for each empirical chapter of this thesis for a number of reasons. Firstly, the research questions concern phenomena between different groups of the population (natives and immigrants), across various spatial scales (nationally and regionally), and across time (before and during the recession). Collecting primary data on a project of this scale would have been difficult given the time frame of a PhD. Secondly, with appropriate secondary data, a quantitative approach is able to offer some insight into causal processes and enable, replicable research across a population using a representative sample (Bryman, 2012). Thirdly, implications of undertaking a quantitative approach also allows the findings to be produced in a language transferrable to other disciplines interested in immigration and labour market dynamics, such as economics, demography and sociology, as well as policy makers too.

The three empirical chapters and their subsidiary research questions, methods, and data are briefly summarised below in Table 3.1. As can be seen by the questions for each chapter, the sequence of the chapters broadly follows the sequence of the major research questions of this thesis (Figure 2.5). In a similar fashion, the methods applied present development over time from cross-sectional approaches used in Chapters 4 and 5, to a longitudinal approach in Chapter 6. Across all of these chapters, the data of choice are Swedish administrative register data. Details of these data more generally, and the data used in the chapters is discussed in the following section. Before that, however, detail is first given as to how best to measure the effects of the recession, distinction between cross-sectional and longitudinal methods, and why the specific research methods for each chapter have been chosen.

Table 3.1 Structure of empirical chapters, including method and data

Chapter	Research questions	Methods	Database
4	Is there an immigrant division of labour in Sweden? Has the division of labour changed as a result of recession or other economic processes? Is there a geographical change to the division of labour over the course of these economic processes?	Cross-sectional: Descriptive statistics Binomial logistic regression	Linnaeus: 1990 2008 2006-2007 2008-2009
5	Do internal migration flows (prior to disaggregation by immigrant origin) show temporal variations in line with the expectations of the literature? Do internal migration flows show temporal-spatial variations consistent with the conceptual framework advanced by Fielding? Do similar patterns emerge, or are different internal migration patterns observed when such flows are disaggregated by immigrant origin?	Cross-sectional: Descriptive statistics Binomial and multinomial logistic regression	Linnaeus: 2006-2007 2008-2009
6	How long does it take for new immigrants to enter employment? Which new immigrants are more likely to enter employment? Where are new immigrants most likely to enter employment?	Longitudinal: Descriptive statistics Discrete-time binomial logistic regression	ASTRID: 2000-2010

Source: Author.

3.3.2 Recession Effects and Research Designs

An important element of this thesis is measuring the effect the recession has had on labour market and migration outcomes. The most common definition of a recession is when there has been at least two quarters of falling GDP (Hall *et al.*, 2008). However, Swedish register data are annual and therefore an alternative definition is required. Edvinsson (2010) defines a recession when annual growth of GDP is below one per cent, which is roughly the equivalent to a contraction of GDP in two consecutive quarters. He also identifies 'major' recessions where volume GDP (GDP at constant prices) in one year is beneath the level of volume GDP from two years earlier. This methodological definition is used for the empirical analysis of this thesis.

Effects of recession may occur at different times, such as before, during, or after a recession. Some of the complexities involved in timing the effects of a recession relate to fact that individuals may anticipate the recession or not feel the true effects of it until much later on (Figure 3.1). Furthermore, the magnitude of recession effects may change over time (Blossfeldt and Mills, 2001) and that the type of recovery may differ greatly depending on the level of resilience in different regions (Martin, 2012).

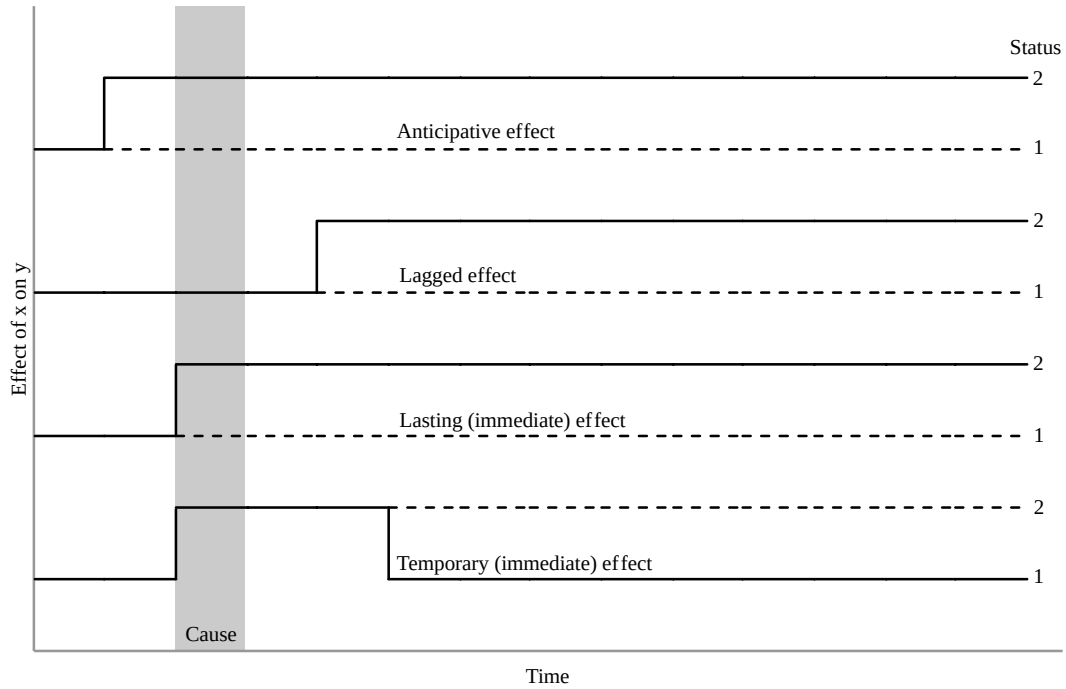

Figure 3.1 A conceptualisation of the timed effects of the recession
Note: 'Cause' in the purpose of this research may indicate the recession. Status may indicate a change in labour market or migration status.
Source: Author's adaptation of Blossfeldt and Mills (2001:418) and Feijten (2005:15).

Measurement of recession effects on a particular outcome can depend on the research design and whether it is cross-sectional or longitudinal. Cross-sectional research typically uses data of a population sample during one point in time, such as a census year. The data can then be used in regression models to estimate the effect that one or more independent variables has upon a dependent variable in that given point in time. Economic outcomes of immigrants can be modelled with independent variables, such as different cohorts that arrived during different periods of the business cycle, and macro-economic variables during the period of arrival. For example, this may be used to measure whether a recession produced a 'scarring effect' (Chiswick *et al.*, 1997).

Separate regression models during periods of economic boom and bust may also be compared to identify which variables remain statistically significant when a country enters or exits recession (Marksoo and Tammaru, 2011). This approach is limited in that it does not enable the size of coefficients to be directly compared across models due to unobserved heterogeneity.[4] Furthermore, the effect of time itself is not included in the models. By merging two datasets such as these, it is possible to include the time period as an independent variable. This overcomes the problem of comparing coefficients and produces a measurement of time that can be interacted with other independent variables to identify whether they change between the two periods (Barrett and Kelly, 2012). However, this method essentially still uses two cross-sections of data making it difficult to identify whether any change in time has occurred because of the period (in this instance, recession) or the change in population sample.

In contrast to cross-sectional research, longitudinal research uses data of a population sample during multiple points in time, such as a cohort study or panel study. The two most common longitudinal modelling approaches are event history analysis and panel data analysis. Event history analysis (also known as survival analysis) models the elapsed time until an individual experiences a particular 'event', or equivalently, the duration of a non-eventful 'spell'. Panel data analysis, in contrast, models repeated observations and requires specific modelling techniques to take into account the panel structure of the data whereby observations may be nested within multiple levels such as an individual or a geographical boundary.

[4] Unobserved heterogeneity is the variation in the dependent variable that is caused by variables that are not observed. This may be through omitted variables or data failing to capture complex social phenomena (Mood, 2010).

According to Davies (1994), longitudinal analysis has several advantages over cross-sectional analysis: firstly, it can reveal the temporal ordering of events related to the direction of causality; secondly, it can control for some of the unobserved heterogeneity that occurs in cross-sectional models; thirdly, it can control for the effects of previous states; and fourthly, it can reveal more about the effects of age, period and cohort. A modelling framework using a data structure similar to that proposed in Figure 3.2 would be ideal for addressing the advantages longitudinal can have over cross-sectional analysis, and also addressing the complex temporal and spatial aspects of the research questions in this thesis. This could be achieved using fixed-effects models to take into account within-person variations or random-effects models to take into account variation within groups or regions (Allison, 2009). However, as section 3.4.3 will discuss, access to data on this project was limited and therefore this made complex data analysis difficult within the given time period. While cross-sectional methods are used in Chapters 4 and 5, only conservative conclusions of recession effects can be made. Chapter 6 does use a longitudinal design but less emphasis is given to recession effects and more on the role of individual characteristics and geography.

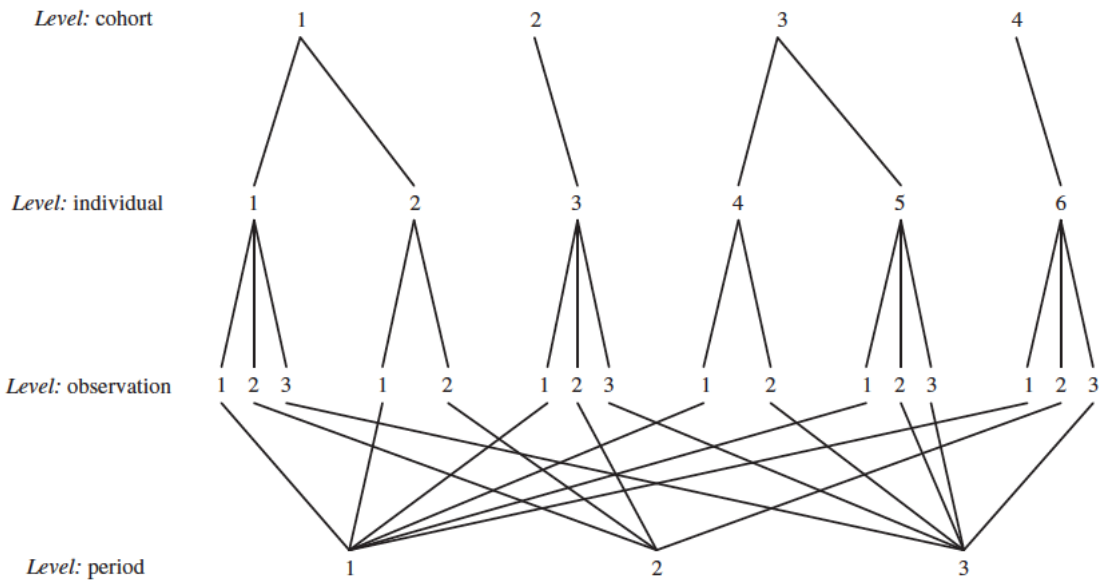

Figure 3.2 A hypothetical data structure of an age-period-cohort analysis in a longitudinal study with repeated measures
Note: Observations are nested within individuals, which in turn nest within cohorts. Observations are also nested within cohorts. Age is not a level because it is an attribute of observations.
Source: Suzuki (2012:454).

3.3.3 Cross-Sectional Analysis: Chapter 4

A key component of Chapter 4 is to identify: 1) whether an immigrant division of labour exists; 2) whether the division has changed through time under long-term and short-term economic processes; and 3) whether there is a spatial patterning of the division of labour that has changed over the course of these economic changes. The analysis of this chapter used data of various snapshots in time to try and capture different moments of long-term economic restructuring and short-term business cycle changes in immigrant labour. Employment is assumed to express longer-term patterns influenced by population, education and occupational structure and early retirements, whereas unemployment is considered to express changes in the business cycle (Bevelander and Lundh, 2007). For this reason, the analysis was split into two parts in an effort to capture long-term and short-term economic effects reflecting the immigrant division of labour.

Data from 1990 were used because this captured the moment before the Swedish economy plunged into a deep recession. Data from 2008 were then used to represent a similar period prior to when the global recession visible impacted the Swedish economy. The period of time between these two cross-sections allowed large-scale changes in the economy and immigrant population to be observed. Furthermore, this time interval begins at the end point of previous work that has examined labour market segmentation in Sweden (Bevelander, 1999), thus providing more up-to-date empirical work on the topic. Following this, data during the economic boom (2006-2007) and economic bust (2008-2009) were used to capture employment instability as a result of short-term cyclical effects of the economic recession. Throughout the analysis using micro-level data, the study population was restricted to the working-age population (20-64 years) during year *t*. Therefore, for the analysis of employment was those aged 20-64 in 1990 and 2008, whereas the analysis of unemployment was those aged 20-64 in 2006 and 2008. Supplementing these cross-sectional individual-level data were, aggregate-level employment data from 1993-2012.[5] While the samples and definition of the latter differ to the former, the analyses of these data were simply used to emphasise the broader patterns of change. For example country of origin groups correspond with those highlighted in Table 1.1 and included individuals aged 16-65.

[5] A longer timeframe of data was not available with the ability to disaggregate by immigrant origin.

Most empirical research concerning immigrant divisions of labour has identified labour market sector and polarisation across immigrants and natives, often reinforced by gender divisions. These sectors may be industrial (Ellis and Wright, 1999), occupational (Wright and Ellis, 2000; Wills *et al.*, 2009) or combination of both (Hudson, 2003; Wilson, 2003; Wang, 2004). Such concentrations are commonly referred to as niches. Different definitions, scale, and statistical methods can identify different niches (Wang and Pandit, 2007). While the location quotient formula has been widely used, particularly at the metropolitan labour market scale (Ellis and Wright, 1999; Wright and Ellis, 2000), this chapter instead used an odds ratio method proposed by Wang (2004, 2006) and applies it at the national level. This was because the odds ratio method was considered more sensitive to scale and after examining both methods, compared to the location quotient method, and the odds ratio method enabled the identification of both native and immigrant niches.

Accordingly, niching is identified with the following odds ratio calculation (Wang, 2006:77):

$$\text{Odds Ratio} = \frac{E_i/E_{t\text{-}i}}{O_i/O_{t\text{-}i}}$$

E_i represents workers in ethnic group E in the employment sector i, $E_{t\text{-}i}$ represents the same ethnic group members (E) in all other sectors (t-i), O_i represents all other ethnic group members (O) in the same employment sector i, and $O_{t\text{-}i}$ represents all other ethnic group members (O) in all other employment sectors (t-i). An odds ratio of no less than 1.5 was the chosen threshold value (Wilson, 2003; Wang, 2004). Furthermore, to prevent biases introduced by very small numbers, a sectoral niche had to be at least 50 per cent of the average size of the origin group.[6] For example, the average population of employed Nordic immigrant men in 2008 was 3,105 (a total of 49,684 divided into 14 sectors. Thus a niche for Nordic immigrant men in 2008 had to have at least 1,553 employed individuals (50 per cent of 3,105) and an odds ratio greater than 1.5.

[6] The threshold value of 1.5 and minimum restriction (50 per cent of the average size) are both arbitrary. Choosing a threshold a priori is problematic as the ranges of values depend on the number of sectors, groups and sample sizes. Previous studies (Wilson, 2003) have used absolute numbers but using a percentage measure is preferable.

In theory, niches can be categorised at the national or regional scale using dichotomous variable of (0) non-niched employment versus (1) niched employment, using the odds ratio cut-off. The odds of niched employment can then be estimated using binomial logistic regression models across various periods of the economy to estimate the odds of niching and identify effects of restructuring and business cycles. However, such an approach results in modelling differently constructed dependent variables across each time period. This makes comparisons across time difficult. Instead, this chapter plotted niches for descriptive analysis before focusing on three particular case study sectors for further analysis in terms of employment over an 18-year interval (1990 and 2008) to identify effects of restructuring.

Manufacturing, hotels and restaurants, and elderly and disabled care were chosen as the case-study sectors based on their temporal and spatial significance to immigrant labour. Manufacturing remains a major source of employment for immigrants in Sweden. Geographically, it is responsible for the distribution of immigrant labour to small and medium-scale factories all across Sweden (Andersson and Solid, 2003; Bevelander and Lundh, 2007). It is also understood to have declined the most during the recent recession (NIER, 2011; Statistics Sweden, 2011e). In contrast, the hotels and restaurants sector is more urban-based. It has also been suggested that immigrants formerly employed in manufacturing having moved into this sector during previous recessions (Wahlbeck, 2007), and that many immigrant managers are more likely to exist in this sector and recruit co-national employees (Åslund *et al.*, 2009). The elderly and disabled care presents an increasingly important sector because of the ageing of the Swedish population (SALAR, 2006; Bengtsson and Scott, 2011) that contains a growing share of the elderly immigrants creating demand for 'culturally competent care' from carers of the same origin as their patients (SALAR, 2007; Hedberg and Pettersson, 2011). Elderly and disabled care is also a sector more associated with rural localities where there larger ageing populations.

This resulted in a dichotomous variable coded (0) not employed in case-study sector and (1) employed in case-study sector. The probability of employment could then be modelled using binomial logistic regression to estimate the effects of independent variables on the logit or log odds of meeting the criteria. As only data for 1990 and 2008 were available for this analysis, independent variables used information from the

same year. The full logistic regression model can written the following way (Tammaru and Kontuly, 2011:680):

$$\log \frac{p(Y_i=1)}{1 - p(Y_i=1)} = \alpha + \sum_k \beta_k X_{ik}$$

$p(Y_i = 1)$ is an individual's $i = 1,\ldots I$ probability of having employment in one of the case study sectors (i.e. manufacturing, hotels and restaurants, or elderly and disabled care), $1 - p(Y_i = 1)$ is an individual's $i = 1,\ldots, I$ probability of working in any other sector. α is the constant and X_{ik} is an individual-level variable; β_k is the parameter for this individual-level variable, with K variables. Four regression models are applied: 1990 men and women, and 2008 men and women.

For the second part of the analysis, unemployment within the three sectors was examined and this required information from the individuals over two years. Unemployment entry was the chosen outcome to be examined as this enabled the chapter to identify how previous employment in niche sectors may have produced different outcomes in terms of unemployment and vulnerability during times of recession. The use of the two-year cross-sections is limited by the previously discussed limitations of cross-sectional data, however, as the data were close together in years, and the direction of bias in the estimated results is more likely to clearer (Barrett and Kelly, 2012). The resulting variable was also dichotomous with (0) staying employed (having been employed in the case study sector) and (1) entering unemployment (having been employed in the case study sector).[7] The logistic regression models here used independent variables recorded at year t (2006 and 2007) while the dependent variables were recorded year $t + 1$ (2008 and 2009). This enabled the models to imply the some direction of causality in comparison to the previous models.

Like Marksoo and Tammaru (2011), the coefficients across all these models are treated with caution as they are not directly comparable due to unobserved heterogeneity in the models (Mood, 2010). To counteract this problem, future research could employ the same approach as Barrett and Kelly (2012) by pooling the two datasets, using the economic boom period (2006-07) as the baseline period, including a

[7] Alternatively a multinomial logistic regression could have been used to model transition from employment into competing outcomes of staying employed, becoming unemployed, or becoming economically inactive. However, those becoming economically active are arguably a select group as they choose to have no declared income through work or benefits.

dummy variable to indicate the economic bust period (2008-09) and interacting the time dummy with other independent variables to test whether significant differences between the variables existed. Nonetheless, this research design moves beyond the descriptive statistics of immigrant niching in Sweden that has completely ignored geography (Hedberg, 2009) and brings a more geographical approach than other methodologically sophisticated studies looking at labour market concentrations of immigrants by displaying and discussing the effects of geographical variables on the probability of labour market concentration (Åslund *et al.*, 2009; Åslund and Nordström Skans, 2010).

3.3.4 Cross-Sectional Analysis: Chapter 5

This second empirical chapter is concerned with whether internal migration showed: 1) pro-cyclical trends (rising during economic boom and falling during economic bust); 2) spatial-temporal trends according to Fielding's hypothesis (net gains to metropolitan regions during recession and net losses during economic growth); and 3) similarities or differences when disaggregated by immigrant origin.

In the same way that studies on immigrant labour and recession tend to focus on differences between periods of economic boom and bust, the same has generally been done with migration studies depending on what data are available. US studies have used annual aggregate-level data to examine how inter-county or inter-state migration changes with the business cycle (McHugh and Gober, 1992; Miller, 1995; Vias, 2010; Ellis *et al.*, 2014). In much of Fielding's work (Fielding, 1992, 1993; Dunford and Fielding, 1997), the Longitudinal Study (LS) has been used to examine changes in social class and migration, and the National Health Service Central Register (NHSCR) to obtain more accurate temporal and spatial patterns of migration. Research on immigrant or ethnic internal migration in the UK and US has generally relied upon the UK Census Sample of Anonymised Records (SAR) that captures when migration has occurred from the year before the decennial census (Finney and Simpson, 2008) or the US Census Public Use Microdata Samples (PUMS) that includes data five years after migration (Ellis and Goodwin-White, 2006).

In a similar way, this chapter uses less aggregate-level migration flow data that is available from 1972-2012 before choosing two cross-sections of individual-level data to enable disaggregation by immigrant origin. The event of migration in year $t + 1$ (2007 and 2009) could be determined to some degree by characteristics recorded previously in year t (2006 and 2008). By having such a modelling framework, the analysis is an improvement on census-based migration studies as the predictors or independent variables capture characteristics before the moment of migration. Like 3.3.3, the study population was restricted to only those of working-age (20-64) during the year *t*. Thus, it focussed on those aged 20-64 in 2006 and 2008. Individuals who were deceased or emigrated in year $t + 1$ were excluded from the analysis. As the aggregate data were sourced separately, the age of the samples included migrants of all ages.

Internal migration involving rural areas could be studied in terms of different types of migration movement. Rather than simply examining internal migration generally and internal migration to and from metropolitan regions (Fielding, 1992, 1993; Dunford and Fielding, 1997), this chapter also distinguishes between different movements out of metropolitan regions (see for example, Lindgren, 2003; Hjort and Malmberg, 2006). This means that the dependent variable changed between a binomial variable of (0) no migration versus (1) migration, and (0) no migration versus (1) migration to metropolitan regions. This was then followed up by a multinomial variable of (0) staying in metropolitan region, versus (1) migration to large urban localities, (2) migration to small urban localities, (3) migration to accessible rural localities, (4) migration to remote rural localities.

This approach presented the same limitations of the approach in Chapter 4 in that it may have confounded period and cohort effects and have been prone to selection bias (Singer and Willett, 2003). One the one hand, individuals captured during 2006-2007 may emigrate during 2008-2009 and therefore produce a bias in the results whereby internal migration is underestimated. On the other hand, new individuals to the data during 2008-2009 may also produce a bias whereby migration is overestimated due to new immigrants having higher odds of migrating. The researcher therefore would be the first to acknowledge the presence of confounding period and cohort effects, but believes that as long as the reader recognises this challenge there remains worth in recognising the relationships presented in the analysis. Furthermore, the analysis builds on the descriptive analysis already undertaken by previous studies examining similar processes (Fielding, 1992, 1993; Andersson, 1996; Dunford and Fielding, 1997) and adds reveals more temporal aspects of escalator regions in Swedish research using multivariate analysis (Nilsson, 2003).

The first stage of the regression modelling is to estimate the odds of migration to non-migration. Similar to Chapter 4, the full regression model may be written as:

$$\log \frac{p(Y_i=1)}{1 - p(Y_i=1)} = \alpha + \sum_k \beta_k X_{ik}$$

This time, $p(Y_i = 1)$ is an individual's $i = 1,\ldots, I$ probability of internal migrating, $1 - p(Y_i = 1)$ is an individual's $i = 1,\ldots, I$ probability of not internally migrating. α is the constant and X_{ik} is an individual-level variable; β_{jk} is the parameter for this individual-

level variable, with K variables. The second stage of analysis then modified this regression model to include those living in non-metropolitan regions and modelling migration to metropolitan regions versus those who do not. The third stage of analysis then models migration from metropolitan regions. This involves different categories. This is sometimes referred to as a 'discrete-choice' model or multinomial regression model as there is more than one category. The full regression model for this is written as follows (see Tammaru *et al.*, 2013:854):

$$\log \frac{p(Y_i = j)}{p(Y_i = J)} = \alpha + \sum_k \beta_{jk} X_{ik}$$

Here $p(Y_i = j)$ is an individual's $i = 1, \ldots I$ probability of internally internal migrant to large urban locality ($j = 1$), small urban locality ($j = 2$), accessible rural locality ($j = 3$), or remote rural locality ($j = 4$), and $p(Y_i = J)$ is the probability of remaining in any other category for those staying within a metropolitan region ($J = 0$). α is the constant and X_{ik} is an individual-level variable; β_{jk} is the parameter for this individual-level variable, with K variables.

Similarly to Chapter 4, this modelling framework is limited in that coefficients are not directly comparable across models due to issues of unobserved heterogeneity. To overcome this issue, the data could be pooled into one model to include time as an independent variable that could be interacted with other independent variables (Lundholm, 2007a). However, as this latter method would still have issues over changes in cohort over time, an alternative approach to measuring the effects of time would be a panel regression model or event history model (Boman, 2011).

3.3.5 Longitudinal Analysis: Chapter 6

In cross-sectional research, while measurement and replication of analysis are achievable, such research designs produce associations rather than findings from which causal inferences can be unambiguously made. Thus, generalisations are more difficult to make because the data and analysis are essentially taking a snapshot of a phenomenon. In contrast, longitudinal research design can allow some insight into the time order of variables and therefore allow more causal inferences to be made. According to Bryman (2012), a longitudinal research design is a sample that is surveyed and surveyed again on at least one further occasion. According to this definition, some of the analysis in the first two empirical chapters may have qualified as longitudinal analysis because the same individuals were studied over two years. However, as Singer and Willett (2003) have argued, two waves of data are only marginally better than one because they are able to narrowly conceptualise change as an increment with the simple differences between scores assessed on two measurement occasions. Two reasons explain why an increment size cannot describe the process of change: firstly, it cannot tell us about the shape of each person's individual trajectory and secondly, it cannot distinguish true change from a measurement error.

Chapter 6 applies a longitudinal research design through the use of a cohort study whereby a cohort of people were selected for having the same experience and are followed over time (Bryman, 2012). This allows the chapter to address the key questions of: 1) how long did it take for new immigrants to enter employment; 2) which immigrants were more likely to enter employment; and 3) where were immigrants most likely to enter employment. The cohort consisted of new immigrants that arrived in Sweden during the year 2000 who were followed over an 11-year period (including data from 2010). Justification behind this cohort and the duration of study is threefold. Firstly, from a contextual point of view, choosing an immigrant cohort arriving during the year 2000 is because the period following witnessed a series of events that have changed the context of immigration. For example, in 2001 Sweden introduced a law to fully permit dual citizenship, and in 2003 a law on discrimination was passed to cover various kinds of discrimination by ethnicity, religion, sexual preference or disability. Secondly, from a methodological point of view, having at least ten years of data seemed critical because of international literature regarding the outcomes for immigrants. In the

US literature, immigrant men are believed to achieve income assimilation to that of native men after ten years in the country (Chiswick, 1978a). Although this has not been the case in Sweden, similar studies have used data covering a similar length of time (Statistics Sweden, 2009a; Hedberg and Tammaru, 2013). Thirdly, from a data point of view, 2010 represented the most recent year of data available during the time the analysis was undertaken. In line with the other empirical chapters delimiting to the working-age population, the study population was restricted to those aged 20-55 at year *t* (2000). This ensured that the study population were still of working-age even after the 11 year study period had passed.

The longitudinal structure of this data enables the analysis to follow the sequence of events in time and infer a greater degree of causality between independent and dependent variables (Blossfeldt *et al.*, 2007). As the analysis only concerned one particular event (first employment entry), event history analysis (also known as 'survival analysis') techniques could be applied to model the elapsed time until the 'event' or 'failure' or, equivalently, the length of a non-eventful 'spell' (Beck *et al.*, 1998). An individual has 'survived' or is 'at risk' until they fail, and the 'hazard' rate is, broadly speaking, how likely failure is to occur at any given time if they have survived until then.

In some instances, the exact survival time is not known and this is what is called 'censoring'. One form of censoring, often called right-censoring or type I censoring, is when the event does not occur before the end of the observation period and all that is known is that the survival time exceeds the time between becoming at risk and the end of the observation period (in this case, 2000-2010). Another form of censoring occurs when the subject stops being at risk of the event under investigation before the end of the observation. In this case this could be through death or emigration. Similarly, left censoring occurs when individuals have experienced the event but the survival time is unknown. Another form of censoring is interval censoring. This could occur when information for an individual is present at the start of a study and end of a study, but is partially missing in between. 3

To visualise the issue of censoring with event history analysis, Figure 3.3 presents the possible scenarios for five individuals. In an ideal scenario, the individual is only exposed to the risk of entering first employment from the first year of employment

and is observed to the point at which they enter first employment. Thus, they are uncensored. A more common form of is right censoring where the individual is observed until the end of the study period without having experienced first employment entry while another possibility is that they are observed until they leave the 'risk set' through emigration or death. Left-censoring would occur if the study were to include those at risk of entering first employment prior to the study period and interval-censoring would be those who went missing from the data. To avoid further complications, the decision was made to only include individuals exposed to first employment entry during the study period and censor anybody as soon as they were censored for the first time. The implication of this approach is that some individuals may have entered employment after 12 years in Sweden without that being identified here. Some of those who may have left Sweden may have returned as early as a year later to then go on and find employment before the study period ended. However, this latter group would be a selective group from the rest of the sample.

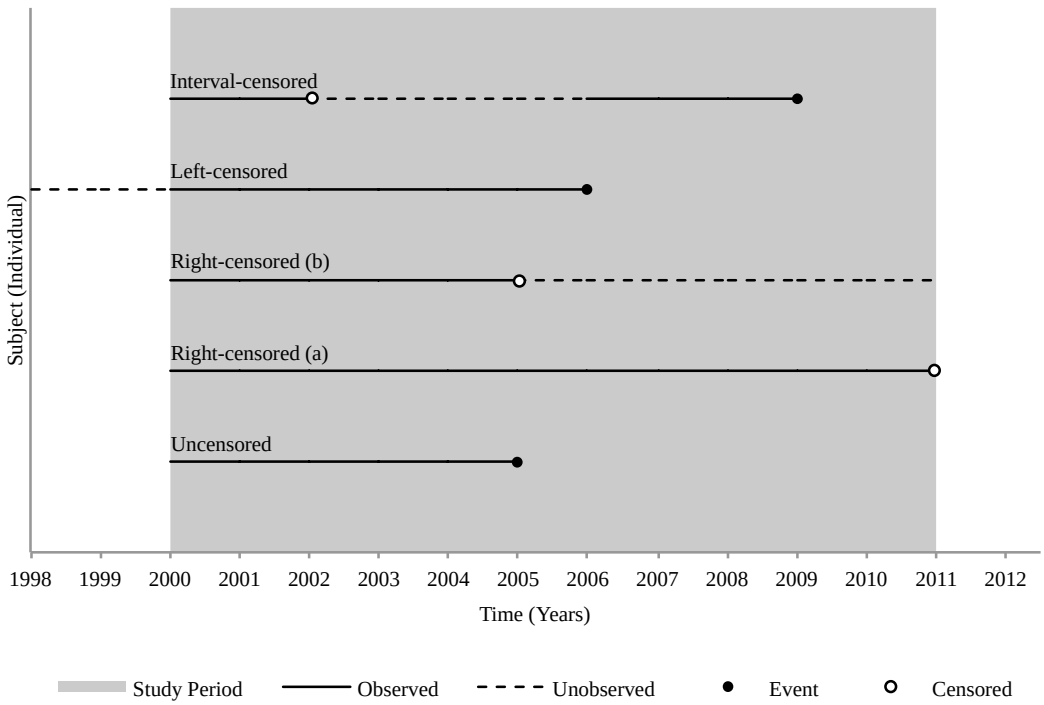

Figure 3.3 Event history analysis and censoring
Note: Right censoring in case (a) indicates that the event does not occur within the study period whereas case (b) indicates that the individual has left the study.
Source: Author.

An informative method to display survival data when not all subjects continue in a study is by using Kaplan-Meier (K-M) survival curves and estimates of survival (Rich *et al.*, 2010). These estimates graphically present survival in terms of the cumulative probability that a subject has not yet experienced the event. The most common statistical modelling technique to compliment K-M analysis is Cox proportional hazard modelling. However, as Singer and Willett (2003) have noted, Cox proportional hazard models rely on continuous time and are based on the assumption that the effect of a predictor on event occurrence is constant over time. Furthermore, in continuous time models (where researchers assume that they know the precise instant when an event occurs), time is often divided discretely into quarters, semesters or years.

In Chapter 6, K-M survival curves were plotted to provide an initial picture as to what may determine employment entry but instead of then using continuous time proportional hazards models, discrete-time event history analysis was applied to include time-varying and time-invariant predictors of the annual register data through the use of a logistic regression (Rabe-Hesketh and Skrondal, 2012; Hedberg and Tammaru, 2013). Like many of the other regression models, this was dichotomous and was coded (0) staying outside the labour market (1) entered employment for the first time.

$$\log \frac{\lambda\,(t;Y)}{1-\lambda\,(t;Y)} = \alpha(t) + \sum_{k} \beta_k X_{ik}$$

Here, $\lambda\,(t; Y)$ is the probability of getting employed at time t (t = 2000, . . . , 2010); $1 - \lambda\,(t; Y)$ is the probability to remain outside the labour market; X ($X = X_i, \ldots, X_k$) stands for a set of both time-variant and time-invariant independent variables; β_k is the parameter describing the effect of those variables; and $\alpha\,(t)$ represents the baseline odds of the event occurrence for a person with value zero for all variables used (Hedberg and Tammaru, 2013:8).

The approach taken in Chapter 6 moves beyond the cross-sectional analysis of Chapters 4 and 5. Based on the discussions of in section 2.5.2, first employment entry was analysed. Immigrants may experience multiple transitions into employment and unemployment. Exploring such transitions would require multiple event history analyses and panel analyses to allow the observation of repeated events. Nonetheless, such analyses can be undertaken in future research using a data and modelling framework such as those highlighted in section 3.3.2.

3.3.6 Presentation and Assessment of Statistical Models

Throughout the binomial logistic regression models, the coefficients displayed are the exponentiated beta values (odds ratios). The odds ratio is the ratio of the probability that the event of interest occurs to the probability that it does not. The odds ratio is limited at the lower end, since it cannot be negative, but is unlimited at the upper end. Therefore, odds ratios are easy to interpret when they are greater than one, but less so when they are less than one (Bland and Altman, 2000). For the multinomial regression models, relative risk ratios are shown which can be interpreted in a similar manner to odds ratios in binomial logistic regression (Manley and Catney, 2012). The odds ratios and relative risk ratios are displayed with standard errors that are estimates of the standard deviations of the coefficients, the amount they vary across cases. The *p* value is the probability of seeing a result as extreme as the one you are getting in a collection of random data in which the variable had no effect. A *p* value of five per cent or less is generally accepted for rejecting the null hypothesis. A *p* value of five per cent suggests there is only a five per cent chance that the results shown would have occurred in a random distribution. Therefore, it is possible to say with 95 per cent probability that the model is specified correctly. The size of the *p* value for a coefficient says nothing about the size of the effect that a variable is having on a dependent variable. It is possible to have a highly significant result (very small *p* value) for a miniscule effect.

In many migration and integration studies using Swedish register data, authors rely heavily upon a low *p* value and the sign of a regression coefficient alone to support their hypotheses. However, as illustrated by Lin *et al*. (2013), relying on *p* values in large sample sizes is problematic. This is because with very large sample sizes, standard errors become extremely small, so that even miniscule distances between the estimate and the null hypothesis become statistical significant. Therefore, conclusions based on significance and the sign of the coefficient (positive or negative), claiming that the null hypothesis is rejected, are meaningless unless interpreted in light of the actual magnitude of the effect size. An alternative method would be to present confidence intervals. In contrast to the *p* value, that only describes the probability that the null hypothesis can be rejected give a true effect, confidence intervals give a range for the actual magnitude of the parameter of interest. In reflection of this, rather than abandoning the use of *p* values to test hypotheses, the *p* value threshold is adjusted

downwards as the sample size grows. Thus, instead of claiming significance at only 5 per cent, thresholds of 1 per cent and 0.1 per cent are used.

The method of constructing the regression models was initially the same for each of the chapters. Variables with theoretical importance were used as independent variables. As this thesis is more concerned about differences between immigrants and natives, and differences between different types of immigrants, the immigrant origin variables were included in the models first. This was followed by other socio-demographic variables reflecting the life-stage of the individuals and their human capital, followed by geographical variables. In order to limit the volume of statistical outputs, the full regression tables are displayed in most of the empirical chapters.

In many of the statistical models in this thesis, and others using Swedish register data, the low R^2 values show that the models constructed have marginal explanatory power. R^2 values below 20 per cent are common in regressions with individual-level data and further limited by not including attitudinal data (Myers *et al.*, 1997). As the thesis progressed, continuous and quadratic variables of age, and years in Sweden were included, as opposed to the categorical versions of these variables used in the first empirical chapter. Nonetheless, the explanatory power of the models remained low. In most cases, the variables that had the most explanatory power in the models were socio-demographic (see Chapter 6).

Two ways in which the models could potentially be improved is with interaction variables, and lagged variables. For example, interactions between duration of residence and immigrant origin would enable the examination of whether integration processes proceeded in the same way for different immigrant groups. However, due to the complex nature of the years in Sweden variable not accurately measuring how some people have been in the country (see 3.5.5), interactions between these variables is problematic. Further interaction variables between education and origin would have added to the analysis but time restrictions did not enable the possibility of this. Lagged dynamic variables would have benefited the analysis to take into account changes in household or labour market position (Coulter *et al.*, 2011, 2012). Nonetheless, early model estimates experimenting with lagged independent variables were difficult to interpret and it would not have been possible to ensure that the changes occurred before or after the labour market and migration outcomes.

To give an idea of how well the individual-level data of the three empirical chapters may capture the differential cyclical, structural, and deep structural economic processes, Figure 3.4 plots the data coverage against annual changes in GDP over the past 40 years in Sweden. Clearly, Sweden has experienced three major economic recessions in this time. The first seen here is the mid-late 1970s recession. The second is the deeper recession of the 1990s. The third is the very deep and most recent 2008-2009 recession. It is also possible from the figure to predict how effectively the various cross-sectional and longitudinal data coverage may have captured long-term and short-term economic processes between 1990 and 2010. In addition to this individual-level data coverage, aggregate-level data cover 1993-2012 for labour market characteristics and 1972-2012 for internal migration. If and when the data reflect the impact of recession relates back to discussion on the timing of recession effects (3.3.2). For example, some of the effects may not be observable until many years after the recession. Having now provided some detail on the research design and methodology, the following section outlines how contemporary register data presents a unique opportunity compared to more conventional or traditional population data. Following this outline, details will be given as to how the data were measured for the analysis of this thesis.

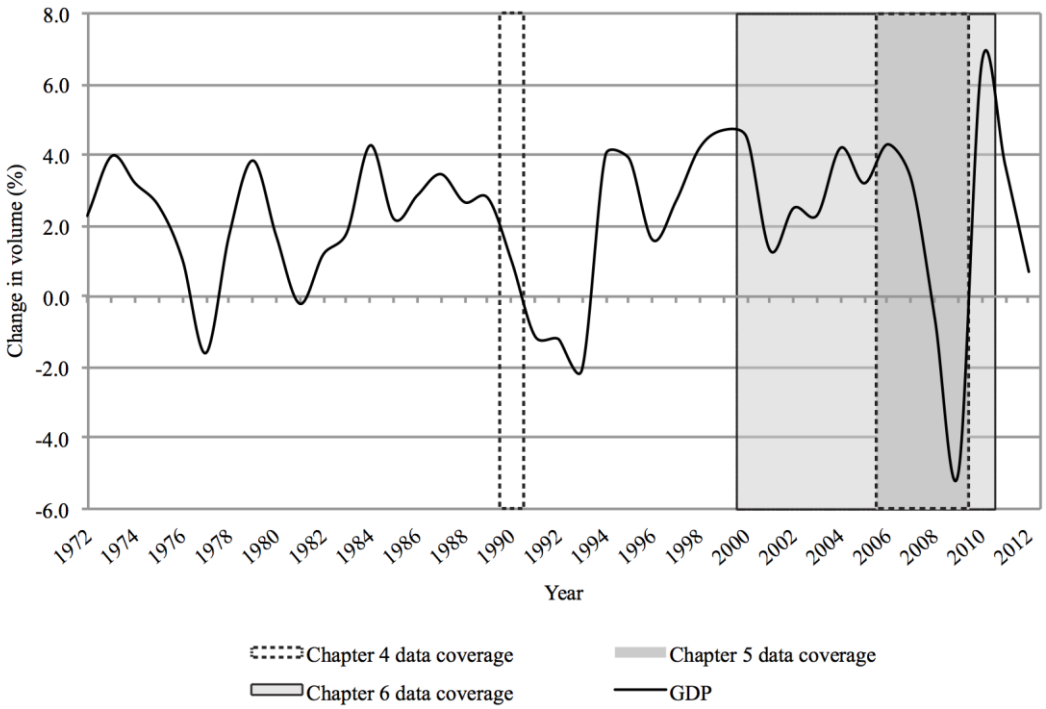

Figure 3.4 The Swedish economy and micro-data coverage, 1972-2012
Source: Author's calculations of Statistics Sweden (2013a).

3.4 Register Data

3.4.1 Why Use Register Data?

While traditionally population censuses have often presented the main nationally representative surveys of their respective countries, many governments or national statistical institutes in charge of such surveys are currently assessing the future of their censuses. This is due to the often out-of-date nature of the data they produce, and discussions over the costs of undertaking them. In the UK, for example, a decision was made by the Office of National Statistics (ONS) in England and Wales, the National Records for Scotland (NRS), and the Northern Ireland Statistics and Research Agency (NISRA), to undertake a 'Beyond 2011 Programme' exploring alternatives to the traditional census (NRS, 2013; ONS, 2013). In the US, similar discussions have been raised and the launch of the American Community Survey (ACS) has marked a possible long-term replacement for the traditional long-form sample data previously collected as part of the decennial census (Franklin and Plane, 2006).

National statistical institutes elsewhere have already moved away from traditional forms of data collection such as censuses and adopted the use of administrative registers in the production of official statistics. This is most notable in the Nordic countries but evident in a growing number of other countries (UNECE, 2013). According to the UNECE (2007), statistical institutes have a duty to produce official statistics with the highest possible quality, with reference to relevance and completeness, timeliness and punctuality, accuracy, comparability and coherence, accessibility and clarity, cost efficiency, and, low response burden. Furthermore, for the given amount of money, the quality requirements are best fulfilled by using data from administrative registers rather than by traditional data collection (UNECE, 2007).

Statistical use of administrative data involves linking data from different registers giving the impression that the statistical institute knows 'everything' about every single citizen ('Big Brother Syndrome'). However, it has been argued that from a public point of view, such re-using of existing data has its advantages for being cost efficient, person/households can live in peace because they are not harassed by unnecessary inquiries, data security is better because there is a reduced number of people handling the data (internally and externally), and only the computer 'sees' all the data due to its electronic formatting (UNECE, 2007).

A major facilitator for the statistical use of administrative data records is the use of a unified identification system across different sources. In the Nordic countries unified personal identity codes (personal identification numbers) are present in nearly all registers. The compilation of such registers has been initiated for the needs of the functioning of society and development of administration, particularly with regards to the development of social security, taxation systems and other administrative needs. One reason for the development of such data in the Nordic countries has been that they have traditionally had small and homogenous populations. The first country to conduct fully register-based official statistics was Denmark in 1980. By 1990, Finland was the same. Currently Norway and Sweden have partly register-based data with the intentions of moving over the years ahead to be fully register-based (see Appendix 1).

3.4.2 Swedish Register Data

Together with Finland, Sweden has the oldest consecutive population statistics in the world. The first organisation, which later became Statistics Sweden, was established in the middle of the 18th century and has been used to compile population statistics ever since (Statistics Sweden, 2006). To give an idea of the richness of the Swedish register data, Figure 3.5 displays the various data received from different authorities and organisations.

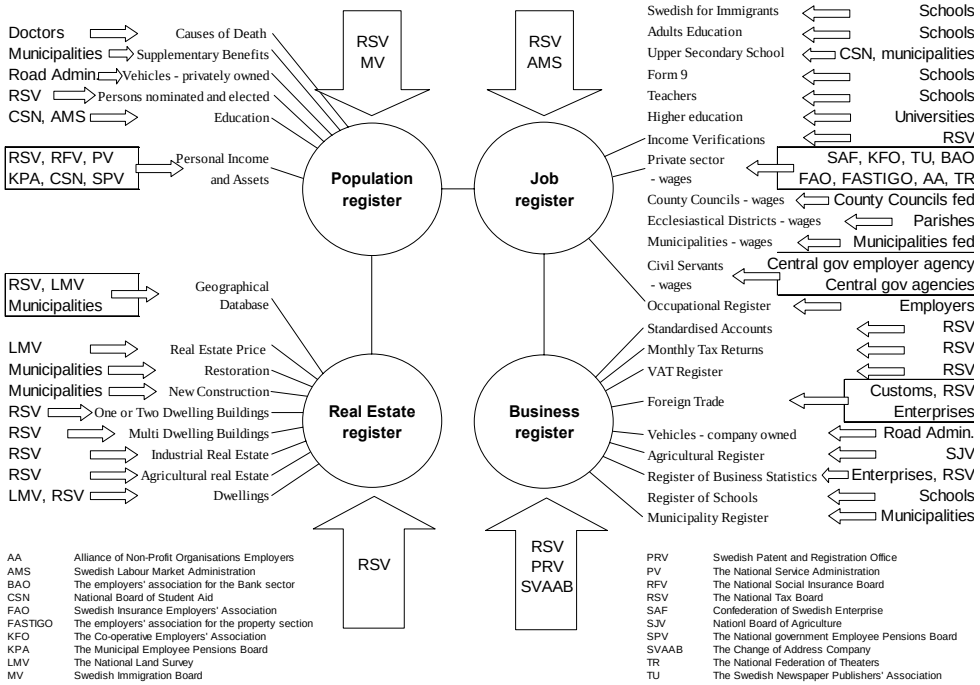

Figure 3.5 How Statistics Sweden receives data from authorities and organisations
Source: Statistics Sweden (2001:11).

According to Andersson (2007), four particular characteristics have given social scientists using Swedish register data a unique opportunity: firstly, the personal identity code (*personnummer*) used in all official registers; secondly, the constantly updated address register (*Register över totalbefolkningen, RTB*) linked to the personal identity codes; thirdly, the geo-coded real estate and property register, linked to the address register (*fastighetsregistren*); and fourthly, the laws granting researchers reasonably easy and inexpensive access to data on individuals.

The Swedish *personnummer* celebrated its 60th birthday in 2007, having been established in 1947 (Statistics Sweden, 2007). All persons who are registered in Sweden are assigned one and will retain the same one for life. It does not change, for example moving from or to Sweden. It initially consisted of the individual's date of birth and a three-digit birth number and in 1967 this was amended to include a fourth digit. The only information that can be derived is the date of birth and gender, for example gender is the last digit and is odd for men and even for women. Upon assigning this personal identity code at the time of immigration, the authorities must make sure that the individual has not previously resided in Sweden. If in some foreign passports the date of birth is not shown, the date of arrival is then recorded.

Inaccurate date of birth registration in relation to immigration is one of the most common reasons that an individuals' personal identity number requires replacement. In some cases, people who immigrate to Sweden have been given the same personal identity as another person previously. This primarily regards deceased people. For example, there was an estimated 14,800 re-used numbers in 2007. Another reason for the re-use of personal identity numbers is that some number series ran out when disproportionately large numbers of particular birth dates among immigrants (notably the 1st of January and 1st of July) were used. The re-use of personal identity numbers in this case are those born between 1940 and 1960 (see Figure 3.6). It is also the age group with the greater numbers of personal identity numbers available. This issue highlights how despite population registers providing a high level of detail, like other data, they share problems in identifying immigrant populations. Furthermore, it is still possible that individuals may reside and seek employment illegally without identification in the data.

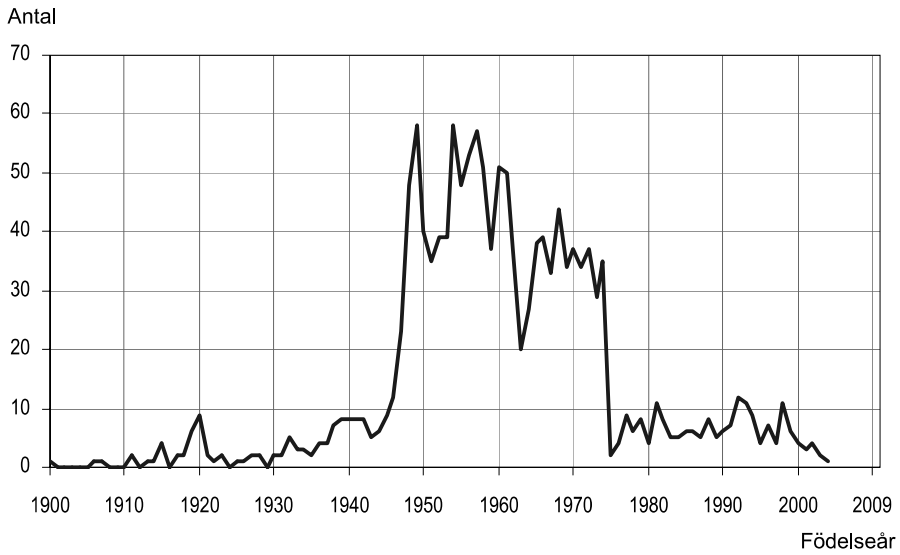

Figure 3.6 Total number of re-used personal identity numbers for immigrants in Sweden by year of birth
Source: Statistics Sweden (2007:18).

As Andersson (2007) has stated, the data are accessible much to the benefit of social scientists. According to Statistics Sweden (2006:15-16) three particular acts are important with regards to the confidentiality and regulations for handling personal data: Secrecy Act (1980:100); Personal Data Act (1998:204); and the Official Statistics Act (2001:99) (see Appendix 2 for details). Like other Nordic countries, Sweden has distributed anonymous micro data to a large number of research institutions and authorities using magnetic tapes, CD ROMS, DVDs and other formats, increasingly with the growth in research (UNECE, 2007:34). In 2005, Statistics Sweden developed the Micro data Online Access (MONA) giving advantages of a secure system where no micro data can leave the system; access to numerous software components; instantly upgraded data; powerful servers with no equipment or software requirements for the end user. Despite this, opportunity to communicate data via the Internet to other countries is prohibited by Swedish law (Statistics Sweden, 2014a, 2014e).

The majority of institutional databases comprise data held by Statistics Sweden, such as the longitudinal database of education, income and employment, LOUISE (*Longitudinell database kring Utbildning, Inkomst och Sysselsättning*) developed during the mid-1990s. This database combines data from register-based labour market statistics (*Registerbaserad arbetsmarnadsstistik, RAMS*), the education register (*Utbildningsregistret*), the Total Population Register (*Registret över totalbefolkningen, RTB*), the income and property register (*Inkomst- och förmögenhetsregistret, IoF*), and

the Population and Housing Census 1990 (Statistics Sweden, 2005c). In 2004, LOUISE was then replaced by the longitudinal integration database for health insurance and labour market studies, LISA (*Longitudinell Integrationsdatabas för Sjuksförsäkrings- och Arbetsmarknadsstudier*). LISA was created by Statistics Sweden, together with the National Social Insurance Board, RVF (*Riksförsäkringsverket*), and the Swedish Agency for Innovation Systems, VINNOVA (*Verket för innovationssystem*) (Statistics Sweden, 2011a, 2014d).

A range of databases exists across Swedish research institutes and these have been designed specifically for their respective research agendas. In Uppsala University, for example, the Department of Economics has the Longitudinal Individual Data Base (LINDA) (Edin and Fredriksson, 2000; Statistics Sweden, 2014c), the Institute for Housing and Urban Research (*Institutet för Bostads- och Urbanforskning, IBF*) has the GeoSweden database (Bråmå, 2006a; Hedman, 2011), while the Department of Human Geography has the PLACE database (Hedberg and Tammaru, 2013).

In terms of research on immigrants, economic demographers at Lund University have access to the Swedish Longitudinal Immigrant database (SLI) which contains a sample of 109,699 individuals from sixteen different countries of origin and a Swedish control group of equal size, presently covering the period 1968-1996 (Lund University, 2013). Nonetheless, the most recent and arguably most useful database is STATIV – a longitudinal database for integration studies, developed by Statistics Sweden in cooperation with the previous Swedish Integration Board (*Integrationsverket*). This database contains information from all permits issued for labour reasons (including family permits associated with a work permit) from 1 January 2005 until 25 May 2011. Immigrants are included in the database if they hold a valid permit of residence of at least one year's duration on the 31st of December (OECD, 2011:42). STATIV offers researchers across Sweden the potential to examine immigrants separately by grounds of settlement as opposed to just country of birth groupings. However, foreign researchers are not allowed to use these data unless they use it in collaboration with researchers in Sweden (Statistics Sweden, 2013b).

3.4.3 Introducing Linnaeus and ASTRID

Central to this thesis has been arranging access to two databases held at Umeå University. The first is housed in the interdisciplinary Centre for Population Studies (*Centrum för befolkningsstudier*, *CBS*). The CBS project entitled Ageing and Living Conditions - ALC (*Åldrande och livsvillkor*) was selected as one of 20 research environments in Sweden to receive a 'Linnaeus Grant' from the Swedish Research Council (*Vetenskapsrådet*) and the Swedish Council for Environment, Agricultural Sciences and Spatial Planning (Formas) (Umeå University, 2013). A result of this has been the creation of the Linnaeus database using information from four different sources to examine what society will look like in the future, given a rapidly increasing proportion of older people: Betula, VIP (The Västerbotten Intervention Programme), Statistics Sweden, and The Swedish National Board of Health and Welfare (Malmberg *et al.*, 2010).

The second, and more established, database is housed in the Department of Geography and Economic History and is the anonymous statistical relational individual database, known specifically by its acronym, ASTRID (*Anonym Statistisk Relationella Individuell Databas*). ASTRID serves as a basis for research into population dynamics and for simulation methods of whole or partial populations on a micro level (Umeå University, 2014). The purpose of this thesis is not specifically to study population ageing or simulation modelling. However, both the Linnaeus and ASTRID databases provide access to elements of the LISA database held by Statistics Sweden. The use of both depended on the former having the most recent data during the first two empirical chapters of this thesis while the latter was upgraded in time for the last empirical chapter. In particular, the analysis of Chapter 4 provides a more detailed picture of the extent of immigrant labour within the elderly care sector and this has helped justify having access to such data in the first place because it is highly relevant to the overall research agenda of the ALC programme.

Linnaeus and ASTRID hold a range of data similar to that displayed in Figure 3.5. However, full documentation of all variables and sources is not accessible outside the data lab. Appendix 3 lists all the variables that are included in the LISA database which Linnaeus and ASTRID have restricted access to. Shaded rows indicate variables used specifically in the analysis of this thesis.

Figure 3.7 shows a simple overview of how the databases are structured at the individual level. Certain data are not considered to change for individuals over time, such as demographic characteristics (date of birth, sex), education (highest level obtained), international migration (only the latest year of immigration/emigration can be recorded for an individual), and death (only one death can be recorded). Whereas the LISA database only has access to the 1990 Census, Linnaeus and ASTRID data can be linked back to 1960. All other data is collected on an annual basis, such as geo-coded property and socio-economic variables.

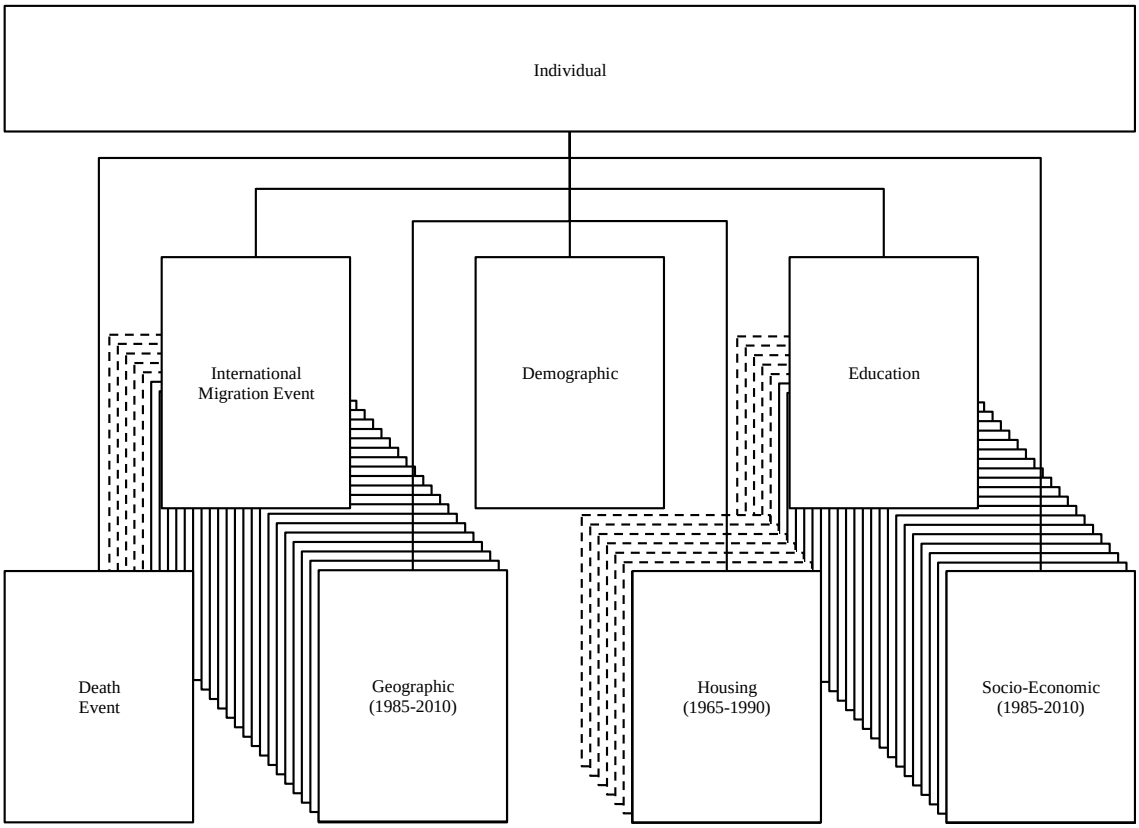

Figure 3.7 Simplified structure of the Linnaeus and ASTRID databases
Note: Dots indicate areas of data that are not accessible in LISA but are in Linnaeus and ASTRID
Source: Author's adaptation of Bråmå (2006a:33)

To access Linnaeus and ASTRID, data requests were submitted via the research project's collaborator (Dr. Emma Lundholm). Technical staff members at the CBS (Maria Larsson) and Department of Geography and Economic History (Erik Bäckström) then extracted the data. Linnaeus data were analysed using SPSS while ASTRID data were analysed using Stata due its greater ability to perform longitudinal analysis. Due to limitations of time and funding, the time spent working in the data labs was restricted to approximately four short (one-to-two month) research visits between May 2011 and

December 2012. Each research visit required completing procedures of: checking data for errors; re-coding data for analyses; and, analysing the data. Two noteworthy challenges occurred during this time frame. The first was during the first research visit to Umeå (May-June 2011) when only data was available up until 2008, which despite showing effects of the recession in aggregate-level data, failed to show any indication of the recession at the micro, individual-level. The second complication was when the new data extraction including 2009 data was delayed because recent data upgrade retrieved from Statistics Sweden obtained errors therefore all new data extractions using the upgraded data was delayed until Statistics Sweden rectified the problem. Given the limited time to achieve the data checking, preparation, and analysis, time was more limited than in comparable doctoral projects working with data based in the same institute. Hence, despite some of the regression modelling lacking complexity at times, the analysis was approached with the greatest efforts given the time and logistical constraints of the project.

