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Regional Migration in Sweden

A study on the determinants of out-migration connected to
Swedish municipal disparities

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The thesis studies internal migration patterns in Sweden in respect to regional disparities between urban and rural municipalities. Sweden, with many other developed countries, is struggling with depopulation in rural regions, which in the long run can cause problems maintaining services and fundamental institutions in the municipality. As the main responsibility of municipalities is to maintain these services to uphold living standards, it is of importance to study the determinants of depopulation. Migration is a significant part of the depopulation matter, where the failure to maintain the younger population in the municipalities strips the opportunities of building a sustainable and attractive society.

The aim of the thesis is to determine whether interregional migration is driven by disequilibrium mechanisms of economic opportunities and basic services between the municipalities. The purpose of the thesis is to highlight the problem of depopulation and to show migration as a part of the problem. Exploring the determinants of migration and understanding migration flows is important both in the formulation of national and regional policies to tackle the depopulation trend and to enable a more efficient policy-making process.

Key words: Rural depopulation, internal migration, rural municipalities, and regional disparities.

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1. Introduction

“Migration is important because it shapes and re-shapes societies, making them more diverse and complex.”

(King, 2012, p.6)

1.1 Problem formulation

A municipality requires taxpayers to finance their spending on health, education and social care, among other things. A larger proportion of residents of working age in a municipality generate more income and more opportunities to create better welfare and growth in that municipality. Through growth, the municipality can broaden its range of services and thus attract new residents, leading to further growth and development of the municipality. *But what happens when the opposite is true? What happens when a municipality loses its residents through out-migration? And what are these determinants of migration?*

The main driver of population growth is migration, which has counterbalanced the negative natural change in many regions in Sweden (Karcagi et al., 2012). For many years, the Swedish Government has actively pursued policies aimed at preserving the scattered settlement patterns in the country, and to maintain a sufficient level of population for each municipality to function. Many of the Swedish municipalities are struggling with negative population growth and an aging population, hence resulting in a higher dependency ratio¹ in the rural areas to the urban areas, with a significantly higher share of the population over the age of 65 (Amkoff, 2008). This, among other things, can cause problems maintaining services and fundamental institutions in the municipality. In many municipalities, the depopulation is a common feature of everyday life, with empty housing, closed shops and closing industries. Further, the negative population growth causes a shortage of labour in some occupational groups in these municipalities (Glesbygdsverket, 2007). The vast urbanisation process began in Sweden during the 1840's, ending around 1970. At the beginning of this period around 10 % of the Swedish population lived in cities, reaching the large number of

¹ Dependency ratio: "The dependency ratio relates the number of children (0-14 years old) and older persons (65 years or over) to the working-age population (15-64 years old)." (UN, 2006)

80 % in the 1970's (Nilsson, 2011, p. 15).

Between 1990 and 2014, the Swedish population had increased roughly by one million, however, although a great stagnation in the urbanisation process, the rural regions in Sweden during this period has seen close to no growth at all or even a decreasing population trend (*Statistics Sweden*). According to Formas (2008, Ch. 6), northern Sweden has faced a depopulation of 25% to 50%, whilst the population nationally has increased by 23% since the 1960's. The reason behind this population decline is due to a combination of factors such as high mortality, low birth rates, negative net-migration and high out-migration rates (Jordbruksverket, 2013). Younger people are more likely to migrate leaving the rural municipalities with a higher dependency ratio. The consequence of this is that these rural municipalities face greater costs from not only a decreasing tax-base and higher elderly costs, but also the increased risk of simply dying out (Jordbruksverket, 2013).

Sweden today is a divided society with great regional disparities in many aspects of the communities. In contrast to the rural municipalities, the three metropolitan areas of Stockholm, Gothenburg and Malmo are rather struggling with overcapacity in the form of high unemployment as well as congestion problems in areas such as health care and public transport (Glesbygdsverket, 2007). Out of the 290 municipalities in Sweden, Glesbygdsverket (2007) has determined that more than 200 municipalities, reaching from north to south of Sweden, has more or less resource shortages in a number of areas, as a result of a declining and aging population base. According to the population forecast provided by Statistics Sweden (2006), the classified "rural" municipalities in Sweden are expected to loose 8 % of their population by 2030.

When speaking of rural regions and cities, they cannot be depicted as a homogenous group, as there are great fundamental differences and disparities between them, connected to the geographical, economic, demographic and political situation. Rural municipalities connected to the metropolitan areas of Stockholm, Gothenburg and Malmo, are generally better off both socially and economically, and face low risk of future depopulation. In light of the flexibility that modern statistics provide, the idea of a uniform definition of rural municipalities seems more like a constraint. Everyone who analyses or describes rural areas must therefore make their own definition and

boundaries (Westholm, 2008). Hence there is a need for defining what a rural municipality conceptualises.

Further, it should not be foreseen that studies support the notion that people tend to seek a calmer lifestyle outside of the cities, however this trend is limited to regions within commuting distance to larger cities where they can consume and find services and work (McGranahan & Beale, 2002). Studies have shown that there is potential for growth in the rural municipalities, however, they must learn to compete with the larger municipalities and cities, which tend to attract people of working age as the rural labour market is less diversified and limited (Niedomysl & Amkoff, 2011). A further problem for rural municipalities is the notion that people tend to acquire second homes in these rural regions to fulfil their dream of a rural lifestyle. Although better than no inhabitants at all, this comes with a cost for these municipalities when they fail to attract full year inhabitants, as these inhabitants seek recreation rather than work (Niedomysl & Amkoff, 2011).

What can be determined is that the difference between regions within countries is often greater than the differences across countries. Yet policymakers and governments tend to focus more on national policies than on regional policymaking (OECD, 2009). An extensive effort is being made in Sweden to widen and increase the population in the long run where municipalities, country councils and regional actors are working together to address the issue. The priority subject is to increase the population and to boost entrepreneurship within the problem regions. The reason to taking these actions is, apart from the obvious reason to increase population, the desire to achieve an improved age structure and to increase the workforce (Glesbygdverket, 2007). Despite the efforts of national programs aimed at improving the situations of rural regions, it is the larger national or supranational structural changes that affect the rural municipalities the deepest, which are often prevalent with insufficient focus of the rural development programs (Kåpe, 2006; Persson & Westholm, 1993).

Moreover, in most EU countries, the study of rural regions is an important and central research field, and there exists specialized sub-programs for rural research within the EU framework program. Sweden however, has a significantly low participation in these contexts, resulting in little or insufficient research being done in the field

nationally. Partly, this is a reflection that rural regions and rural policies are of greater importance in many other countries, and much indicates that this policy area will be of great focus in the coming fifteen years internationally (Westholm, 2008). Therefore, there is reason to believe in a continued good knowledge in the case of rural social, economic and ecological change in Europe. However, without such development of knowledge in Sweden, we cannot expect to contribute to the development of EU policy design and its adaption to the Swedish rural regions (Westholm & Walderström, 2008; Karcagi et al., 2012; UN, 2013). Taking this notion into consideration, it is apparent that further effort on research has to be placed on addressing the depopulation problem of rural Sweden. In order to being able to find more efficient policies, research has to be done trying to find the drivers of migration in the municipalities, especially for the rural regions.

1.2 Purpose & aim

This study will address the issue of internal migration and rural depopulation. The focus lies on the properties of the municipalities, which in the end are the entities that bear responsibility for the population in rural Sweden and their provision of basic welfare services and labour that makes life in these areas possible (Montin, 2008). Hence the main focus of the study is based upon inter-regional disparities connected to municipal migration. The aim is to determine whether interregional migration is driven by disequilibrium mechanisms between the municipalities as suggested by Karcagi-Kovats & Katona-Kovacs (2012).

The purpose of the thesis is to highlight the problem of the shrinking population in the rural municipalities in Sweden. By using existing theories and new data, the aim is to identify the determinants of internal migration from rural municipalities, as this is one of the major issues for depopulation. Understanding the migration flows is important both in the formulation of national and regional policies to tackle the depopulation trend and to enable a more efficient policy-making process. The central question to be answered throughout the line of research in the thesis is the following; *is depopulation a function out-migration caused by disequilibrium mechanisms between urban and rural municipalities in Sweden?*

1.3 Outline

The remainder of the paper is organized as follows. *Chapter 2* contains the background and will address how rural depopulation is treated, both from a national- and regional policy perspective. *Chapter 3* presents the theory, which will have an investigative character related to analytical frameworks and extensive theory on population change. Further, in this section the previous studies is presented and summarizes the recent literature on the subject, in order to illustrate what has been done and to highlight problems in previous work that can be improved. *Chapter 4* presents and describes the data and its sources and also provides with descriptive statistics of the chosen variables. Further, in this section the method used for the empirical analysis is presented, explaining the regional classification of the rural municipalities in Sweden. *Chapter 5* contains the results and discussion, where the major observations of the study can be found and are discussed with a link to the theory and previous studies. *Chapter 6* concludes the paper, providing with the key findings.

2. Background

The background will begin with the definition of depopulation and migration discussing the components of depopulation, motivating migration as a major role of the depopulation phenomenon. The section will continue with a discussion on the implications of the decreasing population in the rural regions of Sweden, in order to further elaborate on the importance of the subject. This is followed by a national policy perspective of depopulation, which provides the reader with knowledge on how rural depopulation is addressed on a national level. The section will end with a description of the role of the Swedish municipalities and its responsibilities towards addressing the issue of depopulation, highlighting the flaws of today's depopulation policies.

2.1 Depopulation as a function of migration

The word depopulation is often very vaguely employed. A formal definition of depopulation is “*a diminution in the number of inhabitants of a district, as compared with those enumerated at a preceding census*” (Longstaff, 1893). The situation prevailing in rural regions in Sweden today is the risk of depopulation in the future and a threat of ill-functioning societies (Niedomysl, 2007). Depopulation is the function of several components such as an ageing population, low fertility rates and the out-migration of predominantly young inhabitants, and is considered a vicious circle of social and economic decline where a dreaded consequence is the decline of the attractiveness of the region as a place to live and work (Niedomysl, 2007; Crauser, 2001).

