

The Regional Welfare Burden in the Nordic Countries

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Preface

This project was commissioned by *Nordregio* to further analyse some of the findings of a previous *Nordregio* project (Rauhut *et al.* [2008] *The Demographic Challenges to the Nordic Countries*. Nordregio WP2008:1). The findings of this previous report indicated that the main problem in respect of the future welfare and dependency burden is not tied to demography *per se*, but rather to a lack of institutional flexibility in the labour market. Even without ongoing demographic ageing the labour market problems themselves would have been enough to cause concern. If the problem of an increasing welfare burden for those of working age is to be solved it is of the utmost importance to ask the right questions from the outset.

This report is the result of a joint work effort carried out by Daniel Rauhut (project manager) and Petri Kahila. Chapters 1, 3, 5, 6, 7, and 8 were written by *Daniel Rauhut* while chapters 2, 4, 9 and 10 were written by *Daniel Rauhut* and *Petri Kahila*.

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Daniel Rauhut & Petri Kahila
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Executive Summary

Ageing does not have a negative impact on economic growth and welfare *per se*. This conclusion is based upon the analysis of 64 Nordic regions. A similar result is found at an aggregate level for the Nordic countries as a whole.

Demographic ageing is not, however, a phenomenon that suddenly has emerged; the trend towards population ageing was highlighted by a number of demographers as far back as the 1940s. It has however taken more than 50 years for politicians and institutions to react to the process of ageing and in particular to the perceived impact of the rising welfare burden. Such a tardy response cannot be blamed on the sudden emergence of ageing, indeed institutional inertia is the key here. Institutional adjustments are possible since ageing is a slow process; although valuable time has been lost, there is still time to act.

At the national level the Nordic populations will continue to grow, while the regional population imbalances will be accentuated; some regions will experience a significant population decline while others will experience the opposite. To a large extent ageing and welfare service provision remains a *regional challenge*. This challenge relates to the (in)efficiency of the labour market; where labour market institutions in particular will be placed under significant stress with adjustment to a new population structure needed.

The regional simulations and scenarios undertaken in this study for the period 2020-2030 indicate that more efficient labour market institutions, leading to a 30% decrease in the share of persons of working age currently belonging to a potential labour reserve, would lead to a welfare burden similar to what is currently experienced today – in some regions it would perhaps be even better than today! Without institutional change in the labour market the simulations and scenarios indicate that the welfare burden, in some cases, would almost double as compared to the present time. Furthermore, the simulations and scenarios for the period 2020-2030 indicate that an increase in immigration by some 50% would produce only marginal effects.

The conclusion then is that the development we see today is a predictable outcome of an as yet unfinished or incomplete structural change occurring in the economies of the Nordic countries. Vested interests, represented by the industrial economy in the Nordic context, are simply unwilling to enter the post-industrial economy.

Few medium to long-term policies, e.g. stimulation of fertility or the promotion of structural change, have been launched to deal with the challenges of ageing. Short-term policies have, however, been launched, e.g. raising the retirement age, enabling elderly persons to work longer, changes in the labour market legislation to favour older workers and the promotion of labour immigration. Further and more thorough analyses of possible policies and their impacts however remain essential as such short term policies that have been adopted basically aim at preserving the current industrial institutional structure, while what we have termed long-term policies here undoubtedly aim at the creation of something new.

As is to be expected the issue of how to build the post-industrial and ageing society and how to organise its welfare production and provision institutions remains highly ideological.

Sammanfattning

En åldrande befolkning i sig har inte en negativ inverkan på välfärd och ekonomisk tillväxt. Denna slutsats bygger på en analys av 64 nordiska regioner. Samma resultat har framkommit vid en analys av utvecklingen på den nationella nivån i de fem nordiska länderna.

En åldrande befolkning är inte ett fenomen som uppkommit plötsligt; redan på 1940-talet kunde demografer identifiera denna trend av en åldrande befolkning. Det har dock tagit ca 50 år för politiker och institutioner att få upp ögonen för denna fråga. En så lång reaktionstid kan inte tillskrivas en snabbt åldrande befolkning utan en inneboende institutionell tröghet i det politiska systemet. Vi har fortfarande tid och goda möjligheter att anpassa oss till nya förutsättningar.