3.5 Measurement of Key Concepts

3.5.1 Measuring Geographies: Spatial Differences in a Sparsely Populated Land

A connecting theme across each of the empirical chapters is the role of space. Sweden is a unique country geographically as it is sparsely populated (22 inhabitants per km^2) and as much as 95 per cent of its area is rural and sparsely populated (Ceccato and Dolmen, 2011). As a result, spatial classifications applied in studies elsewhere may not be entirely appropriate in Sweden. An important element of the analysis in this thesis is to examine whether integration processes and the economic recession differ across urban and rural spaces in Sweden. As discussed in Chapter 2, varying conceptualisations of such spaces may differ depending on ontological and epistemological positions. From an administrative and policy perspective, population density below a specific threshold and distance or accessibility to urban centres are the two most common criteria to distinguish such classifications and are often supplemented with additional socio-economic criteria (Nordregio, 2011).

The Rural Development Programme for Sweden 2007-2013, and most regional rural strategies, apply a similar definition based on accessibility. In terms of analytical purposes, the Swedish Board of Agriculture (*Jordbruksverket*) and the National Rural Development Agency (*Glesbygdsverket*) have together developed a classification with three zones: urban areas with more than 3,000 inhabitants and a hinterland within 5 minutes travel time; rural areas within 5-45 minutes travel time from urban areas with more than 3,000 inhabitants; and remote rural areas more than 45 minutes travel away from urban areas with more than 3,000 inhabitants and islands without fixed connections to the mainland (see Figure 3.8). Furthermore, considerable differences exist within these groups with regards to preconditions and growth potential resulting in four types of regions: inland forest counties; other forest counties; large city regions; other parts of Sweden (Nordregio, 2011:38-40). This classification has strengths in that it distinguishes beyond a simple urban-rural binary and accounts for the vast geographical scale of Sweden's landmass and its sparse population. However, most academics use more conventional administrative boundaries or construct their own classifications.

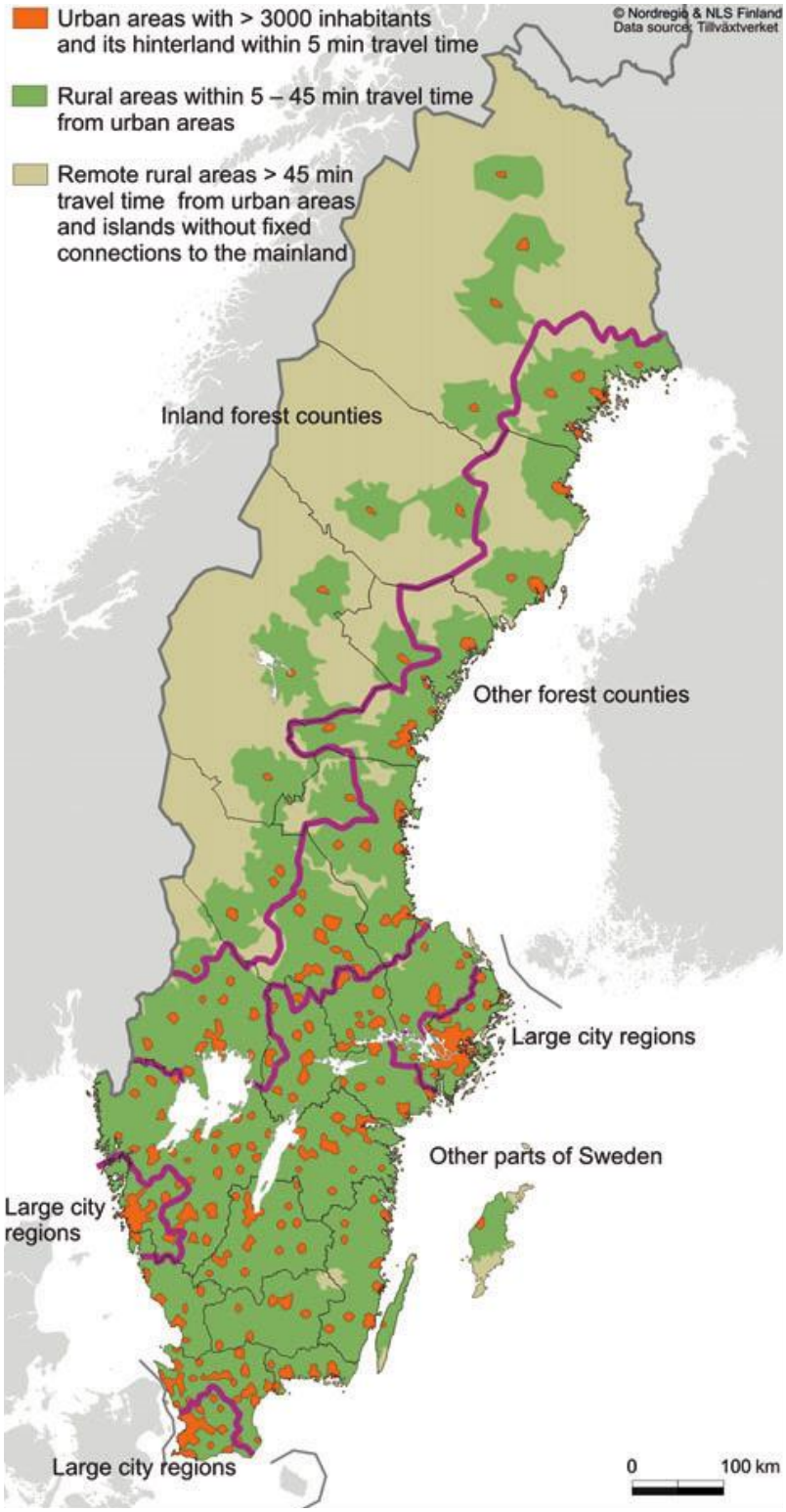

Figure 3.8 Classification of regions and types of areas in Sweden by the Swedish Rural Development Agency (*Glesbygdsverket*)
Source: Nordregio (2011:40).

Swedish register data are primarily collected for administrative purposes. Therefore, there are multiple spatial divisions reflecting the administrative purposes of the data (see Appendix 4). There is already a Swedish definition of locality (*tätortsområden*) that allows researchers to identify urban areas defined by group of dwellings with at least 200 inhabitants where the dwellings are no more than 200 metres apart (Amcoff, 2006). Despite the possibility of extending this definition to include different population cut-offs (Hedberg, 2010), a benefit of the data was having the potential to construct new classifications using the detailed geo-referenced data. The first two empirical chapters of this thesis used the individuals' coordinates at the 100-metre square grid reference. To capture the spatial dynamics of immigration and the labour market across different rural and urban spaces, a typology similar to Hjort and Malmberg (2006:59-61) was adopted. Given the 100-metre square grid reference of the individual, a kilometre radius was constructed to determine whether someone was living within an urban (> 3,000 people) or rural (≤ 3,000 people) area. This could then be further separated into densely or sparsely populated areas based on whether there were over 80,000 people within a 25 km 'daily mobility' radius (Table 3.2).

Table 3.2 Locality classification used in this thesis

Classification	Criteria	Sub-classification (*N*)	Criteria
Urban	> 3,000 individuals within 1km radius	Large urban (191)	> 80,000 individuals within 25km radius
		Small urban (149)	≤ 80,000 individuals within 25km radius
Rural	≤ 3,000 individuals within 1km radius	Accessible rural (212)	> 80,000 individuals within 25km radius
		Remote rural (4,080)	≤ 80,000 individuals within 25km radius

Source: Author's adaptation of Hjort and Malmberg (2006:59-61).

The criteria were applied to the total population in 1990 and 2008 because although empirical analyses were taken within one or two years of these periods (for example, 2006 and 2009) change within the population distribution was considered to be minimal. This implies that spatial differences were defined by 'constant area' rather than 'constant time' criteria limiting the analyses to a degree of assumption that cut-offs should not change with time (Muilu and Rusanen, 2004; Amcoff, 2006). Furthermore, in Chapter 4 the greater metropolitan regions were also identified using an official municipality classification (Statistics Sweden, 2011d:56) (Appendix 5). When mapped, this clearly displays how localities are more evenly spread in the south than the very sparse north (Figure 3.9) and that urban localities were not as evenly spread as the Statistics Sweden definition.

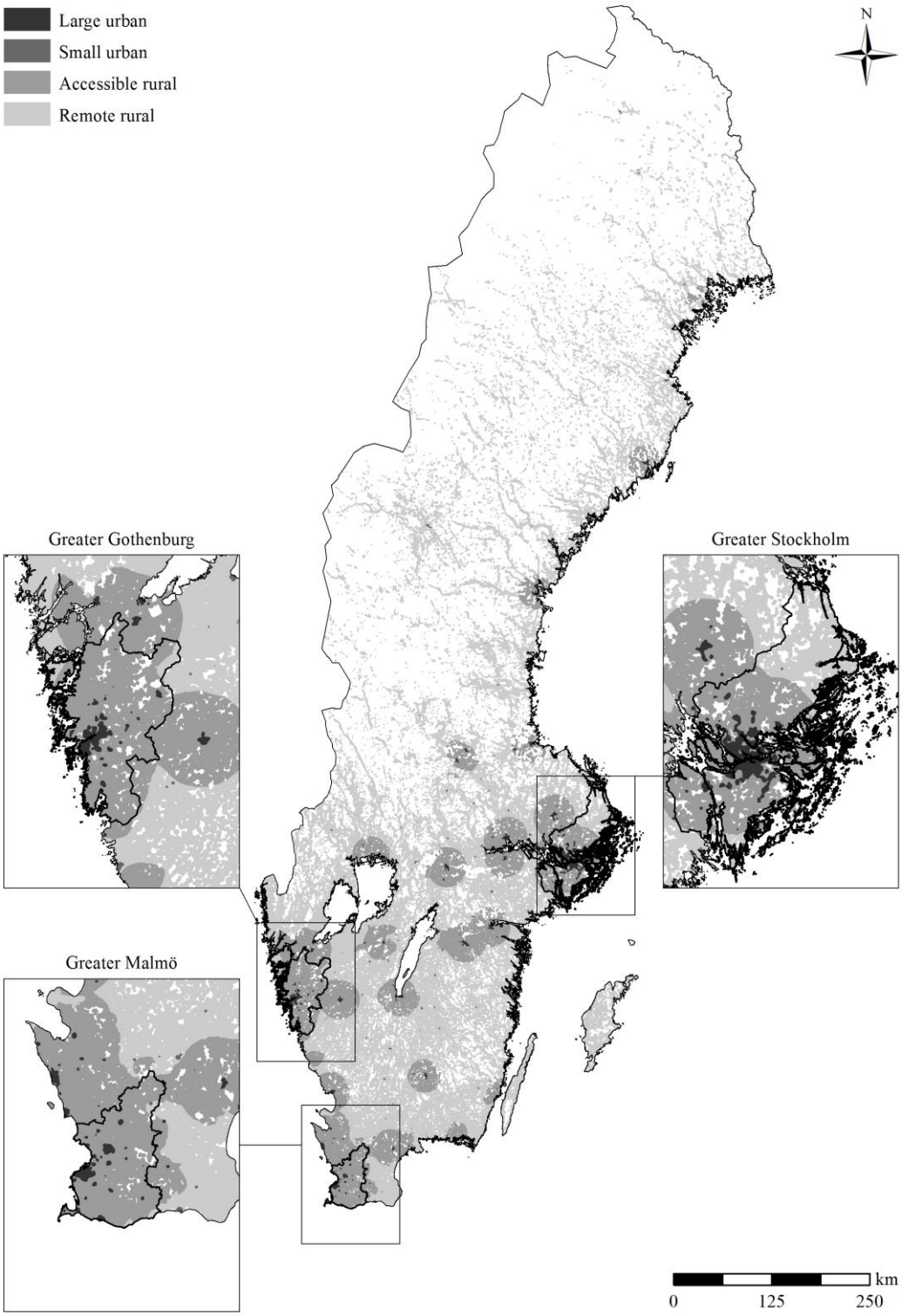

Figure 3.9 Locality classification using the total population in Sweden, 2008
Source: Author's adaptation of Hjort and Malmberg (2006:59-61).

In the last empirical chapter (Chapter 6), because a longer data series of 11 consecutive years was used, a municipality-based classification was considered more appropriate for practical reasons. The growth in international literature concerning immigrants settling away from traditional 'ports of entry' or 'gateways' led to considering more than just an urban-rural classification. In the US, for example, Singer (2004) proposed a typology categorising large metropolitan areas into six different types of immigrant destinations that has since been adapted and used in other studies (Lichter and Johnson, 2009; Wang, 2010; Park and Iceland, 2011; Hall, 2012). In England and Wales, Catney and Simpson (2010) classified census districts into four types of immigrant settlement based on minority ethnic population and international and internal migration history.

In Sweden, no such approach has been applied. Sweden only has three metropolitan areas and time series from 1973-2012 is available only for foreign citizens at the municipality level. Although this is useful and efforts can be made to create such a categorisation (Appendix 7) and mapped to reveal an interesting distribution (Appendix 8), the decision was made to adapt an existing classification to relate to debates concerning rural spaces. Accordingly, the last empirical chapter adapts the municipality classification of the Swedish Authority of Local Authorities and Regions (SALAR/*Sveriges Kommuner och Lanstig, SKL*). The original classification divides municipalities into ten groups on the basis of structural parameters such as population, commuting patterns, tourism and travel industry, and economic structure (Appendix 9 and Appendix 10). This classification was then aggregated into six groups deemed appropriate for capturing differences between urban and rural spaces and labour markets (Appendix 11). The result is a population distribution not too dissimilar to the classification of localities (Figure 3.10).

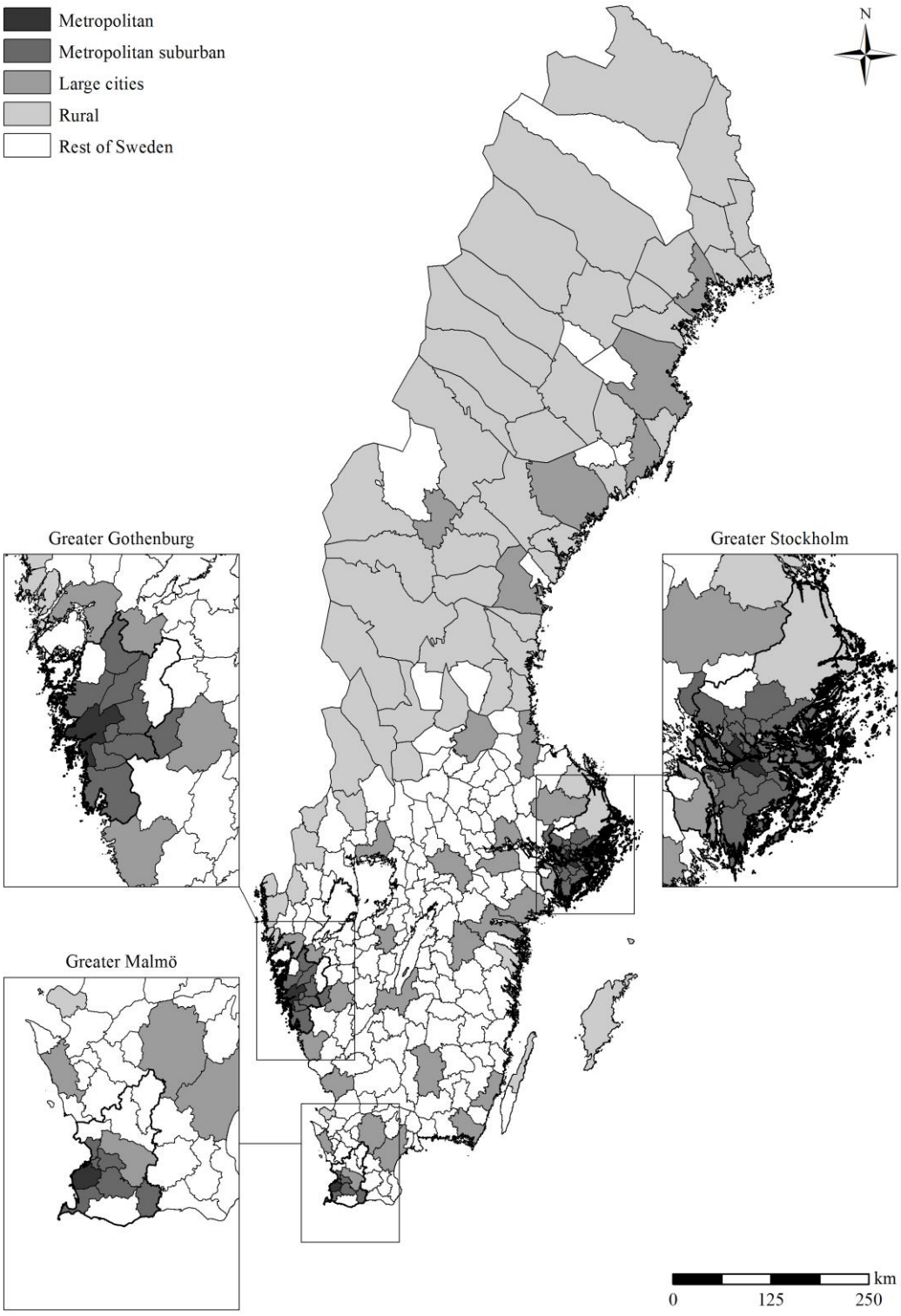

Figure 3.10 Re-classification of municipalities in Sweden, 2011
Source: Author's adaptation of the Swedish Association of Local Authorities and Regions (2011).

3.5.2 Measuring the Labour Market: Defining Employment and Niches

A key element of this thesis is labour market attachment. Thanks to the richness of the register data, there were a number of ways to measure this. Statistics Sweden has its own definition (*Årsyss*) whereby the 'gainfully employed' population comprises any person who worked for at least one hour per week during the month of November. Those temporarily absent during the survey period, for instance due to sick leave, are also included. In addition to this measure, it is possible to construct 'regularly employed' and 'primarily employed', where the first indicates a measure of registered income from gainful or self-employment and is not found in any other event category indicating participation in labour market programmes, unemployment or outside the labour force. The latter indicates a broader measurement based on the same registers but allowing for combinations of employment with other conditions during the given year (Nekby, 2002).

Cut-offs for employment statuses have also been measured against the consumer price index (CPI) (*Prisbaspallopet*) of the given year. For example, an individual can be considered 'gainfully employed' when their work-related income is three and a half times that of the CPI (Bergmark and Bäckman, 2004). The method used in this thesis was to have a lower cut-off for work-related income greater than the CPI (Hedberg, 2010; Hedberg and Tammaru, 2013). Although this method made it possible for individuals to be employed having only worked during part of the year, it is possible for individuals to have lived within the CPI prices in certain parts of the country. Moreover, this method was considered more robust than the Statistics Sweden definition and included more of the population than the other definitions discussed. In a similar way as Bergmark and Bäckman (2004), the employed category was identified first and then subsequent labour market positions were identified (Table 3.3).

Table 3.3 Labour market position classifications used in this thesis

Labour market positions	Criteria	Classification Used
Employed	Work-related income > CPI	Employed
Underemployed	Not the above and work-related income > 0	Unemployed
Unemployed	Not the above and unemployment benefits > 0	
Other	Not the above	Inactive

Source: Author.

Another important area of definition concerned the measurement of sectoral divisions of labour based on gender and immigrant origin. In Sweden there is the Standard Swedish Industrial Classification, SIC (*Svensk näringsgrensindelning, SNI*) with codes at the five-digit level for over 700 categories using the most recent 2002 and 2007 definitions (Statistics Sweden, 2004, 2008). Similarly, there is the Swedish Standard Classification of Occupations (*Standard för svensk yrkesklassificering*, *SSYK*), developed in 1996 to replace the Socio-Economic Classification System (*Socioekonomisk indelning*, *SEI*) and correspond with the International Standard Classification of Occupations (ISCO-88) published in 1990 by the International Labour Office, Geneva (Statistics Sweden, 1982, 2013k). Unfortunately the SSYK data were not compatible across all years of the data and the Linnaeus database only had access to the aggregated two-digit SNI2002B (Statistics Sweden, 2011a). Rather than aggregating up to the standards set by Statistics Sweden, a classification was created using some categories similar to a study in the US (Ellis and Wright, 1999) to allow greater disaggregation of public and service sector employment that makes up a growing share of employment in Sweden (Table 3.4).

Table 3.4 Aggregate industrial sectors

Code	Classification
1	Agriculture, forestry, fishing and mining
2	Manufacturing
3	Construction
4	Wholesale trade
5	Retail trade
6	Hotels and restaurants
7	Transport and storage
8	Communication and utilities
9	Finance, insurance and real estate
10	Other business services
11	Public administration
12	Education, research and development
13	Health and social work
14	Elderly and disabled care
15	Entertainment services
16	Other personal and community services

Source: Author's adaptation of Statistics Sweden (2011a:99).

3.5.3 Measuring Internal Migration

A benefit of classifying spatial units is that it enables researchers in various ways to measure internal migration. For example, internal migration can be measured when an individual changes address between municipalities (Nilsson, 2001), counties (Westerlund, 1997), and labour market regions (Eliasson *et al.*, 2003; Lundholm, 2007a; Rashid, 2009; Boman, 2011). While migrations across labour market region boundaries are considered to rule out short-term residential moves that may merely just cross municipality boundaries, others have opted for threshold distances calculated from the coordinates of individuals over consecutive years, such as those over 30 km (Axelsson and Westerlund, 1998), 40 km (Lindgren, 2003), 150 km (Lundholm, 2010), or even the logged total distances (Mulder and Malmberg, 2011).[8]

In this thesis, analysing longer distance internal migration was considered most appropriate for addressing the research questions. Longer distance internal migration is often said to be behaviourally distinct from residential mobility because while the latter requires the relocation of residence and, in some cases, workplace, the former almost certainly requires the relocation of both (Zax, 1994). Theoretically, a recession may impact both processes resulting in increases or decreases in mobility. However, as the other empirical chapters of this thesis relate to labour market positioning, there is a greater likelihood that changes in labour market position will reflect greater changes in inter-regional migration than they would in intra-regional migration. While this decision may raise the issue that integration research generally tests spatial assimilation theory through analysing intra-regional residential mobility, spatial assimilation can be still be tested in studies of inter-regional migration (Ellis and Goodwin-White, 2006; Hall, 2009).

Internal migration was thus defined when the distance of an individual's coordinates in year $t + 1$ was over 50 km away from the location in year t. This threshold was considered outside a daily travel distance and considered a long commuting distance (Malmberg and Petterson, 2007; Sandow, 2008). Furthermore,

[8] Alternatively, larger intervals of three years (Andersson, 2012) and seven years (Macpherson and Strömgren, 2013) have been used. Such intervals are able to identify those who have actually moved in the address registers and return movers are disregarded. However, this may underestimate return migrations and does not allow close examination with regards to the economic recession.

because Euclidean distances do not take into account physical obstructions between origin and destination on the ground, distances are therefore much greater after converting into average travel times.

A particular interest in this thesis is movement between different forms of localities and to and from metropolitan regions during changes in the business and housing cycle. For this reason, internal migration over 50 km was combined with a registered change in locality. If locality changes alone were used, it would have encompassed changes over very short distances on the boundaries of these zones and neglected the importance of differences between residential mobility and internal migration. Secondly, migration over 50 km and movement to and from the greater metropolitan regions was examined too (see Figure 3.9 for distinction between localities and metropolitan regions).

3.5.4 Measuring the Study Population: Distinguishing 'Immigrants' from 'Natives'

Population groups are not easily identifiable and categorically split into race, ethnicity and social class. Unlike the debates raised concerning the survey categorisations of race in the US (Ellis, 2009), or ethnicity in the UK (Finney, 2011), population classifications in Sweden are derived from register data and therefore do not capture self-classified classifications like those found in surveys. This is a reflection of academic, political and public debates concerning race, ethnicity and immigration (see discussion in Chapter 2). While some databases have access to individual countries of birth, or grounds of resident permits, Linnaeus and ASTRID data were limited to 18 categories of grouped countries of birth - many of which have very little analytical value due to their composition (Appendix 12).

Choosing how to re-categorise country of birth groups depend on what research questions are being asked. For example, in principle it was possible to address issues concerning EU policy because it was possible to construct a EU15 category by combining the Southern Europe, Central Europe and selected Nordic countries. However, it was not possible to construct a category for accession countries (for example A8, A2) or EU27 because although the Baltic countries and Poland were in separate groups, Bulgaria, Czech Republic, Hungary, Romania, Slovak Republic, Slovenia were grouped with non-EU states such as Albania, Montenegro, Serbia as part of the 'Eastern Europe' group. Alternatively, while with Linnaeus data it may have been possible to create a Southern European group to capture labour migrants prior to migration policy changes in 1973, it was not possible to construct this using ASTRID data as Turkey was included as part of the 'Asia' group.

The final decision in the thesis was to group the 18 groups into 8 (Table 3.5). This meant the analysis could move beyond simple binaries between native versus immigrant, or European immigrants versus non-European immigrants. Furthermore, this corresponded to groups used in previous studies using ASTRID data (Tammaru *et al.*, 2010), other Swedish register-based studies (Bråmå, 2008; Dribe and Lundh, 2008), and studies outside of Sweden (Raijman and Semyonov, 1995; Godin, 2008; Awad, 2009). Although data on rights of residence are not available for Linnaeus or ASTRID data, by using data from the Swedish Migration Board for individual countries of citizenship, it is possible to gain some perspective of how the origin groups in this thesis may be

broken down by rights of residence (Table 3.6). As can be seen, no information is required for citizens from other Nordic countries due to their entry under the Common Nordic Labour Market agreement. Western European and North American citizens were largely granted settlement under the EEA-agreement, as were Eastern Europeans. Citizens from Latin America were largely settling through family-reunification. Citizens from the Middle East and North Africa, and Sub-Saharan Africa were largely refugees and others, or family-reunification. Lastly, Asian citizens were settling through family-reunification and labour market purposes. It should be stressed that these figures are based only on 2013 and can vary over time. Therefore, Table 3.6 purely serves to emphasise the heterogeneity of the population groups in this thesis.

Table 3.5 Immigrant origin classification used in this thesis

Code	Classification
1	Native
2	Nordic
3	Western Europe and North America
4	Eastern Europe
5	Latin America
6	Middle East and North Africa
7	Sub-Saharan Africa
8	Asia

Note: All categories are based on region of birth. Western Europe and North America also includes individuals born in Australia, New Zealand and Japan; Eastern Europe includes the former Soviet Union.
Source: Author's adaptation of Linnaeus and ASTRID databases.

Table 3.6 Granted first-time permits and rights of residents (by citizenship origin group and classification) in Sweden, 2013

	Refugees and others	Family-reunification	Labour market	Students	Adopted children	EEA-agreement
Nordic	N/A	N/A	N/A	N/A	N/A	N/A
Western Europe and North America	0.0	19.9	10.2	8.5	0.0	61.3
Eastern Europe	5.6	29.3	11.0	2.7	0.3	51.1
Latin America	6.7	50.9	16.1	21.6	0.0	4.7
Middle East and North Africa	57.5	30.8	8.0	1.9	0.0	1.8
Sub-Saharan Africa	34.7	58.4	2.0	2.3	0.2	2.3
Asia	9.5	34.6	40.4	13.1	0.4	2.0
Total	22.2	35.0	17.3	6.8	0.2	18.6

Note: Row percentages are shown. Like Table 1.1, data for earlier years were not available; therefore this table is to give an example of how the categories of analysis used in this thesis may be broken down by different legal statuses.
Source: Author's calculations of Swedish Migration Board (2014a).

The generational aspect of immigrant origin is also worth noting because of the growth of second-generation immigrants in Sweden and also the availability of the Multi-Generational Register (*Flergenerationsregistret*). While this register gives researchers the possibility to study trends across multiple generations, individuals aged over 18 at immigration will have missing data and those adopted will often have missing data too (Figure 3.11). For this reason, register-based research on second generation immigrants has been avoided by most researchers (Andersson Joona and Wadensjö, 2012:104), and is not included in this thesis.

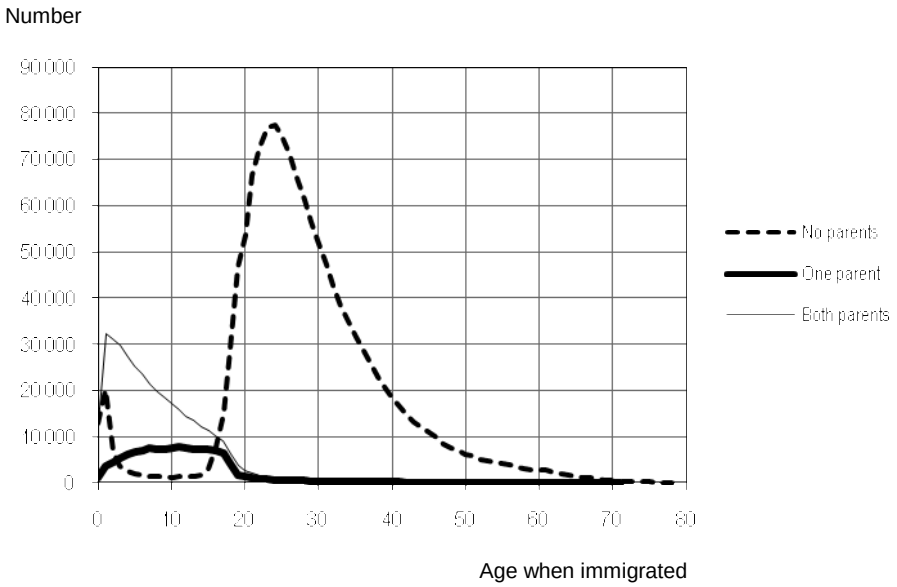

Figure 3.11 Number of individuals with parental data by age when immigrated to Sweden
Source: Statistics Sweden (2011b:24).

Another important aspect of the population studied across the three empirical chapters was the length of time individuals had spent in Sweden, and whether they stayed in Sweden. Only immigrants who held valid residence permits of at least one year's duration on the 31st of December were recorded in the register databases. According to analysis undertaken with the STATIV database in 2009, about two-thirds of immigrants resident in Sweden were identified in the database (OECD, 2011:43). Furthermore, it is likely that many immigrants undertake return or onward migration to other countries (Edin *et al.*, 2000; Nekby, 2006; Statistics Sweden, 2006; Tollefsen and Lindgren, 2006). In this case, to be registered as an emigrant, an individual must intend to stay abroad for at least one year and be registered on the actual day of emigration, or, if registration occurs later, at the time authorities receive notification of emigration. To

guarantee a more robust measure of residence in this thesis, immigrants must also have had a registered parish code (*Församlingskod*) as this stated their primary residence, as compared to a registered economic transfer that could still be obtained when overseas.

The latest date of immigration was used to construct a 'years in Sweden' variable. This variable is a useful proxy for cultural capital or country-specific human capital. However, there are two limitations to this variable that should be noted. Firstly, unless data for an individual is followed up across multiple years, only one 'latest date of immigration' (and emigration) is recorded in the data. Theoretically, this means an individual may have left Sweden, returned a year or more later, and been recorded as having a short duration in Sweden when in reality they may have spent the majority of their lives in Sweden. Secondly, due to the method in which immigration/emigration is recorded, the authorities may not always be informed when an individual leaves Sweden and returns to Sweden and this therefore results in a greater degree of missing or unknown data compared to other data in the registers. In Chapters 4 and 5, a small proportion of immigrants were missing this data. Despite the limitations of this variable, the decision was made to exclude individuals missing this variable due to its theoretical importance. Removing these individuals may have created sample bias by potentially removing immigrants most likely to arrive in Sweden undocumented or from regions. However, due to the large sample sizes in the Swedish data, the likelihood that removing these individuals will significantly impact the results is small and this practice is frequently undertaken in existing studies (Nekby, 2002; Rashid, 2009; Tammaru *et al.*, 2010).[9]

[9] For example, Nekby (2002) removes four per cent of her immigrant sample due to missing data on duration of residence.

3.5.5 Measuring Other Independent Characteristics

Alongside the key dependent and independent variables discussed already, in all of the analyses of the empirical chapters of this thesis, four other variables were used as controlling factors. The first of these, gender, was particularly important because as has been shown in labour market research, women often experience employment within different sectors than men (Wright and Ellis, 2000; Hedberg, 2009), different internal migration behaviour (Lundholm, 2007a), and different patterns of labour market entry (Bevelander, 2001, 2005). In addition to gender, age is an important variable that should, at the very least, be controlled for because it can take into account some of the variation in the life stages. Such life stages may account for differences in labour market disadvantage during a recession, and differences in internal migration of population groups (Finney, 2011). Together with age, household structure or child and partner dependencies were controlled for because they influence both labour market and migration behaviour (Bergmark and Bäckman, 2004; Andersson, 2012).

Education level is the last important characteristic that could be controlled for using the data in this thesis. Education is a measure of human capital and can explain to some degree why certain people are employed in certain lines of work, why certain people move more than others, and why certain people may never enter the labour market. Education level recorded in the registers is the most recent completed level of education for all the population, including students. During the cross-sectional analysis in this thesis, missing or unknown education levels were removed from analysis without any significant changes to the analysis. In the longitudinal analysis, however, it was discovered that very high shares of the sample had unknown education, particularly during the first year of analysis. This required a classification to identify such individuals.

Additional variables would have been beneficial to the analysis but were either absent in the Linnaeus and ASTRID databases or were problematic to use across different time periods. For example, housing tenure would have been a welcome addition to analysis of migration to allow this thesis to build on Fielding's work. However, housing tenure was not available in the data. Citizenship would have been a beneficial characteristic to include as it has been successfully used in previous studies of labour market integration (Bevelander and Pendakur, 2012). Citizenship data were

available in the ASTRID data but not the Linnaeus data. To maintain consistency across the analysis of this thesis, citizenship data were therefore excluded in all analyses. Previous studies have shown that due to strong relationship with citizenship and years in Sweden, having both variables in the same model can lead to problems of multicollinearity (Macpherson and Strömgren, 2013).

Occupation data would have been useful to examine for both labour market integration and migration as they can be used as indicators of social class. As Appendix 3 showed, socio-economic classification and occupational classification both reflect social class but because they are derived from different methods of data collection, it is problematic to try and use them to represent the same category. Furthermore, in previous studies using Swedish data, socio-economic position and occupation are often left of out of models as they cause multicollinearity issues with education as they are highly related (Malmberg and Petterson, 2007). Lastly, language ability would have been very useful as an additional measure of Swedish-specific human capital but this is not available in Swedish register data. If these additional variables were available at the time of analysis, it is possible that the regression models would have explained a greater percentage of variation in the relationships examined.

3.6 Conclusion

This chapter set out to discuss the research design and methodology used to address the main aim and research questions of this thesis. By reflecting on epistemological discussions regarding quantitative methods within human geography, and population studies more generally, a quantitative methodological approach was deemed appropriate for the scale of this project across time and space. While the original and chapter-specific research questions may be answerable in various different ways, the methodological approaches used in this thesis reflect advancements over time within the overall thesis project in terms of understanding the Swedish register data and statistical methods. This is evident through the shift from the cross-sectional research design used in the first two empirical chapters, to the more sophisticated longitudinal analysis in the third empirical chapter. Although the application of longitudinal analysis throughout the thesis would strengthen the overall thesis, and arguably provide a greater degree of confidence in answering the research questions, the following quote comes to mind:

> 'Far better an approximate answer to the *right* question, which is often vague, than an *exact* answer to the wrong question, which can always be made precise' (Tukey, 1962:13-14, emphasis in original)

In other words, an issue to be stressed is that the right research questions are being asked in this thesis and although there may always be better, more sophisticated ways to answer them, having some approximate answer to them is better than having the perfect answer to research questions that are of no relevance. In addition to the methodological approaches highlighted in this chapter (and the thesis overall), a benefit of the thesis has been the increased understanding of alternative sources of population data, not only for studying immigrants and their labour market and migration behaviour, but population research in general. This is particularly timely given that some countries are currently considering the future of their traditional population censuses in a new era of 'Big Data', administrative data and sample surveys. While such data do not offer attitudinal characteristics of the population found in surveys and censuses, they do allow analysis of the full registered population annually and at various spatial scales. The following chapters now apply the methods discussed in this chapter to present the empirical analysis of this thesis.

Chapter 4
Economic Restructuring, Economic Recession, and the Immigrant Division of Labour

4.1 Introduction

Research in immigrant-receiving countries has stressed that in contrast to native or majority populations, immigrants and ethnic or racial minorities are often concentrated in employment sectors characterised by low status and low pay (Wang and Pandit, 2007). In the US, such concentrations are referred to as 'niches' and have been observed to change over time to mark a succession of certain groups becoming niched in those vacated by native or more established groups (Waldinger, 1988; Wright and Ellis, 1997). In the UK, similar research has focused on the rapid growth of ethnic diversity that has coincided with an increased polarisation of occupations, with immigrants often trapped in disadvantaged labour (May *et al.*, 2007; Wills *et al.*, 2010). The result of these changes highlights a changing immigrant division of labour that is a result of complex supply and demand factors, including human capital, discrimination, economic changes, and geography. Previous studies in Sweden have suggested that the labour market is divided among different immigrant groups (Hedberg, 2009; Gavanas, 2010), yet little is known of how this may have resulted from, or been changed by, the recent economic recession. Furthermore, little attention has been paid to immigrant geographies in Sweden outside metropolitan regions. This chapter therefore aims to contribute to literature by addressing the following research questions:

1) Is there an immigrant division of labour in Sweden?

2) Has the division of labour changed as a result of recession or other economic processes?

3) Is there a geographical change to the division of labour over the course of these economic processes?

It addresses these questions for three sectors of the economy (manufacturing, hotels and restaurants, and elderly and disabled care) where immigrant workers form significant niches in the labour market (as explained in section 3.3.3 of the previous chapter).

4.2 Economic Restructuring and Immigrant Employment

4.2.1 Native-Immigrant Labour Market Participation

It is useful to examine changes in labour market participation over time. Figure 4.1 presents aggregate statistics of gainful employment by different origin groups of the population. While Nordic immigrants had similar rates of employment to natives in 1993, there has been a long-term decline over the last 20 years. All other immigrant groups begin with much lower rates of employment that then improve with time. During the recession in 2009, all groups except the Nordic immigrants suffered a decline in employment but recovered quickly by 2010. Thus, the employment rates of immigrants and natives show changes in both the short-term and long-term, even before disaggregating by industrial sectors.

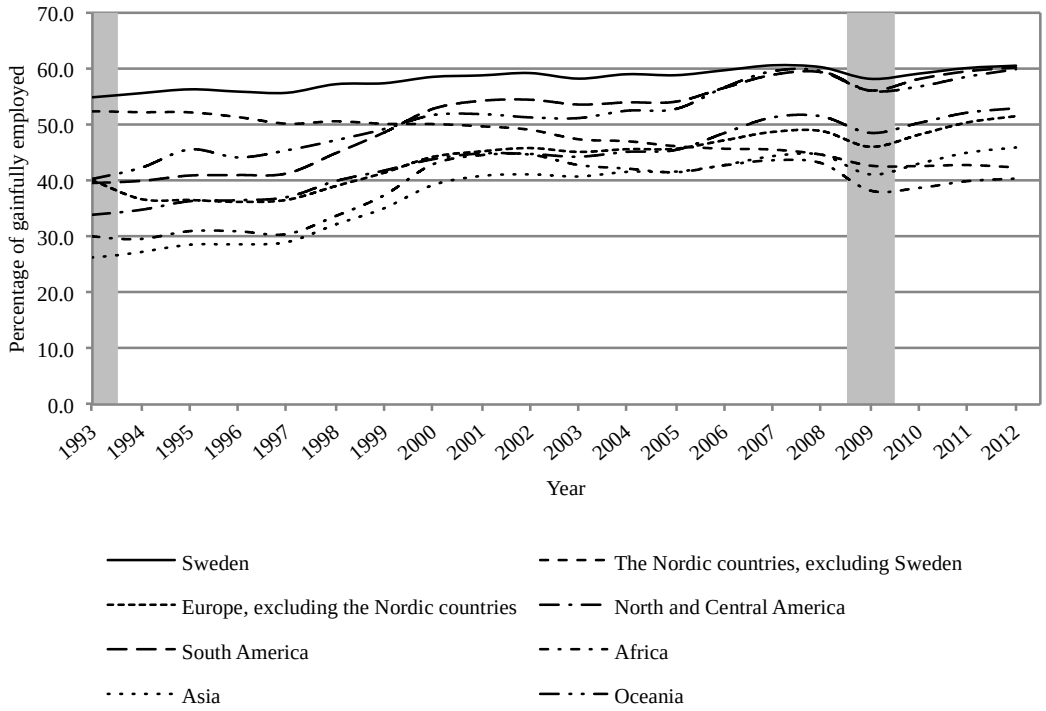

Figure 4.1 Gainful employment (by origin) in Sweden, 1993-2012
Note: Shaded bars indicate recessions according to Edvinsson (2010:404). Gainfully employed includes those aged 16-65 and 65 and over from 2011.
Source: Author's calculations of Statistics Sweden (2011c, 2013i).

4.2.2 The Sectoral Division of Labour

In Table 4.1 the sectoral distribution of labour among men and women is displayed separately for each origin group in 1990 and 2008. Column percentages represent the share of total employed individuals working within each of the 16 sectors and shaded cells indicate sectoral niches whereby the odds of a particular group working in that sector (as opposed to the other 15 sectors) is 1.5 times or higher than the remaining 7 origin groups' odds of working in that sector (as opposed to the remaining 15 sectors). An additional condition was that the size of the origin group in each cell had to equate to at least half of their group average across all sectors.

Looking at Natives in 1990, despite 27.3 per cent of men having worked in manufacturing, this did not represent a niche. Instead, they niched in agriculture, forestry fishing and mining, construction, wholesale trade, communication and utilities, finance, insurance and real estate, and public administration. In the same period, as much as 28.9 per cent of Native women worked in health and social care but actually niched in retail trade, and public administration. 18 years later, the number of Native niches among men and women had decreased. Native men no longer niched in agriculture, forestry, fishing and mining, and wholesale trade. The only niche remaining for women was public administration.

Nordic immigrants showed high concentrations of employment within the manufacturing sector for men and women in 1990. As much as 42.4 per cent of employed Nordic men worked in this sector, representing a niche. 18.7 per cent of Nordic women worked in this sector and represented a niche. In 2008, employment within manufacturing had declined to 29.9 per cent for men and 10.3 per cent for women, leaving only Nordic men niching in this sector. High percentages of men and women from Western Europe and North America worked in manufacturing in 1990 (27.7 and 13.4 per cent, respectively) but niches were present in hotels and restaurants, and other business services. Men also held niches within education, research and development and other personal and community services. In 2008, the number of niches among men reduced to three (hotels and restaurants, education, research and development, and health and social care), and although women no longer niched in hotels and restaurants their employment within other business services remained a niche, and they also niched in education, research and development.

Eastern European immigrants show similar trends to Nordic immigrants with high percentages of employed men and women worked in manufacturing in 1990 and presented niches (41.9 and 23.6 per cent respectively). However, like immigrants from Western European and North America, niches were present in the hotels and restaurants sector for both men and women, and other business services for women. Despite employment of men and women in manufacturing declining by over 10 percentage points by 2008, this sector remained a niche for both men and women. Furthermore, the remaining sectoral niches for men and women remained the same, with women established a niche within the elderly and disabled care sector.

Latin American immigrants presented quite similar employment patterns as Eastern Europeans. For example, men and women niched within manufacturing, hotels and restaurants in 1990. However, both men and women niched within other business services and health and social care. In 2008, manufacturing no longer represented a sectoral niche for men and women. Although niches did remain in hotels and restaurants, and other business services, only men niched within health and social care. New sectoral niches for Latin Americans that developed in 2008 were education, research and development for men, and elderly and disabled care for both men and women (with a notable rise in percentage from 7.4 to 20.1 for women).

Among the immigrant population from the Middle East and North Africa, four of the five niches among men were the same as women during 1990. These were hotels and restaurants, health and social care, elderly and disabled care, and other personal and community services. The only different niche for men was in manufacturing. In 2008, this pattern changed with the percentage of employed men in manufacturing halving and no longer representing a niche. New niches for men emerged within retail trade, transport and storage, and other business services whereas women remained the same as before, with the exception of health and social care no longer representing a niche sector.

The Sub-Saharan African immigrant population did not present any employment niches within manufacturing in 1990, despite 29.6 per cent of employed men and 12.2 per cent of employed women working in the sector. Instead, men and women in this group held niches within hotels and restaurants, other business services and health and social care. Furthermore, women also niched within the elderly and disabled care sector. By 2008, many of the previous niches remained, except hotels and restaurants, and health and social care among women. However, men developed niches within transport and storage, communication and utilities, and also elderly and disabled care.

In 1990, the employed Asian immigrant population presented an unusual situation where despite high percentages of both men and women working in manufacturing, this only represented a niche sector for women. While both men and women were niched within hotels and restaurants, and other personal and community services, men niched within health and social care, and women niched within other business services. In 2008, men and women maintained a niche within hotels and restaurants and women maintained a niche within other business services. All other previous niched sectors disappeared.

Processing all of these changing patterns of labour distributions and niches among immigrant men and women by different origin group in 1990 and 2008 is challenging. In respect to the three case-study sectors that are explored in the following sections of this chapter, is it interesting to note that, with regards to the manufacturing sector, percentages of the employed has declined for all origin groups and that the only groups maintaining niches in both 1990 and 2008 are Nordic men and Eastern European men and women. Regarding the hotels and restaurant sector, an interesting find is that, with the exception of women from Western Europe and North America, and Sub-Saharan Africa, for all other non-Nordic immigrant groups this sector represented a niche in both 1990 and 2008. While the elderly and disabled care sector only represented niches for Eastern European, Latin American women in 2008, the interesting finding is that it presented a niche for men and women from the Middle East and North Africa in both 1990 and 2008, and Sub-Saharan African women in 1990 and both men and women in 2008. This highlights the emerging importance of this sector for these groups, regardless of gender.

Table 4.1 Industrial sector distribution and niching of the employed population (by origin and gender) in Sweden, 1990 and 2008

	Native				Nordic				Western Europe and North America			
	1990		2008		1990		2008		1990		2008	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Agriculture, forestry, fishing and mining	4.4	1.6	2.7	0.6	2.3	0.7	1.5	0.4	1.1	0.8	1.1	0.5
Manufacturing	27.3	11.2	22.9	8.2	42.4	18.7	29.9	10.3	27.7	13.4	19.5	8.9
Construction	12.8	1.3	12.3	1.1	12.7	1.0	12.4	0.9	5.7	0.9	6.5	0.8
Wholesale trade	9.2	3.9	9.3	3.9	7.1	3.1	8.5	4.0	8.9	5.4	7.8	4.7
Retail trade	3.4	7.7	4.0	7.8	2.1	5.3	2.5	4.8	3.3	6.1	2.9	4.6
Hotels and restaurants	1.1	2.3	1.6	2.7	1.6	3.0	1.3	2.1	9.4	4.3	7.0	3.9
Transport and storage	7.0	2.5	6.6	2.4	7.0	3.0	7.7	2.8	6.1	3.0	5.5	2.6
Communication and utilities	4.2	2.9	3.5	1.7	2.1	2.0	2.5	1.2	1.9	2.0	1.9	1.0
Finance, insurance and real estate	5.1	4.7	8.1	5.2	3.4	4.0	6.4	4.8	3.5	3.8	8.2	5.1
Other business services	5.0	4.8	9.3	8.1	4.4	6.3	9.0	9.3	7.8	7.3	11.9	11.6
Public administration	5.6	5.7	5.1	6.9	2.0	3.9	3.1	6.2	2.2	3.5	2.6	4.6
Education, research and development	4.6	9.5	5.6	17.2	2.7	6.9	4.5	14.9	7.7	12.1	12.1	21.9
Health and social care	4.5	28.9	3.5	16.3	4.8	28.9	4.7	18.4	6.3	24.3	6.1	15.3
Elderly and disabled care	0.4	7.2	1.3	11.7	0.4	7.9	1.5	14.0	0.6	5.8	1.6	7.8
Entertainment services	1.6	1.8	2.3	2.3	1.2	1.5	2.2	2.0	2.1	2.2	3.0	2.7
Other personal and community services	3.7	4.0	2.0	3.9	4.0	3.9	2.3	4.0	5.6	5.1	2.3	4.0
N	1,916,978	1,686,087	1,915,730	1,747,662	88,964	98,245	49,684	61,962	34,646	24,009	36,026	23,027

Note: Column percentages are shown. Shaded cells indicate employment niches with an odds ratio ≥ 1.5 and cell count ≥ 50 per cent of the origin group's average number of employment.
Source: Author's calculations of the Linnaeus database.

Table 4.1 Continued

	Eastern Europe				Latin America				Middle East and North Africa			
	1990		2008		1990		2008		1990		2008	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Agriculture, forestry, fishing and mining	0.6	0.4	1.5	0.8	0.3	0.2	0.5	0.2	0.4	0.2	0.2	0.1
Manufacturing	41.9	23.6	30.4	12.3	34.4	16.3	18.4	5.8	32.4	14.0	14.8	4.4
Construction	4.8	0.9	10.3	1.0	2.3	0.6	6.2	0.6	1.9	0.3	2.8	0.4
Wholesale trade	6.6	3.4	8.1	3.0	4.5	1.7	5.8	2.1	4.3	1.4	6.8	2.0
Retail trade	2.5	5.3	3.3	6.4	1.6	3.1	3.9	5.2	3.8	5.1	7.6	8.3
Hotels and restaurants	5.5	5.2	4.1	4.7	5.6	5.0	6.9	4.9	10.1	5.6	13.7	5.9
Transport and storage	7.1	2.2	8.7	1.9	6.1	1.9	5.9	1.9	5.9	1.5	13.0	1.6
Communication and utilities	1.5	1.6	1.7	1.0	2.3	1.8	2.4	1.0	2.2	1.5	1.7	0.6
Finance, insurance and real estate	3.0	3.9	4.2	3.3	3.1	3.6	5.0	3.3	1.8	1.5	3.6	2.8
Other business services	6.7	7.6	12.2	14.0	9.4	10.0	17.5	14.7	4.8	4.2	12.9	10.0
Public administration	1.8	3.7	2.0	4.4	1.7	2.2	2.9	3.9	2.2	2.9	2.4	4.1
Education, research and development	4.7	7.1	4.4	12.8	6.1	7.4	7.8	16.6	5.1	9.4	5.3	18.3
Health and social care	6.3	23.8	3.7	13.3	14.6	33.9	6.4	14.6	14.6	35.1	5.8	14.7
Elderly and disabled care	0.5	4.6	2.1	15.7	2.4	7.4	5.6	20.1	3.8	10.4	4.5	19.4
Entertainment services	1.8	1.8	1.4	1.3	1.5	1.2	2.4	1.6	0.8	1.0	1.2	1.0
Other personal and community services	4.6	5.0	1.9	4.1	4.1	3.9	2.6	3.6	6.0	5.9	3.7	6.6
N	32,656	31,486	70,319	72,339	10,575	8,266	20,375	18,796	18,665	6,136	55,410	32,948

Note: Column percentages are shown. Shaded cells indicate employment niches with an odds ratio ≥ 1.5 and cell count ≥ 50 per cent of the origin group's average number of employment.

Source: Author's calculations of the Linnaeus database.

Table 4.1 Continued

	Sub-Saharan Africa				Asia			
	1990		2008		1990		2008	
	Men	Women	Men	Women	Men	Women	Men	Women
Agriculture, forestry, fishing and mining	0.3	0.2	0.3	0.0	0.2	0.2	0.4	0.7
Manufacturing	29.6	12.2	13.7	2.8	29.6	21.0	16.7	10.2
Construction	1.8	0.5	2.1	0.3	1.6	0.5	2.6	0.6
Wholesale trade	4.9	2.7	4.1	1.1	4.1	2.9	5.8	3.3
Retail trade	2.0	3.5	2.7	2.6	4.4	5.6	5.5	6.4
Hotels and restaurants	7.2	6.6	5.4	3.9	19.2	10.9	25.5	13.4
Transport and storage	7.8	2.7	13.6	1.4	5.8	1.8	7.1	1.7
Communication and utilities	4.1	2.1	5.0	1.0	2.0	1.3	2.7	1.1
Finance, insurance and real estate	2.2	3.1	2.4	1.4	2.0	2.9	5.0	3.6
Other business services	8.2	8.3	19.9	12.1	4.9	7.2	10.5	14.1
Public administration	2.6	2.8	3.0	4.0	1.4	2.2	1.9	3.1
Education, research and development	5.8	6.7	5.9	9.5	5.7	6.4	6.2	12.7
Health and social care	15.5	31.7	6.9	17.4	8.3	25.1	3.2	9.5
Elderly and disabled care	2.6	11.6	10.3	37.2	1.3	5.5	3.0	13.7
Entertainment services	1.2	1.2	1.7	1.1	0.8	0.9	1.2	1.1
Other personal and community services	4.2	4.0	3.0	4.0	8.7	5.7	2.7	4.7
N	5,721	2,896	16,362	12,279	13,114	10,741	34,944	40,059

Note: Column percentages are shown. Shaded cells indicate employment niches with an odds ratio ≥ 1.5 and cell count ≥ 50 per cent of the origin group's average number of employment.
Source: Author's calculations of the Linnaeus database.

The descriptive statistics have so far suggested that there has been a sectoral division of labour reinforced by immigrant origin and gender. Beyond the economic restructuring between 1970 and 1990, there has been a continued decline in manufacturing and growth of service sector employment, notably other business services, and health and social work, and elderly and disabled care. Employment distributions within these sectors suggest that there may have been a hierarchy or sorting of immigrant labour. Manufacturing, for example, provided a niche for many immigrant men and women in 1990 but only for Nordic and Eastern European immigrants in 2008. Hotels and restaurants appear to have changed from providing a niche sector for nearly all immigrant men and women in 1990, to fewer niches among women in 2008. Tables showing the sectoral distribution of men and women in 2009 can be found in Appendix 14. With the exception of Latin American immigrant men no longer niching within education, research and development, and men from the Middle East and North Africa no longer presenting a niche in other business services, all other sectoral niches remain the same between 2008 and 2009. The following section now focuses specifically on the manufacturing, hotels and restaurants, and elderly and disabled care sectors for the temporal and spatial aspects of them highlighted in section 2.6.2.

4.2.3 Immigrant Employment in the Manufacturing Sector

Figure 4.2 shows how in 1990 the manufacturing sector employed a larger share of men than women with some origin differences too. Over 25 per cent of men across all origin groups were employed in manufacturing compared with over 10 per cent for women. Immigrant men and women had higher shares than their native counterparts and in terms of origin, the most prominent groups were Nordic and Eastern Europeans for men and Eastern European and Asian for women. In 2008, the gender difference remained but, unlike 1990, only two groups had higher shares of employment in this sector than native men (Nordic and Eastern Europe) and three groups compared to native women (Nordic, Eastern Europe and Asia). This indicates that over the 18 years, there has not only been a general decline in manufacturing employment, but a changing pattern across origin and gender. These overall patterns are supported with aggregate statistics in Figure 4.3 (similar to those in Figure 4.1).

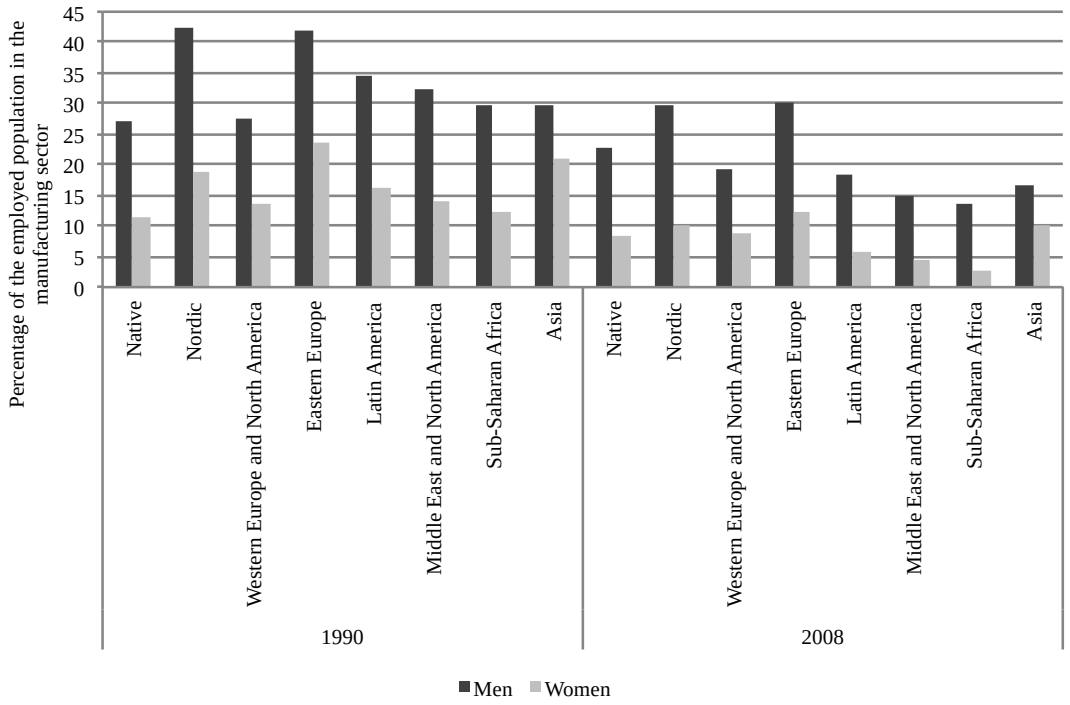

Figure 4.2 Employment in the manufacturing sector (by origin and gender) in Sweden, 1990 and 2008
Source: Author's calculations of the Linnaeus database.