Low fertility rates and an ageing population are major forces of depopulation in rural regions, and migration and low population growth can be seen as a contribution to this development. Today, we live in the age of migration, and one of the major issues of depopulation is the notion that young people migrate from rural regions, cities and municipalities, leaving the rural areas with an ageing population and a lower fertility rate (Niedomysl, 2007, King, 2012). Migration can take on a number of definitions and can occur in a number of ways, such as between continents, within a continent, or simply within a single country. A formal definition of migration is “*the temporary or*

permanent move of individuals or groups of people from one geographic location to another for various reasons ranging from better employment possibilities to persecution” (Hagen-Zanker, 2008, p.4) The most important notion about migration is that it occurs when groups of people move for the same reasons. Migration is a form of social behaviour that shapes and is shaped by social and economic structures, and by knowing that migration is an intrinsic part of change; this serves as a crucial conceptual step towards advancing this field of research (Castles, 2011; de Haas, 2011).

According to King (2012, p.6), *“migration is important since it shapes and re-shapes societies, making them more diverse and complex”*. This statement shows that defining migration and defining the type of society is important, as the statement in the case of many rural municipalities in Sweden, and across the world, cannot be applied. From a rural perspective, the opposite is rather applicable concerning the quote by King (2012), where societies’ diversity and complexity rather stagnates through the notion of migration. The depopulation of the rural areas in Sweden can be divided into two components of migration. The first can be termed as ‘push’ factors, inducing the reasons for people to leave a region. The second is the ‘pull’ factors, which indicated the reasons to come to an area (Lee, 1966). If there are more reasons to leave than to stay, the region will experience persistent net out-migration. Understanding the strength of such forces is important to form effective policies. Hence, understanding the determinants of migration is important in the formulation of both national and regional policies to tackle population decline and promote regional growth to sustain functional societies.

2.2 Implications of depopulation and migration

Although the focus of the study is to identify the drivers of depopulation through studying the out-migration from the Swedish municipalities, it is important to be aware of the implications of this phenomenon. This is partly because knowing the implications of migration further motivates the relevance of the subject and partly since impacts of migration can become drivers of migration through feedback mechanisms (de Haas, 2011; Castles, 2011). When studying depopulation as a function of migration, this is closely connected to demographics, that is, the study of human populations. A demographic basis of rural research is justified because the size

and age of populations are strongly associated with a variety of social and economic conditions (Lindh & Malmberg, 2000; Westholm & Walderström, 2008).

Rural municipalities, cities and regions have specific features and needs. The sparsely populated areas in Sweden face four common problems (Crauser, 2001). The first problem recognised is that many rural regions are geographically isolated. This implies that they are located far from economic centres. A consequence of this is high transportation costs and access problems due to insufficient infrastructure. Furthermore, these municipalities face demographic problems, where migration of the younger population from the municipality leaves an ageing population and low fertility in the area. Third, economic activity is scarce, where employment is concentrated to the primary and public sector, and services are lacking. Last, living standards in these areas tend to be lower, where average income is comparably lower than in other parts of the country, resulting in low investment opportunities in these areas (Crauser, 2001). Hence depopulation is a vicious circle of social and economic decline where a consequence is the decline of the attractiveness of the region as a place to live and work (Crauser, 2001).

The periurban rural areas in Sweden are faring well as dealing with these four fundamental problems is less of an issue. However, it is the rural municipalities beyond commuting distance to the larger cities that can expect a worsening situation regarding the population structure. If the trend continues, the population pyramids in some regions will in the future become reversed and become in the form of “mushrooms”, where the dependency ratio is high, indicating that the economically active population face a greater weight to provide the services needed by children and older population (Amkoff, 2008; UN, 2006). This means that the parts of Sweden that lie outside the larger metropolitan areas are reaching towards an unsustainable situation. The problem thus concerns rural municipalities, which in the foreseeable future cannot be part of a larger local labour market and who have so few inhabitants, that they cannot offer their own diversified labour market with development opportunities for young people (Glesbygdsverket, 2007).

Lack of population growth can be considered one of the biggest issues of Swedish rural regions. After decades of emigration of young people, many rural areas are

entering a phase of advanced aging. The parts of the population that are of working age decreases while there are relatively few children born because of the low number of women in childbearing age. Many of the rural areas that have a declining or aging population, will go through a retrograde economic difficulties. The available labour force decreases while the need for staff in healthcare and elderly care increases. The dreaded implication of this is the emergence of unilateral labour markets while labour shortages (Nygren & Persson, 2001; Westholm & Walderström, 2008). The changing age structure alters the conditions for local enterprise, the valuation of different living environments, and for the supply of commercial and public services, amongst other things (Nygren & Persson, 2001; Westholm & Walderström, 2008). In these remote rural areas, there will be a need for institutional changes such as the increase in new forms of private, public, and non-profit collaborations as well as new solutions for access to goods and services.

2.3 National policies towards rural depopulation

Rural population decline and high levels of out-migration in rural regions is not specific for Sweden, but can be found in all parts of the world (Karcagi-Kovats & Katona-Kovacs, 2012). In less than a century, the western world has transformed from an agrarian to an urbanized society (Lilja, 2008). Today, urbanization is an on-going global process that shows no signs of slowing down and it has been estimated the global urban population share more than 40% of the worlds population. These figures should be compared to an assumed level of urbanization in 1800 to about 3 % and in 1900 about 14% (Lilja, 2008). In a quote from the prominent paper “Rural depopulation” by Longstaff (1893), he states, “[t]he *‘alarming depopulation of our rural districts’* has of late been the subject of many articles and even more speeches.” Hence, globalisation, urbanisation and depopulation has been an on-going discussion for some 100 years, and the concern for ill-functioning and even depopulated rural regions has been concern for quite some time. The subject can hence neither be called a national, nor a new issue, however still highly relevant.

What can be determined is that the difference between regions within countries is often greater than the differences across countries. Yet policymakers and governments tend to focus more on national policies than on regional policymaking (OECD, 2009). The rural regions of Sweden have for long been the subjects of various political

aspirations. The Swedish Government has during the second half of the 1900's sought to preserve the scattered settlement patterns in Sweden, this to protect and develop all parts of the country (Westholm & Walderström, 2008). They have developed instruments and policies to promote municipal tax equalization, regional policy support, and support for local commercial services (Westholm & Walderström, 2008). At the same time, the state has worked to promote the conversion of various industries and structures even if it has meant that rural regions have weakened (Kåks & Westholm, 2006; Westholm & Walderström, 2008).

The ambition of the Swedish government today is to provide all its residents with the same welfare services across the country, regardless on which municipality one resides. On January 1, 2005, the Government of Sweden imposed the so-called "municipality equalisation system". The aim of this system is to create equal economic conditions for all municipalities, and to provide its residents equal services regardless of the residents' income and other structural conditions (Skl, 2006). The core idea is that differences in local taxes to a large extent should reflect the differences in efficiency, services and that it should not depend on the differences in structural conditions of the municipality (Skl, 2006). Thus, if a municipality has high costs, they receive more money, and vice versa. Hence, the Swedish government has expressed its support for developing and preserving a functioning rural landscape. Through the Government Offices of Sweden, there are a number of policies that are undertaken, often initialised by the EU (Regeringskansliet, 2008). Four major programmes are the following; regional development programs; the European Union structure fund-program; the Swedish rural development program and the program for European fishery-fund. Hence these programs exist to maintain the goals of the municipal equalisation system, increasing entrepreneurship and competitiveness in rural areas, to preserve the scattered settlement patterns in Sweden.

Furthermore, in most of the EU countries, the study of rural regions is an important and central research field, and there exists specialized sub-programs for rural research within the EU framework program. Sweden however, has a significantly low participation in these contexts, resulting in little or insufficient research being done in the field nationally. Partly, this is a reflection that rural regions and rural policies are of greater importance in many other countries, and much indicates that this policy

area will be of great focus in the coming fifteen years internationally (Westholm, 2008). Therefore, there is reason to believe in a continued good knowledge in the case of rural social, economic and ecological change in Europe. However, without such development of knowledge in Sweden, we cannot expect to contribute to the development of EU policy design and its adaptation to the Swedish rural regions (Westholm & Walderström, 2008; Karcagi et al., 2012; UN, 2013). Hence, although a great interest for preserving the rural landscape of Sweden, there seem not to be sufficient research in the area, compared to other EU countries.

2.4 Municipal responsibilities

Sweden is today referred to as a decentralised welfare state, indicating that the municipalities bear the main responsibility for the welfare policymaking process (Montin, 2008). This means that much responsibility lies upon the municipalities in the solving of the depopulation problem and the problem of changing age structures and low fertility. There are few nations outside of the Scandinavian countries where as much power and responsibility has been decentralised to the municipal level (Montin, 2008). The government and the state do have the overall responsibility, but it is the politicians in the local governments that bear the immediate responsibility (Montin, 2008).

The main revenues of a municipality come from taxation of the residents, where around 70 percent of the revenues come from the local tax revenues (Bratt, 2010; Montin, 2008). Hence, the Swedish municipalities are increasingly engaged with issues concerning local growth. Local growth is often defined as population growth, which further motivates that depopulation should be seen as a major issue for the rural municipalities (Fjertorp, 2013; Arena for growth, 2001; Westholm et al., 2004). Further there is a general view that population growth is positive and desirable, especially to attract new residents moving to a municipality and to hinder residents from moving out of a municipality (Fjertorp, 2013; Brorström & Siverbo, 2008, p. 104).

The municipalities are required by law to provide basic services to their residents in order to guarantee a certain standard of living. This is a key driver to preserve residents within municipalities, and to promote population growth. However, the

general interpretation that the municipalities' main responsibility is to promote local growth, i.e. population growth, is an incorrect interpretation. According to the Local Government Act (*Kommunallagen*) (1991:900), this is not a prescribed responsibility of the municipal community. The Local Government Act rather indicates that the municipal responsibility intends to the existing residents of the community (Chapter 2, §1) and that the municipality may not take action that may be of any detriment to the existing residents (Chapter 2, §3). Further, according to the Planning and Building Act (*Plan- och bygglagen*) (Chapter 1, §1), the responsibility of the municipality is to work towards development that is in favour of coming generations. Hence, taking action that would be of benefit for residents not yet living in the municipality lies outside the municipalities' sphere of responsibility, indicating that the municipality should rather focus on the existing residents and on the maintaining of the existing residents within the municipality. A suggestion is thus to focus more on determining the reasons for out-migration from these municipalities in order to find areas of improvement in the local community. A common saying is that the municipality and the county council bear responsibility of the residents from the cradle to the grave (Montin, 2008).