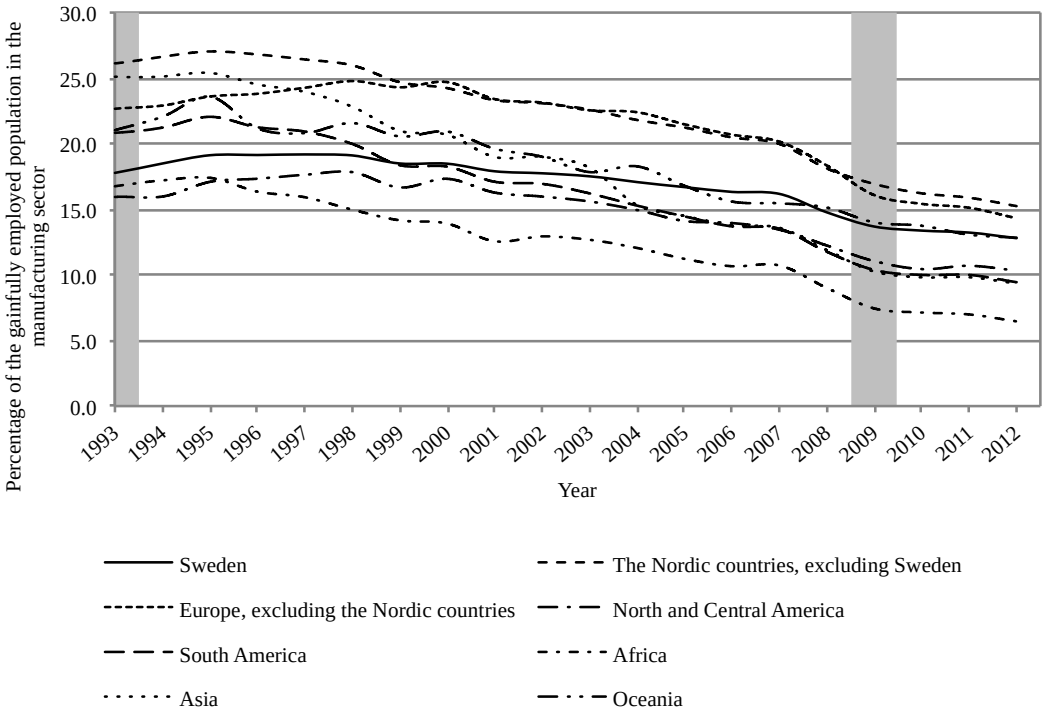

Figure 4.3 Gainful employment in the manufacturing sector (by origin) in Sweden, 1993-2012
Note: Shaded bars indicate recessions according to Edvinsson (2010:404). From 2004 a minor adjustment of classified employees has been made.
Source: Author's calculations of Statistics Sweden (2005a, 2013d, 2013e).

To further the analysis and examine whether the patterns observed remain the same after controlling for the characteristics of individuals, binomial logistic regressions were constructed to estimate the odds of employment in manufacturing versus all other sectors. Table 4.2 presents the summary statistics for variables used in the models in Table 4.3. In the same way that the descriptive analysis has been undertaken so far, models were analysed separately by period and gender. The first column presents the odds ratios for men in 1990. Firstly, all immigrant origin groups had higher odds of employment in manufacturing than natives, even after controlling for other characteristics. The greatest odds were among Eastern European immigrants, who were 2.653 times more likely to be employed in manufacturing than natives. Among women, the overall pattern remained the same with Eastern European immigrants being 3.427 times more likely to be employed in manufacturing than natives. Sub-Saharan immigrant women held no statistically significant differences to native women. In 2008, only immigrants from Nordic countries and Western and Eastern Europe were more likely to be employed in this sector than natives, with respective odds ratios of 1.521, 1.101 and 1.899. Latin Americans held no significant differences to natives. This

pattern is similar for women because there also appears to have been an immigrant origin hierarchy with Nordic, Western and Eastern European immigrants all having had significantly higher odds of employment in the manufacturing sector (1.360, 1.352 and 1.831) than natives while all remaining groups were lower.

In terms of socio-demographic characteristics, the youngest age cohort (20-34 years) was associated with greater odds of employment in this sector for both men and women in 1990. In 2008, this pattern changed because the middle age cohort (35-49 years) was more associated with this form of employment. This finding may be evidence of cohort effect as a result of the 18-year difference separating the analysis periods. In terms of education, all four models show that upper secondary school and university education was less associated with manufacturing employment than compulsory school education. Significant differences also existed between the length of time spent in Sweden and employment in this sector. However, these are not easily interpreted.

The relationship between manufacturing employment and place of residence is interesting. Compared to large urban localities, all other localities were significantly more associated with manufacturing employment, regardless of gender and time period. Among men in 1990, residing in small urban localities resulted in being 1.675 times more likely to be employed in manufacturing than large urban localities. For women during the same period, remote rural localities presented the highest odds of 1.685. In 2008, the odds ratio for men and women was highest in remote rural localities (2.157 and 1.660).

The Nagelkerke R^2 values indicate that the models only explain a small percentage of the variance, and that the 1990 models were better at explaining the variance than the 2008 models. This not only indicates that many unobservable characteristics may explain the relationship between being employment in manufacturing versus other sectors, but also that perhaps the composition of the population as well as the nature of the manufacturing industry has diversified between 1990 and 2008.

Table 4.2 Summary statistics of variables used in the binomial logistic regressions estimating the odds of employment in selected sectors versus all other sectors (by gender) in Sweden, 1990 and 2008

	1990				2008			
	Men		Women		Men		Women	
	N	%	N	%	N	%	N	%
Origin								
Native	1,916,978	90.4	1,686,087	90.3	1,915,730	87.1	1,747,662	87.0
Nordic	88,964	4.2	98,245	5.3	49,684	2.3	61,962	3.1
Western Europe and North America	34,646	1.6	24,009	1.3	36,026	1.6	23,027	1.1
Eastern Europe	32,656	1.5	31,486	1.7	70,319	3.2	72,339	3.6
Latin America	10,575	0.5	8,266	0.4	20,375	0.9	18,796	0.9
Middle East and North Africa	18,665	0.9	6,136	0.3	55,410	2.5	32,948	1.6
Sub-Saharan Africa	5,721	0.3	2,896	0.2	16,362	0.7	12,279	0.6
Asia	13,114	0.6	10,741	0.6	34,944	1.6	40,059	2.0
Age								
20-34 years	782,849	36.9	646,451	34.6	679,300	30.9	592,508	29.5
35-49 years	847,362	39.9	773,530	41.4	830,603	37.8	762,578	38.0
50-64 years	491,108	23.2	447,885	24.0	688,947	31.3	653,986	32.6
Household								
Cohabiting without children	548,226	25.8	513,198	27.5	508,097	23.1	511,156	25.4
Cohabiting with children	823,794	38.8	676,430	36.2	776,812	35.3	682,562	34.0
Single	719,111	33.9	541,396	29.0	862,552	39.2	656,650	32.7
Single parent	30,188	1.4	136,842	7.3	51,387	2.3	158,702	7.9
Education								
Compulsory school	617,763	29.3	475,065	25.5	321,213	14.7	185,764	9.3
Upper secondary school	1,239,410	58.8	1,154,322	62.0	1,445,551	66.2	1,277,470	63.8
University	250,051	11.9	232,724	12.5	417,459	19.1	540,277	27.0
Years in Sweden								
0-4	41,282	2.0	25,185	1.4	50,422	2.3	30,247	1.5
5-9	21,351	1.0	18,339	1.0	34,772	1.6	32,597	1.6
10-19	48,151	2.3	45,261	2.4	87,092	4.0	83,419	4.2
20 or more	1,998,523	94.7	1,768,003	95.2	2,024,593	92.2	1,860,645	92.7
Locality								
Large urban	926,687	42.1	871,526	43.4	926,687	42.1	871,526	43.4
Small urban	153,148	7.0	138,564	6.9	153,148	7.0	138,564	6.9
Accessible rural	557,036	25.3	511,106	25.4	557,036	25.3	511,106	25.4
Remote rural	561,979	25.6	487,876	24.3	561,979	25.6	487,876	24.3
N	2,121,319		1,867,866		2,198,850		2,009,072	

Source: Author's calculations of the Linnaeus database.

Table 4.3 Binomial logistic regressions estimating the odds of employment in the manufacturing sector (by gender) in Sweden, 1990 and 2008

	1990		2008	
	Men	Women	Men	Women
Origin (ref. Native)				
Nordic	2.124***	1.910***	1.521***	1.360***
	(0.009)	(0.010)	(0.011)	(0.014)
Western Europe and North America	1.344***	1.565***	1.101***	1.352***
	(0.014)	(0.021)	(0.015)	(0.025)
Eastern Europe	2.653***	3.427***	1.899***	1.831***
	(0.014)	(0.017)	(0.012)	(0.017)
Latin America	1.777***	1.777***	0.990	0.789***
	(0.024)	(0.035)	(0.019)	(0.033)
Middle East and North Africa	1.559***	1.458***	0.779***	0.580***
	(0.020)	(0.042)	(0.015)	(0.030)
Sub-Saharan Africa	1.430***	1.064	0.737***	0.344***
	(0.033)	(0.063)	(0.025)	(0.057)
Asia	1.435***	2.027***	0.870***	1.196***
	(0.023)	(0.028)	(0.016)	(0.019)
Age (ref. 20-34 years)				
35-49 years	0.849***	0.815***	1.198***	1.157***
	(0.004)	(0.006)	(0.004)	(0.007)
50-64 years	0.859***	0.586***	0.984**	0.761***
	(0.005)	(0.007)	(0.005)	(0.008)
Household (ref. Single)				
Cohabiting without children	0.961***	0.841***	0.971***	0.968***
	(0.004)	(0.007)	(0.005)	(0.008)
Cohabiting with children	0.896***	0.724***	1.004	1.000
	(0.004)	(0.006)	(0.004)	(0.007)
Single parent	0.969*	0.822***	0.921***	0.845***
	(0.013)	(0.010)	(0.011)	(0.011)
Education (ref. Compulsory school)				
Upper secondary school	0.762***	0.404***	0.830***	0.504***
	(0.004)	(0.005)	(0.005)	(0.008)
University	0.328***	0.171***	0.530***	0.356***
	(0.007)	(0.011)	(0.006)	(0.009)
Years in Sweden (ref. 20 years or more)				
0-4 years	1.100***	0.963	0.710***	0.814***
	(0.015)	(0.021)	(0.016)	(0.025)
5-9 years	0.794***	0.852***	0.839***	0.785***
	(0.018)	(0.024)	(0.017)	(0.024)
10-19 years	0.810***	0.835***	1.029*	0.931***
	(0.013)	(0.016)	(0.012)	(0.018)
Locality (ref. Large urban)				
Small urban	1.675***	1.532***	1.978***	1.446***
	(0.006)	(0.009)	(0.006)	(0.010)
Accessible rural	1.237***	1.278***	1.386***	1.271***
	(0.004)	(0.006)	(0.004)	(0.007)
Remote rural	1.651***	1.685***	2.157***	1.660***
	(0.004)	(0.006)	(0.004)	(0.007)
Constant	0.437***	0.282***	0.242***	0.147***
	(0.005)	(0.007)	(0.006)	(0.009)
Log likelihood	2416710,240	1281759,318	2276334,207	1121069,718
Nagelkerke R^2	0.051	0.072	0.049	0.030
N	2,095,299	1,851,061	2,182,274	2,001,354

Note: The reference category of the dependent variable includes employment in all other sectors. *=p<0.05; **=p<0.01; ***=p<0.001. Coefficients shown are odds ratios. Standard errors are in parentheses.

Source: Author's calculations of the Linnaeus database.

4.2.4 Immigrant Employment in the Hotels and Restaurants Sector

Figure 4.4 shows how employment within hotels and restaurants has distinctive gender and origin patterns that have intensified between 1990 and 2008. In 1990, the only immigrant group with higher shares of women employed than men was Nordic immigrants. All other groups, particularly those from Western Europe and North America, Middle East and North Africa, and Asia, had much higher shares of men in comparison to women. By 2008, the most visible changes are the decline in employment among Western European and North American men and women and increase in this sector for both men and women from the Middle East and North Africa, and Asia. Long-term aggregate statistics further emphasise the extent to which many non-European immigrants occupy this sector (Figure 4.5). Unfortunately Figure 4.5 does not capture 1990-1993. While there was a significant rise in the percentage of Asian immigrants between 1990 and 1993, it should be stressed that this change was possibly due to poor data harmonisation and a lack of comparability between the data sources over these years, especially in relation to the difference in how the 'Asian' group is captured in different Swedish register data.

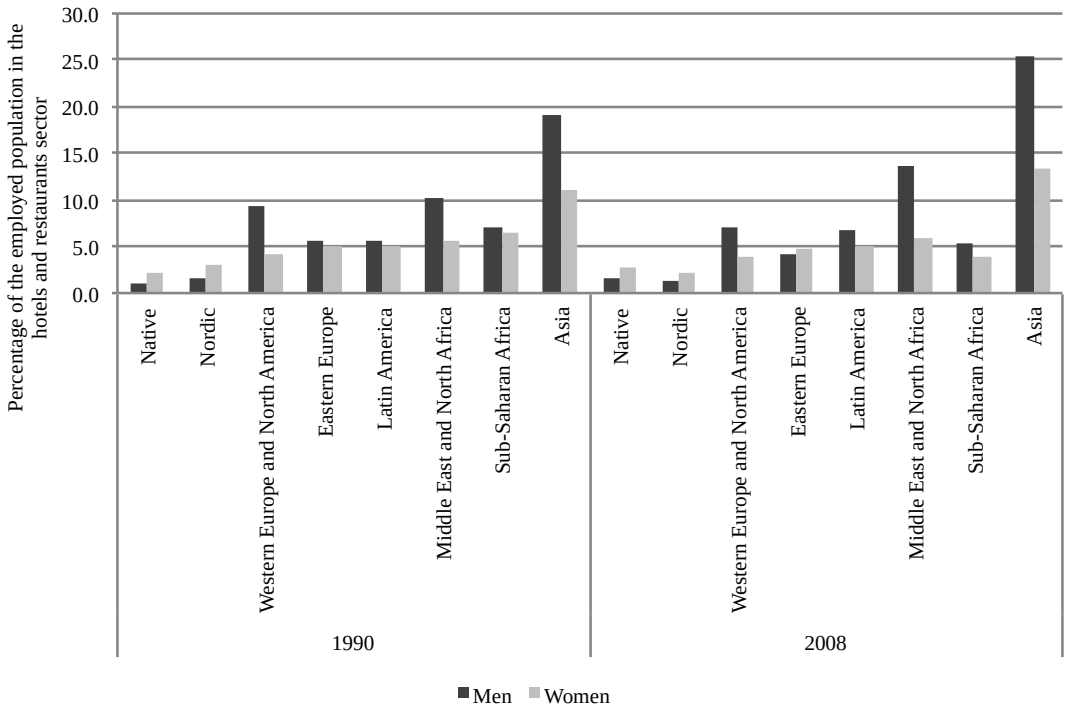

Figure 4.4 Employment in the hotels and restaurants sector (by origin and gender) in Sweden, 1990 and 2008
Source: Author's calculations of the Linnaeus database.

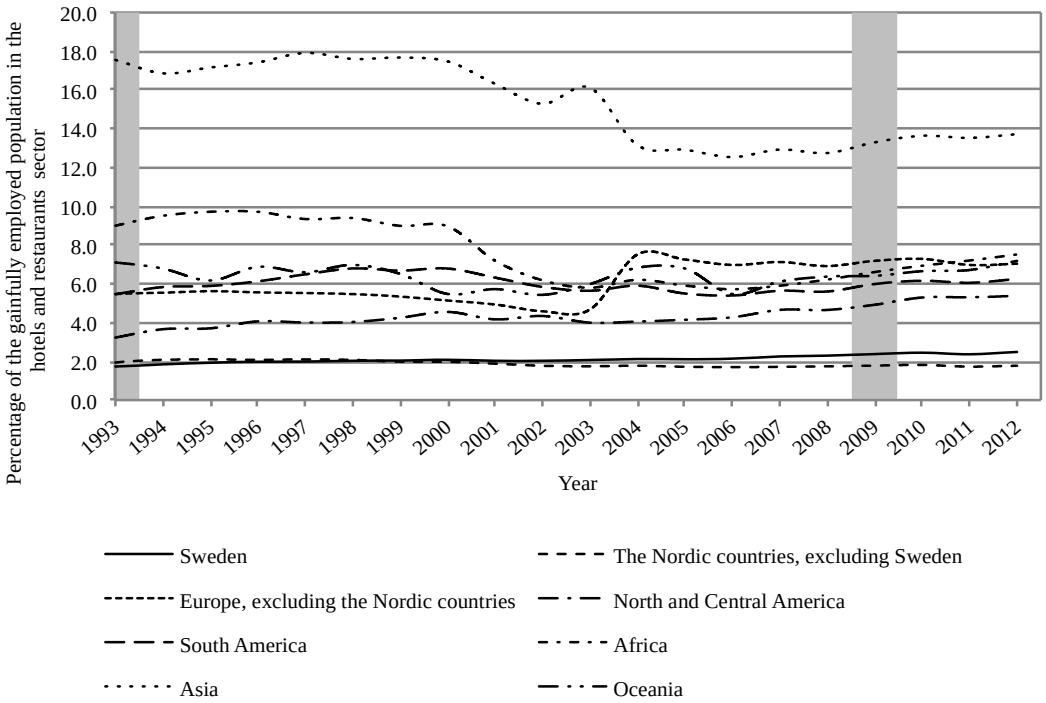

Figure 4.5 Gainful employment in the hotels and restaurants sector (by origin) in Sweden, 1993-2012
Note: Shaded bars indicate recessions according to Edvinsson (2010:404). From 2004 a minor adjustment of classified employees has been made.
Source: Author's calculations of Statistics Sweden (2005a, 2013d, 2013e).

In the same way that logistic regressions were used to estimate employment in the manufacturing sector versus all other sectors, the same process was repeated for the hotels and restaurants sector. The model summary statistics for hotels and restaurants are the same as the manufacturing models (Table 4.2). The regressions are presented in Table 4.4. Unsurprisingly immigrant men were significantly more likely to be employed in this sector than their native counterparts in 1990. Asian immigrant men were the most likely to be employed in this sector, being 12.195 times more likely to be employed in this sector than natives. During the same period, Asian women also presented the highest odds of 2.689. In the 2008 model for men, the findings correspond closely with the descriptive statistics. Asian men maintained the highest odds of employment in this sector (13.937). Nordic immigrant men were the only group significantly less likely to be employed in this sector than natives. Middle Eastern and North African men replaced Western European and North American men as the second most likely to be employment in hotels and restaurants after Asians (with respective odds ratios of 6.724 and 5.226).

Among women in 2008, Nordic employees and those from Sub-Saharan Africa had lower odds of employment in this sector compared to natives (0.932 and 0.667). Similar to the other models, Asian immigrant women had the highest odds of employment in hotels and restaurants (3.214).

The remaining coefficients present findings that correspond intuitively with the literature. The younger age cohorts were associated with greater odds of employment across all models. Single households were the most likely to be employed in this sector but with small or no significant differences for single parents for men in 1990 and 2008. Lower levels of education, like in manufacturing, were associated with higher odds of employment. Duration of time living in Sweden appears to have been important across all models. Men in 1990 were most likely to be in hotels and restaurants if they had been in Sweden for 10-19 years (1.446). For women in 1990, however, the trend was different. Those who had spent less time in the country were more likely to be within this sector (1.440). The 2008 model for men changes to show that men were more likely to be employed if they had been living in Sweden a shorter time. For women the trends remained the same.

The models confirm that, geographically, employment within hotels and restaurants was very different to that of the manufacturing sector. Residing in rural localities resulted in the lowest odds of employment in hotels and restaurants in 1990 and 2008. For men, the lowest odds were in remote rural localities (0.513 in 1990 and 0.570 in 2008). For women, the lowest odds were in accessible rural localities (0.836 in 1990 and 0.809 in 2008). For women, there were no significant differences between small urban and large urban localities in both 1990 and 2008. Compared to the regression models of the manufacturing sector, the variance explained in the models of employment in hotels and restaurants is much greater for men and women, and across time. This may reflect the fact that after separating the population by gender, there are substantial differences between immigrant origin groups within this sector. Furthermore, there may be far less heterogeneity in terms of the occupations within this sector may, as opposed to manufacturing.

Table 4.4 Binomial logistic regressions estimating the odds of employment in the hotels and restaurants sector (by gender) in Sweden, 1990 and 2008

	1990		2008	
	Men	Women	Men	Women
Origin (ref. Native)				
Nordic	1.095**	1.137***	0.889**	0.932*
	(0.033)	(0.025)	(0.043)	(0.031)
Western Europe and North America	8.580***	1.918***	5.226***	1.571***
	(0.027)	(0.038)	(0.025)	(0.039)
Eastern Europe	4.620***	2.209***	1.983***	1.226***
	(0.032)	(0.035)	(0.025)	(0.026)
Latin America	3.192***	1.406***	3.286***	1.270***
	(0.052)	(0.060)	(0.031)	(0.037)
Middle East and North Africa	5.709***	1.392***	6.724***	1.431***
	(0.038)	(0.067)	(0.020)	(0.030)
Sub-Saharan Africa	3.639***	1.366***	2.123***	0.667***
	(0.063)	(0.085)	(0.039)	(0.052)
Asia	12.195***	2.689***	13.937***	3.214***
	(0.035)	(0.043)	(0.018)	(0.021)
Age (ref. 20-34 years)				
35-49 years	0.566***	0.420***	0.577***	0.396***
	(0.014)	(0.012)	(0.011)	(0.010)
50-64 years	0.348***	0.311***	0.326***	0.190***
	(0.021)	(0.016)	(0.015)	(0.014)
Household (ref. Single)				
Cohabiting without children	0.783***	0.765***	0.961**	0.900***
	(0.017)	(0.014)	(0.014)	(0.012)
Cohabiting with children	0.679***	0.506***	0.859***	0.634***
	(0.014)	(0.013)	(0.011)	(0.011)
Single parent	0.916	0.756***	0.958	0.796***
	(0.046)	(0.019)	(0.031)	(0.016)
Education (ref. Compulsory school)				
Upper secondary school	0.870***	0.537***	0.661***	0.601***
	(0.013)	(0.011)	(0.011)	(0.012)
University	0.299***	0.139***	0.162***	0.106***
	(0.029)	(0.030)	(0.020)	(0.019)
Years in Sweden (ref. 20 years or more)				
0-4 years	0.991	1.440***	1.583***	2.041***
	(0.033)	(0.037)	(0.021)	(0.028)
5-9 years	1.149***	1.355***	1.165***	1.381***
	(0.036)	(0.041)	(0.023)	(0.029)
10-19 years	1.446***	1.244***	1.006	1.178***
	(0.029)	(0.033)	(0.019)	(0.024)
Locality (ref. Large urban)				
Small urban	0.743***	1.028	0.835***	1.030
	(0.022)	(0.018)	(0.018)	(0.016)
Accessible rural	0.575***	0.836***	0.596***	0.809***
	(0.016)	(0.013)	(0.013)	(0.012)
Remote rural	0.513***	0.937***	0.570***	0.915***
	(0.016)	(0.012)	(0.013)	(0.011)
Constant	0.034***	0.095***	0.059***	0.151***
	(0.015)	(0.013)	(0.013)	(0.013)
Log likelihood	298261,804	401861,230	427546,381	493831,502
Nagelkerke R^2	0.111	0.064	0.161	0.115
N	2,095,299	1,851,061	2,182,274	2,001,354

Note: The reference category of the dependent variable includes employment in all other sectors. *=p<0.05; **=p<0.01; ***=p<0.001. Coefficients shown are odds ratios. Standard errors are in parentheses.

Source: Author's calculations of the Linnaeus database.

4.2.5 Immigrant Employment in the Elderly and Disabled Care Sector

In contrast to the two previously studied sectors, Figure 4.6 shows that the elderly and disabled care sector presents a female-dominated workforce. Shares of employment were much greater among women across all origin groups in 2008 and also evenly distributed by origin in 1990. Non-European origin men were employed in this sector to a much higher degree than other origin groups. By 2008 this sector had expanded to employ greater shares of all groups but particularly Sub-Saharan African women with up to 37 per cent, followed by around 20 per cent of women from Latin America and the Middle East and North Africa. Even the share of men across all groups had increased within this sector but most notably for those of non-European groups such as Latin Americans (5 per cent) and Sub-Saharan Africa (10 per cent). Unlike the other sectors, it was not possible to supplement this analysis with aggregate statistics, but it is likely that the long term trends of this sector followed that of overall health and social work sector trends with a vastly growing share of African immigrants replacing other gradually declining groups (Appendix 15).

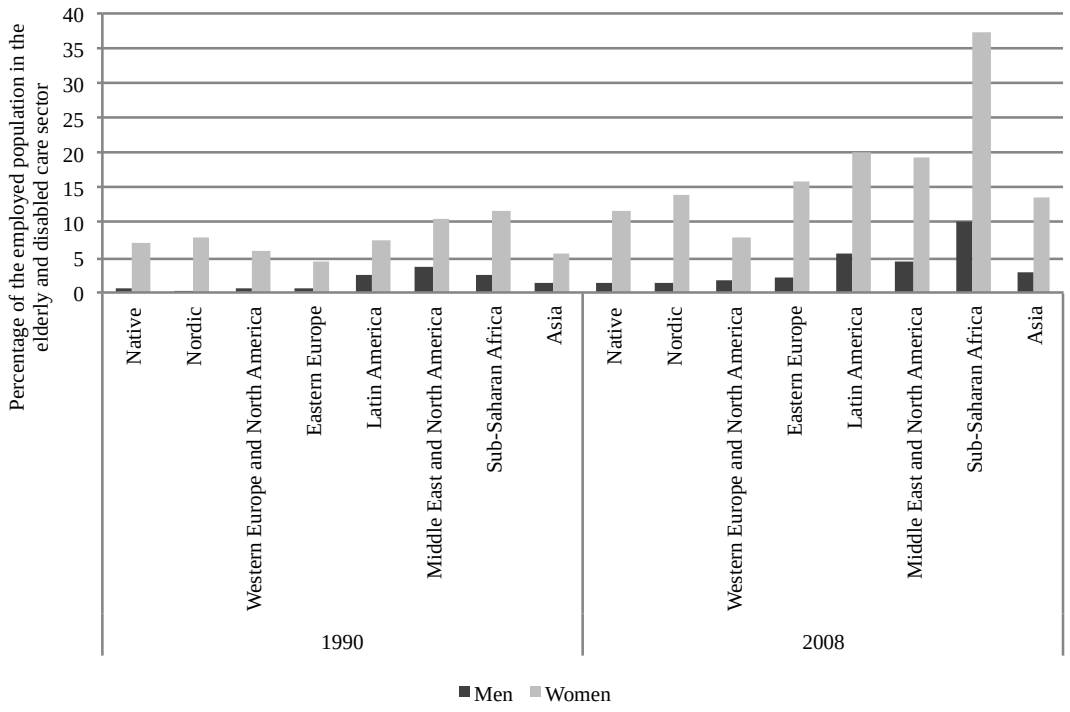

Figure 4.6 Employment in the elderly and disabled care sector (by origin and gender) in Sweden, 1990 and 2008
Source: Author's calculations of the Linnaeus database.

When controlling for other characteristics in logistic regression models, many of the patterns shown in the descriptive statistics are supported (Table 4.5). In 1990, men were more likely to be employed in elderly and disabled care if they were immigrants (particularly from the Middle East and North Africa who were 4.882 times more likely to be employed than natives). Nordic immigrants were the only group that were significantly less likely to be employed in this sector than natives, whereas Eastern Europeans held no statistically significant differences to natives. Women in 1990, on the other hand, showed more varied results. Latin American women held no statistically significant differences to natives, while immigrants from the Nordic countries, the Middle East and North Africa, and particularly Sub-Saharan Africa had higher odds of employment than natives (respective odds ratios of 1.074, 1.647 and 1.884).

In 2008, all immigrant groups were more likely to be employed in this sector than natives with the exception of Western European and North Americans in the women-only model who were significantly less likely (odds ratio of 0.766). Above all else, the Sub-Saharan African group for both men and women was associated with the greatest odds of employment in elderly and disabled care sector (odds ratios of 6.974 for men and 4.046 for women). Also, an important change that has taken place is that Eastern European and Sub-Saharan African men both moved up the hierarchy of origin employment within this sector.

When examining the remaining independent variables, some findings cannot be easily explained. For example, unlike the previous models for the other sectors, the relationship between age and employment in elderly and disabled care is not uniform across all four models. All models had the highest odds of employment among the youngest age cohorts, apart from women in 1990. Instead, they had higher odds in the eldest cohort. Household composition presents similarly complex results with patterns for men having remained the same across time and with those cohabiting with children least likely to have been employed in this sector. Women appear to be linked to this sector if they were single parents. An interesting gender dynamic concerns education and employment. Men were significantly more likely to work in this sector if they had upper secondary school education in both 1990 and 2008, while for women this was only the case in 2008. When ‘years in Sweden’ are examined, a cohort effect is possibly observed. In 1990 it was the recent groups that were clearly associated with elderly and

disabled care employment (odds ratios of 1.860 and 1.195) but by 2008 it was the longer established groups, including those born Sweden and with over 20 years of in Sweden that showed this association more strongly (i.e. it is possibly the same people that account for this switch).

It may be expected that employment within the elderly and disabled care sector is associated more with rural areas, due to the stronger effects of population ageing taking place in such areas. Significant differences existed across all locality types in all four models. Among men in 1990, the highest odds of employment within this sector were associated with remote rural localities (odds ratio of 1.059). During the same period, the findings were the same among women with residing in remote rural localities associated with being 2.046 times more likely to work in elderly and disabled care than residing in large urban localities. In 2008, although remote rural residences were associated with higher odds than large urban localities among men (1.126), small urban localities were associated with the highest odds (1.265). However, among women, remote rural localities maintained the highest odds of employment within this sector (odds ratio of 2.201). With the exception of accessible rural localities for men in both 1990 and 2008, all other localities were associated with higher odds of employment in elderly and disabled care than large urban localities.

Overall, the models for each of the three sectors have revealed, to some extent, a changing immigrant division of labour in Sweden over the 18-year period covered by the results. The next steps of analysis is to try and determine how short-term cyclical changes in the economy are altering the immigrant division of labour through differential risks of unemployment entry and how they may also be changing the geography of immigrants across Sweden.

Table 4.5 Binomial logistic regressions estimating the odds of employment in elderly and disabled care sector (by gender) in Sweden, 1990 and 2008

	1990		2008	
	Men	Women	Men	Women
Origin (ref. Native)				
Nordic	0.742***	1.074***	1.147**	1.190***
	(0.070)	(0.015)	(0.039)	(0.013)
Western Europe and North America	1.289**	0.854***	1.243***	0.766***
	(0.084)	(0.031)	(0.047)	(0.027)
Eastern Europe	0.917	0.693***	1.345***	1.312***
	(0.097)	(0.032)	(0.035)	(0.015)
Latin America	3.370***	1.096	3.730***	1.920***
	(0.098)	(0.049)	(0.035)	(0.020)
Middle East and North Africa	4.882***	1.647***	3.019***	1.806***
	(0.083)	(0.050)	(0.030)	(0.018)
Sub-Saharan Africa	3.211***	1.884***	6.974***	4.046***
	(0.114)	(0.065)	(0.034)	(0.022)
Asia	2.139***	0.830***	2.090***	1.127***
	(0.106)	(0.048)	(0.036)	(0.017)
Age (ref. 20-34 years)				
35-49 years	0.802***	0.957***	0.759***	0.880***
	(0.024)	(0.007)	(0.013)	(0.006)
50-64 years	0.769***	1.420***	0.780***	0.983**
	(0.032)	(0.009)	(0.015)	(0.006)
Household (ref. Single)				
Cohabiting without children	0.715***	0.952***	0.722***	0.881***
	(0.029)	(0.008)	(0.016)	(0.006)
Cohabiting with children	0.614***	1.023**	0.667***	0.908***
	(0.025)	(0.008)	(0.014)	(0.006)
Single parent	0.997	1.418***	1.037	1.288***
	(0.077)	(0.012)	(0.033)	(0.008)
Education (ref. Compulsory school)				
Upper secondary school	1.456***	0.958***	1.386***	1.242***
	(0.025)	(0.007)	(0.017)	(0.007)
University	1.066	0.154***	0.904***	0.333***
	(0.040)	(0.020)	(0.022)	(0.010)
Years in Sweden (ref. 20 years or more)				
0-4 years	1.860***	1.195***	0.940	1.101***
	(0.080)	(0.032)	(0.037)	(0.022)
5-9 years	1.775***	1.209***	1.692***	1.687***
	(0.087)	(0.036)	(0.034)	(0.018)
10-19 years	1.265**	1.052*	1.409***	1.526***
	(0.082)	(0.025)	(0.028)	(0.014)
Locality (ref. Large urban)				
Small urban	0.914*	1.327***	1.265***	1.706***
	(0.039)	(0.012)	(0.020)	(0.009)
Accessible rural	0.680***	1.271***	0.804***	1.346***
	(0.030)	(0.008)	(0.016)	(0.006)
Remote rural	1.059*	2.046***	1.126***	2.201***
	(0.025)	(0.007)	(0.014)	(0.006)
Constant	0.005***	0.058***	0.015***	0.104***
	(0.030)	(0.010)	(0.020)	(0.009)
Log likelihood	123737,267	919820,165	338361,086	1402502,557
Nagelkerke R^2	0.033	0.046	0.039	0.079
N	2,095,299	1,851,061	2,182,274	2,001,354

Note: The reference category of the dependent variable includes employment in all other sectors. *=p<0.05; **=p<0.01; ***=p<0.001. Coefficients shown are odds ratios. Standard errors are in parentheses.

Source: Author's calculations of the Linnaeus database.

4.3 Economic Recession and Immigrant Unemployment Entry

4.3.1 Unemployment Entry by Origin

Figure 4.7 shows the percentage that entered unemployment by origin and gender in the two-year period when Sweden enjoyed economic stability (2006-2007), and also for the two years entering the recession (2008-2009). During 2006-2007, a larger share of women entered unemployment. By 2008-2009, the gender imbalance was less evident. A hierarchy of unemployment entry based on immigrant origin can also be seen. The most at risk of entering unemployment were from the Middle East and North Africa, followed by other non-Europeans. The share of Nordic women entering unemployment in both periods was lower than natives. Although all groups faced increased unemployment when the economy entered the recession, Nordic, Eastern European and Sub-Saharan African men faced greater risks of entering unemployment than women.[10] The recession effects appear to have operated unevenly across both gender and origin.

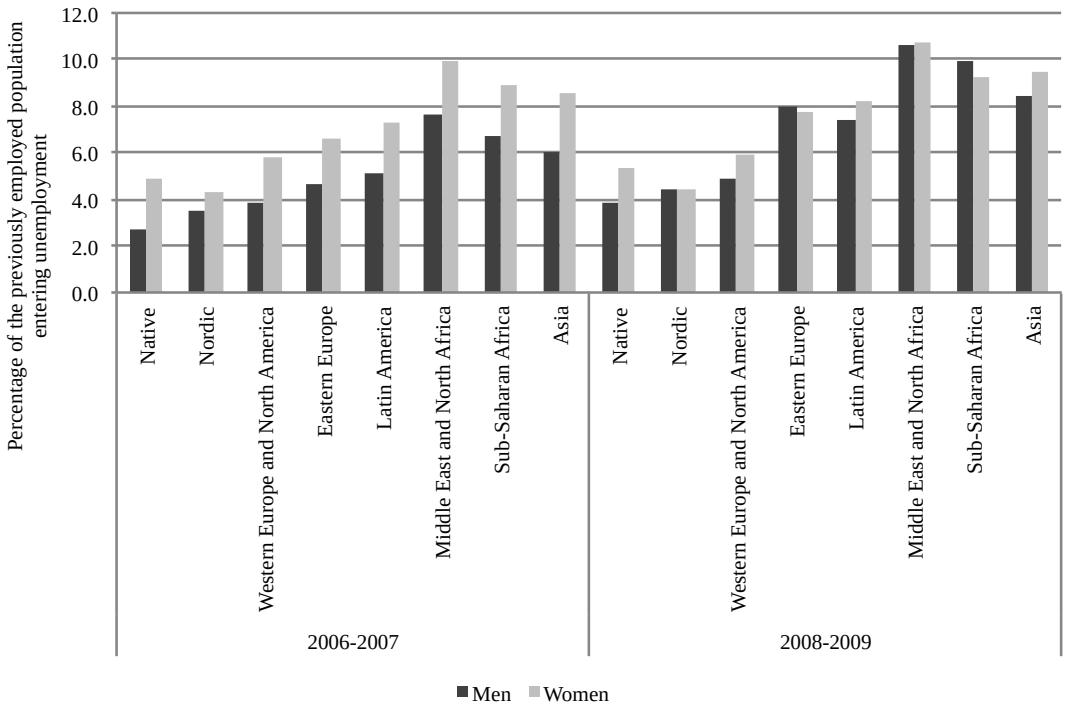

Figure 4.7 Unemployment entry (by origin and gender) in Sweden, 2006-2007 and 2008-2009
Note: Percentages shown are after the economically inactive population have been removed from the sample.
Source: Author's calculations of the Linnaeus database.

[10] While it is not possible to visibly see the difference between Nordic men and women in 2008-2009, there was a difference of 0.1 percentage points.

4.3.2 Unemployment Entry by Industrial Sector

To gain an overview of how the overall labour market structure may have been influenced by recession, Figure 4.8 presents unemployment entry by industrial sector before and during the recession. An initial observation is that, regardless of period, the sector most associated with people being made unemployed was hotels and restaurants. This was followed by the heterogeneous 'other personal and community services' sector. Across all sectors there was an increase in unemployment entry but some of the largest increases are observed for manufacturing, construction, hotels and restaurants, and other business services. Interestingly, although some of the highest shares of unemployment entry were evident in the service-oriented sectors such elderly and disabled care, and entertainment services, the proportionate increases between the percentages of the two time periods were not as large as the previously mentioned sectors. This suggests that, despite higher turnover rates in services, security during recession may have been greater than in sectors that were generally more associated with long-term employment stability.

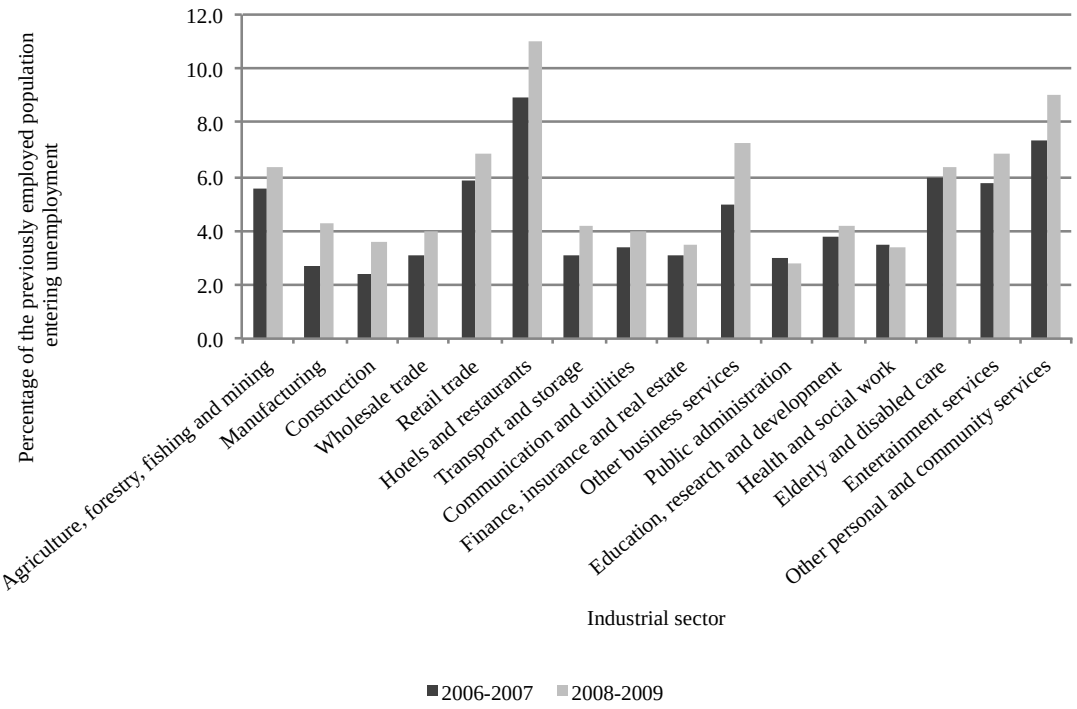

Figure 4.8 Unemployment entry (by industrial sector) in Sweden, 2006-2007 and 2008-2009
Note: Percentages shown are after the economically inactive population have been removed from the sample.
Source: Author's calculations of the Linnaeus database.

4.3.3 Immigrant Unemployment Entry in the Manufacturing Sector

To further the examination of unemployment entry by immigrant group, the analysis focuses again on the manufacturing sector. Figure 4.9 shows that during the stable period of the economy, all immigrant men and women were more likely to enter unemployment than their native counterparts. Figure 4.9 also shows a general pattern for immigrant origin groups most geographically and culturally proximate to Sweden to be the least likely to enter unemployment (similar to Figure 4.7). During the recession period, unemployment entry increased for men across all groups, and for women across all groups except Nordic and Western Europe and North America. Only amongst Sub-Saharan Africans did the share of men entering unemployment become greater than the respective share among women.

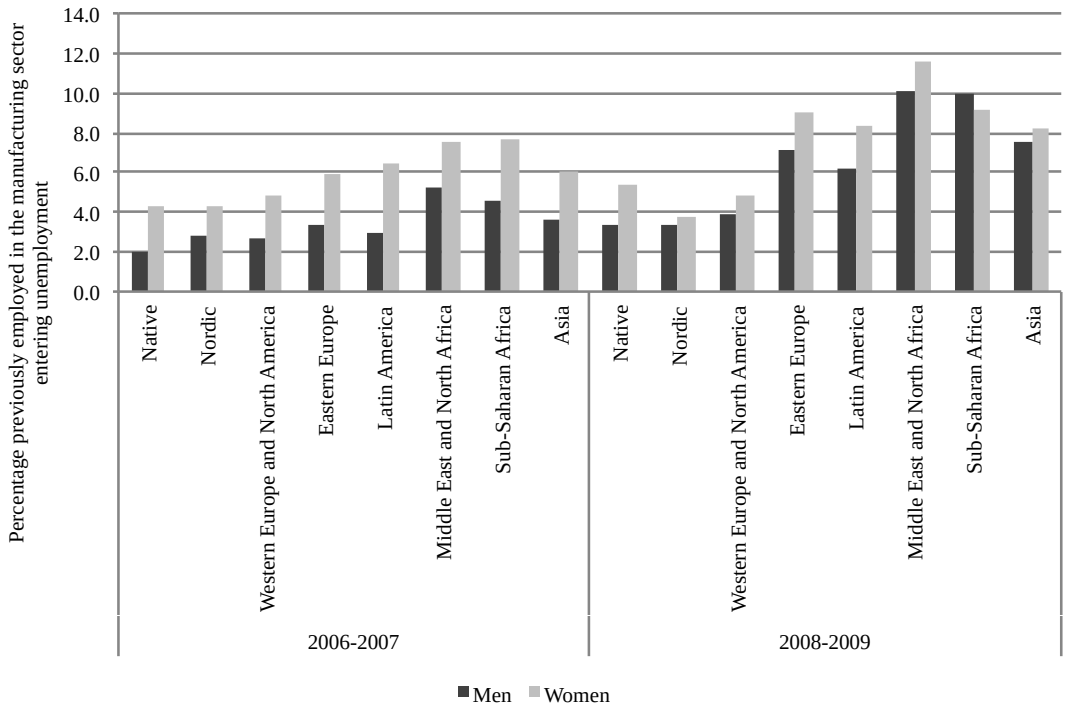

Figure 4.9 Unemployment entry in the manufacturing sector (by origin and gender) in Sweden, 2006-2007 and 2008-2009

Note: Percentages shown are after the economically inactive population have been removed from the sample.

Source: Author's calculations of the Linnaeus database.

To estimate the odds of entering unemployment from employment in the manufacturing sector, logistic regression models were constructed. This was achieved using a dichotomous variable of entering unemployment versus staying employed. Those who had either left Sweden or become economically inactive were left out of the analysis to try and capture only the involuntary moves out of employment. Summary statistics for the variables used in the models are presented in Table 4.6, while the results of the regression models are shown in Table 4.7.

During 2006-2007 all origin groups other than Latin Americans had significantly higher odds of becoming unemployed than native men. The most likely group were Middle Eastern and North African immigrants, with an odds ratio of 2.221. Among women, no significant differences existed between natives and Nordic, Western European and North American, and Asians. Although Sub-Saharan African women had the highest odds ratio of entering unemployment (1.608), the highest odds ratio with a p value of less than 0.001 was for women from the Middle East and North Africa (1.577). Women from Eastern Europe and Latin America also presented higher odds of entering unemployment than natives (1.202 and 1.346), however both of these groups also presented *p* values that were greater than 0.01.

When the economy entered recession, previously significant differences between native, Western European and North American men disappeared. Other groups, however, still presented significantly higher odds of entering unemployment than natives, the most likely again being immigrant men from the Middle East and North Africa (2.148). Among women, immigrants from the Middle East and North Africa were 1.481 times more likely to become unemployed than natives. Eastern European immigrants were also more likely to enter unemployment than natives, but with a lower odds ratio (1.147) that was significant at the 0.05-level. Interestingly, some groups were significantly less likely to enter employment than the native population. This included Nordic immigrants (odds ratio of 0.761 with a *p* value of less than 0.001) and Western Europe and North American immigrants (odds ratio of 0.768 with a *p* value of less than 0.05). When considering that these groups were insignificantly at risk of unemployment to natives during the period of economic boom, the fact that they are significantly less likely to enter unemployment during economic bust suggests their role or position in the labour market may differ to the native population. One theoretical explanation may be

that they constitute a complementary labour force that is in demand even during economic downturns. Another explanation may be that these individuals are working for international companies that are not so subject to economic changes at the local level. Testing these theories would require further research.

It is often noted that young people fare worse during recessions and the regression models support this theory. One might hypothesise that employees cohabiting with their partners (and possibly children) are better supported than single employees, because they have partners to depend on if their hours are shortened or they become unemployed. However, it may also be the case that those who are able to establish families are those who may have more stable employment in the first place. For men during 2006-2007, those cohabiting with children were the least likely to become unemployed while the most likely were cohabiting without children. Women during the same period were all more likely to become unemployed than the reference category. During the recession period, similar patterns emerged to those during the economic boom period, but with the addition of single parents becoming more vulnerable to unemployment. Women also showed similar trends as before but with no significant differences remaining between the reference category and cohabitation with children.

Theoretically, the greater level of human capital (measured by formal education) that an individual had, and the greater their country-specific human capital (measured by years in a destination country), the less the risk was of entering unemployment. The findings of the four models support this. When the odds of being employed in manufacturing were examined in the previous section of this chapter, an association was observed between more rural localities and engaging in such employment. In terms of unemployment among those previously employed in manufacturing, the patterns differ between gender and period. Men in 2006-2007 were significantly less likely to become unemployed in accessible and remote rural localities than large urban, with the least likely being in remote rural. Women during the same period showed no geographically differentiated risks of entering unemployment. During recession, small urban localities became more associated with men entering unemployment than large urban localities (odds ratio of 1.054), while only accessible rural localities were less associated (0.844). Women faced significant differences in the risk of entering unemployment during the

recession period with both small urban and remote rural localities significantly more associated with them becoming unemployed (odds ratios of 1.113 and 1.080).

Similar to the models of employment within this sector, the variance of unemployment entry was very moderately explained by these models in terms of low Nagelkerke R^2 values. However, while the earlier models only included those who were employed in the labour market, the models here accounted for the possibilities of moving from employment into unemployment. This involves greater complexity in terms of considerations to be made by employers and employees, and whether or not employees are required to decrease hours that reflect different labour market positions on an annual basis in comparison to the previous year.

Table 4.6 Summary statistics of variables used in the binomial logistic regressions models estimating the odds of unemployment entry in the manufacturing sector (by gender) in Sweden, 2006-2007 and 2008-2009

	2006-2007				2008-2009			
	Men		Women		Men		Women	
	N	%	*N*	%	*N*	%	*N*	%
Origin								
Native	448,628	88.1	146,766	85.4	433,138	87.5	140,990	85.6
Nordic	16,499	3.2	7,392	4.3	14,473	2.9	6,211	3.8
Western Europe and North America	6,496	1.3	1,918	1.1	6,732	1.4	1,967	1.2
Eastern Europe	19,644	3.9	8,809	5.1	20,888	4.2	8,702	5.3
Latin America	3,646	0.7	1,189	0.7	3,676	0.7	1,069	0.6
Middle East and North Africa	7,193	1.4	1,610	0.9	7,979	1.6	1,401	0.9
Sub-Saharan Africa	2,027	0.4	420	0.2	2,190	0.4	339	0.2
Asia and Oceania	5,225	1.0	3,814	2.2	5,703	1.2	3,971	2.4
Age								
20-34 years	142,559	28.0	45,958	26.7	136,866	27.7	45,628	27.7
35-49 years	209,769	41.2	74,011	43.1	205,149	41.5	72,231	43.9
50-64 years	157,030	30.8	51,949	30.2	152,764	30.9	46,791	28.4
Household								
Cohabiting without children	116,952	23.0	42,619	24.8	113,674	23.0	39,857	24.2
Cohabiting with children	188,222	37.0	61,854	36.0	183,426	37.1	61,348	37.3
Single	192,447	37.8	53,954	31.4	185,991	37.6	50,880	30.9
Single parent	11,736	2.3	13,491	7.8	11,688	2.4	12,565	7.6
Education								
Compulsory school	98,617	19.4	33,492	19.5	87,436	17.7	26,494	16.1
Upper secondary school	350,681	69.1	109,498	63.9	343,929	69.8	106,268	64.7
University	58,025	11.4	28,455	16.6	61,278	12.4	31,494	19.2
Years in Sweden								
0-4	5,365	1.1	1,889	1.1	7,756	1.6	2,389	1.5
5-9	6,359	1.2	2,452	1.4	6,334	1.3	2,516	1.5
10-19	22,183	4.4	8,818	5.1	21,082	4.3	7,883	4.8
20 or more	474,858	93.3	158,526	92.3	459,136	92.9	151,680	92.2
Locality								
Large urban	171,748	33.7	65,297	38.0	150,847	30.5	56,603	34.4
Small urban	56,591	11.1	17,386	10.1	44,285	9.0	13,003	7.9
Accessible rural	110,453	21.7	37,758	22.0	123,703	25.0	42,495	25.8
Remote rural	170,566	33.5	51,477	29.9	175,944	35.6	52,549	31.9
N	509,358	100.0	171,918	100.0	494,779	100.0	164,650	100.0

Source: Author's calculations of the Linnaeus database.

Table 4.7 Binomial logistic regressions estimating the odds of unemployment entry in the manufacturing sector (by gender) in Sweden, 2006-2007 and 2008-2009

	2006-2007		2008-2009	
	Men	Women	Men	Women
Origin (ref. Native)				
Nordic	1.177**	1.066	1.038	0.761***
	(0.050)	(0.062)	(0.049)	(0.072)
Western Europe and North America	1.250**	1.204	1.106	0.768*
	(0.086)	(0.115)	(0.073)	(0.120)
Eastern Europe	1.376***	1.202*	1.466***	1.147*
	(0.061)	(0.072)	(0.049)	(0.069)
Latin America	1.171	1.346*	1.394***	1.206
	(0.107)	(0.129)	(0.076)	(0.123)
Middle East and North Africa	2.221***	1.577***	2.148***	1.481***
	(0.073)	(0.114)	(0.055)	(0.103)
Sub-Saharan Africa	1.839***	1.608*	1.942***	1.146
	(0.118)	(0.196)	(0.084)	(0.203)
Asia	1.568***	1.141	1.569***	0.935
	(0.830)	(0.085)	(0.060)	(0.079)
Age (ref. 20-34 years)				
35-49 years	0.478***	0.292***	0.318***	0.248***
	(0.028)	(0.031)	(0.020)	(0.027)
50-64 years	1.021	0.505***	0.431***	0.322***
	(0.026)	(0.035)	(0.021)	(0.033)
Household (ref. Single)				
Cohabiting without children	1.059*	1.193***	1.045*	1.159***
	(0.025)	(0.035)	(0.020)	(0.032)
Cohabiting with children	0.471***	1.281***	0.514***	1.047
	(0.028)	(0.032)	(0.020)	(0.028)
Single parent	0.912	1.185**	1.107*	1.140**
	(0.070)	(0.051)	(0.048)	(0.045)
Education (ref. Compulsory school)				
Upper secondary school	0.772***	0.788***	0.785***	0.822***
	(0.023)	(0.030)	(0.019)	(0.030)
University	0.412***	0.408***	0.350***	0.344***
	(0.044)	(0.047)	(0.035)	(0.044)
Years in Sweden (ref. 20 years or more)				
0-4 years	1.934***	1.723***	2.213***	2.410***
	(0.087)	(0.104)	(0.056)	(0.086)
5-9 years	1.780***	1.471***	2.213***	1.816***
	(0.081)	(0.096)	(0.058)	(0.089)
10-19 years	1.431***	1.187*	1.483***	1.614***
	(0.061)	(0.075)	(0.049)	(0.072)
Locality (ref. Large urban)				
Small urban	0.860***	1.062	1.054*	1.113**
	(0.032)	(0.041)	(0.026)	(0.040)
Accessible rural	0.813***	1.001	0.844***	0.970
	(0.028)	(0.034)	(0.022)	(0.030)
Remote rural	0.765***	1.029	0.977	1.080**
	(0.025)	(0.030)	(0.019)	(0.028)
Constant	0.045***	0.093***	0.105***	0.152***
	(0.030)	(0.040)	(0.024)	(0.038)
Log likelihood	100539,410	59967,033	148018,667	67181,504
Nagelkerke R^2	0.046	0.041	0.073	0.074
N	506,731	171,213	492,173	164,075

Note: The reference category of the dependent variable includes those staying employed (having been employed in the manufacturing sector). *=p<0.05; **=p<0.01; ***=p<0.001. Coefficients shown are odds ratios. Standard errors are in parentheses.
Source: Author's calculations of the Linnaeus database.

4.3.4 Immigrant Unemployment Entry in the Hotels and Restaurants Sector

Figure 4.4 suggested that hotels and restaurants had higher rates of unemployment entry compared to many other sectors and that the risk of entering unemployment increased with the recession (Figure 4.8). Breaking the sector down by origin and gender, Figure 4.10 shows that during the pre-recession period a higher share of previously employed women than men became unemployed (except Sub-Saharan Africans). The group with the highest proportion entering unemployment were those from the Middle East and North Africa (almost a fifth becoming unemployed). During the recession, the overall patterns were the same but all groups had increased their shares of employees entering unemployment. Interestingly, greater increases were evident among the groups least likely to be employed in this sector, such as women from Latin America, Sub-Saharan Africa, and Western Europe and North America.

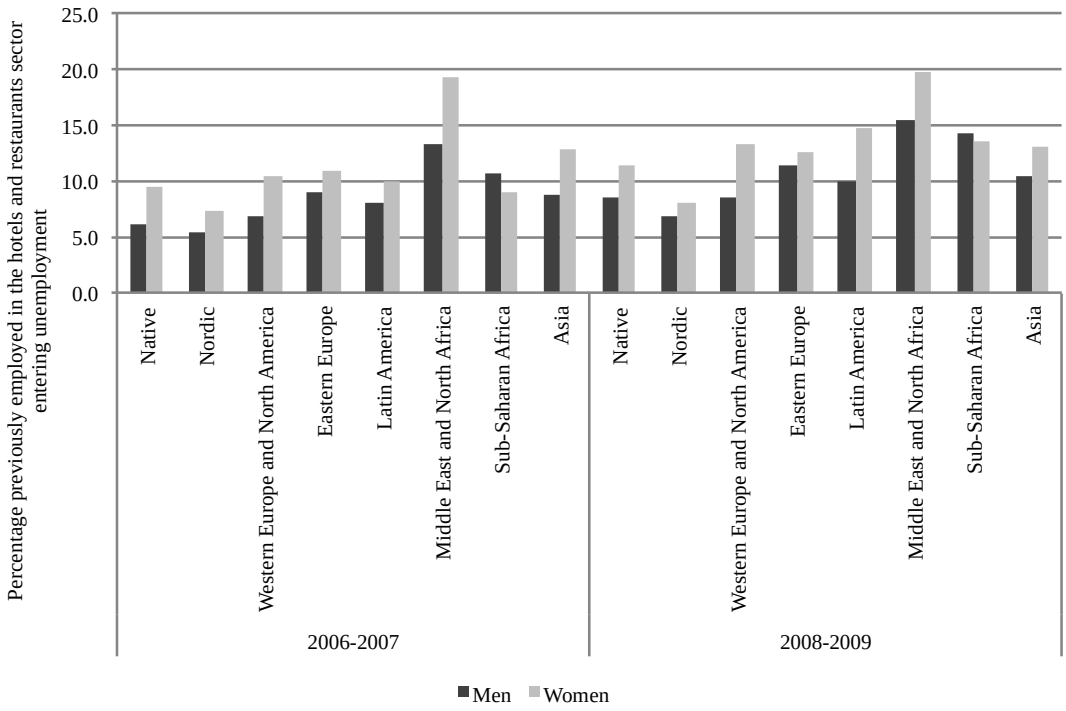

Figure 4.10 Unemployment entry in the hotels and restaurants sector (by origin and gender) in Sweden, 2006-2007 and 2008-2009

Note: Percentages shown are after the economically inactive population have been removed from the sample.

Source: Author's calculations of the Linnaeus database.

The summary statistics for the logistic regression analysis are presented in Table 4.8, and the results are presented in Table 4.9. Prior to the recession (2006-2007), no significant differences were present between native men, and those from Nordic countries, Western Europe and North America, and Latin America. All remaining groups had significantly higher odds of becoming unemployed than natives (particularly the Middle East and North Africa group with an odds ratio of 2.156). During the same period, women from Eastern Europe, Middle East and North Africa, and Asia all showed higher odds of entering unemployment (1.258, 2.209, 1.411). During the recession, the overall trends remained the same for men but for women there were more significant differences. Women from Western Europe, North America and Latin America had significantly higher odds of entering unemployment in this sector (odds ratios of 1.358, 1.258 and 1.852). However, it should be noted that only the coefficient for the Middle East and North Africa was significant at the 0.001 level, whereas the Western European and North American coefficient was significant at the 0.01 level and Latin American coefficient at the 0.05 level.

The risk of entering unemployment from employment within the hotels and restaurant sector was highest for the youngest cohort (20-34 years) across all four models but with no significant differences between that cohort and the eldest cohort (50-64 years) for men in 2006-2007. Unemployment entry in this sector also shows similar trends as manufacturing in relation to household characteristics. Again, those men cohabitating with children were least associated with entering unemployment before and during the recession. Women were more vulnerable if they were not single. Human capital (both formal education and years in Sweden) appears to have been important. The results suggest that those with low levels were more associated with greater risk of becoming unemployed.

Looking back to employment within this sector in the years 1990 and 2008 (Table 4.4), higher odds were shown in urban localities than elsewhere. The coefficients in these models (Table 4.9), however, show that geography played a less significant role in terms of the risk of entering unemployment. The only coefficients showing any significant differences are that in 2008-2009, residing in small urban localities was associated with significantly higher odds (1.157) of entering unemployment than natives.

Table 4.8 Summary statistics of variables used in the binomial logistic regressions estimating the odds of unemployment entry in the hotels and restaurants sector (by gender) in Sweden, 2006-2007 and 2008-2009

	2006-2007				2008-2009			
	Men		Women		Men		Women	
	N	%	*N*	%	*N*	%	*N*	%
Origin								
Native	27,700	58.4	41,823	78.6	29,198	55.3	46,526	77.4
Nordic	634	1.3	1,254	2.4	605	1.1	1,236	2.1
Western Europe and North America	2,344	4.9	718	1.3	2,367	4.5	826	1.4
Eastern Europe	2,331	4.9	2,664	5.0	2,743	5.2	3,251	5.4
Latin America	1,139	2.4	735	1.4	1,349	2.6	889	1.5
Middle East and North Africa	5,617	11.8	1,540	2.9	7,198	13.6	1,813	3.0
Sub-Saharan Africa	632	1.3	366	0.7	852	1.6	447	0.7
Asia and Oceania	7,008	14.8	4,116	7.7	8,510	16.1	5,111	8.5
Age								
20-34 years	24,880	52.5	30,078	56.5	27,798	52.6	34,319	57.1
35-49 years	15,863	33.5	15,221	28.6	17,562	33.2	17,002	28.3
50-64 years	6,662	14.1	7,917	14.9	7,462	14.1	8,778	14.6
Household								
Cohabiting without children	7,838	16.5	9,795	18.4	8,939	16.9	11,122	18.5
Cohabiting with children	16,352	34.5	14,598	27.4	17,945	34.0	16,338	27.2
Single	22,098	46.6	24,142	45.4	24,724	46.8	27,310	45.4
Single parent	1,117	2.4	4,681	8.8	1,214	2.3	5,329	8.9
Education								
Compulsory school	10,537	22.9	9,143	17.3	12,305	24.0	9,949	16.7
Upper secondary school	32,693	71.0	40,174	76.2	35,681	69.5	45,606	76.5
University	2,841	6.2	3,396	6.4	3,328	6.5	4,030	6.8
Years in Sweden								
0-4	3,710	7.8	2,109	4.0	6,060	11.5	2,984	5.0
5-9	3,087	6.5	1,754	3.3	3,709	7.0	2,220	3.7
10-19	6,697	14.1	4,073	7.7	6,843	13.0	4,383	7.3
20 or more	33,853	71.5	45,224	85.1	36,161	68.5	50,462	84.0
Locality								
Large urban	31,147	65.7	28,798	54.1	32,923	62.3	30,576	50.9
Small urban	4,408	9.3	5,422	10.2	3,863	7.3	4,871	8.1
Accessible rural	5,428	11.5	8,337	15.7	8,186	15.5	11,518	19.2
Remote rural	6,422	13.5	10,659	20.0	7,850	14.9	13,134	21.9
N	47,405	100.0	53,216	100.0	52,822	100.0	60,099	100.0

Source: Author's calculations of the Linnaeus database.

Table 4.9 Binomial logistic regressions estimating the odds of unemployment entry in the hotels and restaurants sector (by gender) in Sweden, 2006-2007 and 2008-2009

	2006-2007		2008-2009	
	Men	Women	Men	Women
Origin (ref. Native)				
Nordic	0.824	0.980	0.870	0.923
	(0.186)	(0.118)	(0.166)	(0.113)
Western Europe and North America	1.063	1.212	1.043	1.358**
	(0.097)	(0.137)	(0.085)	(0.115)
Eastern Europe	1.354**	1.258*	1.326***	1.109
	(0.092)	(0.090)	(0.078)	(0.080)
Latin America	1.154	1.034	1.110	1.258*
	(0.122)	(0.136)	(0.100)	(0.107)
Middle East and North Africa	2.156***	2.209***	1.870***	1.852***
	(0.072)	(0.094)	(0.060)	(0.083)
Sub-Saharan Africa	1.687***	0.929	1.620***	1.097
	(0.145)	(0.198)	(0.113)	(0.153)
Asia	1.393***	1.411***	1.239***	1.109
	(0.069)	(0.075)	(0.058)	(0.069)
Age (ref. 20-34 years)				
35-49 years	0.769***	0.394***	0.712***	0.392***
	(0.043)	(0.040)	(0.037)	(0.036)
50-64 years	0.993	0.543***	0.822***	0.436***
	(0.057)	(0.052)	(0.049)	(0.047)
Household (ref. Single)				
Cohabiting without children	0.992	1.211***	0.987	1.214***
	(0.051)	(0.044)	(0.042)	(0.038)
Cohabiting with children	0.746***	1.470***	0.721***	1.217***
	(0.044)	(0.038)	(0.037)	(0.034)
Single parent	1.097	1.479***	1.175	1.398***
	(0.111)	(0.055)	(0.092)	(0.047)
Education (ref. Compulsory school)				
Upper secondary school	0.848***	0.923	0.833***	0.802***
	(0.042)	(0.041)	(0.035)	(0.036)
University	0.847*	0.750***	0.759***	0.712***
	(0.079)	(0.072)	(0.067)	(0.061)
Years in Sweden (ref. 20 years or more)				
0-4 years	1.288**	1.311**	1.218**	1.378***
	(0.082)	(0.092)	(0.063)	(0.078)
5-9 years	1.270**	1.162	1.185*	1.186*
	(0.080)	(0.095)	(0.068)	(0.083)
10-19 years	1.268***	0.963	1.190**	1.079
	(0.067)	(0.081)	(0.058)	(0.073)
Locality (ref. Large urban)				
Small urban	1.109	0.986	1.157**	0.965
	(0.059)	(0.050)	(0.055)	(0.049)
Accessible rural	0.947	0.943	1.024	0.989
	(0.063)	(0.045)	(0.044)	(0.036)
Remote rural	1.111	1.044	1.065	1.038
	(0.055)	(0.040)	(0.045)	(0.034)
Constant	0.084***	0.125***	0.128***	0.184***
	(0.050)	(0.046)	(0.041)	(0.040)
Log likelihood	24390,231	33322,834	32936,109	42111,363
Nagelkerke R^2	0.027	0.035	0.026	0.038
N	46,015	52,659	51,266	59,535

Note: The reference category of the dependent variable includes those staying employed (having been employed in the hotels and restaurants sector). *=p<0.05; **=p<0.01; ***=p<0.001. Coefficients shown are odds ratios. Standard errors are in parentheses.
Source: Author's calculations of the Linnaeus database.

4.3.5 Immigrant Unemployment Entry and the Elderly and Disabled Care Sector

Figure 4.8 suggested that while the shares entering unemployment in the elderly and disabled care sector were higher than many other sectors, the increase during the recession was not as substantial. This indicates that, while there may have been high turnover, employment in this sector may not have been so sensitive to changes in the short-term business cycle. It is therefore interesting to examine whether the high odds of employment has meant a higher level of employment security. Figure 4.11 shows that the proportion of those entering unemployment stayed below 10 per cent, but the differences between origin groups were also more than in other economic sectors. Across immigrant origin groups prior to the recession, a higher share of women were likely to become unemployed than men (except for Nordic immigrants). Greater differences between immigrant origin groups were present for male as opposed to female immigrants. During the recession difference in gender was reduced. Higher shares of native men entered unemployment. This was also true for Eastern Europeans.

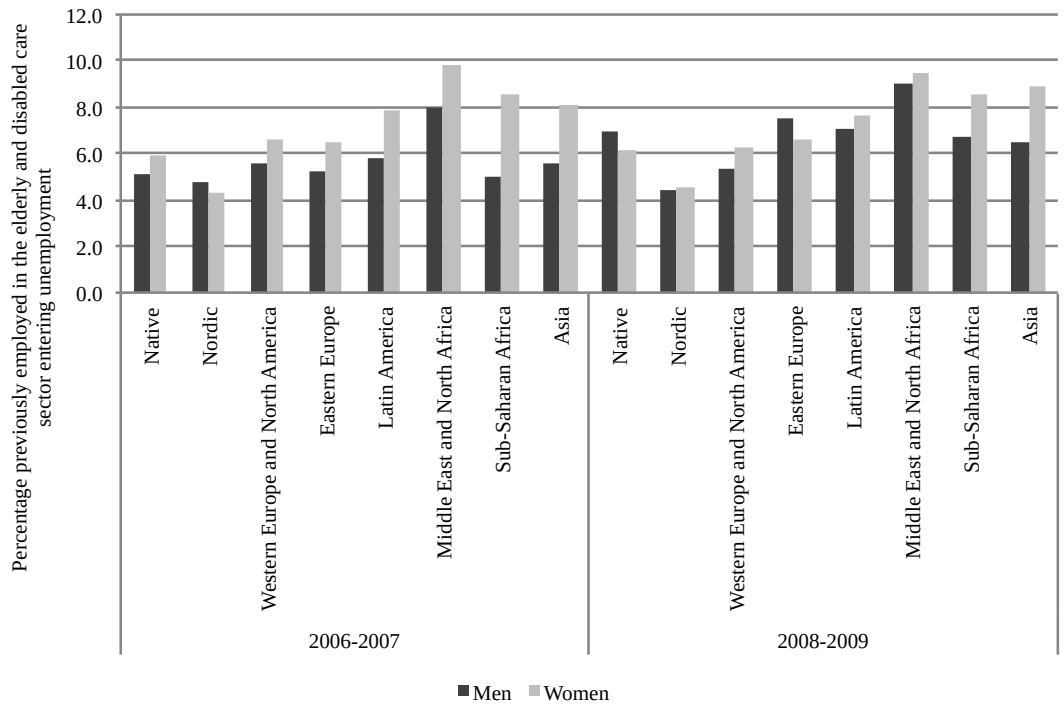

Figure 4.11 Unemployment entry in the elderly and disabled care sector (by origin and gender) in Sweden, 2006-2007 and 2008-2009
Note: Percentages shown are after the economically inactive population have been removed from the sample.
Source: Author's calculations of the Linnaeus database.

Table 4.10 shows summary statistics for the regression models that follow in Table 4.11. In line with the descriptive statistics, few significant differences existed across immigrant origins after controlling for other characteristics. In 2006-2007, only men from the Middle East and North Africa were significantly more likely to enter unemployment than native men (with an odds ratio of 1.676). During the same period, women of the same origin were also more likely to enter unemployment than natives (albeit with an odds ratio of 1.184 significant at the 0.05 level). Interestingly, Eastern European women were significantly less likely to enter unemployment than native women (with an odds ratio of 0.846 significant at the 0.05 level). In 2008-2009, the greater odds of entering unemployment remained for men from the Middle East and North Africa (odds ratio of 1.366) and among women the same group maintained a higher risk of unemployment (1.188) with the addition of Asian immigrants (1.148). However, Eastern European immigrant women no longer presented a significantly different risk of unemployment than natives.

Other characteristics contributing to increased odds of unemployment entry included: young age, cohabitation with children for men, and single parenthood for women both before and during recession. High levels of education were associated with decreased odds of unemployment entry across gender and time. But for men before the recession, no significant differences between compulsory and upper secondary education existed. Length of time in Sweden had little significant impact on the risk of entering unemployment among men prior to recession. Even during the recession, only the shortest staying immigrants (0-4 years) were more likely to enter unemployment. Women, however, showed more significant trends with shorter stays resulting in higher likelihoods of unemployment entry both before and during the recession. Earlier analysis suggested that employment within the elderly and disabled care sector was associated with more remote rural localities compared to large urban localities. Before the recession, men living in small urban and remote rural localities were significantly less likely to become unemployed (odds ratios of 0.706 and 0.762) while for women all localities outside the cities had significantly lower odds. During the recession, however, locality of residence held no significant differences. Among women, the odds of entering unemployment remained low and statistically significant for women residing in accessible rural (0.911) and remote rural localities (0.933).

Table 4.10 Summary statistics of variables used in the binomial logistic regressions estimating the odds of unemployment entry in the elderly and disabled care sector (by gender) in Sweden, 2006-2007 and 2008-2009

	2006-2007				2008-2009			
	Men		Women		Men		Women	
	N	%	*N*	%	*N*	%	*N*	%
Origin								
Native	23,620	75.5	196,577	84.6	24,754	73.5	200,907	83.0
Nordic	706	2.3	8,406	3.6	702	2.1	8,486	3.5
Western Europe and North America	484	1.5	1,583	0.7	548	1.6	1,762	0.7
Eastern Europe	1,267	4.0	9,779	4.2	1,423	4.2	11,216	4.6
Latin America	1,040	3.3	3,248	1.4	1,123	3.3	3,714	1.5
Middle East and North Africa	1,963	6.3	4,986	2.1	2,444	7.3	6,215	2.6
Sub-Saharan Africa	1,349	4.3	3,443	1.5	1,656	4.9	4,442	1.8
Asia and Oceania	863	2.8	4,457	1.9	1,018	3.0	5,381	2.2
Age								
20-34 years	13,391	42.8	69,778	30.0	13,602	40.4	70,462	29.1
35-49 years	10,402	33.2	86,916	37.4	11,347	33.7	89,945	37.1
50-64 years	7,499	24.0	75,785	32.6	8,719	25.9	81,716	33.7
Household								
Cohabiting without children	5,501	17.6	58,485	25.2	6,222	18.5	62,219	25.7
Cohabiting with children	9,014	28.8	76,085	32.7	9,805	29.1	77,015	31.8
Single	15,800	50.5	72,808	31.3	16,631	49.4	77,488	32.0
Single parent	977	3.1	25,101	10.8	1,010	3.0	25,400	10.5
Education								
Compulsory school	3,903	12.5	25,261	10.9	4,184	12.5	25,054	10.4
Upper secondary school	23,076	74.2	186,390	80.4	24,619	73.5	193,488	80.1
University	4,139	13.3	20,240	8.7	4,678	14.0	23,013	9.5
Years in Sweden								
0-4	980	3.1	2,910	1.3	1,212	3.6	3,613	1.5
5-9	1,353	4.3	5,335	2.3	1,580	4.7	5,978	2.5
10-19	3,348	10.7	14,611	6.3	3,478	10.3	16,313	6.7
20 or more	25,576	81.8	209,270	90.2	27,371	81.4	215,892	89.3
Locality								
Large urban	16,129	51.5	82,670	35.6	16,297	48.4	78,924	32.6
Small urban	3,631	11.6	24,203	10.4	3,005	8.9	20,332	8.4
Accessible rural	4,256	13.6	47,076	20.2	5,947	17.7	56,852	23.5
Remote rural	7,276	23.3	78,530	33.8	8,419	25.0	86,015	35.5
N	31,292	100.0	232,479	100.0	33,668	100.0	242,123	100.0

Source: Author's calculations of the Linnaeus database.

Table 4.11 Binomial logistic regressions estimating the odds of unemployment entry in the elderly and disabled care sector (by gender) in Sweden, 2006-2007 and 2008-2009

	2006-2007		2008-2009	
	Men	Women	Men	Women
Origin (ref. Native)				
Nordic	1.173	0.929	0.753	1.074
	(0.190)	(0.059)	(0.194)	(0.057)
Western Europe and North America	1.231	1.193	0.876	1.144
	(0.224)	(0.110)	(0.206)	(0.106)
Eastern Europe	1.074	0.856*	1.041	0.893
	(0.172)	(0.068)	(0.142)	(0.061)
Latin America	1.074	1.053	0.944	1.039
	(0.159)	(0.078)	(0.135)	(0.072)
Middle East and North Africa	1.676***	1.184*	1.366***	1.188**
	(0.146)	(0.074)	(0.117)	(0.064)
Sub-Saharan Africa	0.934	0.953	0.896	0.925
	(0.177)	(0.084)	(0.140)	(0.074)
Asia	1.022	0.998	0.882	1.148*
	(0.174)	(0.069)	(0.150)	(0.061)
Age (ref. 20-34 years)				
35-49 years	0.483***	0.256***	0.433***	0.224***
	(0.064)	(0.023)	(0.056)	(0.023)
50-64 years	0.459***	0.304***	0.473***	0.239***
	(0.075)	(0.026)	(0.060)	(0.026)
Household (ref. Single)				
Cohabiting without children	0.926	1.132***	0.844**	0.970
	(0.074)	(0.028)	(0.063)	(0.027)
Cohabiting with children	0.602***	1.234***	0.637***	1.043
	(0.069)	(0.023)	(0.057)	(0.022)
Single parent	0.972	1.243***	1.106	1.124***
	(0.145)	(0.031)	(0.119)	(0.030)
Education (ref. Compulsory school)				
Upper secondary school	0.886	0.759***	0.759***	0.683***
	(0.074)	(0.027)	(0.060)	(0.025)
University	0.589***	0.632***	0.531***	0.543***
	(0.108)	(0.040)	(0.088)	(0.038)
Years in Sweden (ref. 20 years or more)				
0-4 years	1.036	1.395***	1.357*	1.453***
	(0.177)	(0.082)	(0.138)	(0.071)
5-9 years	1.154	1.200*	1.202	0.008**
	(0.156)	(0.072)	(0.131)	(0.064)
10-19 years	0.944	1.173*	1.053	1.103
	(0.138)	(0.062)	(0.116)	(0.056)
Locality (ref. Large urban)				
Small urban	0.706***	0.932*	0.880	0.947
	(0.087)	(0.030)	(0.079)	(0.032)
Accessible rural	0.883	0.909***	0.915	0.911***
	(0.084)	(0.026)	(0.064)	(0.024)
Remote rural	0.762***	0.871***	0.946	0.933**
	(0.072)	(0.023)	(0.058)	(0.022)
Constant	0.114***	0.163***	0.172***	0.219***
	(0.079)	(0.031)	(0.066)	(0.029)
Log likelihood	12532,031	100544,469	16439,303	105230,342
Nagelkerke R^2	0.039	0.065	0.043	0.087
N	31,084	231,540	33,454	241,229

Note: The reference category of dependent variable includes those staying employed (having been employed in the elderly and disabled care sector). *=p<0.05; **=p<0.01; ***=p<0.001. Coefficients shown are odds ratios. Standard errors are in parentheses.
Source: Author's calculations of the Linnaeus database.

4.4 Conclusion

This chapter set out to address three research questions: 1) 'Is there an immigrant division of labour in Sweden?' 2) 'Has the immigrant division of labour changed as a result of recession or other economic processes?' and 3) 'Is there a geographical change to the immigrant division of labour over the course of these economic processes?' To answer these questions, the analysis was undertaken in two main steps. Firstly, long-term labour market patterns were observed by examining individual-level data for two cross-sections in time (1990 and 2008), labour market niches were identified before three case-study sectors were examined in more detail, including further descriptive analysis and multiple logistic regression models. Secondly, short-term labour market patterns were observed by examining individual-level data for two cross-sections identifying the economic boom (2006-2007) and bust (2008-2009). Unemployment entry rates from all sectors were examined before focus was given to the three case-study sectors, again including further descriptive analysis and multiple regression models.

In response to the first question, there are several points of evidence to suggest that there is an immigrant division of labour in Sweden. Firstly, there is evidence that the Swedish labour market is highly divided by origin and gender. Notable patterns are that Natives niche in very different sectors to the immigrant population and that among the immigrant population there are certain sectors are more characteristic of some origin groups and gender than others. Secondly, there is evidence of an immigrant origin hierarchy within particular sectors of the labour market. For example, it became evident that the manufacturing sector was more associated with Nordic and Eastern European immigrants whereas service-oriented sectors such as hotels and restaurants, and elderly and disabled care, were associated with immigrants originating from outside of Europe. Thirdly, there are important gender differences between native and immigrant labour market positions. One clear example of this is in the hotels and restaurant sector that despite presenting higher shares of employment among women than men for Natives and Nordic immigrants, the opposite was shown for all other immigrant groups, particularly Asian men who were 13 times more likely to work in this sector than natives in 2008. Another example of where gender patterns are evident is the elderly and disabled care sector. Despite being associated with female work, 5 per cent of Latin

American men worked in this sector and as much as 10 per cent for Sub-Saharan African men in 2008.

While the first question was relatively easy to answer, the second question is more challenging due to the methodological challenges of measuring recession effects (see Chapter 3). The first stage of analysis presented results indicating that the immigrant division of labour has changed over time between 1990 and 2008. Aggregate and individual-level data suggest that employment in the manufacturing sector has been decreasing whereas employment in service-oriented sectors, such as hotels and restaurants, and elderly and disabled care, has increased. Despite all immigrants having higher odds of employment in this sector than natives in 1990, only Nordic, Eastern European and Western Europe and North American immigrants still had higher odds in 2008. This highlights that economic restructuring has coincided with a changing immigrant origin hierarchy in the manufacturing sector. Similarly, between the two time periods, the proportion of immigrants from Western Europe and North America had decreased in the hotels and restaurant sector while the opposite had occurred for men from the Middle East and North Africa.

In terms of recession effects, it is more difficult to assess whether these have changed the division of labour or not. The analysis showed that between the periods of economic boom and bust, the manufacturing sector was associated with some of the highest rates of unemployment entry. Considering this sector still employs many immigrants, the issue raised is whether or not immigrants faced equal risks of unemployment or whether the origin hierarchy identified presented differentiated risks of unemployment entry. An interesting finding was that although immigrant men from Nordic, Western Europe and North America presented higher odds of unemployment entry than natives in the period of economic boom, there were no significant differences during the recession. Furthermore, women from the same groups had no significant differences to natives in the period of economic boom but were actually significantly less likely to become unemployed than natives. One theoretical explanation behind this pattern may be that immigrant men and women from these origin groups represent a complementary labour supply because they are either less or no more likely to become unemployed during recession as natives. To truly test this theory would require more sophisticated analysis framework. Nonetheless, this example highlights how between

periods of economic boom and bust, unemployment risks between immigrants and natives can change. Although it is not possible say whether the immigrant division of labour has changed because of the recession on an aggregate scale, the analysis shows that within sectors, there are differential unemployment risks that are likely to have resulted in overall changes in the employment composition within the sector.

Similarly to the previous research question, addressing the third question is challenging due to the fact that it deals with both temporal and spatial processes. Firmer conclusions can be drawn from the geographical analysis of the long-term economic change. For example, the analysis showed that manufacturing has been in long-term decline that is very likely connected to economic restructuring. At the same time, the other two sectors have experienced gains a long interval of time. The regression analyses showed that regardless of time period or gender, employment probabilities were significantly higher outside large urban localities and especially rural localities. In contrast, the odds of employment in the hotels and restaurant sector were significantly lower outside large urban localities (except for women in small urban localities) and while there were higher probabilities of employment in the elderly and disabled care sector in remote rural localities. By considering both aspects, it is possible that due to the spatial differences associated with the sectors, and the changing pattern of the immigrant division of labour reflected by them, that over long-term economic change that the immigrant division of labour has been shaped and reshaped by the spatial characteristics of the sectors. For example, long-term decline in the predominantly rural-based manufacturing sector has resulted in higher probabilities of immigrants working in other sectors with other spatial patterns. One alternative is the predominantly urban-based hotels and restaurant sector. The other could be the predominantly rural-based elderly and disabled care sector.

In terms of recession and geographical changes in the immigrant division of labour, it is even more difficult to draw solid conclusions based on the empirical analysis. During the periods of economic boom and bust, the regression analyses of unemployment entry for the three sectors presented unclear results. For example, in the manufacturing sector, during the economic boom, men had significantly lower odds of entering unemployment in all localities outside large urban localities whereas women had no significant differences. During the economic recession, residing in small urban

localities was associated with higher risks of unemployment entry for both men and women. Meanwhile, there were no significant geographical differences in the risk of unemployment entry in the hotels and restaurant sector (apart from small urban localities presenting higher odds for men in recession period). In the elderly and disabled care sector, the odds of unemployment entry were significantly lower outside large urban localities during the boom for both men and women but only for women during the bust. What then does can this say about the recession and geography of the immigrant division of labour? A speculative answer is that due to the spatial differentiation of the case-study sectors, and the differentiated risks that are associated with them in recession, the geography of the immigrant division of labour may be being transformed.

As a final conclusion, it is worth considering where the findings and approach of this chapter fit within existing theorisations of immigrant niches and divisions of labour. Two areas where this chapter has moved beyond existing studies are in terms of time and space. Unlike the US literature that has focussed more specifically on how economic restructuring drives succession and sectoral relocation of immigrant labour within metropolitan regions (Wright and Ellis, 1996, 1997), or UK literature that focussed specifically on a period of unprecedented economic expansion (Wills *et al.*, 2010), this chapter has considered both long-term and short-term economic processes that have the ability to shape and reshape the immigrant division of labour. Similarly, while literature in the US and UK has focussed on large metropolitan labour market regions, and especially global cities, this chapter brings a broader regional perspective that engages with debates concerning how immigrant labour can have an important role across different urban and rural areas when contextualised in relation to recessions (Findlay *et al.*, 2010).

Chapter 5
Internal Migration of Immigrants and Economic Processes: 'Moving' Beyond the Business Cycle?

5.1 Introduction

According to economic theory, migration is pro-cyclical with migration rates high during the peak of the business cycle as a reflection of employment opportunities, and low during recessions when employment opportunities are scarce (Milne, 1993). The recent economic recession has been largely interpreted as a result of a particularly severe downturn in the short-term business cycle and it is therefore unsurprising that theories about the impacts on migration are taken from knowledge of migration across the business cycle. However, as Fielding (2012) has argued, such views concerning economic processes and migration are oversimplified and the real world can be rather more complicated. This is particularly the case when considering immigrants, who can be more spatially mobile than natives even when controlling for a range of mobility-related individual attributes (Andersson, 2012), and have migration patterns resembling a heterolocalism model that may include both concentration in, or dispersal from, metropolitan regions (Sabater *et al.*, 2012). By adding an immigrant dimension, the relationship between migration and economic processes will be discussed in this chapter in order to address the following research questions:

1) Do internal migration flows (prior to disaggregation by immigrant origin) show temporal variations in line with economic literature?

2) Do internal migration flows (prior to disaggregation by immigrant origin) show temporal-spatial variations consistent with the conceptual framework advanced by Fielding?

3) Do similar patterns remain, or are different internal migration patterns observed when such flows are disaggregated by immigrant origin?

Following the empirical results of this chapter, discussion will return to how these results compare with Andersson (2012) and Sabater *et al*. (2012).

5.2 Internal Migration Propensity and Recession

5.2.1 Inter-Municipal Migration Flows

Recessions and the timing of migration may present variations dependent on whether individuals anticipate economic downturns in their migration decisions, or whether their decisions to migrate are lagged (see Figure 3.1). Nonetheless, according to economic theory migration should be pro-cyclical with higher rates during the peak of the business cycle and lower rates during the trough. Using aggregate migration data at the municipality level, and by highlighting major recessions, it is possible to begin addressing the first research question. Figure 5.1 shows that Sweden has had three major recessions in which internal migration has also declined. Patterns during the periods before and after the recessions suggest that migration behaves pro-cyclically because it is increasing to a peak, decreasing into a trough, before increasing again in the recovery period. Nonetheless, when examining the figure more closely, migration may be reflecting longer-term trends such as the decline between 1973 and 1983 and the gradually increase from then onwards.

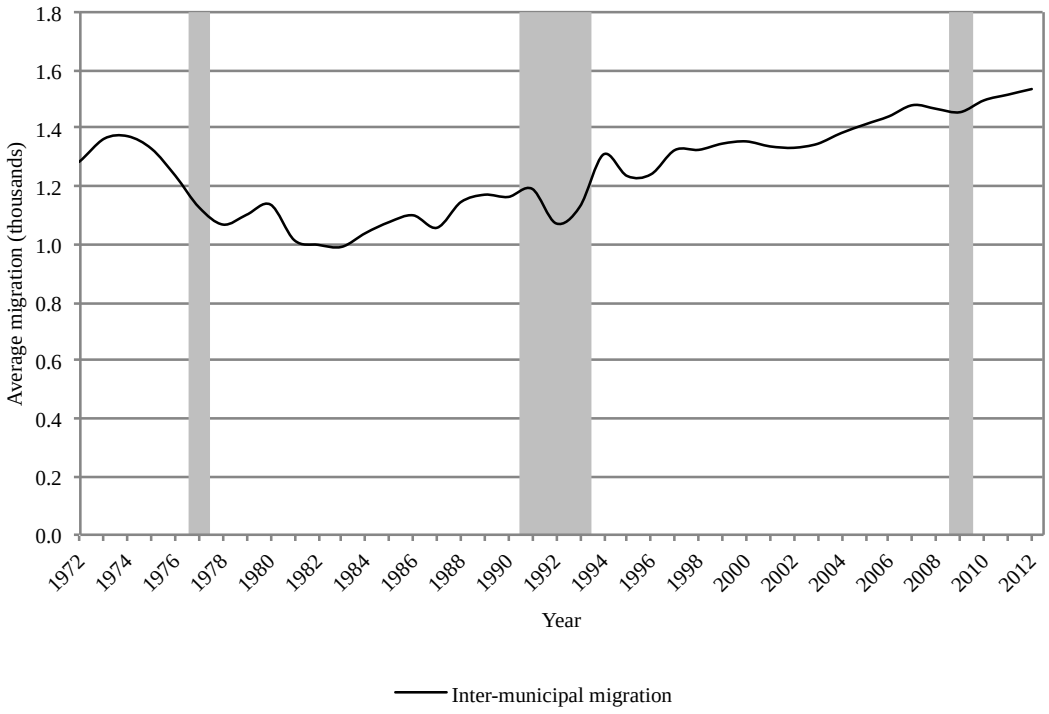

Figure 5.1 Inter-municipal migration in Sweden, 1972-2012
Note: Shaded bars indicate recessions using Edvinsson's (2010:404) definition.
Source: Author's calculations of Statistics Sweden (2013g, 2013h).

5.2.2 Internal Migration Flows by Distance

A limitation of the data used in Figure 5.1 was that it only accounted for inter-municipal migration. This was not only sensitive to the overall number of municipalities in Sweden but also the changing of municipal boundaries. A result of this could therefore be the registration of inter-municipal migrations when in reality the residence was in the same location as the previous year. Figures in Table 5.1 were derived using co-ordinates for individuals' residences to examine migration frequencies and percentages across different distances for the period prior to the recession (2006-2007) and the period during the onset of the recession (2008-2009). On the whole, there have been marginal declines in migration frequencies and percentages across all distances. Taken as a percentage change between the two periods, the greatest changes have occurred for longer distances (-6.4 per cent for > 100 km and -6.4 per cent for > 150 km). This measure was, however, sensitive to overall changes in the total reference population that had increased over time. Looking instead to the difference between the percentages for each time period, shorter distance migration has actually decreased more during the recession (-0.3 per cent for moves > 10 km). Overall, these findings provide further support that internal migration flows may have been pro-cyclical even when measured using different methods.

Table 5.1 Frequencies and percentages of distances internally migrated in Sweden, 2006-2007 and 2008-2009

	2006-2007		2008-2009		Difference		
	N	%	*N*	%	*N*	%[a]	%[b]
> 10 km	285,146	5.4	272,108	5.1	-13,038	-4.6	-0.3
> 50 km	134,053	2.5	126,291	2.4	-7,762	-5.8	-0.2
> 100 km	99,466	1.9	93,120	1.7	-6,346	-6.4	-0.1
> 150 km	82,274	1.6	77,093	1.4	-5,181	-6.3	-0.1
Total population	5,271,807		5,344,532		72,725	1.4	

Note: The numerator is the population migrating over 10, 50, 100, and 150 km. The dominator is the total population for 2006 and 2008. [a] Represents the percentage growth change and [b] represents the difference of percentage.
Source: Author's calculations of the Linnaeus database.

5.2.3 Internal Migration Flows by Origin

An area of research that is currently limited is the extent to which recessions effect the internal migration of immigrant populations. According to research on international migration, the recession is more likely to affect economic immigrants, such as labour immigrants (Fix *et al.*, 2009; Fielding, 2012). An interesting question is whether or not the same can be expected for internal migration? Table 5.2 disaggregates migration flows by immigrant origin. While it is acknowledged that data restrictions limit the analysis from identifying grounds of settlement (3.5.4 and Table 3.6), one can speculate that immigrants from outside Europe are more likely to be refugees or family-reunification. During the period of economic boom, the group most likely to migrate were Sub-Saharan Africans (3.9 per cent) and the group least likely were Nordic (1.7 per cent). When comparing the rates between the economic boom and bust, it is evident that while migration has decreased across all groups, the decrease has been very marginal. For example, migration of Eastern Europeans decreased the most (-0.3 change in rates) while migration for immigrants from Western Europe and North Americans decreased the least (-0.1 change in rates). These findings suggest that transferring the theoretical expectations of international migration to internal migration can be problematic. In addition to different immigrant origins explaining differences in migration rates, the relationship between migration and origin differences are also highly dependent on compositional factors, such as life-stage and cohort.

Table 5.2 Internal migration over 50 km (by origin) in Sweden, 2006-2007 and 2008-2009

	2006-2007		2008-2009		Difference		
	N	%	*N*	%	*N*	%[a]	%[b]
Native	112,518	2.5	103,968	2.3	-8,550	-7.6	-0.2
Nordic	2,909	1.7	2,501	1.5	-408	-14.0	-0.2
Western Europe and North America	1,937	2.4	2,030	2.3	93	4.8	-0.1
Eastern Europe	4,626	2.3	4,626	2.0	0	0.0	-0.3
Latin America	1,536	2.9	1,569	2.7	33	2.1	-0.1
Middle East and North Africa	4,994	3.1	5,395	2.9	401	8.0	-0.2
Sub-Saharan Africa	1,833	3.9	2,174	3.8	341	18.6	-0.1
Asia	3,700	3.2	4,028	3.0	328	8.9	-0.2
Total migrant population	134,053		126,291		-7762	-5.8	

Note: The numerator is the population migrating over 50 km. The dominator is the total population for 2006 and 2008. [a] Represents the percentage growth change and [b] represents the difference of percentage.
Source: Author's calculations of the Linnaeus database.

Figure 5.2 shows how, during 2006-2007, migration propensity by age is similar across origin groups, in that it was much greater during young ages and declined rapidly with age. However, there were differences in this pattern across origin groups. Natives had a higher propensity to migrate at younger ages compared to almost all other immigrant groups. But as age increases, this pattern was reversed, and resulted in higher migration propensity among many immigrants in older age groups.

In Figure 5.3 the cohort effects of immigrants are examined in terms of 'years in Sweden' relative to the latest year of immigration. In comparison to age, years in Sweden and migration propensity showed much greater variation across origin groups and time. As expected, those who had been in Sweden the shortest time were more mobile than those who had been there longer. However, this pattern was by no means linear because several spikes can be observed. While migration is evident in the most recent years across several immigrant origin groups, many of spikes in internal migration correspond with cohorts that arrived during particular historical conflicts. For example, Eastern Europeans show a spike that corresponds to the large increase of refugees from the former Yugoslavia in 1994. Latin Americans show a spike in internal migration relating to those who last arrived in Sweden in 1989. This is most likely connected to the refugees from Chile during the rule of General Pinochet. In addition to these, there are multiple spikes among the Sub-Saharan African immigrant group which is, again, very likely to be related to conflict in numerous African countries resulting in increasing numbers of refugees.

What is striking about this cohort decomposition is that even after some immigrants have spent the majority of their lives in Sweden, those who were likely to be from a refugee cohort upon arrival in Sweden were still more likely to migrate internally than those who arrived in Sweden within other cohorts. This reinforces the importance of controlling for years in Sweden when studying differences in immigrant internal migration behaviour.

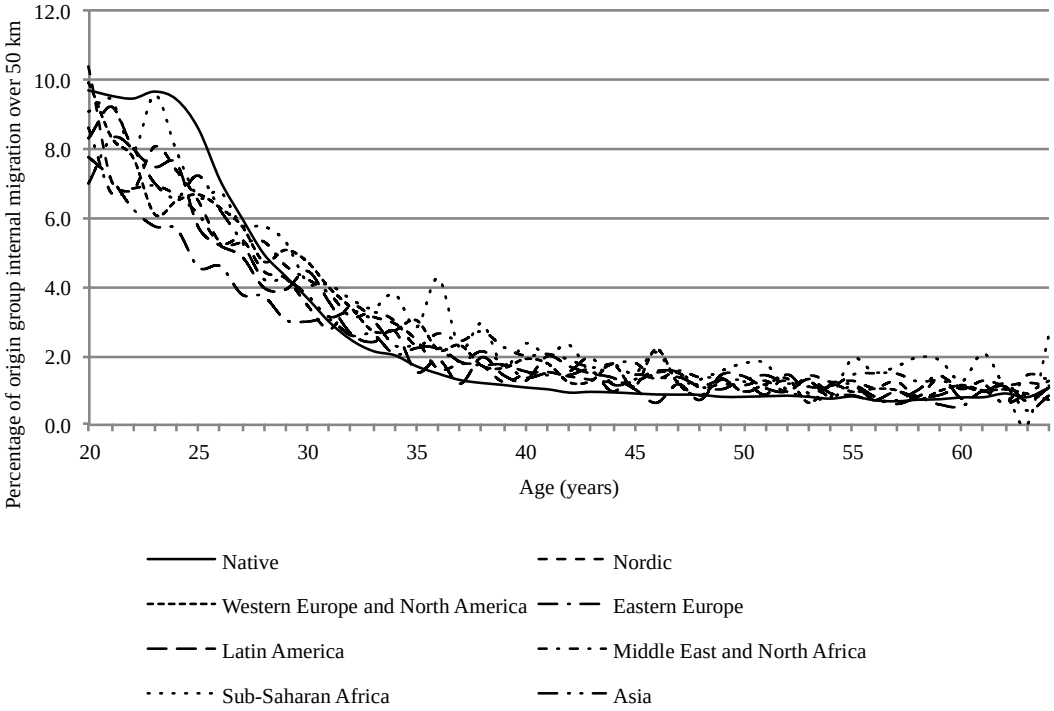

Figure 5.2 Internal migration over 50 km (by age and origin) in Sweden, 2006-2007
Source: Author's calculations of the Linnaeus database.

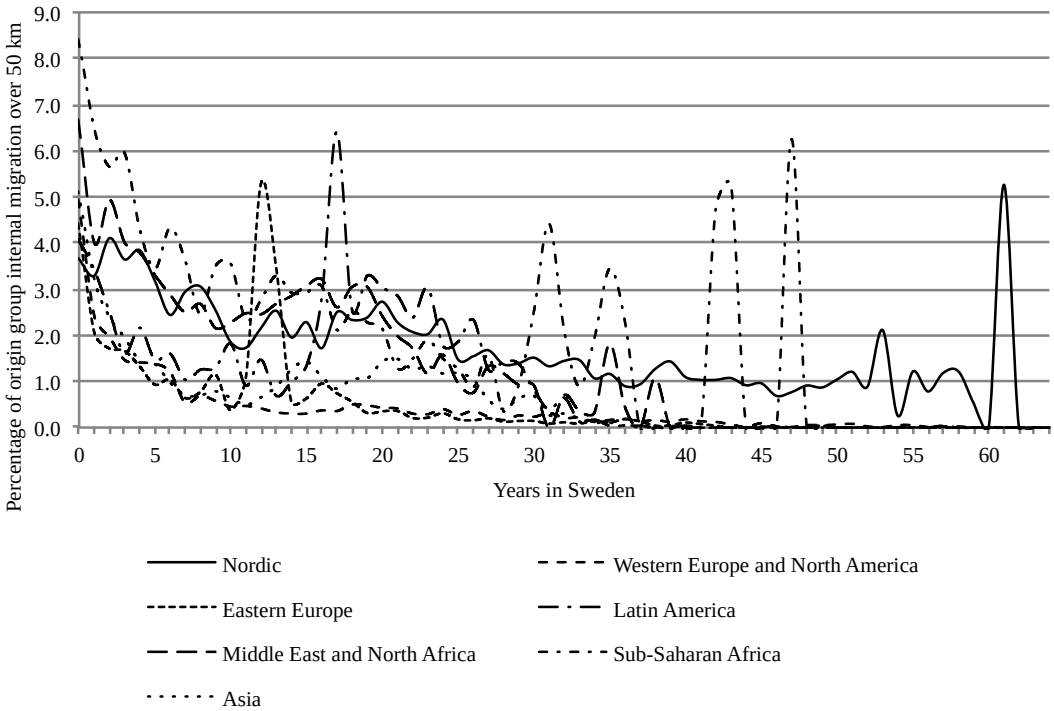

Figure 5.3 Internal migration over 50 km (by years in Sweden and origin) in Sweden, 2006-2007
Source: Author's calculations of the Linnaeus database.

5.2.4 Modelling Internal Migration by Origin

Although origin differences have been observed using descriptive statistics (shown in Table 5.2), origin differences may disappear after taking into account other socio-demographic and spatial characteristics when modelled in a regression. Table 5.3 presents the summary statistics of the variables used in the binary logistic regression models estimating migration over 50 km shown in Table 5.4. For both periods two models are presented, one model including both natives and immigrants, and the other with only immigrants. This allows differences between natives and immigrants to be explored and then differences within immigrants after controlling for years of residence in Sweden.

When controlling for other characteristics during the boom period (2006-2007), it emerges that, with the exception of Western Europe and North America, and Latin America, the other immigrant groups were significantly different to the native population. While those from Eastern Europe were less likely to migrate (odds ratio of 0.908), the other groups were more likely, particularly those from Sub-Saharan Africa, and the Middle East and North Africa (odds ratios of 1.282 and 1.174). When the immigrant population is studied separately from natives, the overall pattern remains the same with Sub-Saharan Africans having been the most mobile (odds ratio of 1.437), followed by the Middle East and North Africa (odds ratio of 1.387). No significant differences were present between Nordic immigrants and those from Western Europe and North America, and Eastern Europe. In 2008-2009, Latin Americans were significantly more mobile than natives (odds ratio of 1.098). Eastern Europeans remained significantly less mobile than natives (odds ratio of 0.853). When immigrants are modelled separately, the Eastern European group were significantly less likely to migrate than the Nordic reference group (odds ratio of 0.909) while the order in which group was most mobile remains the same as the economic boom period.

Although the other independent variable characteristics are not the primary focus this chapter, it is worth noting some of the patterns as they may offer some suggestions as to why there have been increasing differences between origin groups when examining before and during the recession. In terms of demographic characteristics, an increase in age was associated with a decrease in migration and little change was observed between the two time periods. Gender shows an interesting

difference between the total population and the immigrant population whereby the former was associated with greater odds of women migrating and the opposite for the latter. Household characteristics show intuitive results whereby migration was associated across all models (regardless of time period), and that single person households were more mobile while those cohabiting with children were the opposite. Higher levels of education are commonly found to be associated with migration in the broader literature and evidence from the regression models here support this. For example, individuals with university education were 2.437 times more likely to migrate than those with compulsory education. Among the immigrant population, the odds ratio for university education was 1.761. During the recession, university education produced an odds ratio of 2.084 among the total population and 1.543 among the immigrant population. Individuals who had recently immigrated were generally associated with higher rates of subsequent mobility than those who had been longer-term residents (odds ratio 0.993 during boom and 0.987 during bust). Stable employment was an indicator that an individual had settled and this associated with lower odds of internal migration. Unemployment, on the other hand, was associated with the highest odds of internal migration for both the total population, and immigrant population, during the period of economic boom and bust.

Last but not least, significant geographical differences can be observed with regards to different urban and rural localities. In the pre-recession period, the overall population residing in small urban and remote rural localities was associated with greater odds of migration than large urban localities (1.580 and 1.423), whereas the accessible rural population was less likely to migrate (0.899). The immigrant population during the same period, however, also showed greater odds of migration in accessible rural localities too (1.390). As these variables were examined during the period entering the recession, the overall patterns remained the same except that in the model with natives and immigrants, those located in small urban localities were more mobile than those in remote rural localities (1.652 as opposed to 1.504). The findings so far can confirm that, having controlled for various individuals' socio-demographic and spatial characteristics, native and immigrant-origin differences persisted in terms of migration both during the economic boom and bust.

Table 5.3 Summary statistics of variables used in the binomial logistic regressions estimating the odds of internal migration over 50 km in Sweden, 2006-2007 and 2008-2009

	2006-2007		2008-2009	
Categorical variables	*N*	%	*N*	%
Dependent variable				
Non-migrant	5,137,754	97.5	5,218,241	97.6
Migrant	134,053	2.5	126,291	2.4
Origin				
Native	4,447,158	84.4	4,433,623	83.0
Nordic	168,527	3.2	161,429	3.0
Western Europe and North America	81,173	1.5	89,005	1.7
Eastern Europe	201,687	3.8	228,195	4.3
Latin America	53,467	1.0	57,382	1.1
Middle East and North Africa	158,968	3.0	185,520	3.5
Sub-Saharan Africa	46,842	0.9	56,693	1.1
Asia	113,985	2.2	132,685	2.5
Gender				
Man	2,668,127	50.6	2,705,507	50.6
Woman	2,603,680	49.4	2,639,025	49.4
Household				
Cohabiting without children	1,309,994	24.8	1,313,822	24.6
Cohabiting with children	1,693,129	32.1	1,715,857	32.1
Single	1,987,244	37.7	2,036,873	38.1
Single parent	281,440	5.3	277,980	5.2
Education				
Compulsory school	836,213	15.9	794,371	14.9
Upper secondary school	3,332,248	63.2	3,365,685	63.0
University	1,022,230	19.4	1,099,589	20.6
Unknown	81,116	1.5	84,887	1.6
Labour market status				
Employed	4,066,421	77.1	4,192,744	78.4
Unemployed	502,678	9.5	417,351	7.8
Inactive	702,708	13.3	734,437	13.7
Locality				
Large urban	2,497,879	47.4	2,359,737	44.2
Small urban	465,480	8.8	373,841	7.0
Accessible rural	1,077,868	20.4	1,297,804	24.3
Remote rural	1,230,580	23.3	1,313,150	24.6
Continuous variables	Mean	SD	Mean	SD
Age	42.3	12.8	42.2	12.9
Age²	1954.3	1089.0	1947.1	1095.3
Years in Sweden	16.7	13.1	16.2	13.2
Years in Sweden²	450.9	589.4	437.5	595.0
N	5,271,807		5,344,532	

Source: Author's calculations of the Linnaeus database.

Table 5.4 Binomial logistic regression estimating the odds of internal migration over 50 km in Sweden, 2006-2007 and 2008-2009

	2006-2007		2008-2009	
	All	Immigrant	All	Immigrant
Origin (ref. Native)				
Nordic	1.125***		1.114***	
	(0.019)		(0.021)	
Western Europe and North America	0.990	1.006	0.981	0.998
	(0.024)	(0.031)	(0.023)	(0.032)
Eastern Europe	0.908***	0.971	0.853***	0.909***
	(0.016)	(0.026)	(0.016)	(0.027)
Latin America	0.986	1.169***	1.098***	1.294***
	(0.027)	(0.034)	(0.026)	(0.035)
Middle East and North Africa	1.174***	1.387***	1.235***	1.435***
	(0.016)	(0.027)	(0.015)	(0.028)
Sub-Saharan Africa	1.282***	1.437***	1.413***	1.565***
	(0.025)	(0.033)	(0.023)	(0.033)
Asia	1.049**	1.199***	1.073***	1.235***
	(0.018)	(0.027)	(0.017)	(0.028)
Age	0.827***	0.883***	0.826***	0.885***
	(0.002)	(0.005)	(0.002)	(0.004)
Age²	1.002***	1.001***	1.002***	1.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Woman (ref. Man)	1.018**	0.900***	1.057***	0.894***
	(0.006)	(0.015)	(0.006)	(0.014)
Household (ref. Single)				
Cohabiting without children	0.791***	0.612***	0.754***	0.611***
	(0.008)	(0.021)	(0.008)	(0.020)
Cohabiting with children	0.394***	0.422***	0.373***	0.428***
	(0.008)	(0.018)	(0.009)	(0.018)
Single parent	0.633***	0.642***	0.639***	0.690***
	(0.014)	(0.031)	(0.014)	(0.030)
Education (ref. Compulsory school)				
Upper secondary school	1.337***	1.215***	1.297***	1.165***
	(0.010)	(0.020)	(0.010)	(0.019)
University	2.437***	1.761***	2.084***	1.543***
	(0.011)	(0.024)	(0.011)	(0.023)
Unknown	0.953*	1.171***	0.891***	1.059*
	(0.021)	(0.028)	(0.022)	(0.028)
Years in Sweden		0.993***		0.987***
		(0.002)		(0.020)
Years in Sweden²		1.000		1.000
		(0.000)		(0.000)
Labour Market Status (ref. Employed)				
Unemployed	1.825***	1.569***	1.832***	1.546***
	(0.007)	(0.019)	(0.008)	(0.019)
Inactive	1.554***	1.297***	1.478***	1.206***
	(0.009)	(0.018)	(0.009)	(0.017)
Locality (ref. Large urban)				
Small urban	1.580***	2.833***	1.652***	2.821***
	(0.009)	(0.021)	(0.010)	(0.023)
Accessible rural	0.899***	1.390***	0.954***	1.315***
	(0.009)	(0.026)	(0.009)	(0.021)
Remote rural	1.423***	2.852***	1.504***	3.018***
	(0.080)	(0.020)	(0.008)	(0.018)
Constant	1.973***	0.505***	1.941***	0.485***
	(0.033)	(0.088)	(0.034)	(0.086)
Log likelihood	1093777,642	181155,472	1047715,911	190456,089
Nagelkerke R^2	0.138	0.102	0.136	0.102
N	5,271,807	824,649	5,344,532	910,909

Note: The reference category of the dependent variable includes no migration and migration of less than 50 km. *=p<0.05; **=p<0.01; ***=p<0.001. Coefficients shown are odds ratios. Standard errors are in parentheses.

Source: Author's calculations of the Linnaeus database.

5.3 Internal Migration to and from Metropolitan Regions

5.3.1 Net Internal Migration for Metropolitan Municipalities

To begin addressing the second research question, internal migration to and from the metropolitan regions was analysed to test whether Fielding's paradox of the London region was comparable to metropolitan regions in Sweden during the recent economic recession. If Fielding's ideas were transferred to the Swedish context, one would expect net migration losses to metropolitan regions during economic boom and net gains during economic bust. In the same way that aggregate data were used earlier to highlight inter-municipal migration trends (Figure 5.1), similar data were used in Figure 5.4 to focus on Sweden's three metropolitan municipalities. Like average inter-municipal migration, net migration for the three municipalities has fluctuated over time. In the early 1970s, the metropolitan municipalities experienced net migration losses. This pattern may be associated with the 'migration turnaround' or 'green wave' that took place due to public sector jobs being redistributed across the country (Borgegard *et al.*, 1995). Despite the latter two observations, metropolitan municipalities have generally experienced net losses prior to recession and net gains during recession.

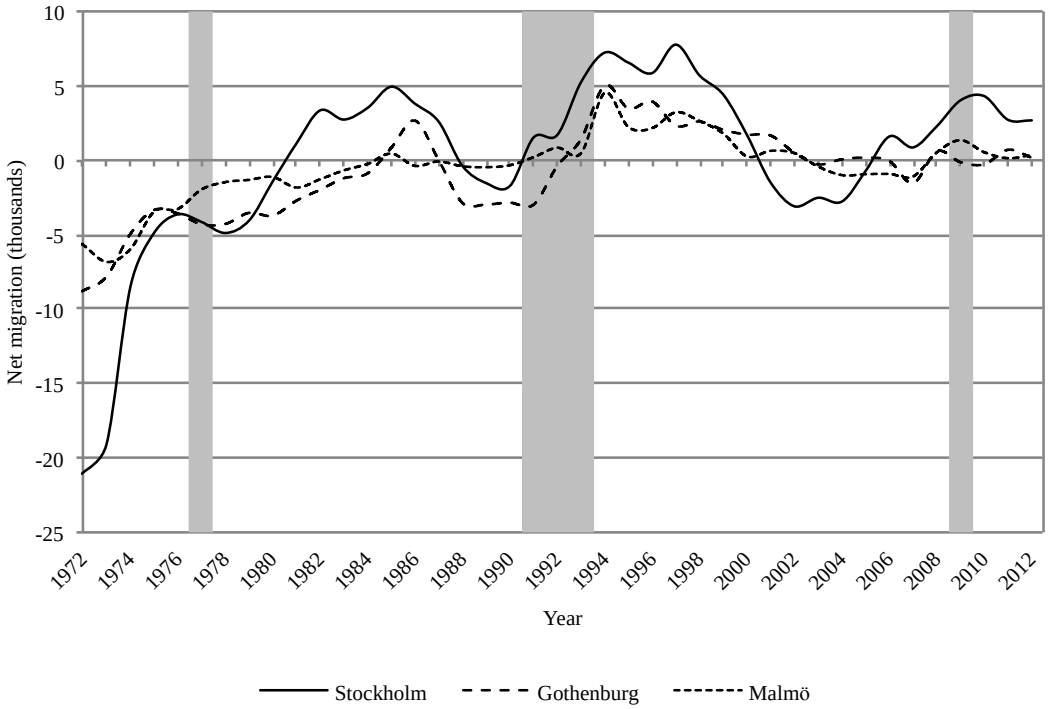

Figure 5.4 Net internal migration for metropolitan municipalities in Sweden, 1972-2012
Note: Shaded bars indicate recessions according to Edvinsson (2010:404).
Source: Author's calculations of Statistics Sweden (2013g, 2013h).

5.3.2 Net Internal Migration for Metropolitan Regions

Using the micro-level data it was possible to capture migration to and from metropolitan regions (Appendix 5). Migration was therefore confined to migration over 50 km and crossing a metropolitan region boundary (for example, outwith Stockholm and the 25 other municipalities within Greater Stockholm region). Table 5.5 shows that migration to metropolitan regions during the economic boom was generally higher in frequency than migration from metropolitan regions (37,108 as opposed to 28,240). Nonetheless, as a percentage of their base populations, migration from metropolitan regions was higher (1.4 per cent compared to 1.1 per cent). During this period, metropolitan regions were net losers of internal migrants (-8,868). During the recession, although migration to and from these regions decreased in number (-1,743 for metropolitan regions and -2,381 for non-metropolitan regions), metropolitan regions experienced a net gain of 9,506 internal migrants. This finding supports Fielding's hypothesis.

Extending from Fielding's work, Table 5.5 also breaks down migration from metropolitan regions into the four locality destinations constructed in the data. Migration to remote rural localities was the most evident (0.5 per cent), followed by large urban (0.5 per cent) and accessible rural localities (0.3 per cent). The least likely destinations were small urban localities (0.2 per cent). During the recession, migration decline was greatest for migration to remote rural localities (-1,117), followed by accessible rural and small urban localities (-508 and -380), and large urban localities (-370). As a change in the migration rates between the two time periods, only remote rural localities had a negative change that was visible within one decimal place.

Table 5.5 Internal migration over 50 km to and from metropolitan regions in Sweden, 2006-2007 and 2008-2009

	2006-2007		2008-2009		Difference		
	N	%	*N*	%	*N*	%[a]	%[b]
To metropolitan regions	37,108	1.1	35,365	1.1	-1,743	-4.7	-0.1
From metropolitan regions	28,240	1.4	25,859	1.2	-2,381	-8.4	-0.2
Net migration for metropolitan regions	-8,868		9,506				
Net migration for non-metropolitan regions	8,868		-9,506				
From metropolitan regions to:							
- Large urban localities	9,623	0.5	9,253	0.4	-370	-3.8	0.0
- Small urban localities	3,695	0.2	3,310	0.2	-385	-10.4	0.0
- Accessible rural localities	5,150	0.3	4,642	0.2	-508	-9.9	0.0
- Remote rural localities	9,772	0.5	8,655	0.4	-1,117	-11.4	-0.1

Note: The numerator is the population migrating over 50 km. The dominator is the total population for 2006 and 2008. [a] Represents the percentage growth change and [b] represents the difference of percentage.
Source: Author's calculations of the Linnaeus database.

5.3.3 Internal Migration to Metropolitan Regions by Origin

Recent immigrant groups of non-European origin in Sweden generally reside within the three metropolitan regions (Andersson, 2012). It could be expected that migration to these regions is more associated with such groups with a desire to congregate with co-nationalities (Rephann and Vencatasawmy, 2000; Åslund, 2005). However, due to the marginalised labour market situations of these very groups, and expensive and competitive housing markets in the metropolitan regions, the opposite trend may also be observed (Sabater *et al.*, 2012). Adding the temporal dimension of the recession to this relationship may lead to different patterns. On the one hand, groups may be less tied to the business cycle due to their association with refugee and family-reunification status and therefore show little variation over time. On the other hand, these groups may suffer greater disadvantages in labour and housing markets (Rydgren, 2004; Ahmed and Hammarstedt, 2008) and will be less likely to migrate into the metropolitan regions.

Table 5.6 shows that it in terms of frequencies, natives, those from the Middle East and North Africa, Eastern Europe, and Asia, were the most likely to migrate to the metropolitan region. In terms of migration rates, those most likely to migrate were from Sub-Saharan Africa (4.4 per cent), Latin America (2.8 per cent) and the Middle East and North Africa (2.8 per cent). During the recession, the frequency of native and Nordic migrants decreased and these groups declined the most as a change in percentage. In terms of differences between percentages migrating for each group between the two periods, the group experiencing the greatest decline was Sub-Saharan Africa (-0.6), followed by the Middle East and North Africa (-0.2).