The Swedish municipalities have a relatively high degree of autonomy, and are somewhat flexible in policymaking as long as they follow the laws (*Swedish Association of Local Authorities and Regions*). 115 out of 290 municipalities declare that they have a population goal, where 103 of these municipalities target for an increasing population (Fjertorp, 2013). The local authorities are taking action to increase population growth through building new residential areas and marketing an attractive image of the municipality to attract new residents (Fjertorp, 2013). This quest for population growth may in some cases be in line with the Swedish municipalities responsibly to create and maintain prosperity for the residents living there. However, according to Erlingsson et al. (2011) and Fjertorp (2013), there is no supporting evidence that population growth can be achieved by the municipalities themselves. The foremost obligation of a Swedish municipality is to provide its residents with healthcare, elderly care, and education, which accounts for over 90 percent of the spending of the municipality (Montin, 2008). Other responsibilities include childcare, environmental planning, housing- and construction administration,

water- and sewer infrastructure, general infrastructure development and maintenance, and public transportation, amongst other things (Bratt, 2010).

In an effort to be more specific on how the municipalities tackle the depopulation problem, except for having a population goal of increasing population, one should remember that municipalities are very similar in that they all have the same legal tasks. However, they are very different in the sense that they are structured differently, facing different problems and different pre-requisites, making their individual tasks very varied (Brorström & Siverbo, 2001, p. 9). Hence, as an example, the municipalities often have motives for supporting local businesses. This is in order to keep both labour opportunities and residents within the municipality. Furthermore, promotion through advertising the municipality is becoming increasingly important and somewhat effective (Niedomysl, 2007). Nevertheless, it seems that most responsibility of solving the depopulation issue in Sweden today is put upon the municipalities, which motivates the importance of studying the determinants of out-migration in these regions, in order to be able to identify the focus area of future policy initiatives.

3. Analytical framework

The purpose of the analytical framework is to conceptualise and describe the main ideas of internal migration, and to provide the reader with both the theory and the knowledge of previous studies made in this field. In this section, the most relevant and utilized migration theories developed are presented, with a special focus on theories connected to determinants of internal migration and regional disparities. The section will follow with an assessment of previous studies, which will provide motivation for the importance of this study and choice of variables in the method.

3.1 Theoretical framework

Today there is a wide range of theories concerning migration, some more utilized than others. The theories on migration are expanding at an exponential rate, much due to the diversification of types of migration and the increasing flows of migration (King, 2008). Reviews on economic migration theories today are primarily provided by Massey et al. (1993; 1994) and Hagen-Zanker (2008). Much theory on migration concerns international migration, however the bulk of the theories developed are also applicable to internal migration. Theories on migration can further be categorised according to the level they focus on, i.e. either classifying them into micro-level theories or macro-level theories (see Table 3.1).

The section will begin with an assessment of macro-economic theories connected to internal migration, looking at the aggregate migration trends. This will follow with an assessment of micro-economic theories of migration, which is more focused on individual migration decisions. Both levels of analysis are important in order to understand the determinants of migration decisions. What can be determined from migration theory is that most research has been conducted looking at economic and labour market related reasons, whilst there is reason to believe that the subject is of a more interdisciplinary nature (King, 2012).

Macro-economic theories of migration:	Micro-economic theories of migration:
<i>Neoclassical macro-migration theory</i> (Lewis, 1954; Harris & Todaro, 1970)	<i>Push- and pull- theory</i> (Lee, 1966)
<i>Dual labour market theory</i> (Piore, 1979)	<i>Human capital approach</i> (Sjaastad, 1962)

Table 3.1. Overview of the micro and macro-economic theories of migration.

3.1.1 Macro-economic migration theory

Macro-economic theories on migration incorporates the aggregate migration trends and explains these trends with a macro-level approach, referring to economic structure such as income and employment earnings differentials. Hence, with this approach one can explain migration on a community level both concerning the causes and the perpetuation of migration (Hagen-Zanker, 2008). One of the earliest writers on migration from a macro-economic perspective is Ravenstein (1885), who published his “Laws of Migration” on empirical migration data. The article could determine that most migrants only travel short distances, however, the paper is far from a complete theory of migration (Ravenstein, 1885). In the 1950’s, migration theory moved from mechanical models into more sophisticated theories, where the *neoclassical macro-migration theory* (Lewis, 1954, Harris & Todaro, 1970) and the *dual market labour market theory* (Piore, 1979) became corner stones of migration theory connected to regional disparities.

The *neoclassical macro-migration theory* developed by Lewis (1954) and later developed by Harris and Todaro (1970), explains migration as a part of economic development. The theory is connected to internal migration and explains that migration occurs as a result of geographical differences in the supply and demand of labour and income (Lewis, 1954). The geographical differences in supply and demand are referred as to the rural agricultural sector and the urban manufacturing sector. The theory is based upon simple trade theory, where it is assumed that there is a perfect labour market and a labour surplus in the rural agricultural sector that is absorbed by the urban modern sector. Hence the population in the urban sector grows through the poaching of labour from the rural agricultural sector, and through capital accumulation (Lewis, 1954). The reason why rural workers are attracted to the urban sector is due to a positive wage differential, where the differential in wages causes workers from low-wage regions to move to high-wage regions. Hence, the theory rests upon the notion that wages and labour act as temporary ‘push’ factors in regions where there is low levels of labour, and acts as a ‘pull’ factor in regions where the provision of labour is generous.

Harris & Todaro (1970) responded to this theory, augmenting the model to take account to unemployment in the urban sector that occurs due to great migration flows to the urban modern sector. They theorise that migration is not risk-free, and that rural-urban migration occurs due to an expected positive income differential, the key work being 'expected'. The authors hence expect migration to increase if there is an increase in urban wages and an increase in the urban employment rate, and believe that it is perfectly rational that migration should be seen as a response to expected positive wage differentials in the destination area (Harris & Todaro, 1970; Hagen-Zanker, 2008). Connecting this to the situation in Sweden, there is a relative difference both in the provision of wages and labour between the urban and rural municipalities. Hence the expectation is that there will be migration from rural to urban regions due to this differential supported by the theory.

Another macro-economic theory of migration relevant in this line of study is the *dual labour market theory* developed by Piore (1979). This theory, correspondingly to the neoclassical theory, explains that migration occurs due to a temporary 'pull' factor. However, contrasting to the neoclassical theory developed by Lewis (1954) and Harris and Todaro (1970), the dual labour market theory is not a purely economic approach (Hagen-Zanker, 2008). The 'pull' factor explained in this theory is the strong structural labour demand in developed countries, or urbanised sectors. According to this theory there is economic dualism on the labour market, where wages also reflect status and prestige. There is a primary sector for skilled job, and a secondary sector for unskilled jobs. Due to structural inflation in the primary sector, there is a constant wage rise whilst the secondary sector cannot match this wage increase. Hence, the primary sector is of more attractiveness to migrants (Piore, 1979; Hagen-Zanker, 2008). This macro-economic model is of importance as it can explain much of the post-war migration trends in Europe and the United States. However, the focus of the theory is very narrow, responding only to one pull factor being analysed in the migrant decision-making.

3.1.2 Micro-economic migration theory

While many early analysts developed theories based upon aggregate data, seeing migration as an equilibrating mechanism, later theorists developed microeconomic models on migration (Hagen-Zanker, 2008). Micro-economic migration theory is

rather focused upon individual decision-making, indicating that individual values, desires and expectancies are more pronounced than the economic structure of a society (Massey et al, 1993). The most common micro-economic theories of migration of relevance are the *push- and pull-theory* (Lee, 1966), and the *human capital approach* (Sjaastad, 1962).

The most commonly refereed micro-economic model of migration is Lee's (1966) *push-and pull- theory*. This theory was the first to formulate migration in a push and pull framework on an individual level, suggesting that it seeks other than labour market related reasons to migration. This theory, similarly to the neoclassical macro-migration theory, considers both the supply- and demand- side of migration. The theory conceptualises that there are positive and negative factors connected to the origin and destination region, connected to not only economic and labour market related factors, but also environmental, cultural and political factors. The 'push' factor represents the reason for people to leave an area. The 'pull' factor of migration represents the motives for moving to an area (Lee, 1966). The reasoning behind the theory is that if there are more reasons to leave than to stay, the region will experience persistent net out-migration, as is the case for many rural regions in Sweden. Common 'push' factors of migration are low productivity, unemployment and underdevelopment of the region. Common 'pull' factors can be represented by opportunities to better employment, higher income and a greater range of services for the region (Lee, 1966). Hence, understanding the underlying reasons, the strengths and the direction of these determinants are important for designing policies to hinder a depopulation trend. In the case of this thesis, the focus lies upon the forces of the 'push' factors of migration, as the focus is on the out-migration from the origin destination. This is an attempt to understand the depopulation of rural regions, and how regional disparities affect the migration decision.

Another theory connected to internal migration is the *human capital approach*, which is a micro-level approach to the neoclassical theory. The theory is based on the study written by Sjaastad (1962), where migration is treated as an individual investment decision to increase human capital. This theory is hence based on the labour market and relies on that individuals make rational cost-benefit calculations, migrating only when the expected returns of migration are positive (Sjaastad, 1962; Hagen-Zanker,

2008). The following equation as provided by Laber & Chase (1971) can be applied to this theory.

$$PV = \frac{W_j - W_i}{r_i - C_{ij}}$$

PV represents the net value of the migration investment, $W_j - W_i$ is the difference between the total revenue for the move and the income that the individual would have had if they stayed at home, r is the discount rate used to calculate the present value of this difference, C is the costs associated with the move. Consequently, migration occurs if PV is greater than zero (Laber & Chase, 1971).