Table 5.6 Internal migration over 50 km to metropolitan regions from non-metropolitan regions (by origin) in Sweden, 2006-2007 and 2008-2009

	2006-2007		2008-2009		Difference		
	N	%	*N*	%	*N*	%[a]	%[b]
Native	30,555	1.1	28,263	1.0	-2,292	-7.5	-0.1
Nordic	612	0.6	548	0.6	-64	-10.5	0.0
Western Europe and North America	571	1.7	582	1.5	11	1.9	-0.1
Eastern Europe	1,293	1.3	1,470	1.3	177	13.7	0.0
Latin America	507	2.8	540	2.8	33	6.5	0.0
Middle East and North Africa	1,708	2.8	1,908	2.6	200	11.7	-0.2
Sub-Saharan Africa	705	4.4	777	3.8	72	10.2	-0.6
Asia	1,157	2.3	1,277	2.2	120	10.4	-0.1

Note: The numerator is the population migrating over 50 km from metropolitan to non-metropolitan regions. The dominator is the total population in metropolitan regions in 2006 and 2008. [a] Represents the percentage growth change and [b] represents the difference of percentage.
Source: Author's calculations of the Linnaeus database.

5.3.4 Modelling Internal Migration to Metropolitan Regions

Regression models were created in order to test whether origin differences remain after controlling for other socio-demographic factors. Summary statistics for the logistic regression models are first presented in Table 5.7 while the main results are presented in Table 5.8. In contrast to the migration models presented earlier (Table 5.4), migration to metropolitan regions was associated with higher odds for all immigrant groups, with the most mobile group being Sub-Saharan Africa (odds ratio of 2.787), followed by the Middle East and North Africa (odds ratio of 2.071). When only immigrants are analysed, a similar pattern emerges whereby the non-European groups presented the greatest odds of migrating but no significant differences remained between Nordic and Eastern Europeans.

In 2008-2009, the difference between natives and immigrants, and Nordic immigrants and other immigrants, corresponds with the previously discussed descriptive statistics, as well as the models for the 2006-2007 period. The only minor differences are that the odds of Eastern European immigrants migrating compared to natives, is significant at the 0.001 level and that compared to Nordic immigrants, Eastern European immigrants are 1.135 times more likely to migrate than them (p <0.05). In line with the previous migration models (Table 5.4), age remained a significant determinant of migration. While no significant differences emerged between gender in the economic boom period, men during the economic bust were 1.068 times more likely to migrate than women when both immigrants and natives are studied, and among the immigrant population women were more likely to migrate (odds ratio of 0.933).

Household variables show that in comparison to the earlier migration models, cohabitation without children was associated with higher odds of migration among the total population (odds ratio of 1.060 during 2006-07 and 1.069 during 2008-09) but among the immigrant population single person households remained the most mobile. Migration to metropolitan regions, like migration overall, was more associated with higher levels of education before and during recession. Again, university education was associated with the highest odds ratios of migrating. Years in Sweden appear to have held a similar relationship as in the earlier migration models with the difference with regards to metropolitan migration was that during the recession it became insignificant.

Further contrasts between the regression models of migration to metropolitan regions to those of migration in general (Table 5.4) are that when studying the sample including both natives and immigrants, the odds of migration were significantly lower had the individual been residing outside large urban localities. This was apparent before and during the recession. However, when immigrants are studied separately, small urban localities were associated with higher odds of internal migration with an odds ratio of 1.176 in 2006-2007 and 1.181 in 2008-2009. Although no significant differences existed between remote rural localities and large urban localities among immigrants in 2006-2007, residing in remote rural localities in 2008-2009 was associated with being 1.117 times more likely to migrate to metropolitan regions than large urban localities.

The overall findings from these regression models provide further understandings of the spatial patterning of internal migration. In other words, there has been a spatial patterning of internal migration whereby metropolitan regions experienced gains during the recession, and these trends were more dominant among the immigrant population, especially non-European immigrants. During the recession, however, the same groups experienced a decline to a greater degree than those of Swedish or Nordic origin. So far, this addresses the spatial patterning of internal migration in terms of migration to metropolitan regions. Providing further understanding of the spatial patterning of internal migration, the next section explores migration from metropolitan regions.

Table 5.7 Summary statistics of variables used in the binomial logistic regressions estimating the odds of internal migration over 50 km from non-metropolitan regions to metropolitan regions in Sweden, 2006-2007 and 2008-2009

	2006-2007		2008-2009	
Categorical variables	*N*	%	*N*	%
Dependent variable				
Non-migrant	3,191,965	98.9	3,206,850	98.9
Migrant	37,108	1.1	35,365	1.1
Origin				
Native	2,853,708	88.4	2,827,789	87.2
Nordic	94,589	2.9	90,141	2.8
Western Europe and North America	34,472	1.1	38,333	1.2
Eastern Europe	101,195	3.1	113,147	3.5
Latin America	18,215	0.6	19,433	0.6
Middle East and North Africa	61,443	1.9	74,707	2.3
Sub-Saharan Africa	16,015	0.5	20,571	0.6
Asia	49,436	1.5	58,094	1.8
Gender				
Man	1,646,519	51.0	1,652,584	51.0
Woman	1,582,554	49.0	1,589,631	49.0
Household				
Cohabiting without children	866,908	26.8	865,115	26.7
Cohabiting with children	1,047,333	32.4	1,045,253	32.2
Single	1,147,900	35.5	1,168,006	36.0
Single parent	166,932	5.2	163,841	5.1
Education				
Compulsory school	552,259	17.1	518,281	16.0
Upper secondary school	2,128,528	65.9	2,139,396	66.0
University	510,022	15.8	544,332	16.8
Unknown	38,264	1.2	40,206	1.2
Labour market status				
Employed	2,504,850	77.6	2,557,210	78.9
Unemployed	310,124	9.6	253,485	7.8
Inactive	414,099	12.8	431,520	13.3
Locality				
Large urban	886,891	27.5	796,227	24.6
Small urban	448,920	13.9	361,586	11.2
Accessible rural	696,807	21.6	810,234	25.0
Remote rural	1,196,455	37.1	1,274,168	39.3
Continuous variables	Mean	SD	Mean	SD
Age	42.9	12.9	42.9	13.0
Age²	2007.3	1099.6	2005.4	1109.0
Years in Sweden	17.1	13.8	16.5	13.9
Years in Sweden²	482.2	640.4	464.4	646.3
N	3,229,073		3,242,215	

Source: Author's calculations of the Linnaeus database.

Table 5.8 Binomial logistic regressions estimating the odds of internal migration over 50 km from non-metropolitan regions to metropolitan regions in Sweden, 2006-2007 and 2008-2009

	2006-2007		2008-2009	
	All	Immigrant	All	Immigrant
Origin (ref. Native)				
Nordic	1.239***		1.237***	
	(0.042)		(0.044)	
Western Europe and North America	1.552***	1.446***	1.417***	1.317***
	(0.044)	(0.061)	(0.043)	(0.063)
Eastern Europe	1.072*	1.083	1.134***	1.135*
	(0.029)	(0.054)	(0.028)	(0.055)
Latin America	1.782***	1.992***	2.055***	2.172***
	(0.047)	(0.064)	(0.045)	(0.065)
Middle East and North Africa	2.071***	2.222***	2.068***	2.162***
	(0.027)	(0.053)	(0.026)	(0.055)
Sub-Saharan Africa	2.787***	2.779***	2.617***	2.550***
	(0.041)	(0.061)	(0.039)	(0.061)
Asia	1.421***	1.578***	1.435***	1.570***
	(0.031)	(0.054)	(0.030)	(0.055)
Age	0.856***	0.908***	0.857***	0.913***
	(0.004)	(0.009)	(0.004)	(0.008)
Age²	1.001***	1.001***	1.001***	1.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Woman (ref. Man)	1.019	0.979	1.068***	0.933**
	(0.011)	(0.026)	(0.011)	(0.025)
Household (ref. Single)				
Cohabiting without children	1.060***	0.597***	1.069***	0.612***
	(0.014)	(0.037)	(0.015)	(0.036)
Cohabiting with children	0.329***	0.317***	0.337***	0.365***
	(0.017)	(0.035)	(0.017)	(0.032)
Single parent	0.603***	0.556***	0.603***	0.615***
	(0.028)	(0.056)	(0.029)	(0.054)
Education (ref. Compulsory school)				
Upper secondary school	1.561***	1.450***	1.511***	1.343***
	(0.020)	(0.038)	(0.020)	(0.035)
University	3.907***	2.542***	3.329***	2.106***
	(0.022)	(0.044)	(0.023)	(0.040)
Unknown	0.958	1.257***	1.068	1.272***
	(0.042)	(0.054)	(0.042)	(0.050)
Years in Sweden²		1.008*		1.005
		(0.004)		(0.003)
Years in Sweden²		0.999***		1.000***
		(0.000)		(0.000)
Labour market status (ref. Employed)				
Unemployed	1.718***	1.324***	1.699***	1.350***
	(0.014)	(0.033)	(0.015)	(0.034)
Inactive	1.401***	1.053	1.320***	1.086**
	(0.017)	(0.034)	(0.017)	(0.031)
Locality (ref. Large urban)				
Small urban	0.947***	1.176***	0.955**	1.181***
	(0.015)	(0.034)	(0.017)	(0.036)
Accessible rural	0.685***	0.844***	0.720***	0.894**
	(0.018)	(0.046)	(0.016)	(0.037)
Remote rural	0.772***	1.035	0.768***	1.117***
	(0.014)	(0.036)	(0.014)	(0.032)
Constant	0.616***	0.187***	0.572***	0.167***
	(0.066)	(0.165)	(0.067)	(0.158)
Log likelihood	340482,672	58925,291	332591,870	65076,599
Nagelkerke R^2	0.168	0.116	0.155	0.102
N	3,229,073	375,365	3,242,215	414,426

Note: The reference category of the dependent variable includes no migration within non-metropolitan regions, migration within non-metropolitan regions, and migration of less than 50 km from non-metropolitan regions to metropolitan regions. *=p<0.05; **=p<0.01; ***=p<0.001. Coefficients shown are odds ratios. Standard errors are in parentheses.
Source: Author's calculations of the Linnaeus database.

5.3.5 Internal Migration from Metropolitan Regions by Origin

Table 5.9 displays the frequencies and shares of migrants away from non-metropolitan regions by origin and also disaggregates them by locality destinations. Generally speaking, the native population were most likely to migrate out of metropolitan regions with the least likely being Eastern Europeans (1.5 per cent and 0.8 per cent, respectively). When comparing the migration rates of the economic boom with economic bust, all groups experienced a negative change (between 0.1 and 0.2 percentage points) except Latin Americans and Sub-Saharan Africans.

Migration from metropolitan regions to large urban localities was highest among immigrants from the Middle East and North Africa (0.6 per cent), followed by Sub-Saharan Africa (0.6 per cent). Taking the difference between percentages of the two time periods, most groups showed no change visible within one decimal place. Eastern European and Middle East and North African immigrants showed declines of -0.1 percentage points. Small urban localities were the least common destination of all groups from metropolitan regions. Natives and Asian immigrants showed the highest rates of migration to this type of locality (0.2 per cent for both). As difference in migration rates between before and during recession, the visible change observable within one decimal place was Asians with -0.1.

In terms of migration to accessible rural localities, the highest rate was observed for Natives (0.3 per cent) and the lowest rates for Eastern Europe and Sub-Saharan Africa (0.1 per cent). All other groups had a migration rate of 0.2 per cent. Although many of these groups experienced a decline in frequency and negative change in percentage between the two periods, the only group experiencing a reduction in the share of migrants between both years was Latin America (-0.1). Lastly, migration to remote rural localities presented the most expected trends with the native population and immigrants from Nordic countries and Western Europe and North America presenting the highest shares (0.5, 0.5, and 0.4 per cent, respectively). All of these groups, including the Eastern Europeans, appear to have experienced declines in their migration rates between the economic boom and bust (-0.1 change in percentage points).

Table 5.9 Internal migration over 50 km from metropolitan regions to localities in non-metropolitan regions (by origin) in Sweden, 2006-2007 and 2008-2009

	2006-2007		2008-2009		Difference		
Non-metropolitan migration	*N*	%	*N*	%	*N*	%[a]	%[b]
Native	23,697	1.5	21,443	1.3	-2,254	-9.5	-0.2
Nordic	718	1.0	609	0.9	-109	-15.2	-0.1
Western Europe and North America	490	1.0	484	1.0	-6	-1.2	-0.1
Eastern Europe	822	0.8	770	0.7	-52	-6.3	-0.1
Latin America	372	1.1	388	1.0	16	4.3	0.0
Middle East and North Africa	1,051	1.1	983	0.9	-68	-6.5	-0.2
Sub-Saharan Africa	352	1.1	420	1.2	68	19.3	0.0
Asia	738	1.1	762	1.0	24	3.3	-0.1
To large urban localities							
Native	7778	0.5	7,348	0.5	-430	-5.5	0.0
Nordic	153	0.2	147	0.2	-6	-3.9	0.0
Western Europe and North America	152	0.3	188	0.4	36	23.7	0.0
Eastern Europe	332	0.3	306	0.3	-26	-7.8	-0.1
Latin America	139	0.4	166	0.4	27	19.4	0.0
Middle East and North Africa	583	0.6	529	0.5	-54	-9.3	-0.1
Sub-Saharan Africa	184	0.6	221	0.6	37	20.1	0.0
Asia	302	0.5	348	0.5	46	15.2	0.0
To small urban localities							
Native	3,123	0.2	2,757	0.2	-366	-11.7	0.0
Nordic	65	0.1	59	0.1	-6	-9.2	0.0
Western Europe and North America	50	0.1	45	0.1	-5	-10.0	0.0
Eastern Europe	112	0.1	101	0.1	-11	-9.8	0.0
Latin America	49	0.1	62	0.2	13	26.5	0.0
Middle East and North Africa	128	0.1	140	0.1	12	9.4	0.0
Sub-Saharan Africa	40	0.1	52	0.1	12	30.0	0.0
Asia	128	0.2	94	0.1	-34	-26.6	-0.1
To accessible rural localities							
Native	4,386	0.3	3,939	0.2	-447	-10.2	0.0
Nordic	136	0.2	96	0.1	-40	-29.4	0.0
Western Europe and North America	89	0.2	79	0.2	-10	-11.2	0.0
Eastern Europe	142	0.1	166	0.1	24	16.9	0.0
Latin America	81	0.2	54	0.1	-27	-33.3	-0.1
Middle East and North Africa	158	0.2	139	0.1	-19	-12.0	0.0
Sub-Saharan Africa	42	0.1	57	0.2	15	35.7	0.0
Asia	116	0.2	112	0.2	-4	-3.4	0.0
To remote rural localities							
Native	8,410	0.5	7,399	0.5	-1,011	-12.0	-0.1
Nordic	364	0.5	307	0.4	-57	-15.7	-0.1
Western Europe and North America	199	0.4	172	0.3	-27	-13.6	-0.1
Eastern Europe	236	0.2	197	0.2	-39	-16.5	-0.1
Latin America	103	0.3	107	0.3	4	3.9	0.0
Middle East and North Africa	182	0.2	175	0.2	-7	-3.8	0.0
Sub-Saharan Africa	86	0.3	90	0.2	4	4.7	0.0
Asia	192	0.3	208	0.3	16	8.3	0.0

Note: The numerator is the population migrating more than 50 km from metropolitan regions to non-metropolitan regions. The dominator is the total population in metropolitan regions for 2006 and 2008. [a] Represents the percentage growth change and [b] represents the difference of percentage. *Source*: Author's calculations of the Linnaeus database.

5.3.6 Modelling Internal Migration from Metropolitan Regions by Origin

Table 5.10 presents the variable summary statistics for the multinomial logistic regression models in Table 5.11. As the main focus was to see whether origin differences held up or differed with time when controlling for other socio-demographic variables, the table is restricted to showing only origin coefficients while the full models are available as an appendix (Appendix 16). When examining migration from metropolitan regions to large urban localities, it is interesting to note that after controlling for compositional differences, immigrants from the Middle East and North Africa, and Sub-Saharan Africa were still more likely to migrate than Natives (with RRR of 1.277 and 1.197). Asian immigrants did not present any statistically significant differences to Natives. The remaining immigrant groups, however, all had significantly lower likelihoods of migration. When the immigrant population are examined separately, the only remaining significant differences are that immigrants from the Middle East and North Africa, Sub-Saharan Africa, and Asia, all had higher likelihood of migrating than Nordic immigrants. During the period of recession, the pattern remained much the same as during the pre-recession period for the model including both natives and immigrants. The main difference is that only significant differences remained for immigrants from Eastern Europe, the Middle East and North Africa, and Sub-Saharan Africa (RRR of 1.122 and 1.133). In the model with just immigrants, however, additional significant differences were present for Eastern Europeans having lower probability of migration than Nordic immigrants (RRR of 0.800) and Latin Americans having higher odds (1.311).

When examining migration to small urban localities, all immigrants except those from Asia were significantly less likely to migrate than Natives. The least likely group to undertake this form of migration were Sub-Saharan Africans (RRR of 0.596). When immigrants are studied separately, the only group that had a significant difference to Nordic immigrants were Asians, who were 1.578 times more likely to migrate to small urban localities. During the recession, the model including both natives and immigrants shows similar patterns as to the model capturing the pre-recession period. The only real exceptions are that Latin Americans and Sub-Saharan Africans were not significantly different to natives. In the model with only immigrants during the economic bust period, there were no significant differences between origin groups and migration.

Table 5.10 Summary statistics of variables used in the multinomial logistic regressions estimating the relative risks of internal migration over 50 km from metropolitan regions to localities in non-metropolitan regions in Sweden, 2006-2007 and 2008-2009

	2006-2007		2008-2009	
Categorical variables	*N*	%	*N*	%
Dependent variable				
Non-migrant	2,014,494	98.6	2,076,458	98.8
Large urban	9,623	0.5	9,253	0.4
Small urban	3,695	0.2	3,310	0.2
Accessible rural	5,150	0.3	4,641	0.2
Remote rural	9,772	0.5	8,655	0.4
Origin				
Native	1,593,450	78.0	1,605,834	76.4
Nordic	73,938	3.6	71,288	3.4
Western Europe and North America	46,701	2.3	50,672	2.4
Eastern Europe	100,492	4.9	115,048	5.5
Latin America	35,252	1.7	37,949	1.8
Middle East and North Africa	97,525	4.8	110,813	5.3
Sub-Saharan Africa	30,827	1.5	36,122	1.7
Asia	64,549	3.2	74,591	3.5
Gender				
Man	1,021,608	50.0	1,052,923	50.1
Woman	1,021,126	50.0	1,049,394	49.9
Household				
Cohabiting without children	443,086	21.7	448,707	21.3
Cohabiting with children	645,796	31.6	670,604	31.9
Single	839,344	41.1	868,867	41.3
Single parent	114,508	5.6	114,139	5.4
Education				
Compulsory school	283,954	13.9	276,090	13.1
Upper secondary school	1,203,720	58.9	1,226,289	58.3
University	512,208	25.1	555,257	26.4
Unknown	42,852	2.1	44,681	2.1
Labour market status				
Employed	1,561,571	76.4	1,635,534	77.8
Unemployed	192,554	9.4	163,866	7.8
Inactive	288,609	14.1	302,917	14.4
Continuous variables	Mean	SD	Mean	SD
Age	41.4	12.6	41.2	12.6
Age²	1870.5	1066.7	1857.1	1067.7
Years in Sweden	16.4	12.5	16.0	12.7
Years in Sweden²	424.7	541.7	415.1	547.5
N	2,042,734		2,102,317	

Source: Author's calculations of the Linnaeus database.

Table 5.11 Multinomial logistic regression models estimating the relative risks of internal migration over 50 km from metropolitan regions to localities in non-metropolitan regions in Sweden, 2006-2007 and 2008-2009

	2006-2007		2008-2009	
To large urban localities	All	Immigrant	All	Immigrant
Origin (ref. Native)				
Nordic	0.788**		0.863	
	(0.083)		(0.085)	
Western Europe and North America	0.782**	1.046	0.896	1.068
	(0.083)	(0.117)	(0.075)	(0.113)
Eastern Europe	0.756***	1.043	0.630***	0.800*
	(0.057)	(0.102)	(0.059)	(0.104)
Latin America	0.816*	1.115	1.026	1.311*
	(0.086)	(0.121)	(0.079)	(0.117)
Middle East and North Africa	1.277***	1.699***	1.122*	1.426***
	(0.045)	(0.097)	(0.046)	(0.099)
Sub-Saharan Africa	1.197*	1.521***	1.133***	1.618***
	(0.076)	(0.115)	(0.070)	(0.112)
Asia	0.925	1.294*	0.965	1.261*
	(0.060)	(0.103)	(0.056)	(0.102)
Constant	0.882	0.279***	0.761*	0.174***
	(0.128)	(0.300)	(0.132)	(0.303)
To small urban localities				
Origin (ref. Native)				
Nordic	0.689**		0.739*	
	(0.127)		(0.133)	
Western Europe and North America	0.601***	0.903	0.536***	0.743
	(0.144)	(0.192)	(0.152)	(0.203)
Eastern Europe	0.616***	0.997	0.534***	0.779
	(0.097)	(0.164)	(0.103)	(0.172)
Latin America	0.681**	1.115	0.950	1.416
	(0.145)	(0.197)	(0.129)	(0.190)
Middle East and North Africa	0.664***	1.095	0.753**	1.087
	(0.092)	(0.165)	(0.089)	(0.169)
Sub-Saharan Africa	0.596**	0.963	0.760	1.086
	(0.161)	(0.211)	(0.142)	(0.201)
Asia	0.954	1.578**	0.681***	0.976
	(0.092)	(0.162)	(0.107)	(0.175)
Constant	0.120***	0.020***	0.091***	0.015***
	(0.196)	(0.533)	(0.206)	(0.554)
To accessible rural localities				
Origin (ref. Native)				
Nordic	0.891		0.756**	
	(0.089)		(0.105)	
Western Europe and North America	0.714**	0.816	0.632***	0.817
	(0.108)	(0.140)	(0.115)	(0.157)
Eastern Europe	0.522***	0.610***	0.590***	0.810
	(0.086)	(0.126)	(0.081)	(0.135)
Latin America	0.783*	0.910	0.554***	0.773
	(0.113)	(0.147)	(0.139)	(0.178)
Middle East and North Africa	0.551***	0.671**	0.494***	0.674**
	(0.083)	(0.128)	(0.088)	(0.114)
Sub-Saharan Africa	0.436***	0.524***	0.573***	0.761
	(0.156)	(0.184)	(0.135)	(0.176)
Asia	0.593***	0.704**	0.552***	0.754
	(0.096)	(0.134)	(0.097)	(0.147)
Constant	0.049***	0.042***	0.049	0.024***
	(0.165)	(0.457)	(0.173)	(0.480)

Note: The reference category of the dependent variable includes no migration within metropolitan regions, migration within metropolitan regions, and migration of less than 50 km from metropolitan regions to non-metropolitan regions. *=p<0.05; **=p<0.01; ***=p<0.001. Coefficients shown are relative risk ratios. Standard errors are in parentheses. All models control for age, household structure, education, years in Sweden, and employment status. Full models can be found in Appendix 16.
Source: Author's calculations of the Linnaeus database.

Table 5.11 Continued

	2006-2007		2008-2009	
	All	Immigrant	All	Immigrant
To remote rural localities				
Origin (ref. Native)				
Nordic	0.996		1.008	
	(0.055)		(0.060)	
Western Europe and North America	0.801**	0.745**	0.712***	0.684***
	(0.073)	(0.091)	(0.078)	(0.099)
Eastern Europe	0.422***	0.425***	0.351***	0.365***
	(0.067)	(0.088)	(0.073)	(0.097)
Latin America	0.503***	0.517***	0.569***	0.619***
	(0.100)	(0.116)	(0.098)	(0.118)
Middle East and North Africa	0.322***	0.314***	0.319***	0.340***
	(0.076)	(0.098)	(0.077)	(0.103)
Sub-Saharan Africa	0.477***	0.436***	0.454***	0.472***
	(0.109)	(0.126)	(0.107)	(0.127)
Asia	0.513***	0.502***	0.546***	0.560***
	(0.074)	(0.096)	(0.072)	(0.098)
Constant	0.064***	0.050***	0.086***	0.060***
	(0.116)	(0.340)	(0.121)	(0.349)
Log likelihood	53343.330	48597.779	50467.589	47392.265
Nagelkerke R^2	0.064	0.053	0.069	0.053
N	2,042,734	205,897	2,102,317	215,644

Note: The reference category of the dependent variable includes no migration within metropolitan regions, migration within metropolitan regions, and migration of less than 50 km from metropolitan regions to non-metropolitan regions. *=p<0.05; **=p<0.01; ***=p<0.001. Coefficients shown are relative risk ratios. Standard errors are in parentheses. All models control for age, household structure, education, years in Sweden, and employment status. Full models can be found in Appendix 16.
Source: Author's calculations of the Linnaeus database.

Turning to the first of the rural locality destinations, migration to accessible rural localities supports the earlier descriptive statistics whereby the native population were most likely to have migrated to accessible rural areas during 2006-2007. The native population presented a significantly higher likelihood of migrating than all groups except the Nordic immigrants. Sub-Saharan Africans presented the lowest likelihood of migrating to accessible rural localities (RRR of 0.436). Among the immigrant-only model, immigrants from Western Europe and North America, and Latin America were significantly no different from Nordic immigrants. However, all remaining groups presented significantly lower likelihoods of migration. Once again, the least likely group to migrate were Sub-Saharan Africans (RRR of 0.524). When looking at migration to the same locality during the economic recession, the only noticeable difference in the model including natives and immigrants is that Nordic immigrants, like all other immigrants, presented a significantly lower probability of migrating than natives (RRR of 0.756). In the immigrant-only model, however, the only significant difference was between immigrants from the Middle East and North Africa and Nordic immigrants (RRR of 0.674).

The models statistics for migration to remote rural localities shows many similarities to migration to accessible rural localities. For example, all immigrants except the Nordic group are significantly less likely to migrate than Natives. However, the least likely group to migrate in this instance are those from the Middle East and North Africa (RRR of 0.322). When immigrants are modelled separately, however, the major difference between this form of migration and migration to accessible rural localities is that all groups have significantly lower odds of migration than Nordic immigrants. For both the models including immigrants and natives, and immigrants only, the pattern during the period of economic recession remains the same.

In summary, this final section of analysis provides an insight into temporal and spatial differences of internal migrants from metropolitan regions. Although the expectation for all of these models may have been that the native population were most likely to have moved away from metropolitan regions, migration to large urban localities was associated with non-European groups and migration to more rural localities (including accessible and remote) was associated with culturally proximate groups, such as Nordic and Western European and North American immigrants.

5.4 Conclusion

This chapter set out to focus on internal migration trends of immigrants during economic boom and bust years to identify whether differences emerged between immigrants and natives. More important in the context of the wider thesis, this chapter has addressed a set of research questions framed around the work of Fielding (2012) and how inter-regional and internal migration flows, more generally, can be shaped by economic processes taking place on very different timescales. This chapter has attempted to add to this conceptual work rather than just testing it in another country context by viewing it from an ethnic/immigrant perspective taking into account issues that previous studies like Andersson (1996) and Nilsson (2003) have not.

The first research question asked whether internal migration flows (prior to disaggregation by immigrant origin) showed temporal variations in line with expectations in the literature. In other words, did migration show pro-cyclical patterns whereby migration increased during periods of growth and decrease during economic decline? The descriptive analysis using aggregate-level inter-municipal migration data showed that migration tended to be at a peak a year or two prior to recessions, be in decline during recession, and increase within a year or two of the recessions during the periods of economic recovery. Based on this, one could conclude that internal migration flows showed temporal variations in line with the economic literature. To further support this analysis, migration at the individual-level was analysed and between the period of economic boom (2006-2007) and economic bust (2008-2009), internal migration declined, albeit by a small margin (-0.2 change in percentage points for migration over 50 km).

The second question asked whether a paradox was observed whereby the metropolitan regions had net losses during economic growth and net gains during economic recession. Using descriptive analysis of aggregate-level data, Sweden's metropolitan municipalities showed net migration gains during periods of recession and net losses during periods of economic growth. It should be stressed, however, that the overall migration flows fluctuated heavily over the 40-year time period and even showed what is possibly the tail-end effect of a migration 'turnaround' during the 1960s to early 1970s. The analysis of micro-level data during the economic boom and bust periods further support Fielding's (2012) ideas of the regional patterning of migration

being shaped by short-term economic drivers. Metropolitan regions had net losses of 8,868 internal migrants during the boom whereas they had net gains of 9,506 during the bust.

The third question concerned whether similar or different patterns emerged after disaggregating migration flows by immigrant origin. In terms of internal migration, more generally, the results showed that migration declined across all groups, albeit very marginally. The group with the greatest decline in internal migration was Eastern Europeans (-0.2 change in percentage points). During both periods of economic boom and bust, internal migration rates showed that immigrants of non-European origin were more likely to internally migrate than natives and other immigrants. This was particularly the case for immigrants from Sub-Saharan Africa, Asia, the Middle East and North Africa, and Latin America (rates of 3.9, 3.2, 3.1 and 2.9 in 2006-2007, and 3.8, 3.0, 2.9, and 2.7 in 2008-2009). To test whether these patterns remained after taking into account the diverse compositional differences between the population groups, binomial logistic regressions were run for both time periods. The results confirmed that even after controlling for other variables, statistically significant differences were evident between natives and immigrants, and between immigrants before and during recession. Therefore, to answer the first part of question three, similar patterns emerged after disaggregating by immigrant origin.

To disaggregate the spatial-temporal variations in internal migration, the first step was to look at migration to the metropolitan regions. According to the descriptive statistics, this form of migration was most common among Sub-Saharan Africans (4.4 per cent), Latin Americans (2.8 per cent), and immigrants from the Middle East and North Africa (2.8 per cent). When compared between economic boom and bust, the group experiencing the greatest decline was Sub-Saharan Africa (-0.6 change in percentage points), followed by the Middle East and North Africa (-0.2 change in percentage points). In much the same way as the regression models of migration in general, the odds of these non-European groups of migrating than Natives was statistically significant even after controlling for other characteristics. These patterns changed very little before and during recession.

The last stage of analysis disaggregated migration flows from metropolitan regions. Although there are many findings in this section of analysis, the most interesting was that particular the destinations were associated with specific immigrant origins and that patterns established during prosperous years remained during conditions of economic bust. These were still evident after controlling for other contextual variables in multinomial regression models. For example, migration to large urban localities was associated with the highest rates among immigrants from the Middle East and North Africa and Sub-Saharan Africa (0.6 per cent for both). In the regressions, these two groups presented significantly higher relative risk ratios than natives both before and during the recession. Migration to small urban localities did occur for all groups but was clearly the least attractive destination both during the boom and bust. The two rural locality destinations presented highest rates of migration among Natives, and immigrants from Nordic countries, Western Europe and North America. Although very little change was evident during the recession for accessible rural localities, remote rural localities experienced decreased rates for the previously mentioned groups. In the multinomial regression models, all groups were significantly less likely to migrate to these localities both before and during the recession, with the exception of Nordic immigrants to accessible rural localities prior to recession and before during recession for remote rural localities.

The important point of departure is where these findings fit within the broader literature, and what theoretical contributions this chapter can make. Internal migration was found to be pro-cyclical in relation to patterns of economic boom and bust (Milne, 1993). Many aspects of the spatial-temporal patterns described by Fielding (2012) were also supported. Therefore, this chapter highlights the applicability of many of Fielding's ideas to the Swedish context. The analysis also went a step further than Fielding by examining, in more detail, the migration flows that redistribute population from metropolitan regions to other urban and rural destinations. Arguably the most interesting element to this chapter has been its ability to breakdown these spatially differentiated migration flows by immigrant origin. In support of the findings of Andersson (2012), this chapter also found that immigrants were significantly more mobile than natives, even after controlling for various individual-level and spatial characteristics. Furthermore, significant differences were observed between natives and

immigrants in terms of migration to and from metropolitan regions. Migration to these regions was associated more closely with Sub-Saharan Africans, Latin Americans, and immigrants from the Middle East and North Africa whereas migration from these regions differed depending on destination. Large urban localities attracted those from the Middle East and North Africa, and Sub-Saharan Africa whereas rural localities attracted Nordic, Western European and North Americans. These findings therefore offer support both of migration producing increased concentration of certain Afro-Asian groups in metropolitan regions, and at the same time, dispersal of other migrant communities away from them (Sabater *et al.*, 2012).

In an effort to try and contribute to linking theoretical perspectives between internal and international migration literature (Skeldon, 2006; King and Skeldon, 2010; Ellis, 2012), this chapter has examined whether immigrant origin differences from above migration patterns are influenced by recession in the same way that international migration patterns are. In other words, are refugees, family-reunification immigrants, and other immigrants less linked to 'economic motives' less affected by recession? However, findings concerning this issue are limited both by data and methods applied. Marginal changes were observed across all groups but the modelling framework was not able to test whether the changes over time were statistically significant.

To conclude, this chapter has highlighted how, when examining internal migration of immigrants in relation to economic change, theoretical understandings must move beyond the business cycle and consider deeper social and economic processes that take place at other temporal and spatial scales.

Chapter 6
The Employment Entry of New Immigrants through Time and Space: A Discrete-Time Event History Analysis

6.1 Introduction

A considerable body of international literature has focussed on labour market integration of immigrants, with particular attention to employment, unemployment, earnings, occupational attainment, and even inter-generational mobility (Rydgren, 2004). However, two areas of limitation have been evident: firstly, the transitions between labour market statuses and the timing of such events, and; secondly, the role of geography in relation to the occurrence and timing of such events (Hedberg and Tammaru, 2013). These two limitations, particularly within Sweden, are surprising given that the vast majority of studies have used register data enabling researchers to follow individuals through time (annually) and through space (with varying detailed spatial units). The purpose of this chapter is therefore to move beyond the cross-sectional and more static analysis of previous research (including the previous two chapters), and apply a longitudinal analysis to a recent cohort of immigrants and examine one particularly important event, first entry to employment. Furthermore, this chapter builds on Hedberg and Tammaru (2013) by following a more recent immigrant cohort, disaggregating their event histories by origin groups, and by broadening the geographical lens of analysis beyond metropolitan regions. Three main research questions are to be addressed in this chapter:

1) How long does it take for new immigrants to enter employment?
2) Which new immigrants are more likely to enter employment?
3) Where are new immigrants most likely to enter employment?

6.2 Following New Immigrants through Time

6.2.1 Death and Emigration

In comparison to the previous two chapters using Linnaeus data for two two-year intervals in person-oriented format, the data here is in person-period (person-year) format as 11 years of annual data for the same individuals was used. Due to the greater complexity of the data structure, several procedures were required before analysis could begin. For example, as the study concerns labour market entry, only individuals of working age during the entire duration were included. Accordingly, the age restriction at year *t* (2000) was 20-55. Another important aspect to consider was whether individuals were in Sweden or not. While it was possible to construct a variable of years in Sweden using the latest reported date of immigration/emigration from the Swedish Migration Board, such data have often been known to underrepresent immigrants' international moves because the date may represent the actual date a person left Sweden, or the date the data were processed (see Chapter 3 for more details). As a precaution, a more robust measure used to identify whether an individual was residing in Sweden was to identify whether they had a parish code.

A total of 157 (0.6 per cent) of the study population died during the study period and therefore had to be right-censored at the appropriate year. This reduced the study population to 25,379 individuals representing 279,169 person-years. Similarly to other data on immigrants, attrition occurring through the return or onward migration of immigrants can be relatively large (Roth *et al.*, 2012) and in this data the sample was reduced to 67.2 per cent (17,045 individuals) by the year 2010. Although the onward or return migration of immigrants was not a focus of this chapter, Figure 6.1 shows how (prior to first entry to employment) the composition of the study population changed over the 11-year period. Those from neighbouring regions to Sweden, such as the Nordic countries and Western Europe and North America, reduced by a higher proportion than other origin groups. This supports existing research whereby emigration was highest among economically driven immigrants from OECD countries (Edin *et al.*, 2000; Nekby, 2006).

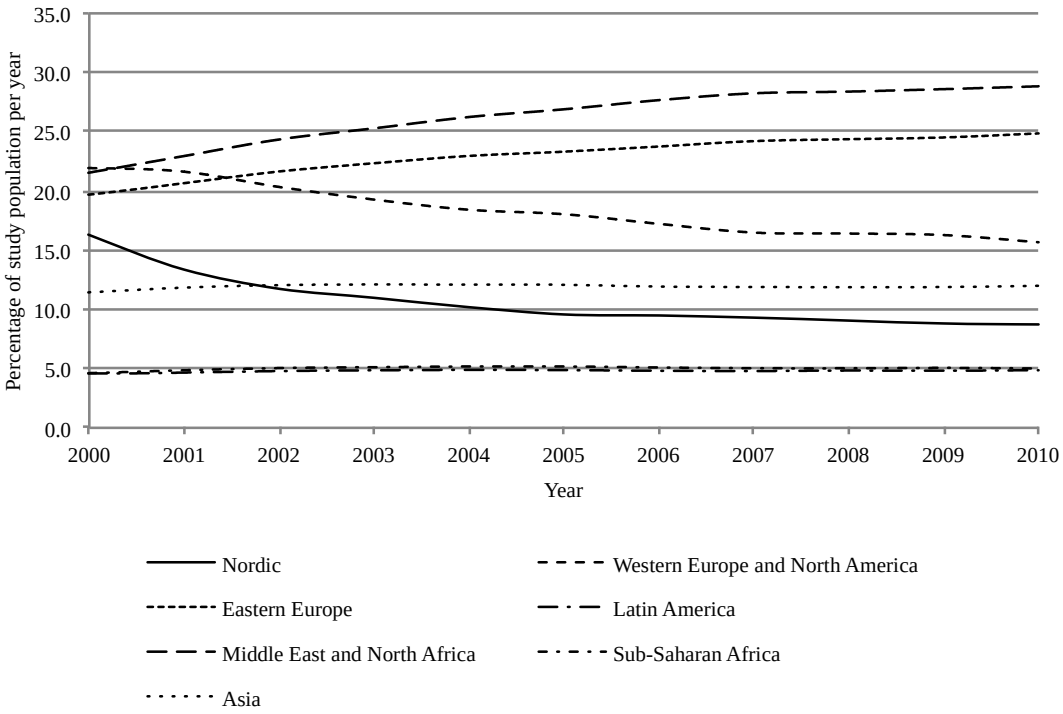

Figure 6.1 Study population (by origin) in Sweden, 2000-2010
Source: Author's calculations of the ASTRID database.

6.2.2 Family Formation and the (Re)accumulation of Human Capital

Time-constant and time-varying predictors for first labour market entry reflect those in the other analysis chapters of this thesis, and the majority of labour market studies of immigrants. For example, time-constant variables of age at migration and age at migration^2 are included to account for the diminishing effect of age at higher values. Gender was included as a control for the often-observed lower labour market participation rates of women. Immigrant origin was also used to identify which groups present quicker rates of first employment entry and whether the effect remains after controlling for other varying socio-demographic and spatial characteristics. The remaining variables were time-variant and included household, education, and municipality classification. The reason for having a time-varying municipality classification is to take into account any possible changes of this variable through migration. However, the study population (see Appendix 17) at the aggregate level show little indication of changing municipality classifications. The importance of accounting for changes in household characteristics is highlighted in Figure 6.2 whereby as much as 50 per cent of the cohort was single during the first year of analysis but half of that by the last year of analysis.

While education at migration is commonly used in longitudinal analysis, one must be wary that qualifications obtained in other countries may take time to be recognised or may never be recognised at all. According to an audit by the Swedish Auditing Office (*Riksrevisionen*), the recognition of qualifications obtained abroad presented a lengthy processes of 150-170 days on average (Swedish National Audit Office, 2011). An observation early in the analysis of this chapter (prior to first employment) was that up to 50 per cent of the study population had missing or 'unknown' information regarding the level of their education and this rapidly changed during the observation period (Figure 6.3). This trend appears to have been even longer than that of the national audit office study but may also reflect some of the study population achieving further qualifications after their arrival too. The following section now looks at how first employment entry is related to independent variables in the descriptive statistical analysis.

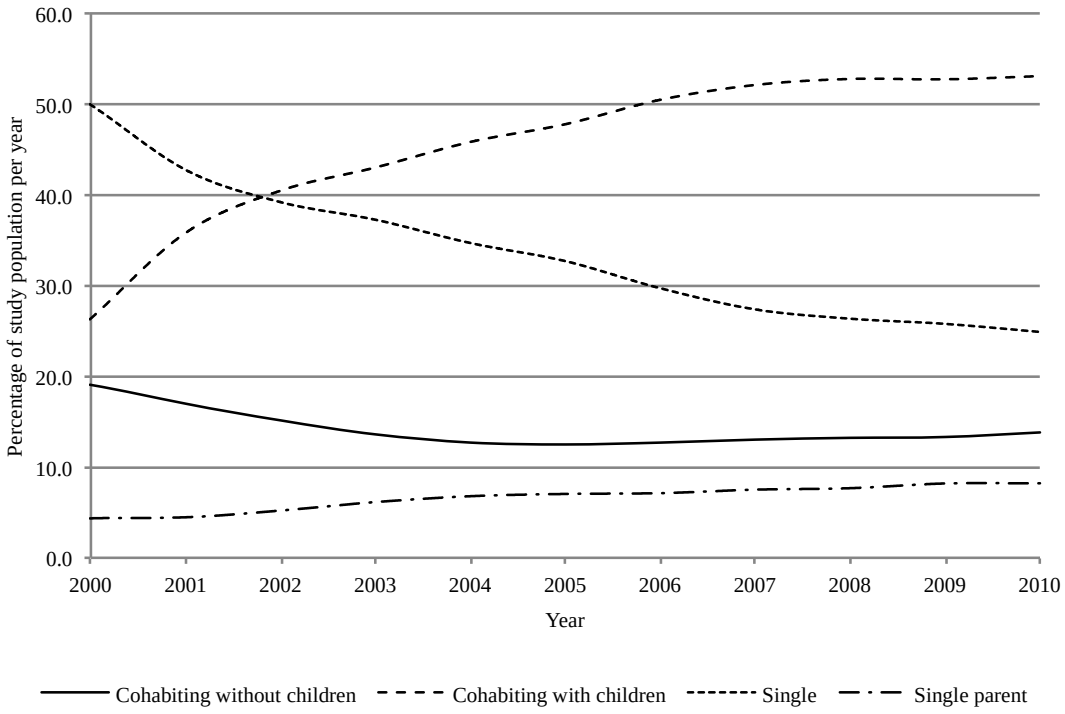

Figure 6.2 Study population (by household structure) in Sweden, 2000-2010
Source: Author's calculations of the ASTRID database.

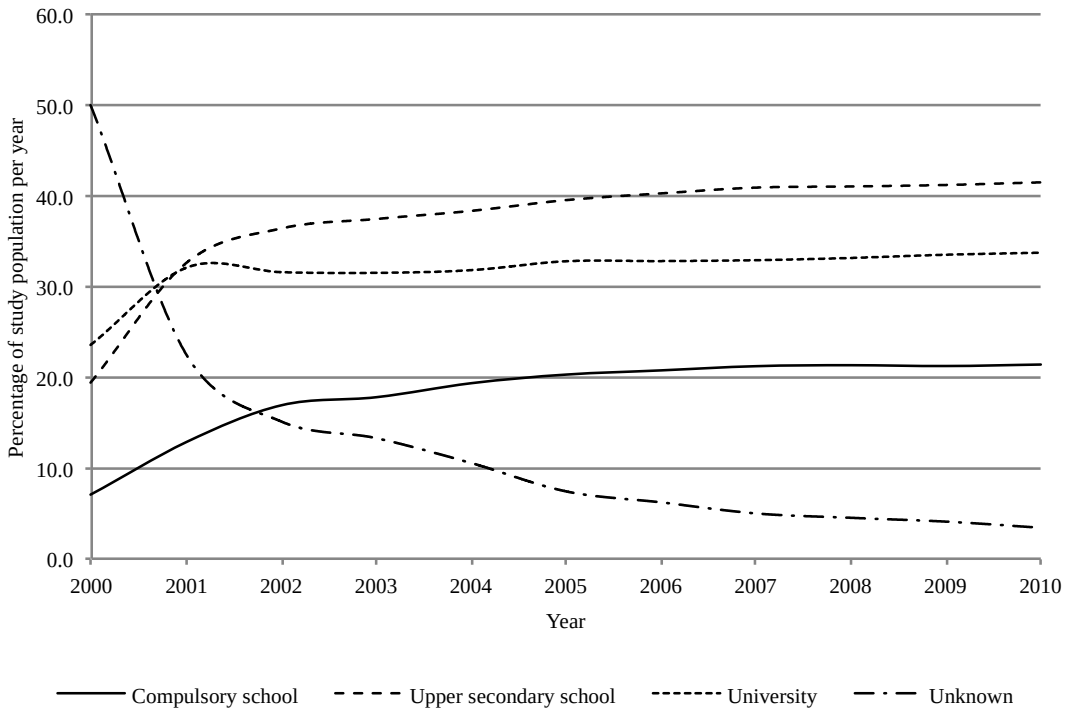

Figure 6.3 Study population (by education level) in Sweden, 2000-2010
Source: Author's calculations of the ASTRID database.

6.3 First Employment Entry

6.3.1 Descriptive Statistics of First Employment Entry

In an effort to address the first research question ('How long does it take for new immigrants to enter employment?') Table 6.1 presents survival data for the study sample. During the first year of analysis, 25,379 immigrants were 'at risk' of entering employment for the first time. 7,773 immigrants from the 'risk set' experienced the event (first employment entry) and 927 immigrants were right censored and therefore not included in the second year of analysis. By looking at the cumulate survival estimate, by the end of 2000, 69 per cent of the sample had 'survived' by not entering employment for the first time. Alternatively, it can be said that only 31 per cent (7,773/25,379 x 100) had experienced first employment entry.

Figure 6.4 plots the cumulative survival probabilities from Table 6.1 as a K-M curve. Clearly the first year of arrival in Sweden appears to have been the most influential in terms of first employment entry because that year presented the biggest proportion (31 per cent) entering employment for the first time. As time passes, the change between each year gradually decreases, suggesting that first employment entry did not necessarily improve as is often stated in the literature. Even after 11 years have passed, 19 per cent of those at risk during that year still remained outside the labour market. Therefore, only 71 per cent of immigrants had entered the labour market.

To answer the first research question set out at the beginning of the chapter, the analysis shows that for those that do enter employment for the first time within the 11-year period, a) the greatest likelihood was to gain employment within the first year (42 per cent in 2000) and b) the median time out of work was just over two years. However, the most striking feature of Figure 6.4 remains the finding that 19 per cent of immigrants never entered employment in the 11-year period under study.

Table 6.1 Survival table of staying outside of employment in Sweden, 2000-2010

Year	Risk set	Event	Censored	Cumulative Survival
2000	25,379	7,773	927	0.694
2001	16,679	4,301	712	0.515
2002	11,666	1,227	488	0.461
2003	9,951	1,286	439	0.401
2004	8,226	870	226	0.359
2005	7,130	766	376	0.320
2006	5,988	745	275	0.280
2007	4,968	603	103	0.246
2008	4,262	450	65	0.220
2009	3,747	272	161	0.204
2010	3,314	228	3,086	0.190
Total	101,310	18,521	6,858	

Source: Author's calculations of the ASTRID database.

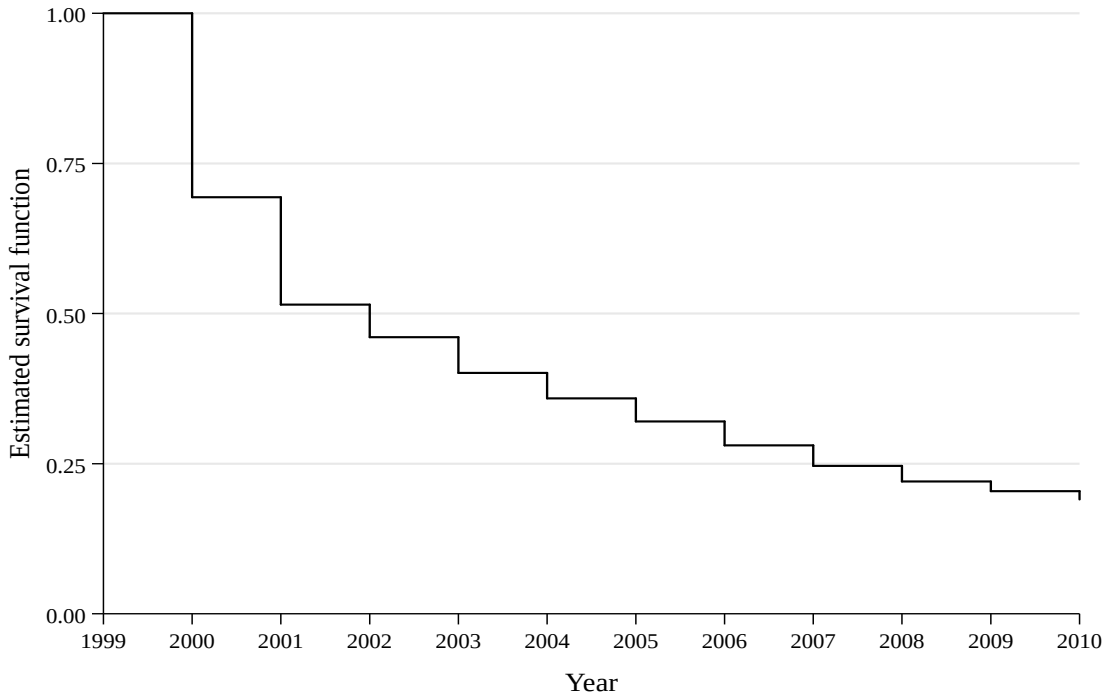

Figure 6.4 Kaplan-Meier survival estimates of staying outside of employment in Sweden, 1999-2010

Source: Author's calculations of the ASTRID database.

When taking into account immigrant origin, Figure 6.5 shows that during the first year of analysis, three groups in particular (Nordic, Western Europe and North America, and Latin America) presented survival rates of around 50 per cent of their original population but, after this initial year, Latin Americans entered first employment the quickest (i.e. they had the most rapid first employment entry rates, with fewer immigrants out of employment). At the other end of the spectrum, immigrants from the Middle East and North Africa struggled the most to keep up with the other groups and this produced a much more gradual first employment entry for them over the 11-year study period. While the analysis is yet to control for other individual characteristics, these descriptive statistics have so far suggested that in relation to the second research question ('Which immigrants are more likely to enter employment?'), immigrants originating from culturally distant regions more associated with refugee immigration were associated with slower first employment entry. These patterns may change when adjusting for various demographic and socio-economic variables in the later stage of analysis.

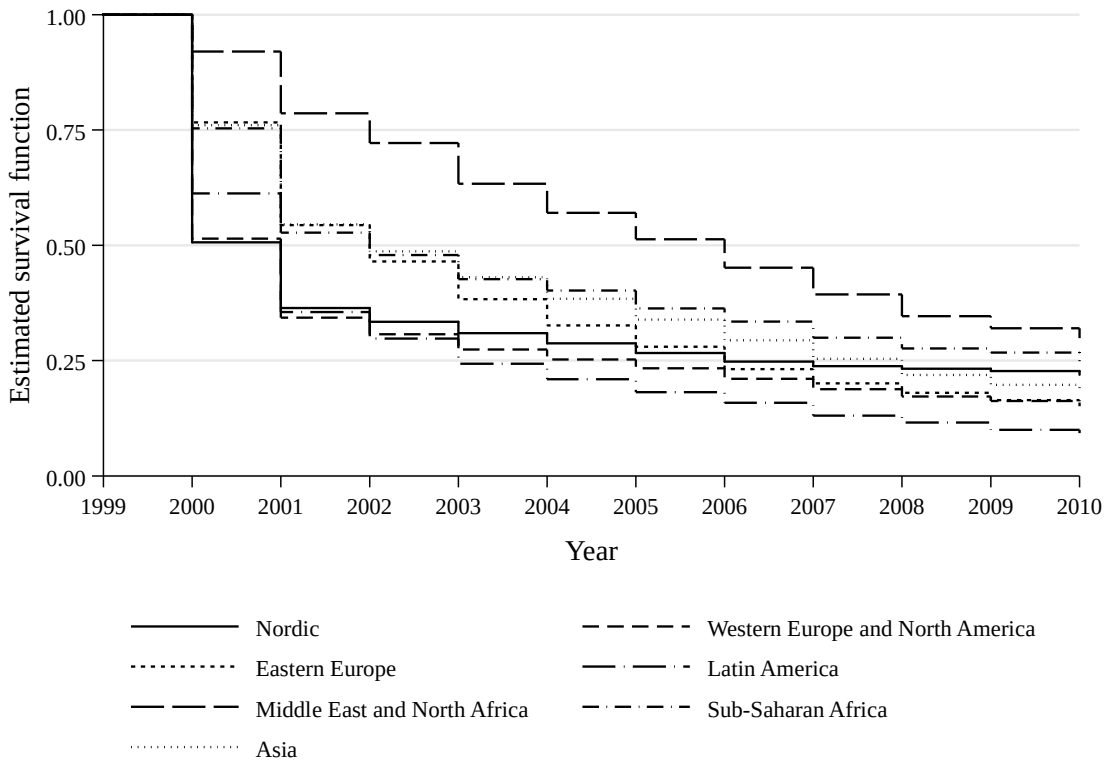

Figure 6.5 Kaplan-Meier survival estimates of staying outside of employment (by origin) in Sweden, 1999-2010
Source: Author's calculations of the ASTRID database.

In relation to the third research question ('Where are immigrants most likely to enter employment?'), Figure 6.6 displays survival estimates for immigrants based upon their residential municipality classification in the year 2000. In 2000, immigrants residing in metropolitan suburbs experienced the greatest proportion of first employment entry (approximately 60 per cent surviving). The remaining municipality classifications followed accordingly with metropolitan and rural municipalities (between 65 and 70 per cent surviving) followed by large cities and the rest of Sweden (75 per cent surviving). Over time, first employment entry decreased and despite metropolitan suburban municipalities maintaining an advantage over other groups, those groups became indistinguishable from each other. Thus, from a glance it could be suggested that immigrants experienced first employment entry when residing in metropolitan suburbs. This finding should, however, be treated with caution as it only captures the municipality classification of the initial year of settlement. Furthermore, multivariate analysis must be used to see whether differences were statistically significant after adjusting for individual-level characteristics.

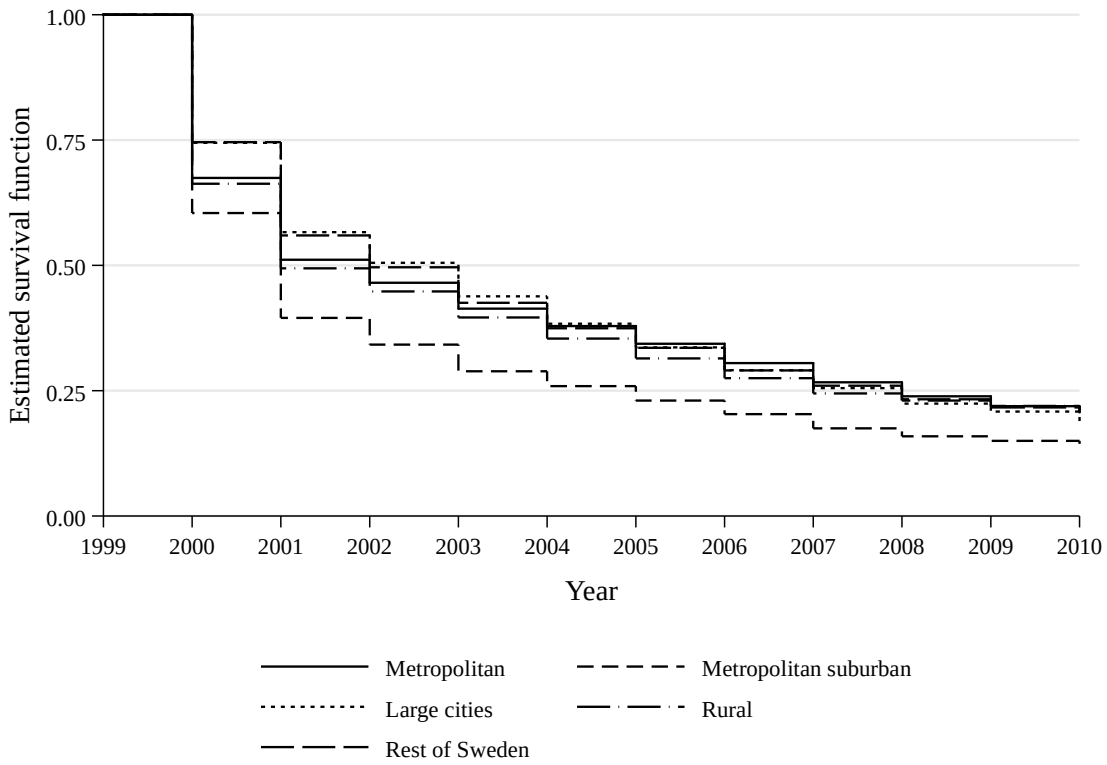

Figure 6.6 Kaplan-Meier survival estimates of staying outside of employment (by municipality classification in 2000) in Sweden, 1999-2010
Source: Author's calculations of the ASTRID database.

6.3.2 Modelling First Employment Entry: Total Study Population

Prior to modelling first employment entry through discrete-time binomial logistic regression, it is useful to examine the overall characteristics of the study population. In Table 6.2, the summary statistics are displayed for the 101,310 person-years included in the dataset (by which time the cohort had either experienced first employment entry, or been right-censored having experienced death or emigration). As the event of interest could only take place once, only 18,521 person-years witnessed the transition and the remaining person-years therefore experienced other life-course statuses such as underemployment, welfare dependency or higher education.

When breaking down the population into origin groups, in line with Figure 6.1, the cohort comprised largely of those from the Middle East and North Africa, and Eastern Europe. In terms of residential location, the majority of the population had spent much of their duration in urban municipalities, such as the three major cities (Stockholm, Gothenburg and Malmö), their suburbs, and other large cities. This left less than five per cent of the person-years spent within rural areas. The demographic characteristics of the population show that the average age at migration was 32.5 years, more years of the analysis represented women, and most of the population were cohabiting with children. In terms of human capital, the greatest share of person-years were with upper secondary school education despite the 50 per cent of immigrants having had missing or 'unknown' education in the year 2000, as only 24.1 per cent of the person-years met this criteria (see Figure 6.3).