Hence, the migration decisions depends on the expected benefits and costs of migration, where the expected benefits consist of discounted earnings and non-monetary returns such as the preference of a new location. The model further predicts that age of the migrants is a significant factor, where young individuals are the primary subject to migration. This is due to that the expected returns of migration are discounted over the remaining lifetime. This corresponds to trends in Sweden, where the young population are of greatest likelihood to migrate from the rural regions, causing more risk of depopulation.

Studies on internal migration are of great importance, as it does not only concern the movement of people between one location to another, but it also influences livelihoods and urban growth and rural decline. From this assessment on migration theories, one can conclude that most theory concerns the economic motivations for migration, such as employment and wages. However, internal migration does not only depend on the socio-economic status, but also concerns demographic and cultural factors such as income, unemployment rates, population growth and the demand for higher schooling (Hagen-Zanker, 2008). However, from the bulk of theories on internal migration, one can conclude that it is regional disparities of different sorts that stand as motives for migration. In the next section, assessing previous studies on internal migration, one can see that there is an emerging field of literature treating the other aspects of migration.

3.2 Previous literature

The literature covering the determinants of migration connected to regional disparities is vast and highly disciplinary in nature. The main focus of this study is on internal migration and how inter-regional disparities can affect migration decisions and be an explanation for the depopulation of rural municipalities in Sweden. Many of the studies related to internal migration relates to the U.S. and Europe with main focus on the labour market and economic disparities between regions (Blachard & Katz, 1992; Bentivogli & Pegano, 1999; Partridge & Rickman, 2003; Amkoff & Niedomysl, 2013). Although less common, there is an emerging field of studies on more non-economic related reasons for internal migration, which will provide motivation for this line of study (Karcagi-Kovats & Katona-Kovacs, 2012; Lundholm et al., 2004; Niedomysl & Clark, 2014). This section will provide a literature review of internal migration, first assessing studies connected to the labour market, continuing with an assessment of papers concerning other aspects of determinants of migration.

3.2.1 Labour market-related determinants of migration

Today, much literature can be found concerning the determinants of migration with a focus on the labour market and the economic performance of a region, i.e. wages, employment and unemployment. It has for long been established that the main forces of migration can be connected to the economy and the labour market, and that these forces can both pose as ‘push’ and ‘pull’ factors of migration (Lee, 1966; Lewis, 1954, Piore, 1979). The key word when studying inter-regional migration is regional disparities. As presented in the neoclassical macro-economic theory, inter-regional migration is primarily driven by disequilibrium mechanisms between regions (Lewis 1954, Harris & Todaro, 1970; Hagen-Zanker, 2008).

In a study by Blanchard & Katz (1992), the disequilibrium disparity in the unemployment rates is studied as a determinant for inter-regional migration. The study concerns the disequilibrium disparities in unemployment between states in the U.S. and looks at how adjustments in wages and the location decision act to close these disparities. The study develops a simple model accounting for unemployment and wages in different regions. Blanchard & Katz (1992) see the states as producing different bundles of goods of employment and wages, with infinite long-run mobility of workers. The model assumes that the differences in goods and services between the

states lead to a permanent difference in growth rates. The study finds that unemployment plays a major role in the migration decisions and can be seen as a key to close regional disparities. In a well-cited study by Bentivogli & Pagano (1999) concerning regional disparities and labour migration, similar results are found to Blanchard & Katz (1992). The paper looks at migration in the Euro area, concerning whether economic disparities between regions can account for large migration flows. The study coheres with the previous conclusion that migration is significantly influenced by unemployment disparities.

Further responding to the previous studies is a paper by Partridge & Rickman (2003). It has been widely discussed whether migrants follow jobs or whether jobs follow migrants, as this has implications for regional development policy. Partridge & Rickman (2003) use a structural vector autoregressive model to study the employment flexibility within the U.S. The results show that labour-demand shocks are more important than migration labour supply-shocks. Hence, the article can conclude that employment acts as a 'pull' factor for migration. The study further looks Europe in a similar manner, but cannot establish the same strong connection of between the short-run flexibility of wages affecting the flow of migration.

In a study composed by Amkoff & Niedomysl (2013), internal return migration is studied for metropolitan regions in Sweden, which are recognised as areas gaining from net migration. This study differs from the previous described studies, as rather than studying regular internal migration, they study return migration. This phenomenon is not as common as rural-urban migration, however, in rural regions close to metropolitan areas, this is an emerging trend. Hence, this shows the complexity in categorising factors of migration as either 'push' or 'pull' factors, as they are different for different types of migrants. However, it is early established that return migrants act in similar manners as regular migrants, with the exception of the notion that they are more likely to stay in the area permanently. The paper rather studies the 'pull' factors of migration than the 'push' factors from the rural regions. However, it provides a basis for the determinants of migration factors. The motivation for performing the study is due to that migration plays an important role in the demographic growth or decline of regions.

Amkoff & Niedomysl (2013) use longitudinal micro data on the Swedish population and determine that return migrants are attracted by temporary ‘pull’ factors connected to the advantages of the metropolitan regions. They find that individuals in which are unemployed or students are more likely to seek themselves from rural to metropolitan areas. The ‘pull’ factors are primarily higher income, higher levels of education and higher employment possibilities for well-educated people. The main conclusion of the paper is that it is primarily the strong ‘pull’ of metropolitan areas in which affect migration, at least connected to economic determinants. Hence, looking to studies connected to labour market migration, one can establish that the number of vacancies, unemployment and income are important factors influencing the migration decision.

3.2.2 Other determinants of migration

Economic and labour market related determinants are established to have an impact on the migration decision from rural to urban regions, and for migration overall. One of the most recent and relevant articles concerning internal migration, in respect to rural depopulation, is the article by Karcagi-Kovats & Katona-Kovacs (2012). The article does not only consider labour market-related determinants of migration, but also looks to social, cultural and political factors prompting the migration decision. In the article Karcagi-Kovats & Katona-Kovacs (2012) claims, “interregional migration is primarily driven by disequilibrium mechanism” (p. 49). By this it is implied that migration is a response to spatial economic differences such as a wages and unemployment.

However, the article also differs between motives for migration in international and internal migration. For international, or in this case trans-Atlantic migrants, motives for migration are due institutional, historical, cultural and linguistic reasons. Shorter distance migration, is however motivated by better quality of life (Karcagi-Kovats & Katona-Kovacs, 2012). Similarly in an article by Niedomysl (2010), motives for migration are different over different distances. For short distances, housing and quality of life is listed as a motive whilst longer distance migration is motivated by economic reasons such as employment. According to the article by Karcagi-Kovats & Katona-Kovacs (2012), if referring to the rural areas, which are showing a trend of depopulation for many countries, these regions need to take into account the “three pillars”. This means that there needs to be a balance between economic, social and

environmental objectives, in order to maintain population and hinder out-migration. In the empirical modelling of the article, the factors of population decline over the EU member states is tested, where unemployment, living conditions, wages, education and health services were amongst the factors of most impact of population decline.

Similarly to Karcagi-Kovats & Katona-Kovacs (2012), McGranahan (2002), in an article on understanding the rural population loss, attempts to identify the determinants for internal migration from rural regions. The article concerns the U.S. and identifies that despite poverty rates falling in rural regions in the U.S. there is an on-going trend of population moving away from rural regions to metropolitan regions. McGranahan (2002) establishes that population loss is more than a question of job availability, and identifies three likely reasons; location away from metropolitan regions, low population density and low level of amenities. Although McGranahan (2002) finds that there are other reasons to migration from rural areas than employment reasons, he also establishes that economics do play a role for rural population decline and the decision to migrate. Due to reasons such as low availability of both natural and urban amenities, manufacturers are not attracted to these regions. Furthermore, due to small labour markets in these rural regions, the income is generally lower. The levels in education are generally the same across the U.S.; however, this creates a gap between the workforce qualifications and the job availability in these parts of the country, which acts as a further reason for migration. Hence, McGranahan (2002) establishes that there is both 'push' and 'pull' factors to migration, referring mainly to 'push' factors from rural regions and 'pull' factors to urban regions. However, something that is established, which is in line with Karcagi-Kovats & Katona-Kovacs (2012), is that quality of life per se is a growing reason for migration from rural regions.

The conclusions made by McGranahan (2002) concerning the growing importance of quality of life, can be connected to an article written by Lundholm et al. (2004). The article concerns motives for inter-regional migration flows in Sweden, and is based on a survey consisting of 9600 respondents. The most interesting argument of the article, found from the respondents of the survey, is that Swedish inhabitants see themselves as voluntary movers. This implies that decisions are not only labour market related, but also connected to the quality of life determinants connected to education, social

motives and environmental motives. As with the other articles postured, the author does not try to disembark on the importance of the economic reasons as influencing the migration decision, in fact, economic factors are statured as one of the major determinants for movement from rural to urban regions. However, the main argument of the article is that rural-urban migration decisions are voluntary and hence there are other reasons than strictly economic, which influence the decision to migrate (Lundholm et al., 2004). What is further mentioned is that these factors can pose as both ‘push’ and ‘pull’ factors of migration depending on if they have a positive or negative value to the migrator.

The most recent research in this field is made by Niedomysl & Clark (2014). The aim of the paper is to give an answer to the on-going debate whether it is employment opportunities or amenities that matter more for economic growth and regional migration. The study is based upon micro-economic individual data, which do not seem to support the macro-economic arguments provided in most literature. In macro-economic studies, everything other than jobs is often classified as amenities. However, in this article it is proclaimed that amenities need to be treated separately, as employment-related reasons only account for a third of stated reasons according to survey evidence from Australia, New Zealand, Australia and the United Kingdom (Niedomysl & Clark, 2014). The ‘either or’ treatment is according to the authors a very biased approach, where the social processes should be taken into more account in evaluating internal migration decisions. Although the paper does not come to any clear answer whether economic and employment reasons are underlying determinants to migration, they determine that there should be a greater research field for amenities and other factors as determinants for internal migration. Hence, in concluding the findings of the previous studies, it can be established that most studies in the field of internal migration concern economic reasons for migration, where other areas of internal migration remains underresearched (Amkoff & Niedomysl, 2013), especially concerning the determinants for migration from rural to urban areas.

3.3 Expectations of study

From the bulk of the theoretical framework and previous studies, one can determine that when studying migration, the economic and labour market related determinants of migration are of most importance. The main aim of the paper is to determine what

factors that influence the migration decision on an aggregate level. What is of further interest is whether there is a difference in effects of both labour market related factors and depending on the nature of the municipality, i.e. whether the municipality is classified as urban or rural. According to both theory and previous studies, regional disparities act as a driver for migration between these regions. What signifies rural areas is that there are fewer opportunities for employment; lower income and the overall living standards are relatively lower to urban regions. Hence, there is reason to believe that the migration decisions respond more to these factors in rural as opposed to urban regions. In order to provide a framework for the analysis of the paper, a number of hypotheses are stated, based upon the previous findings and theories in the study area. As the paper focuses on the out-migration in municipalities in Sweden, there is sole focus on the 'push' factors of migration. The 'push' and 'pull' factors can be considered counter-acting effects depending on whether they are positive or negative in the origin and destination region.

Hypothesis 1: It is expected that there is a greater out-migration rate from rural municipalities. This is due to the increasing depopulation of rural areas and due to migration flows from rural to urban regions to improve quality of life and economic opportunities. As explained by the micro-economic migration theory created by Lee (1966), there are 'push' factors, representing reasons for people to leave an area and 'pull' factors, representing the motives for moving to an area (Lee, 1966). If there are more reasons to leave than to stay, the region will experience persistent net out-migration.

Hypothesis 2: The vacancy rate is expected to have greater impact on out-migration for rural than urban municipalities due to the common trend of less vacancies and employment opportunities in rural to urban municipalities, acting as a 'push' factor in rural municipalities. Hence, low vacancy rates should act as 'push' factors of migration (Lewis, 1954; Harris & Todaro, 1970; Lee, 1966; Piore, 1979).

Hypothesis 3: The unemployment rate is expected to have greater impact on out-migration for rural than urban municipalities due to the higher rates of unemployment in rural to urban regions, acting as a 'push' factor (Lewis, 1954; Harris & Todaro, 1970; Lee, 1966; Piore, 1979).

Hypothesis 4: The mean income is expected to have greater impact on out-migration for rural than urban municipalities due to the generally lower mean income in rural municipalities (Lewis, 1954; Harris & Todaro, 1970; Lee, 1966; Piore, 1979).

4. Method

According to the theoretical background and previous studies, there is evidence that there is a relationship between macroeconomic variables, migration and regional disparities. The aim of the method is to provide the necessary tools for the results and analysis of the paper to answer the research question and the hypotheses. This section will initiate to describe the data and descriptive statistics used in the study. This section includes a detailed assessment of the variables and data used, and an evaluation of rural and urban classifications. Further, the theoretical relevance of the variables is assessed, based upon the previous research and theoretical framework. The method will continue with a section on the empirical design of the study, including an assessment of the model formulation. The section will conclude with an account of the limitations of the study.

4.1 Data & descriptive statistics

The data used in this thesis is gathered from various Swedish local authorities and government authorities. The data is collected on a municipal basis, which constitutes of 290 separate observations for each variable and year. The municipalities in Sweden are divided according to population density and economic status, and represent the lowest level of government (Glesbygdverket, 2007). These municipalities can further be classified into either urban or rural municipalities, which is highly relevant for this study, where a detailed assessment of how this is handled can be found in section 4.1.4.

The years of study are 2003 to 2013, which constitutes an 11-year period. This time-period is selected because it is the most recent data available on a municipal basis, which makes for the study to be highly contemporary in this field of study. The data consists of repeated observations on the same cross-sectional units over time, meaning that they constitute panel data (Wooldridge, 2012). A detailed description of the variables, their source and relevance for constituting the study is provided in the following section. By the chosen variables the aim is to determine whether interregional migration is driven by disequilibrium mechanisms and regional

disparities between the municipalities as suggested by Karcagi-Kovats & Katona-Kovacs (2012).

4.1.1 Dependent variable

The data for calculating out-migration rate is collected from Statistics Sweden, which is a Swedish government agency responsible for collecting official statistics regarding Sweden and is considered a reliable source of data in Sweden. It is collected for the time period 2003-2013 for each of the 290 municipalities in Sweden. The variable is calculated as the out-migrants, divided by the mean population of that municipality, per thousand of the population. With this as a dependent variable the aim is to gain a clearer picture of how the chosen independent variables are related to depopulation per se.

This particular measure is of relevance as a dependent variable because it measures the geographical mobility of the population. This can be connected to the unsustainable development of municipalities because out-migration can be seen as a major force of demographic redistribution (UN, 2007). As internal migration both influences and is influenced by social, economic, environmental and political events, decreases in out-migration can be linked to a loss of livelihood can be a symptom of unsustainability of the municipality (UN, 2007). As we are interested in what variables that affect people from moving from a municipality, this variable is of most relevance.

In the choice of the dependent variable, both the net-migration rate and the out-migration rate were considered. When performing regressions using both variables, the results were very similar. Hence, the out-migration rate is chosen as the dependent variable as opposed to the net-migration rate, as this enables a more straightforward interpretation of how 'push' factors influence the move from municipalities.

4.1.2 Explanatory variables

The explanatory variables are connected to the properties of the municipalities in Sweden, in the form of basic services that is expected to be provided by a municipality to ensure a certain standard of living. This corresponds to the previous literature where much of the literature that found to affect migration decisions is

connected to the labour market, but where simultaneously other determinants connected to the regional environment and social features has been proven to be of great importance in emerging literature.

4.1.2.1 *Job vacancy rate*

The data for calculating the job vacancy rate is collected from Statistics Sweden and the Swedish Public Employment Service (Arbetsförmedlingen). The variable is calculated by the total number of vacancies divided by the average working age population (20-64) for each municipality and year 2003-2013. The variable is expressed as a percentage indicates how much labour demand that exists in a municipality.

The importance of including this variable in the model regressions is motivated by both the study by Blanchard & Katz (1992), and the study by Amkoff & Niedomysl (2013). Blanchard & Katz (1992) motivate that the disequilibrium disparity in the employment rates is studied as a determinant for inter-regional migration and finds that unemployment plays a major role in the migration decisions and can be seen as a key to close regional disparities. Similarly, Amkoff & Niedomysl (2013) determine that migrants are affected by temporary 'push' factors connected to the disadvantages of the rural regions. They find that individuals in which are unemployed or students are more likely to seek themselves from rural to metropolitan areas. Hence, low levels of vacancy rates should affect the out-migration rate positively.

4.1.2.2 *Unemployment rate*

The data for the unemployment rate variable is collected from Statistics Sweden and the Swedish Public Employment Service. The unemployment rate is calculated by the number of unemployed divided by the number of people in the labour force aged 20-64. The labour force consists of the employed population and the population actively searching for jobs. This variable is expressed as a percentage and is calculated for each 290 municipalities and years from 2003-2013. Similarly to the vacancy rate variable, the unemployment rate is a highly relevant factor in motivating migration, and is believed to influence people's moving patterns. Partridge & Rickman (2003) determine that migrants follow jobs and hence that unemployment should be treated as a 'push' factor of migration. Hence, high levels in the unemployment rate should affect out-migration positively.

4.1.2.3 Mean income

The mean income is collected from Statistics Sweden for each year and municipality from 2003-2014. This variable represents the average income within each municipality, and is expressed as SEK thousands. To include the mean income is highly motivated, as the expectation is that this variable should affect migration patterns. According to the *neoclassical macro-migration theory* (Lewis, 1954; Harris & Todaro, 1970), the reason why rural workers are attracted to the urban sector is due to a positive wage differential, where the differential in wages causes workers from low-wage regions to move to high-wage regions. Hence, the theory rests upon the notion that wages and labour act as temporary ‘push’ factors in regions where there is low levels of labour, and acts as a ‘pull’ factor in regions where the provision of labour is generous (Lee, 1966).

4.1.2.4 Tax rate

The data for the tax rate is collected from Statistics Sweden. This variable is based on administrative data from the Swedish Tax Agency (Skatteverket). The statistics make it possible to follow the evolution of the municipal tax base over time and offers good opportunities to study the existence of regional differences. The tax rate is expressed as a percentage for each municipality and year.

The main revenues of a municipality come from taxation of the residents, where around 70 percent of the revenues come from the local tax revenues (Bratt, 2010; Montin, 2008). This variable is intended to measure to what extent the economical motives matter for the population in a municipality.

4.1.2.5 Education-, primary school-, infrastructure-, and elderly care-costs

These four variables represent the determinants connected to the environmental, social and political factors of migration. The numbers are expressed as the net expenses per capita for each consecutive variable, per municipality, over the time period 2003-2013. These variables are seen as proxies for the amount that is invested in the municipal well-being and the maintaining of the standard of living and is supposed to indicate to what extent the municipality invests in these basic and vital services.

The municipalities are required by law to provide basic services to their residents in order to guarantee a certain standard of living. The foremost obligation of a Swedish municipality is to provide its residents with healthcare, elderly care, and education, which accounts for over 90 percent of the spending of the municipality (Montin, 2008). Other responsibilities include childcare, environmental planning, housing- and construction administration, water- and sewer infrastructure, general infrastructure development and maintenance, and public transportation, amongst other things (Bratt, 2010). Hence, the variables serve as proxies for the investment in the municipality.