In Table 6.3 the discrete-time logistic regression models using the previously mentioned variables are displayed. In Model 1, only time variables were included to examine the general trends over the duration of the study period and to provide more robust answers to the first research question. Model 2 introduced immigrant origin because this is a key factor for explaining the second research question. In Model 3, the time-varying municipality classification of residence during the year of first employment was introduced as this provided evidence for the third research question. Lastly, in Model 4, remaining socio-demographic variables were included as they presented the most common and strongly associated factors with labour market participation. This allows the possibility to examine whether the previously observed trends remained after controlling for various other individual characteristics.

Table 6.2 Summary statistics of variables used in the discrete-time binomial logistic regressions estimating the odds of first employment entry in Sweden, 2000-2010

Categorical variables	*N*	%
Dependent variable		
Non-events	82,789	81.7
First employment entries	18,521	18.3
Origin		
Nordic	10,162	10.0
Western Europe and North America	14,410	14.2
Eastern Europe	21,136	20.9
Latin America	3,365	3.3
Middle East and North Africa	34,987	34.5
Sub-Saharan Africa	5,242	5.2
Asia	12,008	11.9
Municipality classification		
Metropolitan	35,000	34.6
Metropolitan suburban	12,882	12.7
Large city	31,777	31.4
Rural	4,096	4.0
Rest of Sweden	17,555	17.3
Gender		
Man	42,275	41.7
Woman	59,035	58.3
Education		
Compulsory	20,605	20.3
Upper secondary	31,771	31.4
University	24,513	24.2
Unknown	24,421	24.1
Household		
Cohabiting without children	15,447	15.3
Cohabiting with children	43,558	43.0
Single	34,929	34.5
Single parent	7,376	7.3
Continuous variables	Mean	SD
Age at migration	32.5	8.7
Age at migration²	1129.5	616.3
N (person-years)	101,310	

Source: Author's calculations of the ASTRID database.

In connection to earlier descriptive statistics, it emerges in Model 1 that following the year of arrival the odds of entering employment for the first time decreases with time with the odds also being the lowest during the year that Sweden entered the recession (odds ratio of 0.177 in 2009). While this may indicate that the recession has had a negative effect on the labour market entry of new immigrants, this cannot be truly tested because this may be a negative selection process whereby those who do not enter the labour market within the initial years become increasingly less likely to do so over time. When adjusting the model to take into account immigrant origin (Model 2), the general negative relationship between time and first employment entry remains much the same. Higher odds are still associated with the year of arrival but lowest odds associated with the year following the recession (odds ratio of 0.206 in 2010). In line with the K-M analysis of origin effects, there is evidence to suggest that Latin American immigrants were significantly more likely to experience first employment entry than other groups as they had an odds ratio of 1.107. Closely following this group, Western Europeans and North Americans also presented significantly higher odds than the Nordic reference category (odds ratio of 1.085). Unsurprisingly, the remaining origin groups therefore reflect the earlier findings that the least likely to enter first employment were from the Middle East and North Africa, Sub-Saharan Africa and Asia (respective odds ratios of 0.410, 0.586, and 0.651).

Taking into account geography (Model 3), the effects of time remain significant but differences between no significant differences are observed between Nordic immigrants and those from Western Europe and North America, and Latin America. Furthermore, the findings from the K-M estimates are backed up because metropolitan suburban municipalities were significantly more associated with first employment entry (odds ratio of 1.357), while residing in rural areas or the rest of Sweden were negatively associated with it (odds ratios of 0.853 and 0.882). There were no significant differences between residing in large urban municipalities and metropolitan municipalities.

In the final column (Model 4), all the variables are included in the model to show that none of the years following arrival presented significantly higher odds of first employment entry. Immigrant origin differences remained the same as Model 3. In terms of geography, only metropolitan suburban municipalities presented a significant

advantage over metropolitan municipalities (odds ratio of 1.421). As for the demographic variables, being a man, and of slightly older age, benefitted first employment entry (odds ratios of 1.461 and 1.103). Unsurprisingly, university education contributed the highest odds of first employment entry (1.413) while those still with unknown qualifications were the opposite (0.610). In terms of household characteristics, single people represented the higher odds (1.068) of entering employment than cohabitants without children, whereas single parents and cohabitants with children were least likely to enter employment (odds ratios of 0.733 and 0.789).

Table 6.3 Discrete-time binomial logistic regressions estimating the odds of first employment entry in Sweden, 2000-2010

	Model 1	Model 2	Model 3	Model 4
Year (ref. 2000)				
2001	0.787***	0.863***	0.869***	0.762***
	(0.022)	(0.022)	(0.023)	(0.024)
2002	0.266***	0.302***	0.305***	0.269***
	(0.033)	(0.033)	(0.033)	(0.035)
2003	0.336***	0.392***	0.397***	0.359***
	(0.033)	(0.033)	(0.033)	(0.035)
2004	0.268***	0.316***	0.321***	0.295***
	(0.038)	(0.039)	(0.039)	(0.041)
2005	0.273***	0.325***	0.330***	0.306***
	(0.041)	(0.041)	(0.041)	(0.043)
2006	0.322***	0.392***	0.399***	0.380***
	(0.042)	(0.042)	(0.043)	(0.045)
2007	0.313***	0.386***	0.393***	0.384***
	(0.046)	(0.047)	(0.047)	(0.049)
2008	0.267***	0.328***	0.335***	0.332***
	(0.052)	(0.053)	(0.053)	(0.055)
2009	0.177***	0.216***	0.221***	0.218***
	(0.064)	(0.065)	(0.066)	(0.068)
2010	0.167***	0.206***	0.221***	0.211***
	(0.070)	(0.070)	(0.071)	(0.073)
Origin (ref. Nordic)				
Western Europe and North America		1.085*	1.052	1.026
		(0.036)	(0.036)	(0.039)
Eastern Europe		0.733***	0.736***	0.809***
		(0.033)	(0.034)	(0.036)
Latin America		1.107*	1.047	1.023
		(0.049)	(0.050)	(0.054)
Middle East and North Africa		0.410***	0.402***	0.423***
		(0.032)	(0.033)	(0.036)
Sub-Saharan Africa		0.586***	0.572***	0.611***
		(0.049)	(0.049)	(0.052)
Asia		0.651***	0.629***	0.659***
		(0.037)	(0.037)	(0.040)
Municipality classification (ref. Metropolitan)				
Metropolitan suburban			1.357***	1.421***
			(0.028)	(0.029)
Large city			0.980	1.005
			(0.022)	(0.023)
Rural			0.853**	1.001
			(0.049)	(0.050)
Rest of Sweden			0.882***	0.990
			(0.027)	(0.028)

Note: The reference category of the dependent variable includes those staying outside of employment. *=p<0.05; **=p<0.01; ***=p<0.001. Coefficients shown are odds ratios. Standard errors are in parentheses.
Source: Author's calculations of the ASTRID database.

Table 6.3 Continued

	Model 1	Model 2	Model 3	Model 4
Age				1.103***
				(0.009)
Age at migration²				0.998***
				(0.000)
Man (ref. Woman)				1.461***
				(0.019)
Education (ref. Compulsory school)				
Upper secondary school				1.387***
				(0.028)
University				1.413***
				(0.030)
Unknown				0.610***
				(0.032)
Household (ref. Cohabiting without children)				
Cohabiting with children				0.798***
				(0.027)
Single				1.068*
				(0.027)
Single parent				0.733***
				(0.044)
Constant	0.441***	0.583***	0.582***	0.165***
	(0.014)	(0.029)	(0.033)	(0.152)
Log likelihood	-45447.494	-44515.879	-44390.509	-42772.295
Nagelkerke R^2	0.057	0.076	0.079	0.112
N (Person-years)	101,310			

Note: The reference category of the dependent variable includes those staying outside of employment. *=p<0.05; **=p<0.01; ***=p<0.001. Coefficients shown are odds ratios. Standard errors are in parentheses.
Source: Author's calculations of the ASTRID database.

6.3.3 Modelling First Employment Entry by Immigrant Origin

Hedberg and Tammaru (2013) identified significant differences between immigrant groups and their first employment entry. Nonetheless, they did not explore whether the factors explaining first employment entry differ between groups. By exploring the immigrant origin groups separately, it is possible that the findings so far may change. This is because the immigrant population in Sweden, and particularly this cohort, represented a very heterogeneous group that may have included labour immigrants and former asylum seekers, refugees, and family-tied immigrants. Similarly to the approach for the last regression models, summary statistics are available for the variables but this time they are separated for each of the origin groups (Table 6.4).

The results report the share of person-years for each group and how likely each group is to experience a transition into first employment. On the next row of the table, the share of person-years by municipality reveals how compared to the overall immigrant population as a whole, distinctions can be made between groups with, on the one hand, Nordic immigrants presenting greater shares among rural areas while, on the other hand, Sub-Saharan African and Latin American immigrants having had much higher shares in metropolitan municipalities and their suburbs. The demographics are also worth considering because compared to the immigrant population as a whole, Nordic immigrants, and those from Western Europe and North America, had higher shares of men. Similarly, the household structure of these two groups differed as they also presented much higher shares of single people without children. In terms of education, the distribution across groups differed greatly too. Nordic and Latin American immigrants, for example, presented the lowest shares of compulsory education but they also presented higher shares of unknown education than expected.

It is, however, important to note that these summary statistics are for person-years after censoring has taken place. For example, any years following the event of first employment entry were removed and therefore the remaining characteristics displayed here arguably represent the least successful immigrants in terms of economic integration. In other words, some of the noticeable patterns may not necessarily be a true representation of the immigrant group concerned but a selection effect of those who have already left the ‘risk set’ by entering first employment.

Table 6.4 Summary statistics of variables used in the discrete-time binomial logistic regressions estimating the odds of first employment entry (by origin) in Sweden, 2000-2010

	Nordic		Western Europe and North America		Eastern Europe		Latin America		Middle East and North Africa		Sub-Saharan Africa		Asia	
Categorical variables	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%
Non-events	7,401	72.8	10,252	71.2	17,106	80.9	2,402	71.4	31,297	89.5	818	15.6	9,907	82.5
First employment entries	2,761	27.2	4,158	28.9	4,030	19.1	963	28.6	3,690	10.6	4,424	84.4	2,101	17.5
Municipality classification														
Metropolitan	2,797	27.5	5,108	35.5	5,418	25.6	1,353	40.2	13,778	39.4	2,429	46.3	4,117	34.29
Metropolitan suburban	1,470	14.5	2,515	17.5	2,160	10.2	758	22.5	3,352	9.6	602	11.5	2,025	16.9
Large city	1,983	19.5	3,815	26.5	6,734	31.9	754	22.4	13,449	38.4	1,467	28.0	3,575	29.8
Rural	1,830	18.0	612	4.3	626	3.0	70	2.1	500	1.4	113	2.2	345	2.9
Rest of Sweden	2,082	20.5	2,360	16.4	6,198	29.3	430	12.8	3,908	11.2	631	12.0	1,946	16.2
Gender														
Man	5,525	54.4	7,837	54.4	6,578	31.1	1,153	34.3	15,128	43.2	2,028	38.7	4,026	33.5
Woman	4,637	45.6	6,573	45.6	14,558	68.9	2,212	65.7	19,859	56.8	3,214	61.3	7,982	66.47
Education														
Compulsory	678	6.7	966	6.7	4,323	20.5	294	8.7	10,486	30.0	1,397	26.7	2,461	20.49
Upper secondary	2,944	29.0	3,139	21.8	7,554	35.7	1,094	32.5	12,081	34.5	1,477	28.2	3,482	29.0
University	2,776	27.3	5,027	34.9	4,658	22.0	1,185	35.2	6,889	19.7	727	13.9	3,251	27.1
Unknown	3,764	37.0	5,278	36.6	4,601	21.8	792	23.5	5,531	15.8	1,641	31.3	2,814	23.4
Household														
Cohabiting without children	1,151	11.3	2,278	15.8	3,670	17.4	595	17.7	4,981	14.2	703	13.4	2,069	17.23
Cohabiting with children	2,234	22.0	4,204	29.2	9,565	45.3	1,115	33.1	19,075	54.5	1,929	36.8	5,436	45.3
Single	6,420	63.2	7,591	52.7	5,608	26.5	1,303	38.7	8,556	24.5	1,795	34.2	3,656	30.5
Single parent	357	3.5	337	2.3	2,293	10.9	352	10.5	2,375	6.8	815	15.6	847	7.1
Continuous variables	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age at migration	33.3	9.8	31.6	8.2	32.7	8.8	30.8	7.4	33.3	8.8	30.2	7.6	31.7	8.0
Age at migration²	1204.0	715.5	1064.2	577.5	1145.4	627.7	1006.5	505.0	1183.2	627.0	967.4	515.9	1065.3	553.7
N (person-years)	10,162		14,410		21,136		3,365		34,987		5,242		12,008	

Source: Author's calculations of the ASTRID database.

The main patterns to be highlighted from Table 6.5 are the differences between the origin groups and the overall findings of the total immigrant cohort (Table 6.3). In contrast to the year 2000, the odds of entering first employment generally decreased with time for most immigrants except those from the Middle East and North Africa. The lowest odds for these immigrant groups generally coincided with the year prior, during, or just after the economic recession. Immigrant groups with small differences to this overall pattern were Eastern Europeans, who had higher odds of entering first employment in 2001 (odds ratio of 1.153), and Latin Americans, Sub-Saharan Africans, and Asians, showing no significant differences between the first and second year. Immigrants from the Middle East and North Africa differed the most because in addition to having significantly higher odds of entering first employment in 2001 than 2000 (odds ratio of 1.666), their highest odds were in 2007 (odds ratio of 2.015) whereas there were no significant differences during the years 2002, 2009, and 2010. It is difficult to explain exactly why the pattern has occurred. However, it may be the case that conditions for first entry to employment are particularly bad during the first two years of settlement in Sweden and that every year following has had a positive effect for this group except during the economic crisis when they were not significantly better or worse than the year of arrival.

The role of geography with regards to first employment entry presents varied results because immigrants from Western Europe and North America showed no significant differences and Latin America showed no significant differences between metropolitan municipalities and the suburbs. The remaining groups all had higher odds in metropolitan suburbs. One of the most interesting finds is that immigrants from Eastern Europe and Asia living in rural municipalities had a significantly higher odds of entering first employment than their counterparts in metropolitan municipalities (odds ratios of 1.268 and 1.442). Another rather surprising find relates to education. While most groups presented lower odds of entering first employment with unknown education, and all groups (except Western Europe and North America, and Latin America) presented higher odds with university education, an unusual find is that Asian immigrants with university level education were negatively associated with first employment entry in comparison to compulsory school education (odds ratio 0.797).

Table 6.5 Discrete-time binomial logistic regressions estimating the odds of first employment entry (by origin) in Sweden, 2000-2010

	Nordic	Western Europe and North America	Eastern Europe	Latin America	Middle East and North Africa	Sub-Saharan Africa	Asia
Year (ref. 2000)							
2001	0.410***	0.499***	1.153**	0.980	1.666***	1.163	1.138
	(0.067)	(0.051)	(0.052)	(0.105)	(0.069)	(0.107)	(0.068)
2002	0.095***	0.114***	0.493***	0.262***	0.919	0.289***	0.343***
	(0.126)	(0.092)	(0.068)	(0.158)	(0.080)	(0.164)	(0.099)
2003	0.087***	0.119***	0.650***	0.312***	1.535***	0.370***	0.378***
	(0.148)	(0.102)	(0.069)	(0.168)	(0.075)	(0.167)	(0.103)
2004	0.083***	0.084***	0.542***	0.234***	1.302**	0.190***	0.356***
	(0.168)	(0.131)	(0.079)	(0.210)	(0.082)	(0.226)	(0.114)
2005	0.090***	0.080***	0.523***	0.217***	1.369***	0.328***	0.392***
	(0.181)	(0.143)	(0.086)	(0.235)	(0.085)	(0.197)	(0.118)
2006	0.090***	0.110***	0.687***	0.218***	1.754***	0.272***	0.458***
	(0.193)	(0.147)	(0.089)	(0.288)	(0.084)	(0.224)	(0.126)
2007	0.048***	0.120***	0.513***	0.331***	2.015***	0.378***	0.491***
	(0.275)	(0.164)	(0.105)	(0.274)	(0.088)	(0.218)	(0.137)
2008	0.031***	0.093***	0.401***	0.204***	1.927***	0.277***	0.498***
	(0.359)	(0.194)	(0.124)	(0.356)	(0.094)	(0.263)	(0.147)
2009	0.029***	0.063***	0.331***	0.247***	1.171	0.102***	0.332***
	(0.385)	(0.243)	(0.141)	(0.362)	(0.111)	(0.397)	(0.182)
2010	0.044***	0.078***	0.306***	0.175***	1.047	0.240***	0.251***
	(0.326)	(0.259)	(0.155)	(0.438)	(0.120)	(0.296)	(0.214)
Municipality classification (ref. Metropolitan)							
Metropolitan suburban	1.689***	1.056	1.406***	1.105	2.057***	1.825***	1.188*
	(0.081)	(0.064)	(0.070)	(0.113)	(0.065)	(0.128)	(0.075)
Large city	1.183*	0.966	0.975	0.777*	1.164***	0.833	0.786***
	(0.075)	(0.055)	(0.051)	(0.108)	(0.042)	(0.103)	(0.065)
Rural	1.029	1.044	1.268*	0.759	1.220	0.743	1.442**
	(0.087)	(0.112)	(0.105)	(0.313)	(0.160)	(0.252)	(0.126)
Rest of Sweden	1.108	1.076	1.029	0.792	1.154*	0.909	0.938
	(0.083)	(0.069)	(0.053)	(0.140)	(0.062)	(0.139)	(0.077)

Note: The reference category of the dependent variable includes those staying outside of employment. *=p<0.05; **=p<0.01; ***=p<0.001. Coefficients shown are odds ratios. Standard errors are in parentheses.
Source: Author's calculations of the ASTRID database.

Table 6.5 Continued

	Nordic	Western Europe and North America	Eastern Europe	Latin America	Middle East and North Africa	Sub-Saharan Africa	Asia
Age at migration	1.068**	1.161***	1.090***	1.135**	1.052**	1.103*	1.116***
	(0.025)	(0.023)	(0.019)	(0.046)	(0.018)	(0.048)	(0.028)
Age at migration²	0.999***	0.998***	0.998***	0.998**	0.998***	0.998*	0.998***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)
Gender (ref. Woman)							
Man	0.822***	1.590***	1.532***	1.951***	2.215***	1.530***	1.374***
	(0.054)	(0.043)	(0.043)	(0.089)	(0.040)	(0.100)	(0.056)
Education (ref. Compulsory school)							
Upper secondary school	1.311	1.091	1.866***	1.168	1.656***	2.115***	0.897
	(0.155)	(0.101)	(0.057)	(0.168)	(0.047)	(0.121)	(0.075)
University	2.074***	0.958	2.109***	0.910	1.982***	1.959***	0.797**
	(0.154)	(0.097)	(0.063)	(0.168)	(0.052)	(0.142)	(0.076)
Unknown	0.961	0.536***	0.657***	0.437***	0.585***	0.509***	0.423***
	(0.152)	(0.097)	(0.071)	(0.179)	(0.080)	(0.136)	(0.085)
Household (ref. Cohabiting without children)							
Cohabiting with children	0.862	0.885	0.708***	0.762*	0.662***	0.581***	0.618***
	(0.115)	(0.069)	(0.055)	(0.124)	(0.054)	(0.112)	(0.067)
Single	1.175	1.378***	1.080	0.905	0.784***	0.743*	0.846*
	(0.102)	(0.062)	(0.059)	(0.125)	(0.061)	(0.124)	(0.071)
Single parent	1.016	0.921	0.645***	0.752	0.533***	0.502***	0.712**
	(0.166)	(0.175)	(0.079)	(0.170)	(0.102)	(0.164)	(0.117)
Constant	0.398*	0.098***	0.089***	0.094**	0.051***	0.091**	0.142***
	(0.441)	(0.379)	(0.313)	(0.749)	(0.303)	(0.757)	(0.452)
Pseudo log-likelihood	-4597.750	-7174.463	-9491.992	-1796.167	-10881.566	-1933.069	-5185.320
Pseudo R^2	0.227	0.171	0.078	0.108	0.077	0.148	0.069
N (Person-years)	10,162	14,410	21,136	3,365	34,987	5,242	12,008

Note: The reference category of the dependent variable includes those staying outside of employment. *=p<0.05; **=p<0.01; ***=p<0.001. Coefficients shown are odds ratios. Standard errors are in parentheses.
Source: Author's calculations of the ASTRID database.

6.4 Conclusion

When referring back to the objectives set out at the start of this chapter, one of the main justifications behind applying a longitudinal framework to analyse first employment entry was to measure the timing of events or spells. The first research question relates to the importance of time and was 'How long does it take for new immigrants to enter employment?' The analysis in this chapter showed that the median time for immigrants to enter employment was just over two years, but the most significant finding was that 19 per cent of immigrants never entered employment during the 11-year observation period. These findings were compatible with earlier work by Hedberg and Tammaru (2013) but also differ in some key ways. Hedberg and Tammaru (2013) found that despite following immigrants for a period of 10 years, one third of them remained outside of employment. The research in this chapter therefore supports Hedberg and Tammaru (2013) in noting that many immigrants never succeed in entering employment. The findings, however, suggest that the problem is less extensive than noted by Hedberg and Tammaru (2013). This said, the research in this chapter shows that for those immigrants who do not manage to get a job in the first year or two, the likelihood of success drops significantly, with worsening odds of this happening over time in comparison to their year of arrival.

Various factors may explain why different patterns have emerged. Firstly, the study by Hedberg and Tammaru (2013) captured a cohort arriving when Sweden's 1990s recession was at its worst and followed them through to a period of economic growth and stability. In contrast, the cohort analysed in this chapter was nearly the opposite. They arrived in 2000 when the economy was relatively strong and stable (with the exception of the IT bubble burst) and were followed through time when Sweden's economy entered recession. Likewise, instead of focussing on a cohort residing in metropolitan and segregated neighbourhoods, this chapter examined arrivals residing across all of Sweden. This may explain the findings with regards to suburban metropolitan municipalities – many of which have the segregated neighbourhoods of the Hedberg and Tammaru (2013) study – had higher observed employment entries.

The second research question of this chapter was 'Which immigrants are more likely to enter employment?' In addressing this question, particular emphasis was given to the role of immigrant origin and other socio-demographic characteristics. Descriptive

statistics from the K-M curves showed that although Nordic immigrants were the first to enter employment in the first year of analysis (50 per cent 'surviving'), by the end of the study period Latin American's had overtaken them (8 per cent 'surviving' in 2010 compared to 21 per cent for Nordic). In contrast, immigrants from the Middle East and North Africa and Sub-Saharan Africa were the least likely to enter employment (29 and 25 per cent 'surviving', respectively). To identify whether statistically significant differences remained after adjusting for immigrant compositional differences, discrete-time binomial logistic regressions were run. The results showed that with the exception of immigrants from Western Europe and North America, and Latin America, having no significant differences to Nordic immigrants, all other groups were significantly less likely to enter employment. The answer to the question, immigrants from the Nordic countries, Western Europe and North America, and Latin America, are more likely to enter employment.

Where this chapter departs from earlier work on this field in Sweden (Hedberg and Tammaru, 2013), is that it examines the immigrant population by separate origin groups to identify whether the socio-demographic predictors of first employment entry are similar across groups. The results showed that except for Nordic immigrants, men had higher odds of entering employment. Different household structures presented no significant differences among Nordic immigrants. Apart from immigrants from Western Europe and North America (who had highest odds for single households), all other groups were most associated with first employment entry if they were cohabiting without children. Another variable that raised some interesting findings was education. Why were Asian immigrants significantly less likely to enter employment if they had university-level education? The 'Asia' group in the data is very heterogeneous and includes immigrants from Turkey, other parts of Western Asia, as well as South and East Asia. Countries within the latter world regions send high numbers postgraduate students to Sweden (see Chapter 1). Students were not excluded from the sample as they, like other members of the population, also seek employment alongside their studies. It is therefore possible that although this group are included in the data, they are less likely to be seeking employment. Another more plausible explanation is that because this immigrant group was so heavily linked with employment in the hotels and restaurant sector (see Chapter 4), low-educated immigrants were more likely to find

employment first while highly-educated immigrants chose to stay outside the labour market until a suitable match could be made between their education level and desirable employment.

The third and final research question was 'Where are immigrants more likely to enter employment?' The answer to this question could be addressed using the location of employment or residence, or both. However, data in this chapter was restricted to only residential location measured by municipality. The K-M analysis suggested that residing in metropolitan suburbs was associated with greater entry to first employment. The regression analysis supported this finding by showing that immigrants living in such municipalities were 1.421 times more likely to enter employment for the first time than those living in metropolitan municipalities. Nonetheless, as the disaggregated analysis has shown, the role of geography was not uniform across all immigrant groups. For example, immigrants from Western Europe and North America did not present any significant differences as to where they were residing and its influence on first employment entry. Latin Americans were more likely to enter employment in large city municipalities. Although an expectation may have been that Nordic immigrants presented higher likelihoods in the rural areas due to the border regions, the surprising finding was that Eastern European and Asian immigrants instead presented higher odds of employment entry in rural areas compared to their metropolitan counterparts (odds ratios of 1.268 and 1.442). Swedish metropolitan suburbs are associated with high concentrations of immigrants. The higher probability of entering employment for the first time may therefore be linked to new immigrants drawing on networks consisting of their co-ethnic/co-national population living near them. These areas are also likely to have access to a larger labour market with a greater variety of employment opportunities.

In contrast, rural municipalities are generally associated with fewer labour market opportunities and also less likely to have as well-established networks for immigrants. The analysis of Chapter 4 showed that Eastern European men and women niched in manufacturing sector and that this sector was largely associated with rural areas of Sweden. This may explain why Eastern European immigrants living in rural municipalities were significantly more likely to enter employment than those in metropolitan municipalities. However, Asian men and women were shown to niche in

the hotels and restaurant sector that was associated large urban localities in Sweden. An alternative explanation may be the increasing presence of South East Asian women in rural areas who have higher employment rates than their urban counterparts (Hedberg and Haandrikman, 2014).

Whether immigrants from Eastern Europe and Asia genuinely have less co-ethnic existing networks in rural areas is not knowable from this analysis. If that is the case, these groups may be drawing more on networks with natives and others in these areas to establish employment opportunities. This emphasises the need to conduct more research on labour market integration of immigrants in areas outside of traditional metropolitan regions and look towards small towns and rural areas that may not only present different opportunities, but possibly preferential ones too (Waters and Jiménez, 2005; Hugo and Morén-Alegret, 2008).

Where this chapter builds on the earlier empirical chapters is that it adopted a longitudinal micro-analytical perspective. This does not necessarily mean that this chapter takes a sociological life-course approach (Wingens *et al.*, 2011). However, because first employment entry may be theorised as a key life event for new (Kogan *et al.*, 2011), this contributes to sociological life-course approach as it revealed how dynamic the transition into the labour market could be between different people across time and space.

Chapter 7
Discussion and Conclusions

7.1 Introduction

The combination of the three previous empirical chapters has helped this thesis provide answers to the research questions developed in Chapter 2 and therefore achieve the greater of aim of this thesis highlighted in Chapter 1. The purpose of this chapter is to draw together the overall findings of the three empirical chapters and discuss their contribution within the broader literature in which this thesis is embedded. The chapter begins by revisiting the original aim of this thesis. The three major research questions of the thesis are then addressed by summarising the findings. The wider significance of the research is then discussed and conceptualised in relation to the academic literature, especially Fielding's (2012) schema. In the final section, critical reflections are made regarding the theoretical and methodological aspects of the thesis before future research possibilities are presented.

7.2 Research Aim and Empirical Findings

The overall aim of this thesis has been '*to deepen understanding of immigrant integration processes during recession using Sweden as an empirical lens*'. To achieve this broad aim, Chapter 2 proposed three major research questions to be answered by three empirical chapters (Chapters 4 and 6). While each of the empirical chapters presented their own subsidiary research questions (and answers), they also, when taken together, offered answers to the three major research questions of the thesis. These research questions are now each reviewed in turn in relation to the answers offered by the data analyses presented in chapters 4-6.

A) 'How has the recession and other economic processes changed the labour market and migration experiences of immigrants in Sweden?

As highlighted in Chapter 2 stated, there are many aspects of integration that can be empirically studied but two particular areas have been examined in this thesis due to their temporal and spatial significance: labour market integration, and internal

migration. Chapters 4 and 6 examined labour market integration and Chapter 5 examined internal migration. Chapter 4 focussed particularly on the sectoral distribution of immigrants within the Swedish labour market. The findings revealed that there was indeed an immigrant division of labour in Sweden and that it has been shaped by a combination of long-term economic processes such as economic restructuring, and also short-term economic processes such as the downturn in the business cycle. Accordingly, the recession appears to have reinforced an existing division of labour based on immigrant origin and gender. For example, the long-term decline in manufacturing sector employment has produced an immigrant origin hierarchy with Nordic and Eastern Europeans niching within the sector and other groups, such as those from Asia, with decreasing probability of working in this sector over time. During the recent recession, the former of these groups tended to show few significant differences of unemployment entry to natives, highlighting the possibility that short-term economic processes, like recession, further shape the immigrant division of labour through creating differential risks of unemployment across sectors.

Many immigrant groups who would have been employed in manufacturing before economic restructuring have shown greater odds of niching within service-oriented sectors that are commonly associated with low-skilled and low-paid employment, such as hotels and restaurants, and elderly and disabled care. While these sectors generally have higher turnover rates of employees, the risk of entering unemployment during recession increased to a lesser degree than other sectors such as manufacturing. Thus, despite larger economic processes potentially placing immigrants in poorer labour market positions, immigrants may not have experienced a higher risk of entering unemployment during the recession than they would have during economic boom conditions. In fact, with the exception of immigrants from the Middle East and North Africa, other groups faced no significantly greater risk of entering unemployment than their native counterparts. This is an important finding as historic and recent accounts of immigrant labour and recessions so often consider the immigrant population as one entity that is all equally, and negatively, affected by the recession (Dobson *et al.*, 2009; Fix *et al.*, 2009). The findings of this thesis challenge this and build an argument that immigrant labour in the recession must be re-conceptualised.

In addition to the labour market integration analysis of Chapter 4, Chapter 6 used a longitudinal approach to analyse the characteristics of first employment entry of new immigrants. Chapter 6 was able to reveal how even after an 11-year period in Sweden, a significant proportion of the study population had not entered employment for the first time. Furthermore, when modelled using regression, it was possible to see that the odds of entering employment reduced over time and that during the years of the recession, the odds were at their lowest for almost all immigrant groups. Interestingly, immigrants from the Middle East and North Africa had no significant differences during these years. This was possibly due to this group having been in no worse circumstances during these years in comparison to the challenging first few years in Sweden. Thus, it could be concluded from the empirical analysis of Chapter 6 that while the years associated with economic recession correspond with the lowest odds of first employment entry, this was not universal across all groups.

The analysis of Chapter 5 contributed to understanding whether the recession and other economic processes affected the migration outcomes of immigrants in Sweden. The findings showed that, in general, internal migration behaved according to economy theory, increasing during periods of economic boom and declining during economic bust. Moreover a clear spatial dimension was observed in relation to this pattern. Metropolitan regions of Sweden (Stockholm, Gothenburg and Malmö) lost migrants during economic boom and gained migrants during the economic bust due to the role of these regions. One theory that may offer explanation behind these patterns is the 'escalator region' theory (Fielding, 1992). Accordingly, young adults move to core metropolitan 'escalator' regions in an effort to achieve social mobility before 'stepping off' the escalator later on in their life-course. While this thesis does not empirical test this hypothesis, the spatial and temporal patterns of migration highlight the potential explanatory power of this theory when applied to the Swedish context.

Migration to and from metropolitan regions may reflect various stages in the life-course, such as attending higher education or starting new employment, while migration to non-metropolitan regions is more characteristic of later stages in the life-course, such as family formation or retirement. These are important considerations when migration flows are disaggregated by immigrant origin, particularly because there may differences in these life-course trajectories between population sub-groups (Finney,

2011). Migration to and from metropolitan regions may also reflect different trajectories of social mobility. For example, according to the spatial assimilation hypothesis (Massey and Denton, 1985), as immigrants experience upward socio-economic mobility, they move in closer proximity to majority population groups. Nonetheless, adaptations of spatial assimilation have highlighted the variety of areas in which immigrants first settle and how they can either concentration with or disperse from minority populations across different spatial scales depending on whether they experience upward or downward socioeconomic mobility (Wright *et al.*, 2005; Sabater *et al.*, 2012). While the analysis in Chapter 5 does not empirically test theories on life-course or spatial assimilation, the fact that significant differences existed between the migration of origin groups to different regions suggests it is not only important to consider the link between internal migration and the business cycle, and internal migration and deeper economic processes, but also the compositional aspects of the immigrant population.

B) ‘Has the recession produced a changing geography of immigrant groups?

Evidence in Chapter 4 (and other research) has revealed how important factors shaping the immigrant division of labour during periods of different economic processes have been shaping the geography of immigrant groups. The early dominance of the manufacturing sector produced a spatial division of labour where employment was focussed especially in small urban localities and various rural localities across Sweden (Andersson and Solid, 2003). Due to the sector relying heavily upon immigrant labour to meet demands, this inevitably resulted in the distribution of immigrants across all these areas. In addition to economic restructuring between 1970 and 1990 in earlier research (Bevelander, 1999), the empirical work in this thesis has shown that restructuring has continued between 1990 and 2008 whereby manufacturing has continued to shrink and resulted in employment growth in other service-oriented sectors.

The example of hotels and restaurants shows that immigrant employment in the service sector continues in urban localities. The example of employment in the elderly and disabled care sector shows that immigrant employment is also important for the service sector in rural localities. Within these sectors there are distinct immigrant origin

and gender differences. Nordic and Eastern European men and women both had high percentages of employment in manufacturing. A high percentage of Asian men were employed in hotels and restaurants. Similarly, there was a high percentage of Sub-Saharan African women employed in elderly and disabled care. Therefore, there exists a distinctive geographical distribution of immigrant groups across urban and rural Sweden as a result in the immigrant division of labour and the process of economic restructuring that predominately shape it. In terms of whether the economic recession has changed this, it is less clear. The gradual privatisation of the Swedish health care services has coincided with increasing reports of precarious employment conditions (Hedberg and Pettersson, 2011; Jönson and Giertz, 2013). This is likely to increase even more as the longer-term effects of the recession are felt and therefore have implications on the types of immigrants hired in these sectors and whether newer, more flexible immigrants, succeed them in the labour market.

The findings of Chapter 5 helped provide some answers about the extent to which a distinct geographical redistribution of immigrant groups has been observed. As shown, immigrants were more likely to migrate internally than natives. During the recession, this pattern remained the same. In terms of migration to metropolitan regions, immigrants were more likely to migrate to such places than natives, regardless of the recession. This was particularly the case for immigrants from non-European countries of origin. Migration from metropolitan regions, however, was more typical of natives and Nordic and European immigrants. In summary, the outcome suggests that there has been a general concentration of non-European immigrants in metropolitan regions and a degree of dispersal of Nordic and European internal migrants away from metropolitan regions. The latter has occurred to a much smaller extent than the former. Although the business cycle has slowed these patterns, it would appear that the forces producing this significant geographical 'sorting' of the population are deep structural economic processes rather than short-term effects associated with cycles of recession and economic boom. Again, this challenges the expectations of cyclical forces in determining internal migration (Milne, 1993) and points towards future considerations focussing more closely on life-course and social mobility.

C) ‘To what extent does labour market integration of immigrants in rural Sweden differ to other areas of Sweden?

For the final major research question, conclusions are drawn from Chapter 4 and 6. In terms of the immigrant division of labour, labour market conditions in rural areas have changed with differential economic processes such as restructuring and recession. Due to economic restructuring, resulting in the decline in manufacturing employment opportunities, rural areas may no longer present a more favourable environment for immigrants. The growth of employment, for example in elderly and disabled care work, may have offered some rejuvenation for immigrant labour market integration opportunities in more rural areas. The examination of unemployment within this sector suggests that even during recession it may be more stable during economic downturns compared to other sectors. In other words, rural Sweden may offer an alternatively beneficial pathway into the labour market for many immigrants through the elderly and disabled care sector, in contrast to other forms of service sector employment located in more urban environments, such as hotels and restaurants.

Chapter 6 examined whether the labour market integration processes of immigrants in rural areas differed from other areas through the analysis of employment entry. By following a new cohort of immigrants over an 11-year period, it was possible to model the odds of first employment entry after controlling for a range of individual characteristics, including municipality classification. Studying the cohort altogether, the findings revealed that first employment entry was more associated with metropolitan suburbs compared to metropolitan municipalities, and rural and others that were not large cities had significantly lower odds compared to metropolitan municipalities. After controlling for socio-demographic characteristics, the finding of metropolitan suburban municipalities remained significant. When the immigrant population was then disaggregated, Eastern European and Asian immigrants in rural areas were still significantly more likely to enter employment for the first time than their counterparts in metropolitan municipalities. Although this thesis stops short of explaining why rural areas of Sweden may provide better labour market integration processes, it is one of a very small number of studies to identify this as an area worthy of more attention.

7.3 Conceptualisation of Labour and Migration Outcomes

7.3.1 Revising Fielding's Schema

In an effort to try and conceptualise the main findings of this thesis, the discussion here turns to presenting a conceptual framework inspired by Fielding (2012). His original framework (Figure 2.1) was designed to summarise economic processes at three levels ('conjuncture', 'restructuring', and 'deep structural') over the period 1950-2010, while also setting out their migration effects in high-income regions/countries. In doing so, he also stressed that it was entirely feasible for processes at these different levels to counteract one another and that such complexity could not be avoided. The new framework presented in this section (Figure 7.1) departs from Fielding's in four main aspects: firstly, it applies to the study of both labour market and migration outcomes; secondly, it captures the differing experiences of immigrant groups from different origins that have been the focus of the empirical analyses; thirdly, it is applied to Swedish context between the years 1990 and 2010; and fourthly, greater effort is given to understand how the economic processes are linked.

7.3.2 'Cyclical' Processes

At the first level, cyclical processes can explain how as the economy experiences periods of growth and decline. Both labour market and migration outcomes are shaped by these cycles. In the same way that migration decreases during economic recession and growth during economic expansion (Milne, 1993), similar patterns can be reflected in the demand for labour (internal and international) as employment in sectors sensitive to the business cycle stagnate. At this moment the differential roles of immigrant labour are important to mark out. For example, if labour is substitutional then the cyclical effects of the recession will be very evident and this may have knock-on effects with internal migration. On the other hand, if the role is complementary then such effects may not necessarily be so evident and therefore migration change will occur to lesser extent. These differentiated roles in labour can reflect different timings of recession effects on migration decisions. For example, migration may range from an instantaneous response, to a lagged response. This may also be based on the type of immigrant that is being studied, for example, refugees, family-reunification, or labour immigrants. In addition to labour demands not being constant with time, due to

fluctuations, demand for labour from one particular immigrant group is not constant with time either. The construction or management of these different immigrant origin groups are, however, related to deeper structural processes discussed shortly.

7.3.3 'Structural' Processes

At the second level of the framework, structural processes take place. In terms of the labour market, many of the processes highlighted in Fielding's diagram (Figure 2.1) remain applicable. Firstly, as a remnant of Fordism occurring before the study period, in 1990 there was still evidence of 'regional sectoral specialisation' as the manufacturing sector employment highly linked with rural localities close to natural resources. This was linked with all immigrant labour initially, but gradually Nordic and Eastern European immigrants as the next stages of structural processes occurred: new spatial division of labour and the new immigrant division of labour.

The new spatial division of labour marks the manner in which demand for particular types of work has differed between urban and rural areas as the Swedish economy has restructured from manufacturing to services. Here, the growing demand for immigrants in low-skilled service sectors differs across space, with hotels and restaurants in urban localities and elderly and disabled care in rural localities. Immigrants of different origin and gender niche within these sectors, such as Asian men in hotels and restaurants, and Sub-Saharan African women in the elderly and disabled care sector.

Coinciding with the two previous phases has been the intensification of neo-liberal globalisation. This has included the commoditisation and financialisation evident in reforms of Swedish housing policy (Hedin *et al.*, 2012), health and care services (Bergmark, 2008), and labour recruitment (OECD, 2011). Immigrants are significantly more likely to face unemployment than natives. The possibility is that this pattern may intensify as the country continues to privatise and outsource aspects of its social welfare system, and directly recruitment of immigrants to fill shortages in the labour market. These shortages will change over time and this feeds back to the debate on whether immigrant labour will be complementary or substitutional or not.

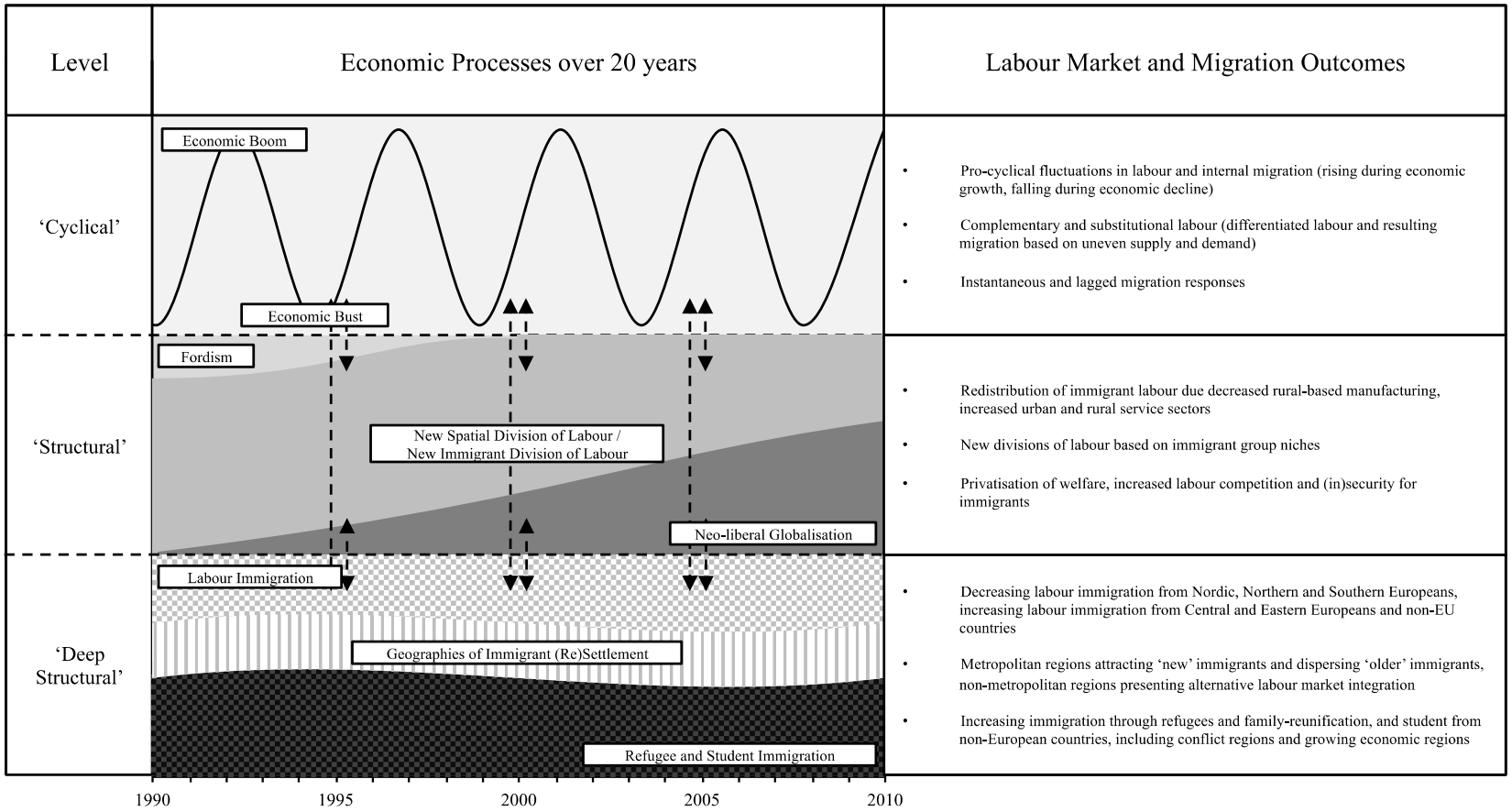

Figure 7.1 Conceptual framework summarising key relations between economic processes and labour market and migration outcomes
Source: Author.
Note: The author acknowledges the contribution of Fielding (2012) whose schema shown in Figure 2.1 was the trigger to the development of Figure 7.1.

7.3.4 'Deep Structural' Processes

At the bottom level of the framework, there have been slower, more foundational elements that shape the above processes. One aspect is the gradual changes in how immigrants are defined and recruited over time. In the early 1990s, the only labour immigrants were Nordic immigrants due to the signing of the Common Nordic Labour Market Agreement. The definition of labour immigrants has since expanded in the Swedish context, to include those from the EU in 1995, the EU accession countries in 2004 and 2007, and non-EU labour immigrants since 2008 (OECD, 2011). In some ways this latter example links back to the neo-liberal processes within the labour market in Sweden. In contrast to the gradual shift in labour immigration in Sweden, there has been a constantly evolving immigrant population through other forms of immigration, such as refugee, family-reunification, and higher education. Cohorts of refugees have been arriving in Sweden for decades but from the 1990s onwards this has included those from Iran, Iraq, the former Yugoslavia, and Somalia and Syria (Bevelander and Dahlstedt, 2012). Alongside these cohorts of refugees or family-tied immigrants, there has been a growing number immigrants arriving for higher education purposes. This has grown substantially among non-EU countries and particularly Southern and Eastern Asia (Swedish Migration Board, 2014c).

Linking the above two phases of 'deep structural' processes has been the changing geographies of immigrants established through different settlement and re-settlement patterns. The geographical location of immigrant settlement has changed over time in relation to the types of immigrants entering Sweden. In addition to the spatial division of labour highlighted as part of the 'structural' processes, there have been various other drivers of settlement and re-settlement of immigrants in Sweden. At this level, core metropolitan regions contribute to migration patterns that behave differently to the oversimplified cyclical patterns observed at the top of the framework. Unlike at the national-level, metropolitan regions experience net migration losses during economic boom and net gains during economic bust. Fielding's (2012) schema points towards the role of metropolitan regions as 'escalator regions' whereby the 'brightest and best' young adults 'step on' to the escalator through spatial relocation (migration) to an escalator region as young adults and 'step off' later in their life-course in relation due events such as family formation and retirement (Fielding, 1992). Previous studies have

examined different proponents of the 'escalator region' hypothesis in the Swedish context (Andersson, 1996; Nilsson, 2003). Depending on how many other characteristics are controlled for, there are potential differences that are observable between native Swedes and immigrants of different origins.

An aspect of Fielding's hypothesis is that it does not explore the complex factors that may shape the movement patterns of different groups. For example, according to the spatial assimilation hypothesis, immigrants may already start off in escalator regions and wish to undertake an outward mobility as they achieve upward mobility (although this may also result in them staying in the same overall region (Macpherson and Strömgren, 2013). Furthermore, the compulsory resettlement of refugees in Sweden between 1985 and 1994 may have overrepresented the extent to which immigrants have undertaken a secondary migration to metropolitan regions. However, when examining immigrants that have not been resettled through such policy mechanisms, the likelihood is that differences between origin groups may relate to compositional factors rather than cultural ones.

7.3.5 Interconnections between Economic Processes

Where the existing Fielding model is limited is that little attention is given to how cyclical, structural, and deep structural processes are linked to one another. Visually displaying the interconnections between the various economic processes is challenging due to the various possible connections than run in both directions. Figure 7.1 includes arrows linking the different levels of economic processes at multiple time points. A good example for understanding these complex interconnections is when considering the immigrant division of labour in Sweden. The immigrant division of labour is located within the restructuring process but is shaped by both deep structural and cyclical processes. Changing origins of immigrants depict the types of immigrants required to meet demand in particular sectors of the labour market. Due to the nature of some sectors being more sensitive to cyclical changes than others, the cyclical changes then further shape the immigrant division of labour. Another good example is the role of core metropolitan regions for inter-regional migration. Core metropolitan regions draw in migrants as part of a deep structural process but migration from the region is subject to cyclical changes in the labour and housing markets.

In summary, Figure 7.1 offers a summary of the conceptual contribution of this thesis. It schematises key relationships between economic processes and labour market and migration outcomes. The evidence base of the thesis provides the evidence on which the conceptual contribution is based. The evidence both supports the principle that labour and migration can be seen to change with economic processes over time and the idea that scholars should not limit themselves only to short-run economic effects but should also seek to identify 'structural' and 'deep structural' effects. The adaptation presented in Figure 7.1 goes further however in illustrating the importance of recognising the power of geographical context in producing distinctive labour and migration outcomes and also the significance of the historically contingent circumstances that embed short-run effects within longer-run structural processes.

Fielding's (2012) framework is limited in how it presents the different trajectories that may take place within the life-course of an individual. Although Fielding suggests that deep structural processes take place over the period of a person's lifespan, and that the escalator region hypothesis (constituting one of the 'deep structural' processes) explains social-spatial mobility to and from core regions as young adults step on to the escalator, and step off it later in life for family formation or retirement, little mention is given to the different trajectories an individual may make. The conceptual framework of this thesis (Figure 7.1) is also limited in this respect.

The framework presented in Figure 7.1 (and Figure 2.4) is structural and overlooks the role of agency among individual immigrants, families, or communities. Returning to the point made by Wingens *et al*. (2011) in section 2.5.2, applying a sociological life-course approach constitutes a promising conceptual start point for overcoming the crucial micro-macro problem in social research because it enables researchers to analyse the dynamic inter-relationship between structure and agency. By treating first employment entry as a key life-course event, and following a new immigrant cohort through a longitudinal micro-analytical perspective, Chapter 6 was able to highlight how within structures of the labour market, immigrants faced differential probabilities of experiencing this key life event over time. Had a similar approach been used in all chapters, the thesis would perhaps have had more to contribute about the inter-relationship between structure and agency.

In light of these limitations, it is worth considering what alternative conceptual frameworks may look like. This would depend on whether or not the emphasis remains on differential economic processes, and how they are reflected across the life-course, or whether the focus is on life-course and on labour and migration outcomes. For example, if one were to visualise how the framework may differ across the life-course, one approach could be to construct a similar framework but disaggregate it by key age groups commonly associated with different life stages, for example, ages 18-34, 35-64, 65 and above (Fischer and Malmberg, 2001). This would constitute a demographic life-course perspective (Wingens *et al.*, 2011). Another approach could be to include a fourth level in the framework to incorporate the individual's life-course that is nested within economic processes including business cycles, economic restructuring, and deeper structural processes. This could include how key life event transitions such as starting higher education, partnership or marriage, having children, could influence migration or labour market outcomes (Finney, 2011). Doing this would constitute more of a sociological life-course approach (Wingens *et al.*, 2011).

Similar approaches could be used with more immigrant-specific characteristics such as grounds of settlement, origin, or cohort. For example, disaggregating the framework by refugees, family-reunified immigrants, labour immigrants, or students could present how labour and migration outcomes differ across time and are also shaped differently by differential economic processes. This could be applied with a multi-generational schema starting with first generation, followed by second or third generations. To continue discussion on such issues, the following section critically reflects on the limitations of this thesis and looks towards future developments.

7.4 Limitations, Implications, and Future Developments

7.4.1 Theoretical Limitations

Having identified the conceptual contributions of the thesis, it is important to critically reflect on the limitations and how these might be overcome in future work. Starting with the theoretical approaches, there are areas of this thesis where the theoretical scope has been limited. These limitations have generally been based on rational choices, such as what theories can be empirically tested within the scope of a PhD. First, this thesis only examines the labour market aspects of integration. Justification behind studying labour market integration was two-fold. Firstly, labour market integration is considered one of the most important aspects for the integration of immigrants (Lemaître, 2007). Secondly, as the performance of labour markets is heavily tied to changes in the business cycle, the labour market integration of immigrants (and natives) is highly likely to be impacted the recession (Fix *et al.*, 2009). This thesis has shown that labour market integration can be adversely affected by recession, and that the effects are not uniform across all immigrant groups. However, this thesis is not able to say whether more social aspects of integration are more or less significantly impacted by the recession. Indeed, the direct effects of recession on labour market positions may have negative indirect effects on the well-being of immigrants (Wright and Black, 2011) creating further challenges for social integration.

Secondly, this thesis has been limited to the study of internal migration rather than both international and internal migration. Moreover, inter-regional migration has been the focus of attention rather than intra-regional migration. The reason behind this decision was that researchers often overlook internal migration in favour of migration at international scales, despite the fact that internal migration occurs to a higher degree (Ellis, 2012). Furthermore, the internal migration of immigrant populations is an under-researched field (Catney and Finney, 2012). Where this thesis could have contributed further is how internal migration and integration are connected. Achieving this would require more empirical focus examining how the spatial distance between immigrants and natives corresponds with socio-economic changes over time, such as spatial assimilation theory (Massey and Denton, 1985).

Thirdly, due to the main focus of this thesis being the effects of economic change on immigrant integration processes, many theoretical advancements in life-course theory have been overlooked (Wingens *et al.*, 2011). Chapters 4 and 5 presented what may be described as a demographic life-course perspective as life-stage was controlled for in terms of age and household structure. According to the view of Kogan *et al*. (2011), Chapter 6 would qualify as a sociological life-course study as it analyses, longitudinally, new immigrants' transition to a key life event: first employment entry. Nonetheless, by examining how this life event (and others) may differ across the life-course, in terms of age, and interact with other key life events (such as moving out of the family home, formation of partnership, birth of children), this chapter would move beyond a longitudinal micro-analytical perspective on one event to a more truly holistic sociological life-course approach (Wingens *et al.*, 2011). Such a theoretical approach would further deepen understandings of immigrant integration processes in the context recession.

7.4.2 Methodological Limitations

As highlighted in Chapter 3, a quantitative approach was used in this thesis for two main reasons. Firstly, collecting primary data encompassing different population groups (natives and immigrants), across various spatial scales (nationally and regionally), and across time (before and during recession), would have been extremely challenging in the time-frame of a PhD. Secondly, a quantitative approach was able to offer insight into causal processes and enable replicable research across a population using a representative sample (Bryman, 2012). Both cross-sectional and longitudinal research designs were used for quantitative analysis.

The first issue to be raised is what this thesis can effectively say about labour market integration. Labour market integration includes the process in which population sub-groups achieve the same outcomes in the labour market, usually measurable through indicators such as employment rates, income, and occupational matching and mobility (Castles *et al.*, 2002). This thesis only looks at niching (concentration) within industrial sectors, what predicts the probability of employment in examples of these niches, and what predicts the unemployment risk for individuals employed in these sectors (Chapter 4). Furthermore, the thesis examines labour market entry (Chapter 6). By studying more complex transitions between economic states (employed,

unemployed etc.) and mobility between sectors (moving from manufacturing into services), this thesis could contribute more to the literature on immigrant succession within the labour market (Wright and Ellis, 1996, 1997), and the immigrant division of labour (Wills *et al.*, 2010). Using attitudinal data (qualitative or quantitative), an additional development would be to examine what immigrants consider successful labour market integration. For example, empirically it may appear that particular groups are not fully integrated into the labour market because their key indicators would suggest that they are disadvantaged in the labour market. Nonetheless, immigrants may actually be satisfied with their labour market performance.

The next main issue to be raised is, to what extent it is possible to separate out recession effects from other age, period, or cohort effects? The modelling strategy used for the first two empirical chapters compared labour market and migration outcomes between two periods that represented economic boom and bust. Had the analysis pooled the models to produce a time variable to capture the difference between the two periods, the analysis would still not have been able to identify whether the observed change over time was due to the time period, the age, or the cohorts studied. In the third empirical chapter, time variables were included but, again, the effects of time may not be reflecting the recession but more the negative selection process of those who fail to enter employment. Even with a more complex multi-level and longitudinal modelling framework (see 3.3.2), it would be challenging to know for certain whether a change in labour market or migration outcomes is driven by economic change, or other social factors, or a combination of both. Qualitative research may offer some insights in this arena.

Lastly, to continue the discussion of age, period, and cohort effects, and to connect back to the absence of a theoretically-positioned life-course approach, by disaggregating many of the observed relationships in the empirical chapters by key life-events, or age intervals commonly associated with them, some of the observed patterns may disappear or be strengthened. For example, are young immigrants who leave their parental homes more likely to be affected by recession in terms of labour market and migration outcomes than natives? Are older adults with children more at risk than singles? Are recession effects stronger for immigrants during events later in life, such as

retirement? These are all valid questions that go beyond the scope of this thesis but, given the correct methods and data, may be answerable.

A unique aspect of this thesis has been that its focus is on immigrant integration issues in Sweden, using Swedish register data, but from an Anglo-American researcher's perspective. How immigrant integration is understood in this thesis may therefore be more heavily influenced by debates taking place in UK and US literature than what is normally the case in Swedish literature. Similarly, the attention given to understanding what is knowable from Swedish register data may be given more notice too. As Chapter 3 highlighted, the future of the population census, particularly in the UK, is a subject of discussion. Register data offer an alternative form of data to study population issues compared to surveys and censuses. While it is unlikely that the UK will move to collecting register-based population data, it remains valuable to reflect on what can been learnt in the case of this thesis in relation to understanding what is actually knowable from using such data.

Sweden's register data are a very rich form of data that are surprisingly accessible to researchers when compared to similarly detailed material in other countries. Despite this, the practicalities of undertaking a research project using Swedish data while being based at a UK institution has its challenges. In addition to the logistical challenges (such as having to travel to secured labs in Umeå University to access data), it is important to recognise that register data also present a variety of more fundamental opportunities and questions to researchers. First, the population available for study is the total registered population. Inevitably when studying immigrant populations, such data will under-represent the population due to omission of movers that are seasonal, illegal, or asylum seekers awaiting grounds for settlement. However, such issues are common if census or survey data were being used. Another aspect limiting the use of register data is the complete lack of attitudinal data. Similar issues relate to the lack of ethnicity information and restricted country of birth data.

For all the limitations of data being collected through administrative registers rather than directly posing questions to the population, multiple advantages are the less biased results concerning capital transfers (for example, work-related income, unemployment benefits), and also the annual availability of the data and geo-referencing of units of analysis. These factors allow the register data to be ideal for

longitudinal analysis in comparison to censuses, and allow spatial disaggregation of such analysis in comparison to longitudinal surveys that only have samples of the total population.