4.2 Variable overview

Variable	Definition	Expectation	Source
<i>Dependent variables:</i>			
Out-migration rate	Out-migrants / mean population	(The expected effect on the dependent variable with one unit increase in the independent variable)	<i>Statistics Sweden</i>
<i>Independent variables:</i>			
Vacancy rate	Total number of vacancies/ average working age population (20-64)	-	<i>Statistics Sweden/ Swedish public Employment Service</i>
Unemployment rate	Number of unemployed (20-64)/ labour force (20-64)	+	<i>Statistics Sweden/ Swedish public Employment Service</i>
Mean income	Mean income/SEK thousand	-	<i>Statistics Sweden</i>
Tax rate	Average municipal tax rate	+	<i>Statistics Sweden</i>
Primary school cost	Net expense / capita	-	<i>Statistics Sweden</i>
Education costs	Net expense / capita	-	<i>Statistics Sweden</i>
Elderly care cost	Net expense /capita	+	<i>Statistics Sweden</i>
Infrastructure cost	Net expense / capita	-	<i>Statistics Sweden</i>

Table 4.1. *The variables, their definition, expected value and source.*

4.1.3 Urban-rural classification (dummy)

In light of the flexibility that modern statistics provide, the idea of a uniform definition of municipalities seems like a constraint. Everyone who analyses or describes regions must make their own definition and boundaries (Westholm, 2008).

The importance of understanding a region is that every region develops its own profile, with unique properties of economies of scale (Cheshire & Shepard, 1995). In particular, rural municipalities, cities and regions have specific features and needs (Crauser, 2001). Hence, it is of importance to define the difference between an urban and a rural municipality in order to determine if regional disparities affect depopulation and out-migration.

The classification of the municipalities as either 'urban' or 'rural' is based upon the categorisations provided by the Swedish Association of Local Authorities and Regions (SALAR, Svenska Kommuner och Landsting) and the Swedish Board of Agriculture (Jordbruksverket). Sweden is today categorised into 290 municipalities after the extensive reforms completed in 1974, which finalised the definite transition to a representative democracy and decentralised welfare state (Erlingsson et al., 2011). SALAR has classified these 290 municipalities into ten groups taking into account structural features such as population density and economic structures. The Swedish Board of Agriculture has divided the Swedish municipalities into four categories. The Swedish Board of Agriculture takes into account whether the municipalities should be categorised as 'urban' or 'rural' regions in the following groups according to population density and distance to economic centres; *metropolitan regions*, *urban regions*, *countryside regions*, and *sparse rural regions*.

Metropolitan regions refer to the municipalities of Stockholm, Gothenburg and Malmö. What characterises these municipalities are that the whole population live within areas with 100 000 inhabitants or within 60 km radius. *Urban regions* are classified as municipalities with at least 30 000 inhabitants, or at least 25 000 inhabitants within the population centre. Furthermore, municipalities with 50 percent of its population within a 60 km radius are also considered as being urban areas, whilst outside this distance to larger cities, municipalities are considered as rural. *Countryside regions* are the municipalities, which have a population density of at least five people per km². Last, *sparse rural regions* are the municipalities that are not included into the previous three classifications, meaning the regions that have a population density of less than five people per km² (Board of Agriculture). Hence, according to this classification, the Swedish municipalities are categorised into 164 rural municipalities and 126 urban municipalities. For this particular study, the

municipalities are divided into either ‘urban’ or ‘rural’ municipalities based upon the classifications provided by SALAR and the Swedish Board of Agriculture. Here the first two classifications are considered as a uniform urban regions category and the last two classifications are considered one rural category. The division of two as reverse to four categories is done to create a simpler interpretation of the urban-rural differences.

The choice of a rural-urban division of municipalities enables to compare the difference in conditions between regions, in which migration patterns respond to. As emphasized, every region develops its own profile, with unique properties of economies of scale. Hence different conditions apply in the attractiveness of the municipality, which likely has an affect on the migration decision when referring to different push and pull factors of migration (Lee, 1966; Cheshire & Shepard, 1995). One can expect that rural municipalities can provide less in areas such as employment, education and services compared to urban areas, much due to their limited population size and distances to metropolitan areas. Hence, referring to economic, social, environmental and political factors of migration, one can expect that there is more push factors in rural municipalities and a higher prevalence of pull factors in urban municipalities, due to these regional disparities. This variable is presented as a dummy, where urban regions take the value 0 and rural regions take the value 1.

4.1.4 Descriptive statistics

The dataset contains 3190 numbers of observations, which is a large number of observations allowing for reliable results. The first table displays the descriptive statistics for the full sample, including both urban and rural municipalities. This follows with descriptive statistics for rural and urban municipalities separately.

Variable	Mean	Std.Dev	Min	Max
<i>Region (dummy) rural=1</i>	0.57	0.49	0	1
<i>Out-migration rate</i>	0.0491	0.0121	0.0243	0.1306
<i>Vacancy rate</i>	0.0876	0.1088	0	1.2048
<i>Unemployment rate</i>	0.0406	0.0130	0	0.1099
<i>Mean income (thousands)</i>	168.87	23.553	121.9	334.1
<i>Tax rate (percent)</i>	32.043	1.0323	28.89	34.52
<i>Primary school (SEK/ capita)</i>	5113.1	1259.8	2328	10064
<i>Education (SEK/ capita)</i>	14525.3	1725.4	7702	21951
<i>Elderly care (SEK/ capita)</i>	14242.9	3559.3	4089	32131
<i>Infrastructure (SEK/ capita)</i>	2882.2	818.56	307	7751

Table 4.2. The descriptive statistics for the full sample of 290 municipalities, including the dummy for region and university.

Variable	Mean	Std.Dev	Min	Max
<i>Out-migration rate</i>	0.0523	0.0095	0.0244	0.1306
<i>Vacancy rate</i>	0.0825	0.0908	0	1.0808
<i>Unemployment rate</i>	0.0403	0.0118	0	0.0900
<i>Mean income (thousands)</i>	145.49	18.146	121.9	239
<i>Tax rate (percent)</i>	32.105	0.9250	29.15	34.52
<i>Primary school (SEK/ capita)</i>	4723.178	961.07	2433	7968
<i>Education (SEK/ capita)</i>	14487.6	1424.89	10041	19137
<i>Elderly care (SEK/ capita)</i>	14704.1	2541.74	8320	24343
<i>Infrastructure (SEK/ capita)</i>	2908.1	658.38	307	6490

Table 4.3. The descriptive statistics for the 164 rural regions.

Variable	Mean	Std.Dev	Min	Max
<i>Out-migration rate</i>	0.0467	0.0143	0.0243	0.0885
<i>Vacancy rate</i>	0.0942	0.1283	0.0016	1.2040
<i>Unemployment rate</i>	0.0409	0.0145	0.0092	0.1099
<i>Mean income (thousands)</i>	173.26	28.539	144.8	334.1
<i>Tax rate (percent)</i>	31.963	1.1527	28.89	34.42
<i>Primary school (SEK/ capita)</i>	5620.4	1412.8	2328	10064
<i>Education (SEK/ capita)</i>	14574.3	2051.2	7702	21951
<i>Elderly care (SEK/ capita)</i>	13654.2	4487.4	4089	32131
<i>Infrastructure (SEK/ capita)</i>	2848.51	988.18	435	7751

Table 4.4. The descriptive statistics for the 124 urban regions.

Looking to the descriptive statistics, the out-migration rate from rural municipalities is higher than in urban municipalities in Sweden. This responds to expectations, where depopulation in rural regions is a common occurrence, much due to the out-migration of the younger population to urban regions. Furthermore, as expected, there is higher mean income in urban as to rural regions. This is interesting, as the notion of lower wages is seen as a major reason for migration, and serves as a push factor in the rural municipalities. Table 4.4 shows that the mean of the variables are close to each

other, indicating normal distribution. Further, the standard deviations are rather small, meaning that the data appears to be well behaved and no outliers were found in the data set.

4.2 Empirical design

The empirical design aims to create an empirical model to apply the theoretical background and the chosen data. This includes two sections, one where the Pooled OLS (POLS) regression is explained, and one where the Fixed Effects (FE) regression model is assessed, motivating why these empirical models are chosen for treating the data.

The data consists of repeated observations on the same cross-sectional units over time, meaning that they constitute panel data. The panel data set is balanced, meaning that all entities have measurements in all time periods (Greene, 2008). There are a number of ways in which one can treat this data, where the simplest form of estimation is to estimate a POLS model. The POLS model is used to have a baseline comparison model, and will also include the regional dummy to analyse the difference of out-migration between urban and rural regions. The treatment that follows in this paper is given by Greene (2008), Wooldridge (2012), and Gujarati (2009).

First, the POLS regression models will be estimated, using the out-migration rate to see if there is any difference in impact of the independent variables on the dependent variable of out-migration. This will be followed with specifications including interaction variables to see the difference of effect of the variables in urban and rural space, and to respond to the hypotheses. Second, the FE regression models will be estimated in a similar order to account more specifically to the time-effect and heterogeneity (Greene, 2008; Wooldridge, 2012). The interaction variables are included to account for the differences in influence of the estimates in urban and rural areas, in order to respond to the hypotheses presented.

4.2.1 Pooled OLS model (POLS)

There are several advantages with using panel data rather than cross-sectional data (Gujarati, 2008, p. 529). Panel data models examine group-effects and time-effects simultaneously in order to deal with heterogeneity, which may not be observed. A

POLS model samples randomly from a large population at different points in time, where one gains more precise estimators and test statistics with more power than for regular cross-sectional models (Wooldridge, 2012). The following is the estimated model when using a POLS model.

$$Y_i = \alpha_i + \beta_1 X_i \dots + \beta_k X_{ki} + \mu_i$$

Where $\alpha_i (i = 1 \dots n)$ is the unknown intercept for each municipality, Y_i is the out-migration rate where $i = municipalities$, X_i represents one independent variable, β_1 is the coefficient for the independent variable and μ_i is the error term. Furthermore, three interaction variables are included (urban*vacancy rate, urban*unemployment rate and urban*mean income) in three separate model specifications.

A limitation to the POLS model is that it is restricted with the assumption that there is no cross-sectional heterogeneity and no period effects (Gujarati, 2008). More specifically, there is the assumption that the estimated coefficients are the same for each cross-section and over all of the estimated years (Wooldridge, 2012).

4.2.2 Fixed Effects model (FE)

In reality intercepts and slopes vary with individuals and across time. The approach allowing for this is the FE model, which is used whenever one is interested in analysing the impact of variables over time (Wooldridge, 2002). In the use of a FE model, it is assumed that something within the municipality may bias the predictor variable, which needs to be controlled for. By using the FE model, the time-invariant characteristics are removed so that one can assess the net effect of the predictors on the outcome variables, in this case the out-migration (Gujarati, 2008; Wooldridge, 2002).