A last reflection is that in comparison to demographers, economists or sociologists, geographers in Sweden (as elsewhere) appear to have been slower in adopting longitudinal models to longitudinal data. This is unfortunate because although the existing research done within these other disciplines has expanded knowledge, there has often been neglect of understanding geographical variations. As identification numbers in the Swedish register data are available at the individual level, family level, workplace level, company level, as well as the longitudinal capabilities of research through annual updates of the registers, there are multi-level and longitudinal capabilities for future studies.

7.4.3 Future Research

Given the richness of the Swedish register data, the future of quantitative immigrant integration research in Sweden should link data in multiple domains of integration (e.g. employment, housing, education, health) across different temporal and spatial scales. These data can also be examined across multiple temporal scales, such as economic cycles, economic restructuring, and during multiple generations and life-courses using more advanced modelling techniques. Standard measures of immigrant assimilation employed by social scientists have generally included: socio-economic status (defined through educational attainment, occupational specialisation and parity in earnings); spatial concentration (dissimilarity in spatial distribution and of suburbanisation); language assimilation (defined in terms of language ability and loss of mother tongue; and intermarriage (defined by race, ethnicity and generation) (Waters and Jiménez, 2005). These overlap with immigrant engagement within core domains of integration, such as employment, housing, education, and health (Ager and Strang, 2008). In addition to measures of integration, an important consideration is how these measures both influence, and are influenced by geographical proximity between immigrants and natives. This proximity may, however, take place in different spaces such as residence, workplace, and household.

The interaction between immigrants and natives across various geographical spaces offers advancements in understanding integration processes, but it is only relatively recently that researchers have begun to examine the interaction between these different spaces. Inspired by research in the US that studies the exposure to racial and ethnic contact at both residential and workplace spaces concurrently (Ellis *et al.*, 2004, 2007; Wright *et al.*, 2010), Swedish literature has now begun to take into account both residential and workplace segregation to reveal how the latter is more important for determining the earnings of immigrants (Tammaru *et al.*, 2010). The most recent study also applies similar data to analyse how much residential segregation and intermarriage with natives accounts for workplace segregation (Strömgren *et al.*, 2014).

A particularly interesting methodological approach to follow over the coming years is sequence analysis. Originally used in genetics research and later adopted by sociologists (Abbott, 1995; Abbott and Tsay, 2000), sequence analysis has since been used for studying housing and employment careers (Pollock, 2007), and moving desires and actual moves (Coulter and van Ham, 2013). In terms of immigrant integration, only a few studies have applied this method (Kogan, 2007; Fuller, 2011; Fuller and Martin, 2012). In Sweden, only one study has used such an approach and that was for the study of intergenerational transmission of neighbourhood poverty (van Ham *et al.*, 2014). In terms of advancing both empirical and theoretical literature on immigrant integration processes, further research should consider examining the engagement of immigrants within multiple domains of integration highlighted in the previous section by using innovative new methods such as sequence analysis. Such methods can provide more dynamic and holistic approaches to understanding the complexity of integration through time and space.

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Appendices

Appendix 1 The year of establishing registers/introducing registers in census statistics by type of register and country

	Denmark		Finland		Norway		Sweden	
Type of register	Est.	Used in Census	Est.	Used in Census	Est.	Used in Census	Est.	Used in Census
Central Population Register	1968	1981	1969	1970	1964	1970	1967	1975
Business Register	1975	1981	1975	1980	1965	1980	1963	1975
Dwellings	1977	1981	1980	1985	2001	*2011*	*2008*	*2011*
Housing conditions	1977	1981	1980	1985	2001	*2011*	*2008*	*2011*
Education	1971	1981	1970	1975	1970	1980	1985	1990
Employment	1979	1981	1987	1990	1978	2001	1985	1985
Family	1968	1981	1978	1980	1964	1980	1960	1975
Household*	1968	1981	1970	1975	2001	*2011*	*2011*	*2011*
Income	1970	1981	1969	1970	1967	1980	1968	1975
Totally register-based census		1981		1990		*2011*		*2011*

Note: Italics indicate uncertainties in original source.
Source: UNECE (2007).

Appendix 2 Confidentiality and regulations for handling personal data in Sweden

Act	Description
Secrecy Act (1980:100)	According to the Secrecy Act, confidentiality applies to the activities of authorities that involve the production of statistics on data showing individual personal or economic situations and which can be identified as referring to that individual. The principle rule is therefore that data in statistical activities are confidential and should not be released. Exceptions to this rule have been made for information needed for research or statistical purposes, which cannot be directly linked to the individual through name, other identity symbol or comparable situation. Data can be released, in these cases, when it is determined that the data can be disclosed without causing harm or injury to the individual the data refer to or someone close to that individual. The term individual relates to physical as well as legal persons. Before the release of data on the basis of one of the exceptions, an assessment must always be carried out on the risk of causing harm or injury to the individual the data refer to or someone close to that individual. It should be clear that the release of data could be done without risk.
Personal Data Act (1998:204)	The Personal Data Act contains certain fundamental decisions on the handling of personal information, for example that the handling should be carried legal and carried out in the correct manner and according to best practice. The data being handled should be adequate and relevant. The information should be handled only if it is essential to the objectives of the activity. Particularly rigorous rules apply for the handling of sensitive personal information, i.e. information on race or ethnic background, political views, religious or philosophical convictions, trade union membership and health or sexual circumstances. The handling of sensitive personal information for research purposes is permitted by explicit consent from the registered individual. It is permitted even without such consent, if it is essential and approved by a regional ethics committee or is reported in advance to the Data Inspection Board, for advance control.
Official Statistics Act (2001:99)	The Official Statistics Act, which came into force in April 2001, states that, for research and statistical purposes, it is acceptable to release data with a serial number, which can be linked to a personal identity number by the statistical authority using a key. Such data can be released if the recipient has a specific need to add additional material later, such as the next year's information. This release of anonymous material with a key means that the data, according to the Personal Data Act, will be considered as personal information for the recipient. The recipient of the data then becomes responsible for personal data and is obliged to follow the rules laid out in the Personal Data Act.

Source: Statistics Sweden (2006:15-16)

Appendix 3 Variable table of the LISA database

Variable	Description (Swedish)	Coverage	Source	Description (English)
Demografiska variabler				**Demographic variables**
PersonNr	Personnummer *(ersätts med löpnummer vid levererans)*	1990-	RTB	Personal identity number (anonymised)
FodelseAr	Födelseår	1990-	RTB	Year of birth
Alder	Ålder	1990-	RTB	Age
Kon	Kön	1990-	RTB	Sex
Lan	Bostadslän	1990-	RTB	County
Kommun	Bostadskommun	1990-	RTB	Municipality
Forsamling	Bostadsförsamling	1990-	RTB	Parish
FastLopNr	Fastighetens löpnummer (hjälpvariabel, levereras ej)	1990-1998	RTB	Property identity number
FastBet	Fastighetsbeteckning (hjälpvariabel, levereras ej)	1998-	RTB	Property name
AntFlyttTot	Antal flyttningar inom riket under året	1990-	InrFlytt	Number of migrations within the country during the year
AntFlyttKommun	Antal flyttningar över kommungräns under året	1990-	InrFlytt	Number of migrations across municipal boundaries during the year
Civil	Civilstånd	1990-	RTB	Civil status
CivilAntAr	Antal år i civilstånd	1990-	RTB	Number of years in civil status
FamStF	Familjeställning	1990-	RTB	Family status
SenInvAr	Senaste invandringsår	1990-	RTB	Latest year of immigration
FodelseLan	Eget födelselän	1990-	RTB	Country of birth
MedbLandNamn	Medborgarskap *(hjälpvariabel, levereras ej)*	1990-	RTB	Citizenship
MedbGrEg	Medborgarskap *(grupperad med EU(15))*	1990-	RTB	Citizenship (grouped by EU15)
MedbGrEg2	Medborgarskap *(grupperad med EU(25))*	1990-	RTB	Citizenship (grouped by EU25)
MedbGrEg3	Medborgarskap *(grupperad med EU(27))*	2006-	RTB	Citizenship (grouped by EU27)
MedbMan	Månad för medborgarskap	1998-	RTB	Month of citizenship
SEI	Socioekonomisk indelning	1990	FoB90	Socio-economic classification
För familj:				**For family:**
FamTypF	Familjetyp	1990-	RTB	Family type
KonsViktF	Konsumtionsvikt för familj	1990-2004	IoT	Consumption weight of family
KonsViktF04	Konsumtionsvikt för familj, nytt begrepp	2004-	IoT	Consumption weight of family
Barn0_3	Antal hemmavarande barn 0-3 år	1990-	RTB	Number of dependent children 0-3 years
Barn4_6	Antal hemmavarande barn 4-6 år	1990-	RTB	Number of dependent children 4-6 years
Barn7_10	Antal hemmavarande barn 7-10 år	1990-	RTB	Number of dependent children 7-10 years
Barn11_15	Antal hemmavarande barn 11-15 år	1990-	RTB	Number of dependent children 11-15 years
Barn16_17	Antal hemmavarande barn 16-17 år	1990-	RTB	Number of dependent children 16-17 years
Barn18plus	Antal hemmavarande barn 18 år o däröver	1990-2004	RTB	Number of dependent children 18 years or over
Barn18_19	Antal hemmavarande barn 18-19 år	2004-	RTB	Number of dependent children 18-19 years
Barn20plus	Antal hemmavarande barn 20 år och däröver	2004-	RTB	Number of dependent children 20 years or over
FamId	Familjeidentitet *(ersätts med löpnummer vid levererans)*	1990-	RTB	Family identity number

Note: Shaded cells indicate variables used in this thesis. Country of birth is aggregated to 18 countries (see Appendix 12). Latest year of emigration is also included. In addition to these variables, north and east coordinates for the primary property is included at the 100 x 100 metre grid reference.
Source: Statistics Sweden (2014b)

Appendix 3 Continued

Variable	Description (Swedish)	Coverage	Source	Description (English)
Utbildningsvariabler				**Education variables**
HUtbSun	Utbildning, högsta avslutade enligt ”gamla” SUN	1990-1999	UReg	Highest completed education, "old" SUN
Sun2000niva	Utbildningsnivå, högsta avslutade, SUN2000	1990-	UReg	Highest completed education, SUN2000
Sun2000Inr	Utbildningsinriktning, högsta avslutade, SUN2000	1990-	UReg	Highest completed education by orientation, SUN2000
Sun2000Grp	Utbildningsgrupp, högsta avslutade, SUN2000	1990-	UReg	Highest completed education by group, SUN2000
Sun2000niva_old	Utbildningsnivå, högsta, aggregerat till 7 'svenska' nivåer	1990-	UReg	Highest completed education, aggregated to 7 'Swedish' levels
ExamAr	Utbildningsår (avslutningsår högsta utb.)	1990-	UReg	Exam year of highest completed education
ExamKommun	Utbildningskommun (avslutningsår högsta utb.)	2012-	UReg	Municipality of highest completed education
KallKod	Källa för uppgift om högsta utbildning	1990-	UReg	Student participation in the fall semester, form of education
StudDelt	Studiedeltagande under höstterminen, form av utbildning	1997-	Personer i utbildning	Student participation in fall semester
StudDeltTyp	Markering för studiedeltagande under höstterminen	1992-	Personer i utbildning	Selection for student participation in fall semester
FoDelt	Registrering på högskola, forskarutbildning	1990-	Personer i utbildning	Registration in graduate education
HSDelt	Registrering på högskola, grundutbildning	1990-	Personer i utbildning	Registration in undergraduate education

Source: Statistics Sweden (2014b).

Appendix 3 Continued

Variable	Description (Swedish)	Coverage	Source	Description (English)
Sysselsättningsvariabler				**Employment variables**
SyssStat11	Sysselsättningsstatus enligt justerad metod 2011	2011-	SReg	Employment status
SyssStatJ	Sysselsättningsstatus enligt justerad metod 2004	2003-2011	SReg	Employment status
SyssStat	Sysselsättningsstatus (november månad)	1993-2003	SReg	Employment status (November)
SyssStatG	Sysselsättningsstatus (gamla definitionen)	1990-1993	SReg	Employment status (old definition)
ArbTid	Arbetad tid	1990	FoB90	Employment time per week
YrkStalln	Yrkesställning (november månad)	1990-	SReg	Occupational position (November)
YrkStallnJ[1]	Yrkesställning (november månad) enligt justerad metod[1]	2003	SReg	Occupational position (November)
YrkStallnKomb	Kombinatörer (anställd + företagare m.m.)	2003-	SReg	Combination (employed + employer etc.)
OpFtgLedare	Operativ företagsledare	2004-	OpF	Operating manager
StatusF	Aktiv eller passiv egenföretagare (novembersysselsättning)	2004-	SReg	Active or passive self-employed
PeOrgNr	Företagets organisationsnummer *(ersätts med löpnummer vid levererans)*	1990-	Arbetsstallen	Company registration number
PeOrgNrSregJ[1]	Företagets organisationsnummer *(ersätts med löpnummer vid levererans)*, enligt justerad metod[1]	2003	SReg	Company registration number
PeOrgNrSreg	Företagets organisationsnummer enligt Sysselsättningsregistret *(ersätts med löpnummer vid levererans)*	1990-	SReg	Company registration number according to the Employment Register
CfarNr	Arbetsställets CFAR-nummer *(ersätts med löpnummer vid levererans)*	1990-	SReg	Workplace identity number
CfarNrJ[1]	Arbetsställets CFAR-nummer (ersätts med löpnummer vid levererans), enligt justerad metod[1]	2003	SReg	Workplace identity number
AstNr	Arbetsställenummer enligt RAMS	1990-	SReg	Workplace number according to RAMS
ArbstId	Kopplingsvariabel till arbetsställetabell (endast sysselsatta vid faktiska arbetsställen)	1990-	SReg	Coupling variable to workplace table (only employed with actual workplaces)
Nyk	Yrke enligt Folk- och Bostadsräkning	1990	FoB90	Occupational status
Ssyk3	Yrke enligt SSYK, 3-siffernivå, för förvärvsarbetande	2001-	Yreg	3-digit occupational classification
Ssyk4	Yrke enligt SSYK, 4-siffernivå, för förvärvsarbetande	2001-	Yreg	4-digit occupational classification
SsykAr	Årtal för yrkesuppgift, för förvärvsarbetande	2001-	Yreg	Years of occupational classification
SsykKalla	Källa för yrkesuppgift, för förvärvsarbetande	2001-	Yreg	Source of occupational classification
SsykStatus	Yrkets överensstämmelse med novembersysselsättningen	2001-	Yreg	Occupation's compliance with November employment
YrkVerksStat	Yrkesverksamhetsstatus enligt Yrkesregistret	2002-	Yreg	Occupational status according to Occupational Register

Note: Employment status variables were only used to compare with the author's labour market position classification.
Source: Statistics Sweden (2014b).

Appendix 3 Continued

Variable	Description (Swedish)	Coverage	Source	Description (English)
Sysselsättningsvariabler				**Employment variables**
AstKommun	Arbetsställekommun	1990-	SReg	Workplace municipality
AstKommunJ[1]	Arbetsställekommun enligt justerad metod[1]	2003	SReg	Workplace municipality
AstLan	Arbetsställelän	1990-	SReg	Workplace county
AstLanJ[1]	Arbetsställelän enligt justerad metod[1]	2003	SReg	Workplace county
AntalSys	Antal sysselsatta på arbetsstället	1990-	SReg	Number of employees in the workplace
InstKod	Institutionell sektorkod (företag)	1990-1998	SReg	Company institutional sector code
InstKod6	Institutionell sektorkod (företag)	1999-2000	SReg	Company institutional sector code
InstKod7	Institutionell sektorkod (företag)	2001-	SReg	Company institutional sector code
InstKod7J[1]	Institutionell sektorkod (företag) enligt justerad metod[1]	2003	SReg	Company institutional sector code
SektorKod	Sektortillhörighet (företag)	1990-	Arbetsstallen	Company sector of employment
SektorKodSreg	Företagets sektortillhörighet enligt Sysselsättningsregistret	2005-	SReg	Company's sector according to Employment Register
SektorKodJ[1]	Sektortillhörighet (företag) enligt justerad metod[1]	2003	Arbetsstallen	Company sector of employment
AstSNI69	Arbetsställets näringsgren, SNI69	1990-1993	SReg	Workplace industrial classification, SNI69
AstSNI92	Arbetsställets näringsgren, SNI92	1990-2001	SReg	Workplace industrial classification, SNI92
AstSNI92B	Arbetsställets näringsgren, SNI92, begränsad nivå (42 grupper)	1990-2001	SReg	Workplace industrial classification, SNI92 (42 groups)
AstSNI92G	Arbetsställets näringsgren, SNI92, grov nivå (10 grupper)	1990-2001	SReg	Workplace industrial classification, SNI92 (10 groups)
AstSNI2002	Arbetsställets näringsgren, SNI2002	2002-2010	SReg	Workplace industrial classification, SNI2002
AstSNI2002B	Arbetsställets näringsgren, SNI2002, begränsad nivå (42 grupper)	2002-2010	SReg	Workplace industrial classification, SNI2002 (42 groups)
AstSNI2002G	Arbetsställets näringsgren, SNI2002, grov nivå (10 grupper)	2002-2010	SReg	Workplace industrial classification, SNI2002 (10 groups)
AstSNI2002J[1]	Arbetsställets näringsgren, SNI2002, enligt justerad metod[1]	2003	SReg	Workplace industrial classification, SNI2002
AstSNI2002BJ[1]	Arbetsställets näringsgren, SNI2002, begränsad nivå (42 grupper), enligt justerad metod[1]	2003	SReg	Workplace industrial classification, SNI2002 (42 groups)
AstSNI2002GJ[1]	Arbetsställets näringsgren, SNI2002, grov nivå (10 grupper), enligt justerade metod[1]	2003	SReg	Workplace industrial classification, SNI2002 (10 groups)
AstSNI2007	Arbetsställets näringsgren, SNI2007	2007-	SReg	Workplace industrial classification, SNI2007
AstSNI2007G	Arbetsställets näringsgren, SNI2007, grov nivå (15 grupper)	2007-	SReg	Workplace industrial classification, SNI2007 (15 groups)
AstSNI2007U	Arbetsställets näringsgren, SNI2007, utökad nivå (51 grupper)	2007-	SReg	Workplace industrial classification, SNI2007 (51 groups)
AntAns	Antal förvärvskällor under året	1990-	JobbReg	Number of income sources during the year

Note: Unlike the occupational classification on the previous table, the industrial classification variables used here presented very little definitional differences across time at the aggregate level.
Source: Statistics Sweden (2014b).

Appendix 3 Continued

Variable	Description (Swedish)	Coverage	Source	Description (English)
Sysselsättningsvariabler				**Employment variables**
För största förvärvskälla:				**For largest income source:**
KU1Ink	Inkomst av största förvärvskälla	1990-	JobbReg	Income from largest income source
KU1PeOrgNr	Företagets organisationsnummer *(ersätts med löpnummer vid levererans)*	1990-	JobbReg	Company registration ID
KU1CfarNr	Arbetsställets CFAR-nummer *(ersätts med löpnummer vid levererans)*	1990-	JobbReg	Workplace identity number
KU1AstNr	Arbetsställenummer enligt RAMS	2007-	JobbReg	Workplace number according to RAMS
KU1YrkStalln	Yrkesställning 1 (största förvärvskälla)	1990-	JobbReg	Employment position
KU1AstKommun	Arbetsställekommun	1990-	JobbReg	Workplace municipality
KU1AstLan	Arbetsställelän	1990-	JobbReg	Workplace county
KU1InstKod	Institutionell sektorkod (företag) (InstKod)	1990-1998	JobbReg	Company institutional sector code
KU1InstKod6	Institutionell sektorkod (företag) (InstKod6)	1999-2000	JobbReg	Company institutional sector code
KU1InstKod7	Institutionell sektorkod (företag) (InstKod7)	2001-	JobbReg	Company institutional sector code
KU1SektorKod	Sektortillhörighet (företag)	1990-	JobbReg	Company sector of employment
KU1AstSNI69	Arbetsställets näringsgren, SNI69	1990-1992	JobbReg	Workplace industrial classification, SNI69
KU1AstSNI92	Arbetsställets näringsgren, SNI92	1993-2001	JobbReg	Workplace industrial classification, SNI92
KU1AstSNI92B	Arbetsställets näringsgren, SNI92, begränsad nivå (42 grupper)	1993-2001	JobbReg	Workplace industrial classification, SNI92 (42 groups)
KU1AstSNI92G	Arbetsställets näringsgren, SNI92, grov nivå (10 grupper)	1993-2001	JobbReg	Workplace industrial classification, SNI92 (10 groups)
KU1AstSNI2002	Arbetsställets näringsgren, SNI2002	2002-2010	JobbReg	Workplace industrial classification, SNI2002
KU1AstSNI2002B	Arbetsställets näringsgren, SNI2002, begränsad nivå (42 grupper)	2002-2010	JobbReg	Workplace industrial classification, SNI2002 (42 groups)
KU1AstSNI2002G	Arbetsställets näringsgren, SNI2002, grov nivå (10 grupper)	2002-2010	JobbReg	Workplace industrial classification, SNI2002 (10 groups)
KU1AstSNI2007	Arbetsställets näringsgren, SNI2007	2007-	JobbReg	Workplace industrial classification, SNI2007
KU1AstSNI2007G	Arbetsställets näringsgren, SNI2007, grov nivå (15 grupper)	2007-	JobbReg	Workplace industrial classification, SNI2007 (15 groups)
KU1AstSNI2007U	Arbetsställets näringsgren, SNI2007, utökad nivå (51 grupper)	2007-	JobbReg	Workplace industrial classification, SNI2007 (51 groups)
KU1Ssyk3	Yrke enligt SSYK, 3-siffernivå, för yrkesverksamma	2002-	Yreg	3-digit occupational classification
KU1Ssyk4	Yrke enligt SSYK, 4-siffernivå, för yrkesverksamma	2002-	Yreg	4-digit occupational classification
KU1SsykAr	Årtal för yrkesuppgift, för yrkesverksamma	2002-	Yreg	Years of occupational classification
KU1SsykKalla	Källa för yrkesuppgift, för yrkesverksamma	2002-	Yreg	Source of occupational classification
KU1SsykStatus	Yrkets överensstämmelse med största förvärvskälla	2002-	Yreg	Occupational

Source: Statistics Sweden (2014b).

Appendix 3 Continued

Variable	Description (Swedish)	Coverage	Source	Description (English)
Sysselsättningsvariabler				**Employment variables**
För näst största förvärvskälla:				**For second largest income source:**
KU2Ink	Inkomst av näst största förvärvskälla	1990-	JobbReg	Income from second largest income source
KU2PeOrgNr	Företagets organisationsnummer *(ersätts med löpnummer vid levererans)*	2007-	JobbReg	Company registration ID
KU2CfarNr	Arbetsställets CFAR-nummer (*ersätts med löpnummer vid levererans*)	2007-	JobbReg	Workplace identity number
KU2AstNr	Arbetsställenummer enligt RAMS	2007-	JobbReg	Workplace number according to RAMS
KU2YrkStalln	Yrkesställning 2 (näst största förvärvskälla)	1990-	JobbReg	Employment position
KU2AstKommun	Arbetsställekommun	2007-	JobbReg	Workplace municipality
KU2AstLan	Arbetsställelän	2007-	JobbReg	Workplace county
KU2InstKod	Institutionell sektorkod (företag) (InstKod)	1990-1998	JobbReg	Company institutional sector code
KU2InstKod6	Institutionell sektorkod (företag) (InstKod6)	1999-2000	JobbReg	Company institutional sector code
KU2InstKod7	Institutionell sektorkod (företag) (InstKod7)	2001-	JobbReg	Company institutional sector code
KU2SektorKod	Sektortillhörighet (företag)	1990-	JobbReg	Company sector of employment
KU2AstSNI69	Näringsgrenstillhörighet (arbetsställe) (SNI69)	1990-1992	JobbReg	Workplace industrial classification, SNI69
KU2AstSNI92	Näringsgrenstillhörighet (arbetsställe) (SNI92)	1993-2001	JobbReg	Workplace industrial classification, SNI92
KU2AstSNI2002	Näringsgrenstillhörighet (arbetsställe) (SNI2002)	2002-2010	JobbReg	Workplace industrial classification, SNI2002
KU2AstSNI2002B	Arbetsställets näringsgren, SNI2002, begränsad nivå (42 grupper)	2007-2010	JobbReg	Workplace industrial classification, SNI2002 (42 groups)
KU2AstSNI2002G	Arbetsställets näringsgren, SNI2002, grov nivå (10 grupper)	2007-2010	JobbReg	Workplace industrial classification, SNI2002 (10 groups)
KU2AstSNI2007	Arbetsställets näringsgren, SNI2007	2007-	JobbReg	Workplace industrial classification, SNI2007
KU2AstSNI2007G	Arbetsställets näringsgren, SNI2007, grov nivå (15 grupper)	2007-	JobbReg	Workplace industrial classification, SNI2007 (15 groups)
KU2AstSNI2007U	Arbetsställets näringsgren, SNI2007, utökad nivå (51 grupper)	2007-	JobbReg	Workplace industrial classification, SNI2007 (51 groups)
KU2Ssyk3	Yrke enligt SSYK, 3-siffernivå, för yrkesverksamma	2002-	Yreg	3-digit occupational classification
KU2Ssyk4	Yrke enligt SSYK, 4-siffernivå, för yrkesverksamma	2002-	Yreg	4-digit occupational classification
KU2SsykAr	Årtal för yrkesuppgift, för yrkesverksamma	2002-	Yreg	Years of occupational classification
KU2SsykKalla	Källa för yrkesuppgift, för yrkesverksamma	2002-	Yreg	Source of occupational classification

Source: Statistics Sweden (2014b).

Appendix 3 Continued

Variable	Description (Swedish)	Coverage	Source	Description (English)
Sysselsättningsvariabler				**Employment variables**
För tredje största förvärvskälla:				**For third largest income source:**
KU3Ink	Inkomst av tredje största förvärvskälla	1990-	JobbReg	Income from third largest income source
KU3PeOrgNr	Företagets organisationsnummer *(ersätts med löpnummer vid levererans)*	2007-	JobbReg	Company registration ID
KU3CfarNr	Arbetsställets CFAR-nummer (*ersätts med löpnummer vid levererans*)	2007-	JobbReg	Workplace identity number
KU3AstNr	Arbetsställenummer enligt RAMS	2007-	JobbReg	Workplace number according to RAMS
KU3YrkStalln	Yrkesställning (tredje största förvärvskälla)	1990-	JobbReg	Employment position
KU3AstKommun	Arbetsställekommun	2007-	JobbReg	Workplace municipality
KU3AstLan	Arbetsställelän	2007-	JobbReg	Workplace county
KU3InstKod	Institutionell sektorkod (företag) (InstKod)	1990-1998	JobbReg	Company institutional sector code
KU3InstKod6	Institutionell sektorkod (företag) (InstKod6)	1999-2000	JobbReg	Company institutional sector code
KU3InstKod7	Institutionell sektorkod (företag) (InstKod7)	2001-	JobbReg	Company institutional sector code
KU3SektorKod	Sektortillhörighet (företag)	1990-	JobbReg	Company sector of employment
KU3AstSNI69	Näringsgrenstillhörighet (arbetsställe) (SNI69)	1990-1992	JobbReg	Workplace industrial classification, SNI69
KU3AstSNI92	Näringsgrenstillhörighet (arbetsställe) (SNI92)	1993-2001	JobbReg	Workplace industrial classification, SNI92
KU3AstSNI2002	Näringsgrenstillhörighet (arbetsställe) (SNI2002)	2002-2010	JobbReg	Workplace industrial classification, SNI2002
KU3AstSNI2002B	Arbetsställets näringsgren, SNI2002, begränsad nivå (42 grupper)	2007-2010	JobbReg	Workplace industrial classification, SNI2002 (42 groups)
KU3AstSNI2002G	Arbetsställets näringsgren, SNI2002, grov nivå (10 grupper)	2007-2010	JobbReg	Workplace industrial classification, SNI2002 (10 groups)
KU3AstSNI2007	Arbetsställets näringsgren, SNI2007	2007-	JobbReg	Workplace industrial classification, SNI2007
KU3AstSNI2007G	Arbetsställets näringsgren, SNI2007, grov nivå (15 grupper)	2007-	JobbReg	Workplace industrial classification, SNI2007 (15 groups)
KU3AstSNI2007U	Arbetsställets näringsgren, SNI2007, utökad nivå (51 grupper)	2007-	JobbReg	Workplace industrial classification, SNI2007 (51 groups)

Source: Statistics Sweden (2014b).

Appendix 3 Continued

Variable	Description (Swedish)	Coverage	Source	Description (English)
Inkomstvariabler *Inkomst av förvärvskälla*				**Income variables** *Income by income source*
FInk89	Inkomst av rörelse/Inkomst av Jordbruksfastighet (brukad)1989	1990	SReg	Income from business/farming property
FInk90	Inkomst av rörelse/Inkomst av Jordbruksfastighet (brukad)1990	1990	SReg	Income from business/farming property
LoneInk	Kontant bruttolön	1990-	SReg	Work income
LoneInkJ[1]	Kontant bruttolön enligt justerad metod[1]	2003	SReg	Work income
FInk	Inkomstöverskott av aktiv näringsverksamhet	1991-2003	SReg	Surplus income from active business
InkFNetto	Nettoinkomst av näringsverksamhet	2003-	Sreg	Net income from business
InkFNettoA	Nettoinkomst av aktiv näringsverksamhet	2004-	Sreg	Net income from active business
ForvInk	Summa inkomst av förvärvskälla av aktiv näringsverksamhet, exkl underskott	1990-	SReg	Total income from active business, excluding debt
ForvInkNetto	Summa inkomst av förvärvskälla inkl underskott av näringsverksamhet	2003-	SReg	Total net income from business, including debt
ForvInkNettoA	Summa inkomst av förvärvskälla av aktiv näringsverksamhet, inkl underskott	2004-	SReg	Total income from active business, including debt
PasNar	Inkomst av passiv näringsverksamhet	1991-	IoT	Income from passive business
DekLon	Deklarerad löneinkomst	1991-	IoT	Declared work income
ForvErs	Förvärvsinkomst och arbetsrelaterade ersättningar	1990-	Sreg & IoT	Earned income and work-related benefits
ForvErsNetto	Förvärvsinkomst och arbetsrelaterade ersättningar inkl underskott av näringsverksamhet[1]	2003-	Sreg & IoT	Earned income and work-related benefits, including loss of business
ForvErsNettoA	Förvärvsinkomst och arbetsrelaterade ersättningar inkl underskott av aktiv näringsverksamhet[1]	2004-	Sreg & IoT	Earned income and work-related benefits, including loss of active business

Source: Statistics Sweden (2014b).

Appendix 3 Continued

Variable	Description (Swedish)	Coverage	Source	Description (English)
Inkomstvariabler				**Income variables**
Arbetstidsrelaterad social inkomst				*Work-related social income*
Studier:				**Studies:**
StudMed	Studiemedel och studiehjälp	1990-	IoT	Study support and study loan
SVuxA	Särskilt vuxenstudiestöd, bidrag (arb.lösa)	1997-2003	IoT	Adult study grant (unemployment)
Svux	Särskilt vuxenstudiestöd, bidrag (övriga)	1997-2003	IoT	Adult study grant (other)
SVuxSVuxA	Särskilt vuxenstudiestöd, bidrag	1990-1996	IoT	Adult study grant
VuxLan	Vuxenstudiestöd, lånedel	1990-1996	IoT	Adult study loan
SVuxALan	Vuxenstudiestöd, lån (arbetslösa)	1997-2003	IoT	Adult study loan (unemployment)
SVuxLan	Vuxenstudiestöd, lån (övriga)	1997-2003	IoT	Adult study loan (other)
RekrBidr	Rekryteringsbidrag	2003-2009	IoT	Recruitment grant
SUtKun	Särskilt utbildningsbidrag (Kunskapslyftet)	1997-2003	IoT	Educational grant
KortStu	Korttidsstudiestöd	1990-2001	IoT	Short-term study grant
SarVux	Timersättning vid läs- och skrivsvårigheter	1990-2001	IoT	Hourly rate for reading and writing
SFI	Svenska för invandrare	1990-1998	IoT	Swedish for immigrants
UtbDok	Utbildningsbidrag till doktorander	1990-	IoT	Educational grants for doctoral students
Stud	Summa inkomst föranledd av studier	1990-	IoT	Total income from studies
StudTyp	Förekomst av studerandeinkomster	1990-	IoT	Incidence of student income

Source: Statistics Sweden (2014b).

Appendix 3 Continued

Variable	Description (Swedish)	Coverage	Source	Description (English)
Inkomstvariabler				**Income variables**
Arbetstidsrelaterad social inkomst				*Work-related social income*
VPLErs	Värnpliktsersättning	1990-2010	IoT	Military service compensation
VPLTyp	Förekomst av värnpliktsersättning	1990-2010	IoT	Military service compensation
GMUErs	Grundläggande militärutbildning, ersättning för	2011-	IoT	Basic military training allowance
GMUTyp	Grundläggande militärutbildning, förekomst av	2011-	IoT	Basic military training allowance
ForsvarErs	Ersättningar, exkl. bilersättning, för hemvärn och frivillig personal	2012-	IoT	Allowance excluding car allowance etc.
Föräldraledighet:				**Parental leave:**
ForPeng	Föräldrapenning vid barns föd. el. adoption [2]	1990-	IoT	Parental care with child birth, excluding adoption
ForVAB	Tillfällig föräldrapenning för vård av barn [2]	1990-	IoT	Temporary parental child care
VardBidr	Vårdbidrag	1990-	IoT	Care allowance
KomVardBidr	Kommunalt vårdnadsbidrag	2011-	IoT	Municipal care allowance
ForLed	Summa inkomst föranledd av föräldraledighet	1990-	IoT	Total income from parental leave
ForLedTyp	Förekomst av föräldraersättning	1990-	IoT	Incidence of parental leave
ForPeng_Bdag	Föräldrapenning, antal bruttodagar	1993-	STORE (FK)	Parental benefit, gross number of days
ForPeng_Ndag	Föräldrapenning, antal nettodagar	1993-	STORE (FK)	Parental benefit, net number of days
ForPeng_Belopp	Föräldrapenning, ersättningsbelopp [2]	1993-	STORE (FK)	Parental benefit, reimbursement
TfForPeng_Bdag	Tillfällig föräldrapenning, antal bruttodagar	1993-	STORE (FK)	Temporary parental benefit, gross number of days
TfForPeng_Ndag	Tillfällig föräldrapenning, antal nettodagar	1993-	STORE (FK)	Temporary parental benefit, net number of days
TfForPeng_Belopp	Tillfällig föräldrapenning, ersättningsbelopp [2]	1993-	STORE (FK)	Temporary parental benefit, reimbursement
HavPeng_Bdag	Havandeskapspenning, antal bruttodagar	1993-	STORE (FK)	Pregnancy benefit, gross number of days
HavPeng_Ndag	Havandeskapspenning, antal nettodagar	1993-	STORE (FK)	Pregnancy benefit, net number of days
HavPeng_Belopp	Havandeskapspenning, ersättningsbelopp	1993-	STORE (FK)	Pregnancy benefit, reimbursement

Source: Statistics Sweden (2014b).

Appendix 3 Continued

Variable	Description (Swedish)	Coverage	Source	Description (English)
Inkomstvariabler				**Income variables**
Sjukdom/Arbetsskada/Rehabilitering:				**Sickness/Occupational injury/Rehabilitation:**
SjukPA	Sjukpenning, arbetsgivarinträde	1990-1993	IoT	Sickness benefit, employer entry
SjukPP	Sjukpenning, ej arbetsgivarinträde	1990-	IoT	Sickness benefit, individual entry
ArbSkErs	Arbetsskadeersättning [2]	1992-	IoT	Occupational injury compensation
AGSTFA	Ersättning från AGS och TFA	1990-	IoT	Compensation from AGS and TFA
SjukTyp	Förekomst av sjuk-/arbetsskadeersättning [2]	1990-	IoT	Incidence of sick-/occupational injury compensation
RehabErs	Rehabiliteringsersättning [2, 3]	1992-	IoT	Rehabilitation compensation
RehabTyp	Förekomst av rehabiliteringsersättning [2, 3]	1992-	IoT	Incidence of rehabilitation compensation
BoTill	Boendetillägg	2012-	IoT	Housing supplement
SjukRe	Summa inkomst föranledd av sjukdom/arbetsskada/rehabilitering	1990-	IoT	Total income from sickness/occupational injury/rehabilitation
SjukFall_Antal	Summerar antal sjukfall under året som övergått till sjukpenning, förebyggande sjukpenning, arbetsskadesjukpenning och/eller rehabiliteringspenning	1993-	STORE (FK)	Total number of cases of sickness in the year and sickness benefit, sickness prevention benefit, occupational injury benefit and/or rehabilitation compensation
SjukFall_PgStart	Startdatum för sjukfall som pågår sedan år t-1	1993-	STORE (FK)	Start date of sickness occuring since year t-1
SjukFall_Pg	Markering för om sjukfall pågår sedan föregående år	1993-	STORE (FK)	Check mark for sickness occuring since last year
Karens_Foretagare	Antal karensdagar för företagare	2008-	STORE (FK)	Number of qualifying days for entrepreneurs
SjukSum_Bdag	Summerar bruttodagar för ersättningsslag ingående i "SjukFall_antal"	1993-	STORE (FK)	Total gross number days for benefits in "SjukFall_antal"
SjukSum_Ndag	Summerar nettodagar för ersättningsslag ingående i "SjukFall_antal"	1993-	STORE (FK)	Total net number of days for benefits in "SjukFall_antal"
SjukSum_Belopp	Summerar utbetalt belopp för ersättningsslag ingående i "SjukFall_antal"	1993-	STORE (FK)	Total amount paid for benefits in "SjukFall_antal"
SjukP_Bdag	Sjukpenning, antal bruttodagar	1993-	STORE (FK)	Sickness benefit, gross number of days
SjukP_Ndag	Sjukpenning, antal nettodagar	1993-	STORE (FK)	Sickness benefit, net number of days
SjukP_Belopp	Sjukpenning, ersättningsbelopp	1993-	STORE (FK)	Sickness benefit, reimbursement
SjukP_08_Bdag	Sjukpenning, antal bruttodagar	2008-2011	STORE (FK)	Sickness benefit, gross number of days
SjukP_08_Ndag	Sjukpenning, antal nettodagar	2008-2011	STORE (FK)	Sickness benefit, net number of days
SjukP_08_Belopp	Sjukpenning, ersättningsbelopp	2008-2011	STORE (FK)	Sickness benefit, reimbursement
SjukP_Forlangd_Bdag	Sjukpenning, förlängd, antal bruttodagar	2008-2011	STORE (FK)	Extended sickness benefit, gross number of days
SjukP_Forlangd_Ndag	Sjukpenning, förlängd, antal nettodagar	2008-2011	STORE (FK)	Extended sickness benefit, net number of days
SjukP_Forlangd_Belopp	Sjukpenning, förlängd, ersättningsbelopp	2008-2011	STORE (FK)	Extended sickness benefit, reimbursement
SjukP_Fortsatt_Bdag	Sjukpenning, fortsatt, antal bruttodagar	2008-2011	STORE (FK)	Continued sickness benefit, gross number of days
SjukP_Fortsatt_Ndag	Sjukpenning, fortsatt, antal nettodagar	2008-2011	STORE (FK)	Continued sickness benefit, net number of days
SjukP_Fortsatt_Belopp	Sjukpenning, fortsatt, ersättningsbelopp	2008-2011	STORE (FK)	Continued sickness benefit, reimbursement

Source: Statistics Sweden (2014b).

Appendix 3 Continued

Variable	Description (Swedish)	Coverage	Source	Description (English)
Inkomstvariabler				**Income variables**
Sjukdom/Arbetsskada/Rehabilitering:				**Sickness/Occupational injury/Rehabilitation:**
Rehab_Bdag	Rehabiliteringspenning, antal bruttodagar	1993-	STORE (FK)	Rehabilitation benefit, gross number of days
Rehab_Ndag	Rehabiliteringspenning, antal nettodagar	1993-	STORE (FK)	Rehabilitation benefit, net number of days
Rehab_Belopp	Rehabiliteringspenning, ersättningsbelopp [2]	1993-	STORE (FK)	Rehabilitation benefit, reimbursement
Rehab_08_Bdag	Rehabiliteringspenning, antal bruttodagar	2008-2011	STORE (FK)	Rehabilitation benefit, gross number of days
Rehab_08_Ndag	Rehabiliteringspenning, antal nettodagar	2008-2011	STORE (FK)	Rehabilitation benefit, net number of days
Rehab_08_Belopp	Rehabiliteringspenning, ersättningsbelopp [2]	2008-2011	STORE (FK)	Rehabilitation benefit, reimbursement
Rehab_Forlangd_Bdag	Rehabiliteringspenning, förlängd, antal bruttodagar	2008-2011	STORE (FK)	Extended rehabilitation compensation, gross number of days
Rehab_Forlangd_Ndag	Rehabiliteringspenning, förlängd, antal nettodagar	2008-2011	STORE (FK)	Extended rehabilitation compensation, net number of days
Rehab_Forlangd_Belopp	Rehabiliteringspenning, förlängd, ersättningsbelopp [2]	2008-2011	STORE (FK)	Extended rehabilitation compensation, reimbursement
ArbSk_Bdag	Arbetsskadesjukpenning, antal bruttodagar	1993-	STORE (FK)	Occupational injury compensation, gross number of days
ArbSk_Ndag	Arbetsskadesjukpenning, antal nettodagar	1993-	STORE (FK)	Occupational injury compensation, net number of days
ArbSk_Belopp	Arbetsskadesjukpenning, ersättningsbelopp [2]	1993-	STORE (FK)	Occupational injury compensation, reimbursement
Smitt_Bdag	Smittbärarsjukpenning, antal bruttodagar	1993-	STORE (FK)	Disease carrier allowance, gross number of days
Smitt_Ndag	Smittbärarsjukpenning, antal nettodagar	1993-	STORE (FK)	Disease carrier allowance, net number of days
Smitt_Belopp	Smittbärarsjukpenning, ersättningsbelopp	1993-	STORE (FK)	Disease carrier allowance, reimbursement
ForbSjukP_Bdag	Sjukpenning, förebyggande, antal bruttodagar	1993-2011	STORE (FK)	Preventive sickness benefit, gross number of days
ForbSjukP_Ndag	Sjukpenning, förebyggande, antal nettodagar	1993-2011	STORE (FK)	Preventive sickness benefit, net number of days
ForbSjukP_Belopp	Sjukpenning, förebyggande, ersättningsbelopp	1993-2011	STORE (FK)	Preventive sickness benefit, reimbursement
ForbSjukP_08_Bdag	Sjukpenning, förebyggande, antal bruttodagar	2008-2011	STORE (FK)	Preventive sickness benefit, gross number of days
ForbSjukP_08_Ndag	Sjukpenning, förebyggande, antal nettodagar	2008-2011	STORE (FK)	Preventive sickness benefit, net number of days
ForbSjukP_08_Belopp	Sjukpenning, förebyggande, ersättningsbelopp	2008-2011	STORE (FK)	Preventive sickness benefit, reimbursement
ForbSjukP_Forlangd_Bdag	Sjukpenning, förlängd förebyggande, antal bruttodagar	2008-2011	STORE (FK)	Extended preventive sickness benefit, gross number of days
ForbSjukP_Forlangd_Ndag	Sjukpenning, förlängd förebyggande, antal nettodagar	2008-2011	STORE (FK)	Extended preventive sickness benefit, net number of days
ForbSjukP_Forlangd_Belopp	Sjukpenning, förlängd förebyggande, ersättningsbelopp	2008-2011	STORE (FK)	Extended preventive sickness benefit, reimbursement
AktStod_Dag	Aktivitetsstöd vid utbildning, antal dagar	2008-	STORE (FK)	Activity grant for education, number of days
AktStod_Belopp	Aktivitetsstöd vid utbildning, ersättningsbelopp	2008-	STORE (FK)	Activity grant for education, reimbursement
AktStod_Sjuk_Dag	Aktivitetsstöd och sjuk med sjukpenning vid utbildning, antal dagar	1993-	STORE (FK)	Activity grant and sick with sickness benefit for education, number of days
AktStod_Sjuk_Belopp	Aktivitetsstöd och sjuk med sjukpenning vid utbildning, ersättningsbelopp	1993-	STORE (FK)	Activity grant and sick with sickness benefit for education, reimbursement
UtvErs_Dag	Utvecklingsersättning, antal dagar	2008-	STORE (FK)	Activity grant
UtvErs_Belopp	Utvecklingsersättning, ersättningsbelopp	2008-	STORE (FK)	Activity grant, reimbursement
UtvErs_Sjuk_Dag	Utvecklingsersättning och sjuk med sjukpenning, antal dagar	2008-	STORE (FK)	Activity compensation and sick with sickness benefit, number of days
UtvErs_Sjuk_Belopp	Utvecklingsersättning och sjuk med sjukpenning, ersättningsbelopp	2008-	STORE (FK)	Activity compensation and sick with sickness benefit, reimbursement

Source: Statistics Sweden (2014b).

Appendix 3 Continued

Variable	Description (Swedish)	Coverage	Source	Description (English)
Inkomstvariabler				**Income variables**
Arbetslöshet:				**Unemployment:**
Akassa	Ersättning från arbetslöshetskassa/arbetslöshetsförsäkring	1990-	IoT	Compensation from unemployment/unemployment benefits
KAS	Kontant arbetsmarknadsstöd	1990-1998	IoT	Constant employment
AMK	Ers. från statlig arbetsmarknadskassa	1994-1997	IoT	Compensation from state labour transfers
KASEES	Kontant arbetsmarknadsstöd (EES-avtal)	1994-1997	IoT	Constant employment (EES contract)
ArbLos	Summa inkomst föranledd av arbetslöshet	1990-	IoT	Total income caused by unemployment
ArbLosTyp	Förekomst av arbetslöshetsersättning	1990-	IoT	Incidence of unemployment
TillfTimDag	Antal dagar med tillfällig timdagpenning	1996-	Händel (AMS)	Number of days with temporary hourly allowance
ArbSokNov	Arbetssökande i november	1998-	Händel (AMS)	Job seeker in November
ALKod	Arbetslöshetskod	1992-	Händel (AMS)	Unemployment code
IAKod	Åtgärdskod	1992-	Händel (AMS)	Action code
ALosDag	Antal dagar i arbetslöshet	1992-	Händel (AMS)	Number of days in unemployment
AK14Dag	Antal dagar som arbetssökande med förhinder, tidigare ”Övrig inskriven vid AF”	1992-	Händel (AMS)	Number of days job seeking with impediments, former 'Other AF enrollment"
ADelDag	Antal dagar i deltidsarbetslöshet	1992-	Händel (AMS)	Number of days in partial unemployment
EtablErs	Etableringsersättning för nyanlända invandrare	2011-	IoT	Establishment allowance for newly arrived immigrants
Arbetsmarknadspolitisk åtgärd:				**Labour market policy measure:**
UtbBidr	Utbildningsbidrag (inkl. Starta eget-bidrag)	1990-	IoT	Activity support
UtvErs	Utvecklingsersättning	2008-	IoT	Development allowance
UtbBArb	Särskild dagpenning vid arbetsmarknadsutbildning	1993-1995	IoT	Specific allowance for labour market training
UtbBLan	Särskilt studielån vid arbetsmarknadsutbildning	1993-1995	IoT	Specific student loan for labour market training
ALUBidr	Arbetslivsutvecklingsbidrag (ALU)	1993	IoT	Working life development benefit
ALUKU	ALU (från AKassa)	1994-1999	IoT	Working life development benefit (Akassa)
AKassaAmPol	Ersätter "ALUKU"	2000-2006	IoT	Replaces "ALUKU"
ALUKAS	ALU (från RFV, (KAS))	1994-1998	IoT	ALU from RFV (KAS)
ALUAMK	ALU (från AMK)	1994-1996	IoT	ALU from AMK
ALUEES	ALU enligt EES-avtal	1994-1997	IoT	ALU under EEA-agreement
OTA	Offentligt Tillfälligt Arbete	1997	IoT	Public temporary employment
AmPol	Summa inkomst föranledd av arbetsmarknadspolitisk åtgärd	1990-	IoT	Total income from labour market policy measure
AmPolTyp	Förekomst av ersättning i samband arbetsmarknads-politisk åtgärd	1990-	IoT	Incidence of compensation from labour market policy measure
AStuDag	Antal dagar i ”åtgärdsstudier”	1992-	Händel (AMS)	Number of days in "action studies"
ASysDag	Antal dagar i ”åtgärdssysselsättning”	1992-	Händel (AMS)	Number of days in "action employment"
ASysTyp	Förekomst av åtgärdssysselsättning	1992-	Händel (AMS)	Incidence of "action employment"
ANysDag	Antal dagar i nystartsjobb	2007-	Händel (AMS)	Number of days in new employment

Note: Only ArbLos was available in Linnaeus so ASTRID analysis required combining Akassa and AmPol to create ArbLos variable.
Source: Statistics Sweden (2014b).

Appendix 3 Continued

Variable	Description (Swedish)	Coverage	Source	Description (English)
Inkomstvariabler				**Income variables**
Förtidspension/Sjukbidrag:				**Early retirement/Sickness benefit**
FolkFort	Förtidspension från folkpens., egenförmån	1990-1992	IoT	Early retirement from national pension
FolkFortSjuk	Förtidspension/sjukbidrag från folkpension, egenförmån [2]	1993-2002	IoT	Early retirement/sickness benefit from national pension
FolkSjuk	Sjukbidrag från folkpension, egenförmån	1990-1992	IoT	Disability pension from national pension
ATPFort	Förtidspension från ATP, egenförmån [2]	1990-1992	IoT	Early retirement pension from ATP
ATPSjuk	Sjukbidrag från ATP, egenförmån	1990-1992	IoT	Disability pension from ATP
ATPFortSjuk	Förtidspension/sjukbidrag från ATP egenförmån [2]	1993-2002	IoT	Early retirement/disability pension
ForTid	Summa inkomst föranledd av förtidspension/sjukbidrag/sjukersättning/aktivitetsersättning [2]	1990-	IoT	Total income from early retirement/
ForTidTyp	Förekomst av förtidspension/sjukbidrag/sjukersättning/aktivitetsersättning [2]	1990-	IoT	Incidence of early retirement pension/sickness benefit/activity benefit
ForTidAGS	AGS i samband med förtidspension/sjukbidrag	1996-	KuSoc	AGS for early retirement pension/sickness benefit
FolkEgen	Folkpensionskod för egenförmån	1990-2002	IoT	National pension code
ATPegen	ATP-kod för egenförmån	1990-2002	IoT	ATP-code
SjukErs	Sjukersättning	2003-	IoT	Sickness
SjukErsGarAnd	Andel/grad för sjukersättning (garantiersättning)	2003-	IoT	Proportion/degree of sickness benefit (reimbursement)
SjukErsInkAnd	Andel/grad för sjukersättning (inkomstrelaterad)	2003-	IoT	Proportion/degree of sickness benefit (income-related)
SjukErsVilAnd	Andel/grad för sjukersättning (vilande)	2009	IoT	Proportion/degree of sickness benefit
AktErs	Aktivitetsersättning	2003-	IoT	Activity benefits
AktErsGarAnd	Andel/grad för aktivitetsersättning (garantiersättning)	2003-	IoT	Proportion/extent of activity benefits (reimbursement)
AktErsInkAnd	Andel/grad för aktivitetsersättning (inkomstrelaterad)	2003-	IoT	Proportion/extent for activity benefits (income-related)
AktErsVilAnd	Andel/grad för aktivitetsersättning (vilande)	2009	IoT	Proportion/extent for activity benefits
FortPens_Bman	Förtidspension, antal bruttomånader	1994-2002	STORE (FK)	Early retirement, gross number of months
FortPens_Nman	Förtidspension, antal nettomånader	1994-2002	STORE (FK)	Early retirement, net number of months
FortPens_Belopp	Förtidspension, ersättningsbelopp [2]	1994-2002	STORE (FK)	Early retirement, reimbursement
SjukErs_Bman	Antal bruttomånader med icke tidsbegränsad och/eller tidsbegränsad sjukersättning	2003-	STORE (FK)	Gross number of months with time-limited and/or temporary sickness compensation
SjukErs_Nman	Antal nettomånader med icke tidsbegränsad och/eller tidsbegränsad sjukersättning	2003-	STORE (FK)	Net number of months with time-limited and/or temporary sickness compensation
SjukErs_Belopp	Ersättningsbelopp för månader med icke tidsbegränsad och/eller tidsbegränsad sjukersättning	2003-	STORE (FK)	Reimbursement for months with time-limited and/or temporary sickness
SjukErs_Tidsbegr	Markering om sjukersättningen är tidsbegränsad eller icke tidsbegränsad	2008-	STORE (FK)	Check mark for sickness benefit for a fixed or indefinite time period
SjukBidr_Bman	Sjukbidrag, antal bruttomånader	1994-2002	STORE (FK)	Sickness benefit, gross number of months
SjukBidr_Nman	Sjukbidrag, antal nettomånader	1994-2002	STORE (FK)	Sickness benefit, net number of months
SjukBidr_Belopp	Sjukbidrag, ersättningsbelopp [2]	1994-2002	STORE (FK)	Sickness benefit, reimbursement
AktErs_Bman	Antal bruttomånader med aktivitetsersättning	2003-	STORE (FK)	Gross number of months with activity benefit
AktErs_Nman	Antal nettomånader med aktivitetsersättning	2003-	STORE (FK)	Net number of months with activity benefit
AktErs_Belopp	Ersättningsbelopp för månader med aktivitetsersättning	2003-	STORE (FK)	Reimbursement for months with activity benefit
AKtErs_Tidsbegr	Markering om aktivitetsersättningen är tidsbegränsad eller icke tidsbegränsad	2008-	STORE (FK)	Check mark for activity benefit for a fixed or indefinite time period

Source: Statistics Sweden (2014b).

Appendix 3 Continued

Variable	Description (Swedish)	Coverage	Source	Description (English)
Inkomstvariabler				**Income variables**
Övrig arbetstidrelaterad social inkomst:				**Other employment-related social income:**
NarPeng	Närståendepenning	1990-	IoT	Allowance
TAE	Tillfällig avgångsersättning	1997	IoT	Temporary severance pay
GenErs	Generationsväxlingsersättning	1998-2000	IoT	Generational replacement
SocInk	Summa Arbetstidsrelaterad social inkomst	1990-	IoT	Total employment-related social income
Kapitalinkomst				
KapInk	Inkomst av kapital	1991-	IoT	Income from capital
Annan inkomst				
Ålderpension:				**Retirement pension:**
FolkAld	Ålderspension från folkpension, egenförmån	1990-2002	IoT	Retirement pension from national pension
ATPAld	Ålderspension från ATP, egenförmån	1990-2004	IoT	Retirement pension from ATP
SumAld	Summa ålderspension	1990-2002	IoT	Total retirement pension
SumAldP03	Summa ålderspension	2003-	IoT	Total retirement pension
SPenTill	Särskilt pensionstillägg	1991-	IoT	Pension supplement
InkPens	Inkomstpension	2003-	IoT	Income pension
InkPensAnd	Andel/grad för inkomstpension	2003-	IoT	Proportion/degree of income pension
TillPens	Tilläggspension	2003-	IoT	Supplementary pension
TillPensAnd	Andel/grad för tilläggspension	2003-	IoT	Proportion/degree of supplementary pension
PremPens	Premiepension	2003-	IoT	Premier pension
PremPensAnd	Andel/grad för premiepension	2003-	IoT	Proportion/degree of premier pension
GarPens	Garantipension	2003-	IoT	Guarantee pension
GarPensAnd	Andel/grad för garantipension	2003-	IoT	Proportion/degree of guarantee pension
Tjänstepension:				**Occupational pension:**
ITP	ITP - Industrins o handelns tjänste- och tilläggspension	1990-	IoT	ITP - industry and trade occupational pension
KTjP	Kommunal- o landstingsanställdas tjänstepension	1990-	IoT	Municipal and county occupational pension
STjP	Statlig tjänstepension	1990-	IoT	State occupational pension
SBTjP	Tjänstepension från statligt bolag	1994-	IoT	Occupational pension from state company
KUPens	Tjänstepension enligt individuellt tjänstepensionsavtal mellan arbetsgivare och arbetstagare	1991-	IoT	Occupational pension according to agreement between company and employee
STP	Särskild tjänste- o tilläggspension för privatanställda LO- medlemmar	1990-	IoT	Specific occupational pension for private sector employees and LO members
OvrTjp	Övrig tjänste- och tilläggspension	1994-	IoT	Other occupational pension
SumTjP	Summa Tjänstepension	1990-	IoT	Total occupational pension
AldTjPTyp	Förekomst av ålders-/tjänstepension	1990-	IoT	Incidence of retirement/occupational pension

Source: Statistics Sweden (2014b).