In order to account for the individuality of the municipalities, one allows for the intercept to vary, but the slope to remain constant. Hence, in a FE panel regression, the relationship between the predictor and outcome variable within the entity is explored. For FE modelling, the intercept starts at the value m , where m is constant over the considered time period, meaning that the intercept is time invariant (Gujarati & Porter, 2009). This further allows controlling for average differences across the

municipalities in unobservable and observable estimators. Hence, this refers to a within-group variation rather than an across-group variation, which is estimated with the POLS model. The following is the equation for the fixed effects model.

$$Y_{it} = \alpha_i + \beta_1 X_{it} \dots \beta_k X_{kit} + \delta_i + \mu_{it}$$

Where $\alpha_i (i = 1 \dots n)$ is the unknown intercept for each municipality, Y_{it} is the out-migration rate, where $i = municipalities$ and $t = time (2003 - 2013)$, X_{it} represents one independent variable for each municipality and time period, β_1 is the coefficient for the independent variable, δ_i is the fixed effect and μ_{it} is the error term for each municipality and time period.

Advantages of using the FE model is that it is robust to the omitted variable bias, meaning that it allows for omitted variables (Greene, 2008). This is due to that the FE model rests on the assumption that omitted variables in the general model is correlated with the regressors in the model. The main idea of the FE model is that it assumed that the differences across the individuals could be captured in the differences of the intercepts (Greene, 2008). Furthermore, one should use the FE model when there are risks of correlation between the regressors and the error terms, as by using panel data, one allows for the unobserved effects to be correlated with the explanatory variables (Wooldridge, 2012). Furthermore, the FE model is appropriate to use if autocorrelation is present in the model as the results are unbiased (Gujarati & Porter, 2009).

4.3 Limitations

A POLS regression can be of interest as a baseline model, and to see the across-group variation of the variables. However, a POLS model assumes the intercept and slope to be the same for the ‘individuals’, or in this case, the municipalities across time and space (Wooldridge, 2012). This is fairly unrealistic and naïve. As everything that is not explained in the pooled regression is transferred to the error terms, it is necessary to estimate a fixed effects regression as well, in order to account for the heterogeneity in the data.

Although the FE model, in contrast to the POLS model, does account for the

individuality of the municipalities, by allowing for the intercept to vary, and the slope to remain constant, there are some statistical problems in using the FE model. Although the model succeeds in accounting the common effect and the correlation that exists across the observations within a group, it does not account for heteroscedasticity in the data due to that it only centres the conditional mean (Greene, 2008). Another problem that occurs is autocorrelation, meaning that the error terms in the model are correlated. For autocorrelation not to be present, if given two values of the same variable, the correlation between the error terms should be zero. Although the estimators are still linear, unbiased and normally distributed in the presence of heteroscedasticity and autocorrelation, they are not efficient. This means that t , F and X^2 could be invalid (Greene, 2008). In order to control for this, cluster-robust standard errors are used, also refereed to as White/Huber standard error estimators. In using this, each municipality is treated as a cluster, which eliminates both heteroscedasticity and autocorrelation of the error terms.

5. Results & Discussion

The main objective of the paper is to investigate what impact the chosen variables, connected to economic and municipal conditions, have on out-migration in the municipalities of Sweden. This is in order to give further light to the factors affecting depopulation of rural municipalities in Sweden and to be able to suggest areas of improvement. The regional analysis is allowed through the classification of municipalities after measures of SALAR and the Board of Agriculture of Sweden.

The results are discussed in two sections. The first section examines the general impact of the explanatory variables on out-migration, accounting for all municipalities of Sweden through the POLS and FE regression analysis. The second section considers the urban and rural differences in out-migration in respect to the interaction variables included in the regressions.

5.1 Analysis of results

Looking to 'Model 1' for both the POLS and the FE model, the estimated coefficients are very similar, showing both the same sign of the coefficients throughout the models as well as similar values. This is an indication that one is not facing the biased estimate issue by omitted variables when using POLS (Greene, 2008). Furthermore, for both of the models, the majority of the variables are statistically significant, which responds to theory. Looking to the R^2 , it has a satisfactory value, where the estimated variables can account for approximately 79% of the variation in out-migration for the POLS model and 73% of the FE model.

What is not unexpected is that the variables of *tax rate* and *primary school costs* are insignificant. *Tax rate* is intended to measure to what extent the economical motives matter for the population in a municipality. Although this is expected to have an effect on the out-migration rate, this is not surprising. Looking to the descriptive statistics in table 4.2, there is not much variation in the tax rate across municipalities, and there is especially no variation between rural or urban municipalities. The variable of *tax rate* is further linear in the parameters, which motivates the insignificance of the variable.

5.1.1 Pooled OLS model

POOLED OLS MODEL (Dependent variable: out-migration rate)				
	Model 1	Model 2	Model 3	Model 4
d.region (urban=1)	-0.119** (0.015)	-0.103** (0.016)	-0.114** (0.012)	-0.147** (0.020)
Vacancy rate	-0.093* (0.001)	-0.084* (0.002)	-0.088* (0.001)	-0.079** (0.001)
Unemployment rate	0.056* (0.017)	0.054* (0.017)	0.048* (0.018)	0.062* (0.017)
Mean income	-0.110** (0.000)	-0.098** (0.000)	-0.099** (0.000)	-0.112** (0.000)
Tax rate	0.013 (0.002)	0.011 (0.009)	0.041 (0.000)	0.050 (0.000)
Primary school costs	-0.007 (0.002)	-0.012 (0.010)	-0.002 (0.000)	-0.002 (0.003)
Education costs	-0.113** (0.001)	-0.118** (0.018)	-0.219** (0.002)	-0.200** (0.006)
Elderly care costs	0.079** (0.003)	0.101** (0.000)	0.098* (0.011)	0.114** (0.000)
Infrastructure costs	-0.009* (0.000)	-0.009** (0.000)	-0.011** (0.000)	-0.010** (0.000)
d.region*vacancy rate		-0.023* (0.000)		
d.region*unemployment rate			-0.018** (0.007)	
d.region*mean income				-0.087** (0.007)
Year dummies are not reported				
Adj. R square	0.795	0.821	0.823	0.819
F probability	0.000	0.000	0.000	0.000
Sample size	3190	3190	3190	3190

Table 5.1. *Dependent variable: out-migration. Cluster robust standard errors in the brackets. **, * significant at the 0.01 and 0.05 level.*

In the urban-rural comparison of out-migration it is interesting to initially look to the POLS regression model presented in Table 5.1. This model is used as a baseline model to the FE model; however, it contains more information in terms of the urban and rural differences in out-migration. In the pooled OLS model, a dummy for region is included where a value of 1 represents urban municipalities. This is used to respond to *hypothesis 1* stating that it is expected that there is a greater out-migration rate from

rural municipalities. From the POLS model, one can determine that the variable denoted 'd.region' is negative. Although the coefficient is quite low for all models, the coefficient is significant to the 0.01 significance level. Hence, interpreting this, it means that the out-migration rate is lower for urban municipalities than for rural municipalities, which is in accordance to theory. More specifically, looking to 'Model 1', the out-migration for urban municipalities in Sweden is about 12% lower than in rural municipalities. Hence, *hypothesis 1* cannot be rejected.

This result is interesting in the context of depopulation of rural regions, as the result indicates that out-migration is greater in rural municipalities than urban. Although depopulation cannot solely be explained by out-migration, but is also a function of an ageing population and lower fertility rates, the higher out-migration rates for rural municipalities to urban municipalities motivates the concern that out-migration is an important part of analysing depopulation. This is likely due to the increasing depopulation of rural areas and due to migration flows from rural to urban regions to improve quality of life and economic opportunities. As explained by the micro-economic migration theory created by Lee (1966), there are 'push' factors, representing reasons for people to leave an area and 'pull' factors, representing the motives for moving to an area (Lee, 1966). If there are more reasons to leave than to stay, the region will experience persistent net out-migration.

5.1.2 Fixed Effects model

As the results from the POLS model could establish that there is a case of higher out-migration in rural to urban municipalities, the next concern is to analyse the effect of the independent variables on out-migration rate of municipalities. This is to establish whether they are of significance in the discussion on migration and depopulation. In the interpretation of the variables and the remaining results, the FE model is used as a reference as opposed to the POLS model. As mentioned, both models present results in accordance to each other, and as the POLS model is mainly used as a baseline model, the FE model is of more interests here. By using the FE model, the time-invariant characteristics are removed so that one can assess the net effect of the predictors on the outcome variables, in this case the out-migration, whilst in the POLS model there is the assumption that the estimated coefficients are the same for each cross-section and over all of the estimated years (Gujarati, 2008; Wooldridge, 2012).