Appendix 3 Continued

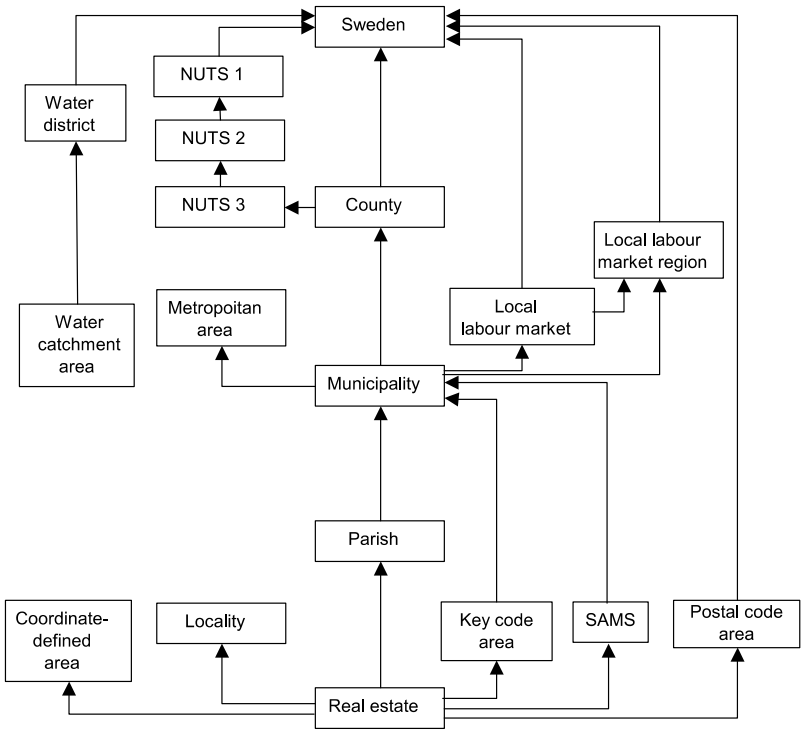
Variable	Description (Swedish)	Coverage	Source	Description (English)
Inkomstvariabler				**Income variables**
Övrig pension:				**Other pension:**
FolkHust	Hustrutillägg	1990-2002	IoT	Wife's addition
PrivPens	Privat pensionsförsäkring	1991-	KuSoc	Private pension
Delpension:				**Partial pension:**
DelPens	Delpension	1990-2004	IoT	Partial pension
DelPensTyp	Förekomst av delpension	1990-2004	IoT	Incidence of partial pension
AldPens	Summa inkomst av åldersrelaterade pensioner	1990-	IoT	Total income from retirement-related pensions
Livränta:				**Annuity:**
LivYrke	Yrkesskadelivränta	1990-	KU-Soc	Occupational injury annuity
LivArb	Arbetsskadelivränta, egenförmån	1990-	KU-Soc	Employment injury annuity
LivRta	Summa inkomst från yrkes-/arbetsskadelivränta	1990-	KU-Soc	Total income from occupational/employment injury annuity
YrkArbTyp	Förekomst av yrkes-/arbetsskadelivränta	1990-	KU-Soc	Incidence of occupational/employment injury annuity
LivAnnan	Annan livränta	1990-	KU-Soc	Other annuity
Efterlevandeförmåner:				**Widow's pension:**
LivArbF	Arbetsskadelivränta, efterlevandeförmån	1990-	KU-Soc	Widow's employment injury annuity
SumEftPens	Efterlevandeförmån	2003-	IoT	Widow's pension
FolkATPFam	Efterlevandeförmån av folkpension o ATP	1990-2002	IoT	Widow's pension from national pension and ATP
FolkFam	Folkpensionskod för efterlevandeförmån	1990-2002	IoT	Widow's pension from national pension
ATPFam	ATP-kod för efterlevandeförmån	1990-2002	IoT	Widow's pension from ATP
Familjerelaterade inkomster:				**Family-related income:**
SocBidrPersF	Socialbidrag (individualiserat från familj)	1990-2004	IoT	Social assistance (individualsed from family)
SocBidrPersF04	Socialbidrag (individualiserat från familj)	2004-	IoT	Social assistance (individualsed from family)
SocBidrTypF	Förekomst av socialbidrag (familjemedl.)	1990-	IoT	Incidence of social assistance (family)
BostBidrPersF	Bostadsbidrag (individualiserat från familj)	1990-2004	IoT	Housing benefit (individualised from family)
BostBidrPersF04	Bostadsbidrag (individualiserat från familj)	2004-	IoT	Housing benefit (individualised from family)
BostTillPersF	Bostadstillägg (individualiserat från familj)	1990-2004	IoT	Housing supplement (individualised from family)
BostTillPersF04	Bostadstillägg (individualiserat från familj)	2004-	IoT	Housing supplement (individualised from family)

Source: Statistics Sweden (2014b).

Appendix 3 Continued

Variable	Description (Swedish)	Coverage	Source	Description (English)
Inkomstvariabler				**Income variables**
Övriga inkomster/ersättningar:				**Other income/benefits:**
HKapErs	Handikappersättning	1990-	IoT	Disability compensation
BidrFor	Underhållsstöd/Bidragsförskott	1990-	IoT	Maintenance payment/benefit
AnnInkF	Summa Annan inkomst för familj	1990-2004	KUSoc & IoT	Total other family income
AnnInkF04	Summa Annan inkomst för familj	2004-	KUSoc & IoT	Total other family income
FolkBel	Summa Folkpension	1990-2002	IoT	Total national pension
ATPBel	Summa ATP	1990-2002	IoT	Total ATP
SocBidrFam	Socialbidrag för familj	1990-	IoT	Family social benefit
BostBidrFam	Bostadsbidrag för familj	1990-	IoT	Family housing benefit
BostTillFam	Bostadstillägg för familj	1990-	IoT	Family housing supplement
Disponibel inkomst				*Disposable income*
DispInkPersF	Disponibel inkomst (individualiserat från familj)	1990-2004	IoT	Disposable income (individualised from family)
DispInkPersF04	Disponibel inkomst (individualiserat från familj)	2004-	IoT	Disposable income (individualised from family)
DispInk	Disponibel inkomst (individens delkomponent)	1990-2004	IoT	Disposable income (individual subcomponent)
DispInk04	Disponibel inkomst (individens delkomponent)	2004-	IoT	Disposable income (individual subcomponent)
DispInkFam	Disponibel inkomst för familj	1990-2004	IoT	Family disposable income
DispInkFam04	Disponibel inkomst för familj	2004-	IoT	Family disposable income
DispInk04	Disponibel inkomst (individens delkomponent)	2004-2011	IoT	Disposable income (subcomponent)
DispInkFam	Disponibel inkomst för familj	1990-2004	IoT	Family disposable income
DispInkFam04	Disponibel inkomst för familj	2004-2011	IoT	Family disposable income

Note: RTB - *Registret över totalbefolkningen* (Total Population Register); InrFlytt – *Internalflyttningar* (Internal Migration); FoB90 - *Folk-och Bostadsräkning 1990* (Population and Housing Census 1990); IoT - *Inkomst- och Taxeringsregistret* (Income and Tax Register); Ureg - *Utbildningsregistret* (Education Register); *Personer i education/Registret över personer i Utbildning* (Register of People in Education); Sreg – *Sysselsättningsregistret* (Employment Register); OpF – *Operativ företagsledare* (Operational Managers); Arbetsstallen – *Arbetsställen* (Workplaces); Yreg – *Yrkeregistret med yrkesstatistik* (Occupational Register); Jobbregistret (Job Register); STORE (FK) – *Försäkringskassan* (Swedish Social Insurance Agency); Händel (AMS) – *Arbetsförmedlingen* (Swedish Public Employment Service); KUSoc – *Konstrolluppgiftsregistret* (Statement Register). In both Linnaeus and ASTRID, most data regarding pensions and sickness benefits etc. are inaccessible.
Source: Statistics Sweden (2014b)

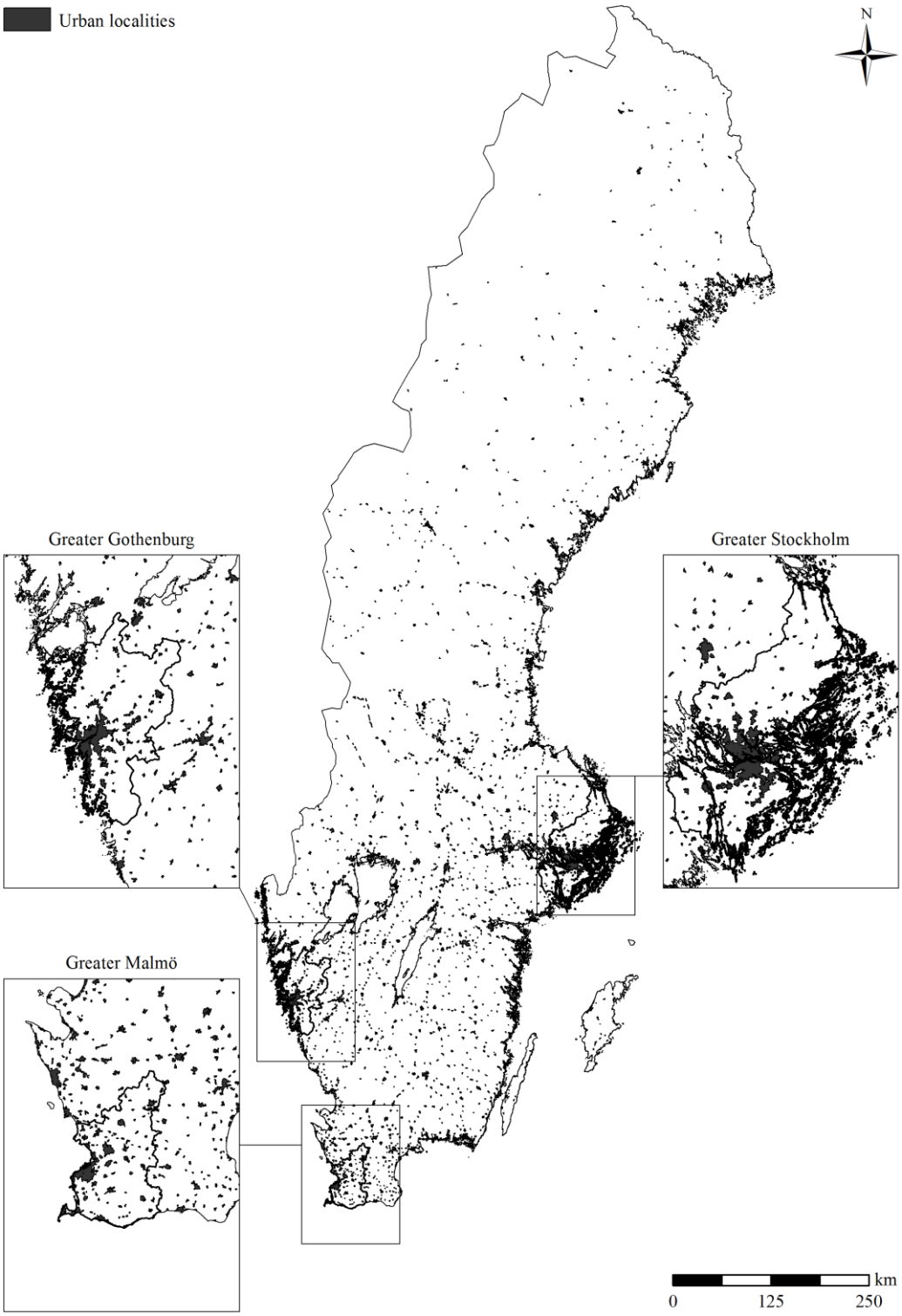


Appendix 4 Overview of the relations between regional divisions in Sweden
Source: Statistics Sweden (2005b:40)

Appendix 5 Greater metropolitan areas and their municipalities in Sweden, 2011

Greater Stockholm (26)		Greater Gothenburg (13)		Greater Malmö (12)	
Code	Municipality	Code	Municipality	Code	Municipality
114	Upplands Väsby	1480	Göteborg	1280	Malmö
115	Vallentuna	1407	Öckerö	1281	Lund
117	Österåker	1415	Stenungsund	1287	Trelleborg
123	Järfälla	1419	Tjörn	1230	Staffanstorp
125	Ekerö	1482	Kungälv	1231	Burlöv
139	Upplands-Bro	1440	Ale	1233	Vellinge
160	Täby	1441	Lerum	1261	Kävlinge
162	Danderyd	1462	Lilla Edet	1262	Lomma
163	Sollentuna	1489	Alingsås	1263	Svedala
183	Sundbyberg	1401	Härryda	1264	Skurup
184	Solna	1402	Partille	1267	Höör
186	Lidingö	1481	Mölndal	1285	Eslöv
187	Vaxholm	1384	Kungsbacka		
188	Norrtälje				
191	Sigtuna				
120	Värmdö				
126	Huddinge				
127	Botkyrka				
128	Salem				
136	Haninge				
138	Tyresö				
140	Nykvam				
180	Stockholm				
181	Södertälje				
182	Nacka				
192	Nynäshamn				

Source: Statistics Sweden (2011d:56).

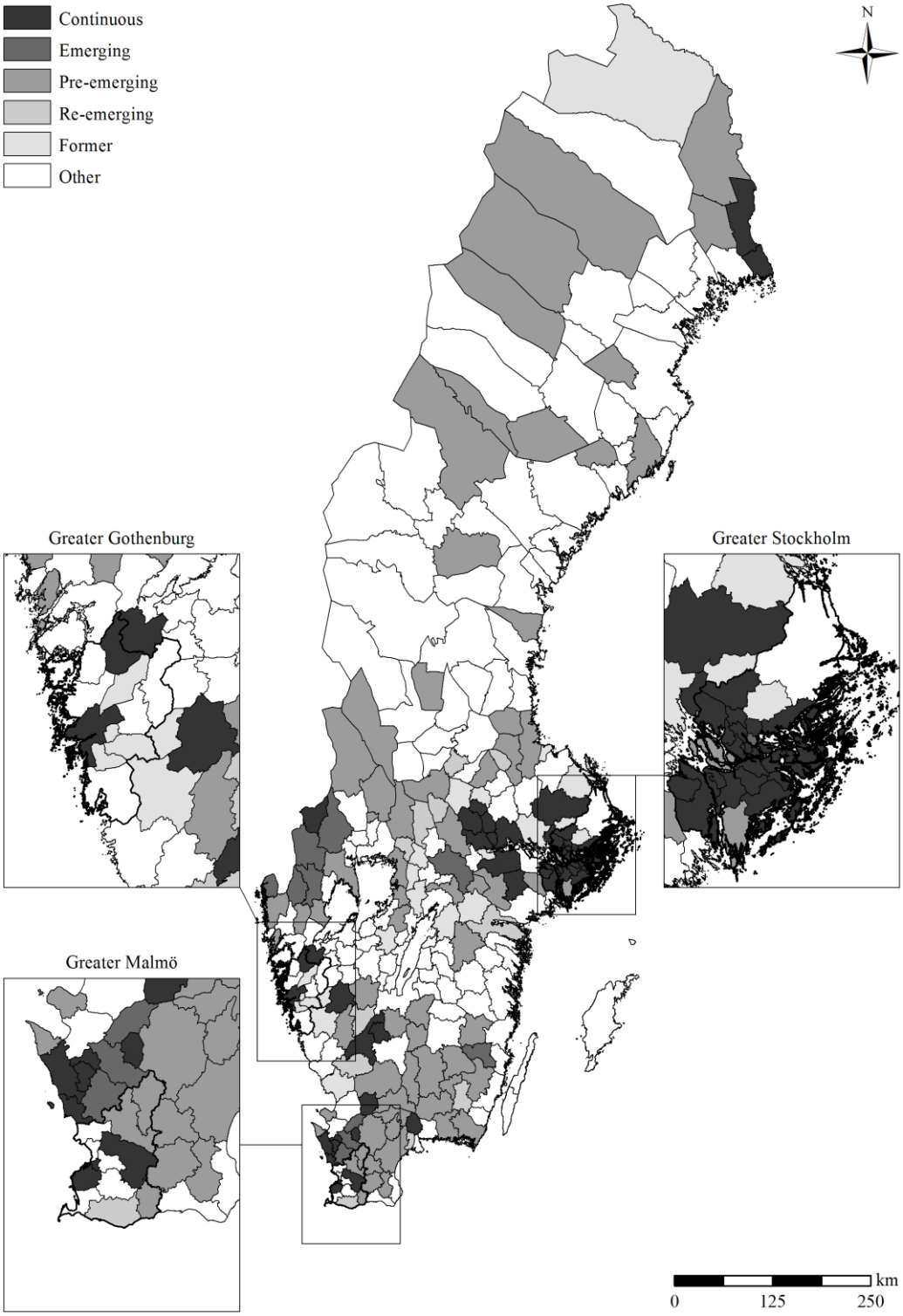


Appendix 6 Urban localities in Sweden, 2011
Source: Statistics Sweden.

Appendix 7 Classification of immigrant gateway municipalities in Sweden, 1973-2013

Code	Classification (*N*)	Criteria
1	Continuous (50)	Foreign citizens > national average for the past 40 years
2	Emerging (11)	Foreign citizens > national average for at least the past 10 years
3	Pre-emerging (68)	Foreign citizens > national average but less than the past 10 years
4	Re-emerging (11)	Foreign citizens > national average previously and in past 10 years
5	Former (22)	Foreign citizens > national average previously
6	Other (128)	None of the above

Note: Various municipalities changed codes during this period (Statistics Sweden, 1986).
Source: Author' calculations of Statistics Sweden (2013c).

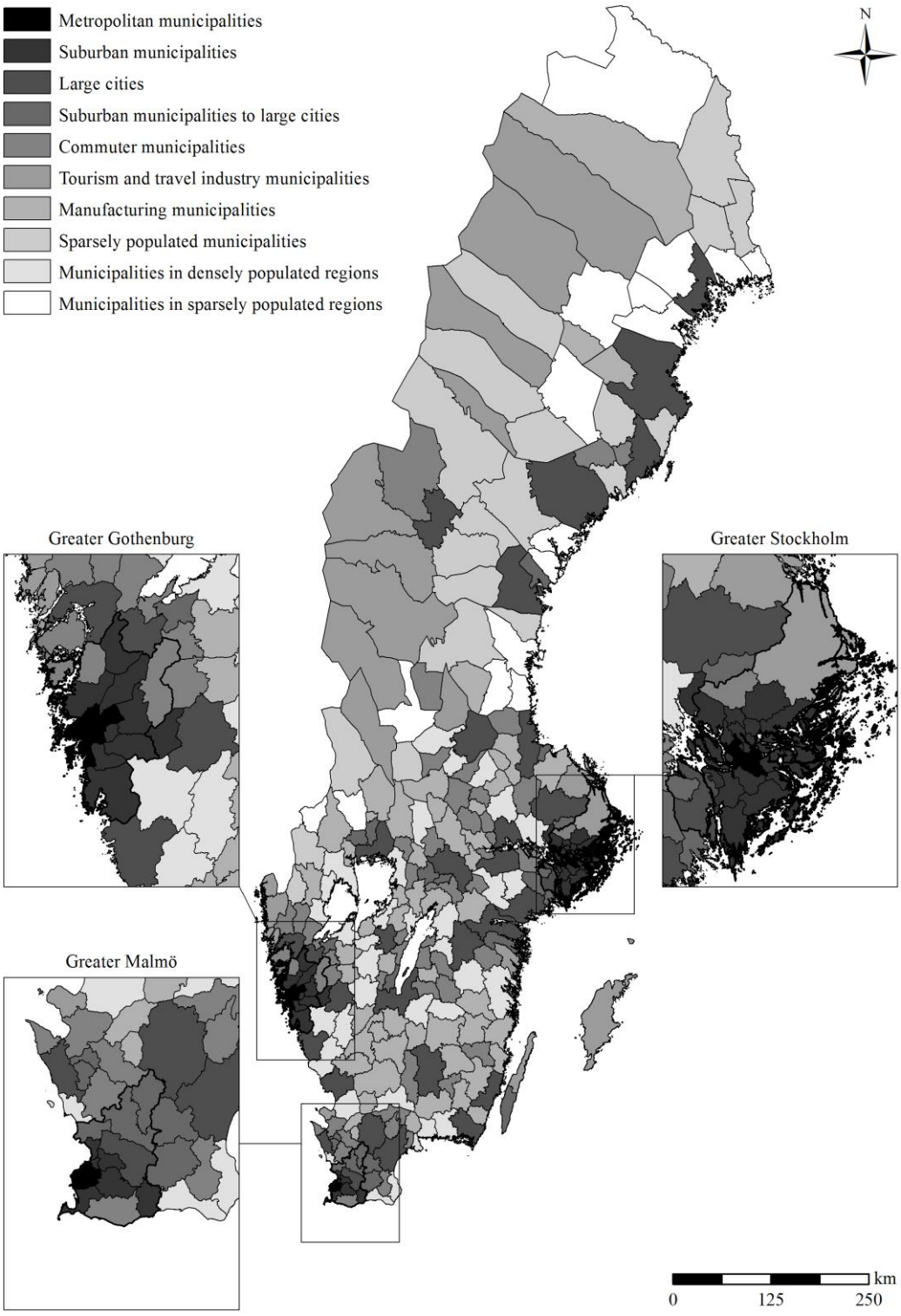


Appendix 8 Mapped classification of immigrant gateway municipalities in Sweden, 1973-2012
Source: Author's calculations of Statistics Sweden (2013c).

Appendix 9 Classification of municipalities in Sweden, 2011

Code	Classification (*N*)	Criteria
1	Metropolitan municipalities (3)	Municipalities with a population over 200,000 inhabitants
2	Suburban municipalities (38)	Municipalities where more than 50 per cent of the night population commutes to work in another municipality. The most common destination must be one of the metropolitan municipalities
3	Large cities (31)	Municipalities with 50,000-200,000 inhabitants and more than 70 per cent of the population lives in urban areas
4	Suburban municipalities to large cities (22)	Municipalities in which more than 50 per cent of the night population commutes to work in a large city
5	Commuter municipalities (51)	Municipalities in which more than 40 per cent of the night population commute to work in another municipality
6	Tourism and travel industry municipalities (20)	Municipalities where the number of guest nights in hotels, youth hostels and camping sites is higher than 21 nights per inhabitant and the number of holiday homes is higher than 0.20 per inhabitant
7	Manufacturing municipalities (54)	Municipalities where more than 34 per cent of the night population aged 16 to 64 is employed in manufacturing, mining, energy, environment and construction industries. (SNI 2007)
8	Sparsely populated municipalities (20)	Municipalities where less than 70 per cent of the population lives in urban areas and less than eight inhabitants per km^2.
9	Municipalities in densely populated regions (35)	Municipalities with more than 300,000 inhabitants within a 112.5 km radius.
10	Municipalities in sparsely populated regions (16)	Municipalities with less than 300,000 inhabitants within a 112.5 km radius.

Source: Swedish Association of Local Authorities and Regions (2011).



Appendix 10 Mapped classification of municipalities in Sweden, 2011
Source: Swedish Association of Local Authorities and Regions (2011).

Appendix 11 Reclassification of municipalities in Sweden, 2011

SALAR			Adaptation	
Code	Classification (*N*)	Designated Code	Code	Classification (*N*)
1	Metropolitan municipalities (3)	1	1	Metropolitan (3)
2	Suburban municipalities (38)	2	2	Metropolitan suburban (38)
3	Large cities (31)	3	3	Large cities (31)
4	Suburban municipalities to large cities (22)	5	4	Rural (56)
5	Commuter municipalities (51)	5	5	Rest of Sweden (162)
6	Tourism and travel industry municipalities (20)	4		
7	Manufacturing municipalities (54)	5		
8	Sparsely populated municipalities (20)	4		
9	Municipalities in densely populated regions (35)	5		
10	Municipalities in sparsely populated regions (16)	4		

Source: Author's adaptation of Swedish Association of Local Authorities and Regions (2011).

Appendix 12 Key for country of birth coding

Linnaeus database			ASTRID database		
Linnaeus (SCB)	Country	New	ASTRID (SCB)	Country	New
1 (A)	Sweden	1	1 (A)	Sweden	1
2 (B)	Finland	2	2 (B)	Finland	2
3 (C)	Denmark	2	3 (C)	Denmark	2
4 (D)	Iceland	2	4 (D)	Iceland	2
	Norway			Norway	
5 (E)	Belgium	3	5 (E)	Belgium	3
	France			France	
	Ireland			Ireland	
	Liechtenstein			Liechtenstein	
	Luxembourg			Luxembourg	
	Netherlands			Netherlands	
	Switzerland			Switzerland	
	Great Britain and Northern Ireland			Great Britain and Northern Ireland	
	Germany			Germany	
	Austria			Austria	
6 (F)	Andorra	3	6 (F)	Greece	3
	Cyprus			Gibraltar	
	Gibraltar			Italy	
	Greece			Portugal	
	Italy			Spain	
	Malta		7 (G)	Albania	4
	Monaco			Bulgaria	
	Portugal			Montenegro	
	San Marino			Romania	
	Spain			Serbia	
	The Vatican city			Serbia and Montenegro	
7 (G)	Serbia	4		Slovakia	
	Albania			Czech Republic	
	Bulgaria			Czechoslovakia	
	Montenegro			Hungary	
	Romania		8 (H)	Andorra	3
	Serbia and Montenegro			San Marino	
	Slovakia			Malta	
	Czech Republic			Monaco	
	Czechoslovakia			The Vatican city	
	Hungary		9 (I)	Azerbaijan	4
8 (Gb)	Estonia	4		Georgia	
	Latvia			Kyrgyzstan	
	Lithuania			Moldova	
9 (Gf)	Bosnia-Herzegovina	4		Russia	
	Yugoslavia			Soviet Union	
	Croatia			Tajikistan	
	Macedonia			Turkmenistan	
	Slovenia			Ukraine	
10 (Gp)	Poland	4		Uzbekistan	
11 (H)	Turkey	4		Belarus	

Appendix 12 Continued

Linnaeus database			ASTRID database		
Linnaeus (SCB)	Country	New	ASTRID (SCB)	Country	New
12 (I)	Armenia	4	10 (J)	Australia	3
	Azerbaijan			Japan	
	Georgia			British Virgin Islands	
	Kazakhstan			Canada	
	Kyrgyzstan			New Zealand	
	Moldova			USA	
	Russia		11 (K)	Antigua and Barbuda	5
	Soviet Union			Argentina	
	Tajikistan			Bahamas	
	Turkmenistan			Barbados	
	Ukraine			Belize	
	Uzbekistan			Bermuda	
	Belarus			Bolivia	
13 (J)	Australia	3		Brazil	
	Japan			Chile	
	British Virgin Islands			Colombia	
	Canada			Costa Rica	
	New Zealand			Dominica	
	USA			Dominican Republic	
14 (K)	Antigua and Barbuda	5		Ecuador	
	Argentina			El Salvador	
	Bahamas			Grenada	
	Barbados			Guatemala	
	Belize			Guyana	
	Bermuda			Haiti	
	Bolivia			Honduras	
	Brazil			Jamaica	
	Chile			Cuba	
	Colombia			Mexico	
	Costa Rica			Nicaragua	
	Dominica			Panama	
	Dominican Republic			Paraguay	
	Ecuador			Peru	
	El Salvador			St Kitts and Nevis	
	Grenada			St Lucia	
	Guatemala			St Vincent and the Grenadines	
	Guyana			Samoa	
	Haiti			Suriname	
	Honduras			Trinidad and Tobago	
	Jamaica			Venezuela	
	Cuba		12 (L)	Algeria	6
	Mexico			United Arab Emirates	
	Nicaragua			Bahrain	
	Panama			Egypt	
	Paraguay			Gaza	
	Peru			Israel	
	St Kitts and Nevis			Jordan	

Appendix 12 Continued

Linnaeus database			ASTRID database		
Linnaeus (SCB)	Country	New	ASTRID (SCB)	Country	New
14 (K)	St Lucia	5	12 (L)	Kuwait	6
	St Vincent and the Grenadines			Lebanon	
	Samoa			Libya	
	Suriname			Morocco	
	Trinidad and Tobago			Palestine	
	Venezuela			Qatar	
15 (L)	Algeria	6		Saudi Arabia	
	United Arab Emirates			South Yemen	
	Bahrain			Syria	
	Egypt			Tunisia	
	Gaza			The West Bank	
	Israel		13 (M)	Angola	7
	Jordan			Egypt (Arab Republic)	
	Kuwait			Benin	
	Lebanon			Botswana	
	Libya			Burkina Faso	
	Morocco			Burundi	
	Palestine			Central Africa Republic	
	Qatar			Comoros	
	Saudi Arabia			Djibouti	
	South Yemen*			Equatorial Guinea	
	Syria			Ivory Coast	
	Tunisia			Eritrea	
	The West Bank			Ethiopia	
16 (M)	Angola	7		Gabon	
	Egypt (Arab Republic)*			Gambia	
	Benin			Ghana	
	Botswana			Guinea	
	Burkina Faso			Guinea-Bissau	
	Burundi			Cameroon	
	Central Africa Republic			Cape Verde	
	Comoros			Kenya	
	Djibouti			Congo	
	Equatorial Guinea			DR Congo	
	Ivory Coast			Lesotho	
	Eritrea			Liberia	
	Ethiopia			Madagascar	
	Gabon			Malawi	
	Gambia			Mali	
	Ghana			Mauritius	
	Guinea			Mozambique	
	Guinea-Bissau			Namibia	
	Cameroon			Niger	
	Cape Verde			Nigeria	
	Kenya			Rwanda	
	Congo			Sao Tome and Principe	
	DR Congo			Senegal	

Appendix 12 Continued

Linnaeus database			ASTRID database		
Linnaeus (SCB)	Country	New	ASTRID (SCB)	Country	New
16 (M)	Lesotho	7	13 (M)	Sierra Leone	7
	Liberia			Somalia	
	Madagascar			Sudan	
	Malawi			Swaziland	
	Mali			South Africa	
	Mauritius			Tanzania	
	Mozambique			Chad	
	Namibia			Togo	
	Niger			Uganda	
	Nigeria			Zambia	
	Rwanda			Zanzibar	
	Sao Tome and Principe			Zimbabwe	
	Senegal		14 (N)	Iraq	6
	Sierra Leone			Iran	
	Somalia		15 (O)	Armenia*	8
	Sudan			Cyprus*	
	Swaziland			Turkey*	
	South Africa			Afghanistan	
	Tanzania			Bangladesh	
	Chad			Bhutan	
	Togo			Brunei Darussalam	
	Uganda			Fiji	
	Zambia			Philippines	
	Zanzibar			Hong Kong	
	Zimbabwe			India	
17(N)	Iraq	6		Indonesia	
	Iran			Cambodia	
18 (O)	Afghanistan*	8		China	
	Bangladesh			Kazakhstan*	
	Bhutan			Kiribati	
	Brunei Darussalam			North Korea	
	Fiji			South Korea	
	Philippines			Laos	
	Hong Kong			Malaysia	
	India			Maldives	
	Indonesia			Marshall Islands	
	Cambodia			Micronesia	
	China			Mongolia	
	Kiribati			Myanmar	
	North Korea			Nauru	
	South Korea			Nepal	
	Laos			Oman	
	Malaysia			Pakistan	
	Maldives			Palau	
	Marshall Islands			Papua New Guinea	
	Micronesia			Solomon Islands	
	Mongolia			Sikkim	

Appendix 12 Continued

Linnaeus database			ASTRID database		
Linnaeus (SCB)	Country	New	ASTRID (SCB)	Country	New
18	Myanmar	8	15 (O)	Singapore	8
	Nauru			Sri Lanka	
	Nepal			Taiwan	
	Oman*			Thailand	
	Pakistan*			Tonga	
	Palau			Tuvalu	
	Papua New Guinea			Vanuatu	
	Solomon Islands			Vietnam	
	Sikkim			Western Samoa	
	Singapore			Yemen	
	Sri Lanka			East Timor	
	Taiwan		16 (Gf)	Bosnia-Herzegovina	4
	Thailand			Yugoslavia	
	Tonga			Croatia	
	Tuvalu			Macedonia	
	Vanuatu			Slovenia	
	Vietnam		17 (Gb)	Estonia	4
	Western Samoa			Latvia	
	Yemen*			Lithuania	
	East Timor		18 (Gp)	Poland	4

Source: Linnaeus and ASTRID databases.

Appendix 13 Industrial sector reclassification

Original code	Label	New code
00	Unspecified activity	18
01	Agriculture	1
02	Forestry	1
03	Fishing	1
04	Mining and quarrying	1
05	Food industry	2
06	Textile and clothing industry	2
07	Wood products	2
08	Pulp and paper	2
09	Publishing and printing industry	2
10	Chemical industry	2
11	Rubber and plastic products	2
12	Agricultural and mineral products	2
13	Steel and metal	3
14	Metal	2
15	Machinery	2
16	Manufacture of electrical and optical equipment	2
17	Transportation industry	2
18	Other manufacturing industries	2
19	Energy, water and waste	8
20	Construction	3
21	Trade in service of motor claims, petrol stations	4
22	Wholesale trade and commission trade	4
23	Retail	5
24	Transportation and storage	7
25	Post and telecommunications	8
26	Banks and other credit institutions	9
27	Insurance	9
28	Real estate companies and property managers	9
29	Rental Firms	9
30	Computer and related service agencies	9
31	Other business services	10
32	Education	12
33	Research and development	12
34	Health	13
35	Child Care	13
36	Elderly and disabled	14
37	Other health and social care	13
38	Hotels and restaurants	6
39	Non-profit and religious organizations	16
40	Recreation, culture and sports	15
41	Other service	16
42	Public administration	11

Source: Author's adaptation of Statistics Sweden (2011a:99).

Appendix 14 Industrial sector distribution and niching of the employed population (by origin and gender) in Sweden, 2008 and 2009

	Native				Nordic				Western Europe and North America			
	2008		2009		2008		2009		2008		2009	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Agriculture, forestry, fishing and mining	2.7	0.6	2.8	0.7	1.5	0.4	1.5	0.4	1.1	0.5	1.1	0.6
Manufacturing	22.9	8.2	21.8	7.6	29.9	10.3	29.0	9.8	19.5	8.9	18.5	8.5
Construction	12.3	1.1	12.5	1.1	12.4	0.9	12.3	0.9	6.5	0.8	6.3	0.8
Wholesale trade	9.3	3.9	9.2	3.8	8.5	4.0	8.4	4.0	7.8	4.7	7.6	4.6
Retail trade	4.0	7.8	4.1	7.8	2.5	4.8	2.5	4.8	2.9	4.6	3.0	4.5
Hotels and restaurants	1.6	2.7	1.7	2.9	1.3	2.1	1.4	2.1	7.0	3.9	7.1	3.9
Transport and storage	6.6	2.4	6.6	2.3	7.7	2.8	7.9	2.8	5.5	2.6	5.3	2.4
Communication and utilities	3.5	1.7	3.5	1.6	2.5	1.2	2.6	1.2	1.9	1.0	2.1	1.0
Finance, insurance and real estate	8.1	5.2	8.3	5.2	6.4	4.8	6.6	4.7	8.2	5.1	8.6	5.2
Other business services	9.3	8.1	9.4	8.0	9.0	9.3	9.1	9.2	11.9	11.6	11.7	11.2
Public administration	5.1	6.9	5.2	7.1	3.1	6.2	3.1	6.4	2.6	4.6	2.7	4.7
Education, research and development	5.6	17.2	5.6	17.3	4.5	14.9	4.7	15.1	12.1	21.9	12.7	22.3
Health and social care	3.5	16.3	3.6	16.4	4.7	18.4	4.9	18.3	6.1	15.3	6.3	15.7
Elderly and disabled care	1.3	11.7	1.4	11.9	1.5	14.0	1.5	14.4	1.6	7.8	1.6	7.9
Entertainment services	2.3	2.3	2.3	2.3	2.2	2.0	2.3	2.0	3.0	2.7	3.0	2.7
Other personal and community services	2.0	3.9	2.0	3.9	2.3	4.0	2.3	3.9	2.3	4.0	2.3	4.1
Total	1,915,730	1,747,662	1,872,355	1,721,749	49,684	61,962	47,180	59,677	36,026	23,027	35,448	23,134

Note: Column percentages are shown. Shaded cells indicate employment niches with an odds ratio ≥ 1.5 and cell count ≥ 50 per cent of the origin group's average number of employment.
Source: Author's calculations of the Linnaeus database.

Appendix 14 Continued

	Eastern Europe				Latin America				Middle East and North Africa			
	2008		2009		2008		2009		2008		2009	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Agriculture, forestry, fishing and mining	1.5	0.8	1.8	0.8	0.5	0.2	0.5	0.1	0.2	0.1	0.2	0.1
Manufacturing	30.4	12.3	27.5	10.8	18.4	5.8	16.8	5.3	14.8	4.4	13.0	4.0
Construction	10.3	1.0	11.2	1.1	6.2	0.6	6.3	0.7	2.8	0.4	2.7	0.4
Wholesale trade	8.1	3.0	8.1	3.0	5.8	2.1	5.4	2.1	6.8	2.0	7.0	2.1
Retail trade	3.3	6.4	3.5	6.4	3.9	5.2	3.9	5.1	7.6	8.3	7.9	8.1
Hotels and restaurants	4.1	4.7	4.4	4.8	6.9	4.9	7.8	4.9	13.7	5.9	14.5	6.1
Transport and storage	8.7	1.9	8.9	1.9	5.9	1.9	5.8	1.7	13.0	1.6	13.2	1.5
Communication and utilities	1.7	1.0	1.8	1.0	2.4	1.0	2.7	1.0	1.7	0.6	1.8	0.6
Finance, insurance and real estate	4.2	3.3	4.5	3.4	5.0	3.3	5.0	3.4	3.6	2.8	3.6	2.9
Other business services	12.2	14.0	11.9	14.4	17.5	14.7	17.1	14.4	12.9	10.0	11.9	9.5
Public administration	2.0	4.4	2.2	4.4	2.9	3.9	3.1	4.1	2.4	4.1	2.5	4.1
Education, research and development	4.4	12.8	4.3	12.8	7.8	16.6	7.9	17.0	5.3	18.3	5.4	18.4
Health and social care	3.7	13.3	4.0	13.5	6.4	14.6	6.5	14.9	5.8	14.7	6.2	15.1
Elderly and disabled care	2.1	15.7	2.4	16.2	5.6	20.1	6.0	20.3	4.5	19.4	4.9	19.9
Entertainment services	1.4	1.3	1.5	1.3	2.4	1.6	2.4	1.4	1.2	1.0	1.2	0.9
Other personal and community services	1.9	4.1	2.0	4.2	2.6	3.6	2.8	3.6	3.7	6.6	3.8	6.3
Total	70,319	72,339	69,584	73,407	20,375	18,796	20,107	18,880	55,410	32,948	55,748	33,901

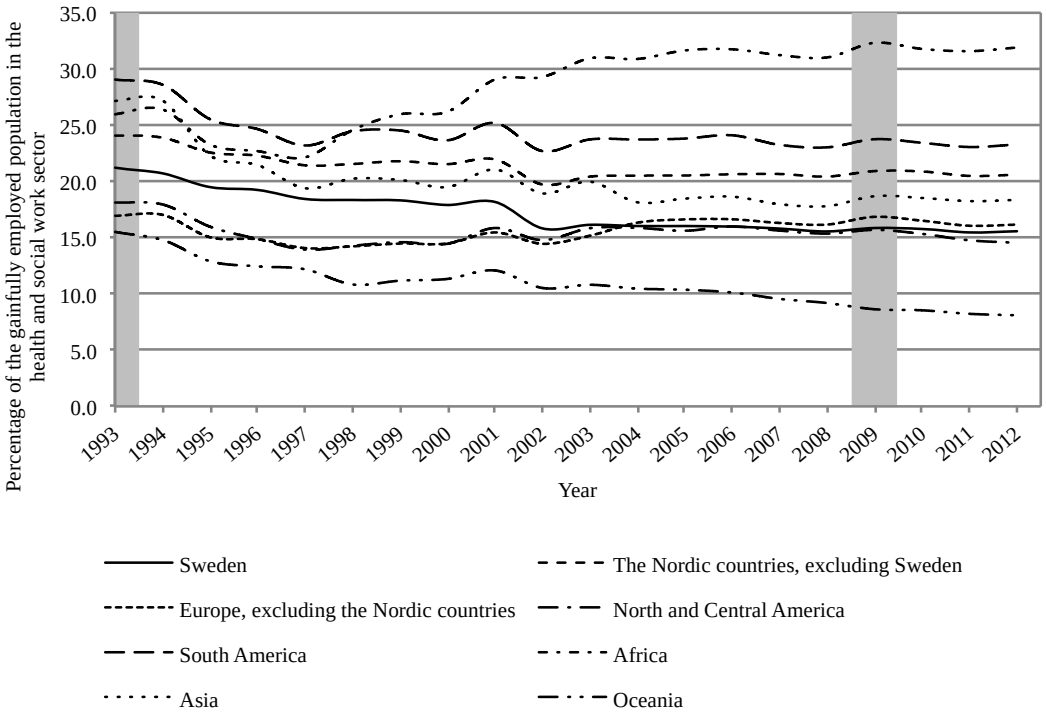
Note: Column percentages are shown. Shaded cells indicate employment niches with an odds ratio ≥ 1.5 and cell count ≥ 50 per cent of the origin group's average number of employment.
Source: Author's calculations of the Linnaeus database.

Appendix 14 Continued

	Sub-Saharan Africa				Asia			
	2008		2009		2008		2009	
	Men	Women	Men	Women	Men	Women	Men	Women
Agriculture, forestry, fishing and mining	0.3	0.0	0.4	0.1	0.4	0.7	0.5	0.8
Manufacturing	13.7	2.8	11.7	2.5	16.7	10.2	15.0	9.2
Construction	2.1	0.3	2.0	0.3	2.6	0.6	2.5	0.7
Wholesale trade	4.1	1.1	4.1	1.1	5.8	3.3	5.7	3.1
Retail trade	2.7	2.6	2.9	2.3	5.5	6.4	5.5	6.3
Hotels and restaurants	5.4	3.9	6.2	4.1	25.5	13.4	27.2	14.0
Transport and storage	13.6	1.4	13.6	1.3	7.1	1.7	7.1	1.7
Communication and utilities	5.0	1.0	5.4	1.0	2.7	1.1	2.9	1.1
Finance, insurance and real estate	2.4	1.4	2.6	1.4	5.0	3.6	5.2	3.7
Other business services	19.9	12.1	18.5	12.1	10.5	14.1	9.9	14.0
Public administration	3.0	4.0	3.3	4.0	1.9	3.1	2.0	3.1
Education, research and development	5.9	9.5	6.1	9.5	6.2	12.7	6.3	13.1
Health and social care	6.9	17.4	7.2	16.8	3.2	9.5	3.3	9.6
Elderly and disabled care	10.3	37.2	11.1	38.2	3.0	13.7	3.1	13.8
Entertainment services	1.7	1.1	1.5	0.9	1.2	1.1	1.2	1.2
Other personal and community services	3.0	4.0	3.4	4.3	2.7	4.7	2.7	4.7
Total	16,362	12,279	16,319	12,809	34,944	40,059	35,500	40,957

Note: Column percentages are shown. Shaded cells indicate employment niches with an odds ratio ≥ 1.5 and cell count ≥ 50 per cent of the origin group's average number of employment.

Source: Author's calculations of the Linnaeus database.



Appendix 15 Gainful employment in the health and social work sector (by origin) in Sweden, 1993-2012

Note: Shaded bars indicate recessions according to Edvinsson (2010:404). From 2004 a minor adjustment of classified employees has been made.

Source: Author's calculations of Statistics Sweden (2005a, 2013d, 2013e).

Appendix 16 Multinomial logistic regression estimating the relative risks of migration over 50 km from metropolitan regions to localities in non-metropolitan regions in Sweden, 2006-2007 and 2008-2009

	2006-2007		2008-2009	
	All	Immigrant	All	Immigrant
Origin (ref. Native)				
Nordic	0.788**		0.863	
	(0.083)		(0.085)	
Western Europe and North America	0.782**	1.046	0.896	1.068
	(0.083)	(0.117)	(0.075)	(0.113)
Eastern Europe	0.756***	1.043	0.630***	0.800*
	(0.057)	(0.102)	(0.059)	(0.104)
Latin America	0.816*	1.115	1.026	1.311*
	(0.086)	(0.121)	(0.079)	(0.117)
Middle East and North Africa	1.277***	1.699***	1.122*	1.426***
	(0.045)	(0.097)	(0.046)	(0.099)
Sub-Saharan Africa	1.197*	1.521***	1.133***	1.618***
	(0.076)	(0.115)	(0.070)	(0.112)
Asia	0.925	1.294*	0.965	1.261*
	(0.060)	(0.103)	(0.056)	(0.102)
Woman (ref. Man)	1.031	0.834***	1.061	0.880**
	(0.021)	(0.049)	(0.021)	(0.048)
Age	0.792***	0.832***	0.799***	0.866***
	(0.007)	(0.016)	(0.007)	(0.016)
Age²	1.002***	1.002***	1.002***	1.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Household (ref. Single)				
Cohabiting without children	0.859***	0.734***	0.800***	0.665***
	(0.029)	(0.066)	(0.030)	(0.068)
Cohabiting with children	0.471***	0.408***	0.476***	0.411***
	(0.030)	(0.065)	(0.031)	(0.063)
Single parent	0.530***	0.617***	0.553***	0.562***
	(0.059)	(0.106)	(0.059)	(0.112)
Education (ref. Compulsory school)				
Upper secondary school	1.556***	1.275***	1.492***	1.246**
	(0.040)	(0.069)	(0.040)	(0.069)
University	2.456***	1.631***	2.056***	1.540***
	(0.044)	(0.082)	(0.044)	(0.078)
Unknown	1.160*	1.190	1.015	1.041
	(0.073)	(0.094)	(0.078)	(0.096)
Years in Sweden		1.006		0.991
		(0.007)		(0.007)
Years in Sweden²		1.000		1.000
		(0.000)		(0.000)
Labour market status (ref. Employed)				
Unemployed	1.477**	1.647***	1.504***	1.413***
	(0.027)	(0.062)	(0.029)	(0.065)
Inactive	1.237***	1.378***	1.236***	1.155*
	(0.033)	(0.059)	(0.033)	(0.057)
Constant	0.882	0.279***	0.761*	0.174***
	(0.128)	(0.300)	(0.132)	(0.303)

Note: The reference category of the dependent variable includes no migration within metropolitan regions, migration within metropolitan regions, and migration of less than 50 km from metropolitan regions to non-metropolitan regions. *=p<0.05; **=p<0.01; ***=p<0.001. Coefficients shown are relative risk ratios. Standard errors are in parentheses.
Source: Author's calculations of the Linnaeus database.

Appendix 16 Continued

	2006-2007		2008-2009	
	All	Immigrant	All	Immigrant
Origin (ref. Native)				
Nordic	0.689**		0.739*	
	(0.127)		(0.133)	
Western Europe and North America	0.601***	0.903	0.536***	0.743
	(0.144)	(0.192)	(0.152)	(0.203)
Eastern Europe	0.616***	0.997	0.534***	0.779
	(0.097)	(0.164)	(0.103)	(0.172)
Latin America	0.681**	1.115	0.950	1.416
	(0.145)	(0.197)	(0.129)	(0.190)
Middle East and North Africa	0.664***	1.095	0.753**	1.087
	(0.092)	(0.165)	(0.089)	(0.169)
Sub-Saharan Africa	0.596**	0.963	0.760	1.086
	(0.161)	(0.211)	(0.142)	(0.201)
Asia	0.954	1.578**	0.681***	0.976
	(0.092)	(0.162)	(0.107)	(0.175)
Woman (ref. Man)	1.047	0.874	1.071	0.986
	(0.033)	(0.087)	(0.035)	(0.088)
Age	0.848***	0.910**	0.856***	0.940*
	(0.011)	(0.028)	(0.011)	(0.029)
Age²	1.001***	1.001	1.001***	1.000
	(0.000)	(0.000)	(0.000)	(0.000)
Household (ref. Single)				
Cohabiting without children	0.611***	0.701**	0.544***	0.482***
	(0.051)	(0.118)	(0.055)	(0.141)
Cohabiting with children	0.474***	0.371***	0.421***	0.501***
	(0.046)	(0.116)	(0.050)	(0.107)
Single parent	0.525***	0.596**	0.559***	0.443***
	(0.090)	(0.189)	(0.091)	(0.218)
Education (ref. Compulsory school)				
Upper secondary school	1.037	0.944	1.111	1.019
	(0.056)	(0.118)	(0.060)	(0.119)
University	1.499***	1.461**	1.325***	1.042
	(0.061)	(0.134)	(0.067)	(0.140)
Unknown	0.709**	0.877	0.803	0.818
	(0.131)	(0.173)	(0.138)	(0.178)
Years in Sweden		0.993		0.973*
		(0.012)		(0.011)
Years in Sweden²		1.000		1.001*
		(0.000)		(0.000)
Labour market status (ref. Employed)				
Unemployed	1.616***	1.805***	1.541***	1.616***
	(0.045)	(0.110)	(0.050)	(0.119)
Inactive	1.302***	1.299*	1.281***	1.188
	(0.053)	(0.106)	(0.055)	(0.106)
Constant	0.120***	0.020***	0.091***	0.015***
	(0.196)	(0.533)	(0.206)	(0.554)

Note: The reference category of the dependent variable includes no migration within metropolitan regions, migration within metropolitan regions, and migration of less than 50 km from metropolitan regions to non-metropolitan regions. *=p<0.05; **=p<0.01; ***=p<0.001. Coefficients shown are relative risk ratios. Standard errors are in parentheses.
Source: Author's calculations of the Linnaeus database.

Appendix 16 Continued

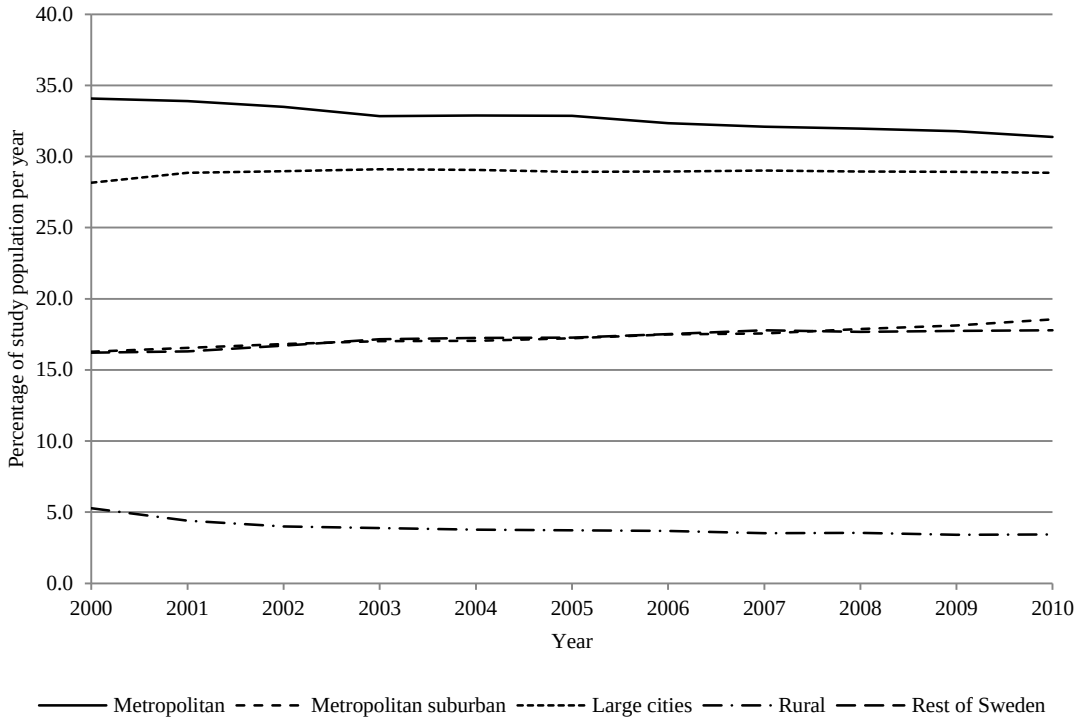
	2006-2007		2008-2009	
	All	Immigrant	All	Immigrant
Origin (ref. Native)				
Nordic	0.891		0.756**	
	(0.089)		(0.105)	
Western Europe and North America	0.714**	0.816	0.632***	0.817
	(0.108)	(0.140)	(0.115)	(0.157)
Eastern Europe	0.522***	0.610***	0.590***	0.810
	(0.086)	(0.126)	(0.081)	(0.135)
Latin America	0.783*	0.910	0.554***	0.773
	(0.113)	(0.147)	(0.139)	(0.178)
Middle East and North Africa	0.551***	0.671**	0.494***	0.674**
	(0.083)	(0.128)	(0.088)	(0.114)
Sub-Saharan Africa	0.436***	0.524***	0.573***	0.761
	(0.156)	(0.184)	(0.135)	(0.176)
Asia	0.593***	0.704**	0.552***	0.754
	(0.096)	(0.134)	(0.097)	(0.147)
Woman (ref. Man)	1.028	0.963	1.077*	0.857
	(0.028)	(0.075)	(0.030)	(0.079)
Age	0.893***	0.890***	0.892***	0.929**
	(0.009)	(0.023)	(0.009)	(0.025)
Age²	1.001***	1.001**	1.001***	1.000
	(0.000)	(0.000)	(0.000)	(0.000)
Household (ref. Single)				
Cohabiting without children	0.720***	0.743**	0.572***	0.604***
	(0.042)	(0.105)	(0.047)	(0.115)
Cohabiting with children	0.626***	0.612***	0.543***	0.505***
	(0.037)	(0.092)	(0.039)	(0.098)
Single parent	0.621***	0.572**	0.528***	0.592**
	(0.073)	(0.177)	(0.080)	(0.182)
Education (ref. Compulsory school)				
Upper secondary school	1.128*	1.331*	1.148**	1.024
	(0.048)	(0.111)	(0.051)	(0.108)
University	1.448***	1.605***	1.330***	1.153
	(0.052)	(0.127)	(0.057)	(0.124)
Unknown	0.896	1.384*	0.806	0.768
	(0.111)	(0.157)	(0.121)	(0.160)
Years in Sweden		1.004		0.976*
		(0.010)		(0.010)
Years in Sweden²		1.000		1.001*
		(0.000)		(0.000)
Labour market status (ref. Employed)				
Unemployed	1.532***	1.216	1.601***	1.623***
	(0.040)	(0.104)	(0.044)	(0.109)
Inactive	1.360***	1.093	1.404***	1.320**
	(0.044)	(0.092)	(0.045)	(0.092)
Constant	0.049***	0.042***	0.049	0.024***
	(0.165)	(0.457)	(0.173)	(0.480)

Note: The reference category of the dependent variable includes no migration within metropolitan regions, migration within metropolitan regions, and migration of less than 50 km from metropolitan regions to non-metropolitan regions. *=p<0.05; **=p<0.01; ***=p<0.001. Coefficients shown are relative risk ratios. Standard errors are in parentheses.
Source: Author's calculations of the Linnaeus database.

Appendix 16 Continued

	2006-2007		2008-2009	
	All	Immigrant	All	Immigrant
Origin (ref. Native)				
Nordic	0.996		1.008	
	(0.055)		(0.060)	
Western Europe and North America	0.801**	0.745**	0.712***	0.684***
	(0.073)	(0.091)	(0.078)	(0.099)
Eastern Europe	0.422***	0.425***	0.351***	0.365***
	(0.067)	(0.088)	(0.073)	(0.097)
Latin America	0.503***	0.517***	0.569***	0.619***
	(0.100)	(0.116)	(0.098)	(0.118)
Middle East and North Africa	0.322***	0.314***	0.319***	0.340***
	(0.076)	(0.098)	(0.077)	(0.103)
Sub-Saharan Africa	0.477***	0.436***	0.454***	0.472***
	(0.109)	(0.126)	(0.107)	(0.127)
Asia	0.513***	0.502***	0.546***	0.560***
	(0.074)	(0.096)	(0.072)	(0.098)
Woman (ref. Man)	1.058**	0.834**	1.057*	0.954
	(0.021)	(0.056)	(0.022)	(0.058)
Age	0.902***	0.931***	0.888***	0.923***
	(0.006)	(0.017)	(0.006)	(0.018)
Age²	1.001***	1.001**	1.001***	1.001**
	(0.000)	(0.000)	(0.000)	(0.000)
Household (ref. Single)				
Cohabiting without children	0.740***	0.776**	0.585***	0.667***
	(0.028)	(0.076)	(0.032)	(0.081)
Cohabiting with children	0.496***	0.565***	0.440***	0.487***
	(0.029)	(0.072)	(0.031)	(0.077)
Single parent	0.688***	0.649**	0.680***	0.772*
	(0.049)	(0.130)	(0.052)	(0.125)
Education (ref. Compulsory school)				
Upper secondary school	1.000	1.051	0.931*	0.821**
	(0.031)	(0.075)	(0.033)	(0.076)
University	0.955	0.997	0.899**	0.863
	(0.036)	(0.092)	(0.038)	(0.090)
Unknown	0.819*	0.864	0.745**	0.788*
	(0.079)	(0.113)	(0.086)	(0.115)
Years in Sweden		0.969***		0.962***
		(0.007)		(0.007)
Years in Sweden²		1.001***		1.001***
		(0.000)		(0.000)
Labour market status (ref. Employed)				
Unemployed	1.643***	1.645***	1.790***	1.604***
	(0.030)	(0.078)	(0.032)	(0.085)
Inactive	1.589***	1.505***	1.566***	1.227**
	(0.029)	(0.066)	(0.031)	(0.068)
Constant	0.064***	0.050***	0.086***	0.060***
	(0.116)	(0.340)	(0.121)	(0.349)
Log likelihood	53343.330	48597.779	50467.589	47392.265
Nagelkerke R^2	0.064	0.053	0.069	0.053
N	2,042,734	205,897	2,102,317	215,644

Note: The reference category of the dependent variable includes no migration within metropolitan regions, migration within metropolitan regions, and migration of less than 50 km from metropolitan regions to non-metropolitan regions. *=p<0.05; **=p<0.01; ***=p<0.001. Coefficients shown are relative risk ratios. Standard errors are in parentheses.
Source: Author's calculations of the Linnaeus database.



Appendix 17 Study population (by municipality classification) in Sweden, 2000-2010
Source: Author's calculations of the ASTRID database.

Appendix 18 Ethical Clearance

University of St Andrews

University Teaching and Research Ethics Committee
School Of Geography And Geosciences

27 October 2011
Robert Macpherson
Geography and Geosciences

Ethics Reference No: *Please quote this ref on all correspondence*	**GG8044**
Project Title:	Transnational migration, global recession and issues of integration
Researchers Name(s):	Robert Macpherson
Supervisor(s):	Allan Findlay

Thank you for submitting your application which was considered by the Geography and Geosciences School Ethics Committee. The following documents were reviewed:

1. Ethical Application Form 26 October 2011

The University Teaching and Research Ethics Committee (UTREC) approves this study from an ethical point of view. Please note that where approval is given by a School Ethics Committee that committee is part of UTREC and is delegated to act for UTREC.

Approval is given for three years. Projects, which have not commenced within two years of original approval, must be re-submitted to your School Ethics Committee.

You must inform your School Ethics Committee when the research has been completed. If you are unable to complete your research within the 3 three year validation period, you will be required to write to your School Ethics Committee and to UTREC (where approval was given by UTREC) to request an extension or you will need to re-apply.

Any serious adverse events or significant change which occurs in connection with this study and/or which may alter its ethical consideration, must be reported immediately to the School Ethics Committee, and an Ethical Amendment Form submitted where appropriate.

Approval is given on the understanding that the 'Guidelines for Ethical Research Practice' (http://www.st-andrews.ac.uk/media/UTRECguidelines%20Feb%2008.pdf) are adhered to.

Yours sincerely

Dr. Sharon Leahy
Convenor of the School Ethics Committee

UTREC School of Geography and Geosciences Convenor, Irvine Building, North Street, St Andrews, KY16 9AL
Email: ggethics@st-andrews.ac.uk Tel: 01334 463897