FIXED EFFECTS MODEL (Dependent variable: out-migration rate)				
	Model 1	Model 2	Model 3	Model 4
Vacancy rate	-0.098** (0.001)	-0.099** (0.012)	-0.102** (0.001)	-0.101** (0.006)
Unemployment rate	0.138** (0.020)	0.140* (0.019)	0.139** (0.018)	0.129** (0.020)
Mean income	-0.109** (0.056)	-0.108** (0.012)	-0.087** (0.008)	-0.102** (0.001)
Tax rate	0.045 (0.010)	0.045 (0.023)	0.041 (0.003)	-0.078 (0.012)
Primary school costs	-0.078 (0.010)	-0.056 (0.010)	-0.057 (0.007)	-0.067 (0.009)
Education costs	-0.021** (0.012)	-0.019** (0.009)	-0.025** (0.001)	-0.034** (0.010)
Elderly care costs	-0.050** (0.001)	-0.061** (0.000)	-0.045* (0.000)	-0.056** (0.002)
Infrastructure costs	-0.011* (0.000)	-0.019* (0.011)	-0.021* (0.000)	-0.011* (0.000)
d.region*vacancy rate		-0.039** (0.003)		
d.region*unemployment rate			-0.101** (0.010)	
d.region*mean income				-0.090** (0.012)
Adj. R square	0.732	0.791	0.801	0.784
F probability	0.000	0.000	0.000	0.000
Sample size	3190	3190	3190	3190

Table 5.2. *Dependent variable: out-migration. Cluster robust standard errors in the brackets. **, * significant at the 0.01 and 0.05 level.*

Regional disparities in the economic factors, i.e. vacancy rate, unemployment rate, income and tax rates, have in theory been established to affect out-migration to the greatest extent, especially concerning rural regions where these usually act as ‘push’ factors of migration (Lee, 1966). In the FE model in table 5.2, looking to ‘Model 1’, it can be established that all of the economic factors are significant to the 0.01 significance level. Looking to the coefficient of *vacancy rate*, it has a negative coefficient value of -0.098, indicating that if the vacancy rate in a municipality increases by one unit, the out-migration rate decreases by 0.098 units. Hence, this indicates that out-migration is sensitive to the fluctuations in vacancy rates in

municipalities, and that it serves a likely reason for population to leave a municipality if the vacancy rate decreases. Similarly, the *unemployment rate* has an extensive effect of the out-migration rate from municipalities in Sweden. The expectations after the theoretical assessment are that a higher rate of unemployment would have a positive effect on out-migration. Looking to the FE regression, a one-unit increase in unemployment would result in an increase in out-migration of 0.138 units. Hence, it can be established that the rate of unemployment is a factor that influences the migration decision.

Looking to *mean income*, this is a factor that is expected to have a substantial impact on the migration decision. The mean income varies much across regions in Sweden, much due to the regional disparities in business opportunities and economic development between urbanised and more rural municipalities. Harris & Todaro (1970) theorise that migration is not risk-free, and that rural-urban migration occurs due to an expected positive income differential. Hence, there is reason for population to move if there is a negative trend in income development in the municipality. Looking to the FE regression output in table 5.2, a one-unit increase in mean income would result in a decrease in out-migration of 0.109. Hence, the level of income is also an important part to assess in the maintaining of population within a municipality. Last, the variable of *tax rate* is assessed. As earlier discussed for the POLS model, the tax rate is not a significant variable. The variable is included in the regression equation to act as a proxy to measure the extent to which the economical motives matter for the population in a municipality. However, the tax rate does not vary substantially across regions in Sweden or across time and is seen to be linear in the parameters, which is a probable reason for its insignificance.

Factors connected to the amount of investment that municipalities place on their population in the form of education, infrastructure, and healthcare should reflect the attractiveness of municipalities, and the amount of resources and services that a municipality has to offer the population. This should in theory have an effect on the migration flows as these create incentives to stay or leave a municipality. Hence, it is expected that a higher investment per capita for these factors would act as a ‘pull’ factor of migration. Similarly, a lower level of investment would act as a ‘push’ factor of migration. Reflect the amount of money that the municipality has.

Looking to ‘Model 1’ in table 5.2, education costs, elderly care costs and infrastructure costs are all significant variables, whilst primary school costs is not. A one-unit increase in *education costs* would result in a decrease in the rate of out-migration of 0.021. Similarly, a one-unit increase in *elderly care costs* would result in a decrease in the rate of out-migration of 0.050. Furthermore, a greater investment in *infrastructure* in a municipality has a negative effect on out-migration, where a one-unit increase in infrastructure costs per capita would result in a decrease of out-migration of 0.011. These results indicate that the amount in which is invested in the municipality on basic goods and services has an effect on the migration decision. The variable of *primary school costs* is insignificant. An explanation to this could be the emphasis of higher education in the investment decision rather than a basic service such as primary school.

Hence from the bulk of the results from the FE model in table 5.2, it can be determined that economic, as well as factors connected to the environmental and social properties of the municipality influences the migration decision. This strengthens and elevates the results from the theoretical background, where it could be established that this is the case. Furthermore, these results are interesting, as the bulk of studies on depopulation and internal migration have been conducted in countries outside of Sweden.

5.1.3 Interaction effects

Due to the considerable impact of the economic factors on the out-migration rate and due to the notion that out-migration is higher for rural than urban areas, there is an expectation that the economic factors would influence the out-migration rate more in rural than urban regions. This is also due to the notion that the economic situation in rural regions tends to be unstable to urban regions, much due to the depopulation problem. Due to the less income from taxes and less investment incentives in rural areas, they can provide less in terms of the supply and demand of goods and services. As suggested by the *neoclassical macro-migration theory* developed by Lewis (1954), migration is a part of economic development and the geographical differences in the supply and demand of labour market related factors (Lewis, 1954). Hence the theory rests upon the notion there are ‘push’ and ‘pull’ factors connected to these regional

disparities that affect migration. The variables of interest are vacancy rate, unemployment rate and mean income. The hypotheses of the interaction variables are the following, based upon theory. The calculations for the interaction effects are shown in table 5.3.

- *Hypothesis 3:* The vacancy rate is expected to have greater impact on out-migration for rural than urban municipalities.
- *Hypothesis 4:* The unemployment rate is expected to have greater impact on out-migration for rural than urban municipalities.
- *Hypothesis 5:* The mean income is expected to have greater impact on out-migration for rural than urban municipalities.

Interaction variables:	Rural	Urban
<i>Vacancy rate</i>	-0.099	-0.138
<i>Unemployment rate</i>	0.139	0.038
<i>Mean income</i>	-0.102	-0.192

Table 5.3. Interaction effects of labour market related factors, where urban=1 indicates a rural municipality.

Looking to the interaction variable of *vacancy rate* included in ‘Model 2’, the coefficient is significant to the 0.01 level and is negative. As the ‘urban’ dummy indicates that 1 is an urban municipality and 0 is a rural municipality, this should be interpreted as the effect of the variable in urban regions alone. The effect of the vacancy rate in urban areas, seen in table 5.3 is -0.138. This indicates that the out-migration rate in urban regions is less sensitive to changes in the vacancy rate compared to rural regions. Hence, the presence of available labour is of more importance in rural municipalities of Sweden, in terms of the out-migration rate. This further supports the neoclassical macro-migration theory, stating that migration occurs as a result of the geographical differences in the supply and demand of labour (Lewis, 1964). Therefore, *hypothesis 3* cannot be rejected.

The *unemployment rate* for urban regions is expected to have less effect on the out-migration rate than for rural municipalities as stated in *hypothesis 4*. As for the vacancy rate, the sensitivity to economic instability and decline should affect the out-migration rate as a temporary ‘push’ factor in rural municipalities and a ‘pull’ factor for urban municipalities (Lee, 1966). However, looking to the effect of the unemployment rate in urban regions on the out-migration rate, this is a positive

number, hence rejecting the hypothesis. This result thus indicates that the out-migration rate is more sensitive to fluctuation in the unemployment rate in urban regions than in rural regions. An explanation to this could be that the unemployment rate in urban regions is higher due to the great migration flows to the urban modern sector (Harris & Todaro, 1970).

Looking to the *mean income*, as a factor influencing out-migration, the expectation according to *hypothesis 5* is that out-migration in rural regions should be more sensitive to the level of mean income than in urban regions. The reason for this is that the mean income level for rural municipalities is generally lower than in urban municipalities. As the *dual labour market theory* developed by Piore (1979) states, due to structural inflation in the primary sector, with constant wage rise, the secondary sector cannot match this, making the primary sector more attractive to migrants, where the primary sector is most often subjected to the urban municipalities (Hagen-Zanker, 2008). Furthermore, as stated by Harris & Todaro (1970), rural-urban migration occurs due to an expected positive income differential. Similarly, the new economics theory of labour migration theorises that migration occurs to maximize income (Bloom & Stark (1985). Looking to the interaction effect of mean income in urban regions, it is lower than for rural regions, with a value of -0.192. Hence, the results respond to theory, suggesting that out-migration is less affected by mean income in urban regions than in rural regions.

Hence, looking to the results in the study, one can summarize that regional disparity in both economic and more municipal structural features affect the out-migration rate in municipalities in Sweden. The lower levels of vacancy and income, the higher levels of unemployment, as well as lower investment in municipal services such as elderly care and schooling, act as ‘push’ factors of migration in rural municipalities. Although depopulation cannot solely be explained by out-migration, the trend of a decreasing population in the Swedish rural municipalities in combination with these results should be revised in the development of regional municipal policies. The findings of the study support the advise that many scholars suggest, which is an increased focus on the maintaining of municipal basic responsibilities to maintain a good quality of life through functioning welfare services, effective institutions and good infrastructure.

6. Concluding remarks

The main objective of the thesis is to determine the factors affecting out-migration in Swedish municipalities, with a focus of the rural municipalities. This is to attempt a greater knowledge of the drivers of depopulation in rural municipalities, and to identify areas of improvement in the creation of regional and national policies to reverse this issue. To revisit the question posed in the beginning; *is depopulation a function out-migration caused by disequilibrium mechanisms between urban and rural municipalities in Sweden?* The simple answer to this question, in light of the study, is that it is partly determined by the degree to which labour market related factors and living standard related factors affect out-migration overall, and to the degree to which out-migration is determined by the nature of the municipality.

The findings in this thesis are largely in line with the findings in previous studies on determinants of internal migration, and build upon literature by highlighting the importance of non-labour market related factors on the migration decision. The explanatory variables of education, health care, and infrastructure proves that it is not only economic drive forces that influences out-migration from rural regions, which is the case for many other studies within this field. This is believed to expand studies within this field, as literature mostly tends to focus of economic drivers of migration.

The main findings denote the significance of both economic and more municipal-specific factors as influencing out-migration. With the results, several intriguing relationships between out-migration and the economic factors have been found, especially when looking to the urban-rural division of municipalities. In the urban-rural comparison, it is found that both mean income and vacancy rates influence the out-migration rate more in rural to urban regions, whilst the unemployment rate influences the out-migration rate more in urban regions. This suggests that in the making of national and regional policy-making, incentives to boost the labour market would most likely decrease the out-migration in rural regions as well as the maintaining of municipal basic responsibilities. In conclusion, policymakers should be aware of the influence of both economic factors and factors related to the basic needs of the population in the formation of policies to reverse the depopulation.

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