På den nationella nivån kommer befolkningen i de nordiska länderna att fortsätta öka, men de regionala obalanserna, befolkningsmässigt sett, kommer att öka; några regioner kommer att uppleva en befolkningstillväxt, medan andra kommer att uppleva en befolkningsminskning. I stor utsträckning kommer en åldrande befolkning och produktionen av välfärdstjänster vara *regional utmaningar* snarare än nationella. Arbetsmarknadens institutioner kommer särskilt att utsättas för stora prövningar och en anpassning till nya befolkningsstrukturer kommer att vara nödvändiga. I mångt och mycket rör framtidens demografiska utmaningar inte så mycket demografi som arbetsmarknadens låga effektivitet.

De regionala simuleringar och scenarier som görs i denna studie för perioden 2020-2030 visar att mer effektiva arbetsmarknadsinstitutioner, som minskar antalet personer i arbetsför ålder i den potentiella arbetskraftsreserv som finns idag med 30 procent, kommer att leda till en modifierad försörjningsbörda i paritet med den vi har idag – för vissa nordiska regioner kommer den dessutom att vara bättre än idag! Små förändringar sker dock av försörjningskvoten i dessa simuleringar. Simuleringarna visar även på att en ökad invandring endast ger marginella förbättringar för perioden 2020-2030 jämfört med idag.

En av de slutsatser som dras i studien är att den stora andelen personer i arbetsför ålder som är ingår i ett potentiellt arbetskraftsutbud är ett förutsägbart resultat av en ofullbordad strukturomvandling från ett industriellt samhälle till ett post-industriellt. Det finns många starka särintressen som vinner mycket på att rådande industriella institutionella struktur bevaras och som skulle förlora på en fullbordad strukturomvandling med nya institutioner på arbetsmarknaden.

Få medel- och långsiktiga policies har lyfts fram för att hantera de utmaningar som en åldrande befolkning och dess välfärdsbehov kommer att ställa. Flera kortsiktiga policies har däremot antagits, t.ex. en höjd pensionsålder, möjliggörandet för äldre att arbeta längre och främja invandring. Dessa kortsiktiga policies befrämjar den industriella ekonomins institutioner på arbetsmarknaden, medan medium- och långsiktiga policies innebär en förändring och anpassning till nya strukturella förutsättningar på arbetsmarknaden.

Som förväntat är frågan om hur framtidens post-industriella samhälle och välfärd och hur denna skall organiseras en mycket ideologiskt laddad fråga.

1 Introduction

Background

The demographic changes to come will generate a number of significant challenges for our society – at all levels and in most aspects of our lives (from infrastructure and housing issues to labour supply and pension schemes). Notwithstanding this, however, much of what currently passes for research into the effects of demographic change is often highly partial and generally short-sighted often culminating in "alarmist" conclusions and providing a clarion call for significant policy changes based, ultimately, on rather thin scientific justification. There is then a need for a more historical as well as a more holistic perspective to be taken.

“The prospect of an ageing society fills many otherwise rational people with dread. They worry about a greying world, a stagnant place bereft of youthful vigour with unsupportable numbers of dribbling pensioners packing out care homes on every street corner, bleeding the small number of workers dry of every penny of wealth they slave away to generate. If you suffer from this fear, you’ve been reading too many newspapers. It is just ageist hysteria. /.../ People are frightened of an ageing society because it is a step into the unknown, and because we have a youth-obsessed culture and ageist prejudices. But almost all our fears are totally unfounded” (Brown 2002, p. 52)

That ageing will affect all facets of human life is quite evident, but, as a UN report clearly points out:

“The profound, pervasive and enduring consequences of population ageing present enormous opportunities as well as enormous challenges for all societies” (United Nations 2001, p. xxxi)

It is an ideologically based postulate that demographic change and population ageing *per se* will have negative consequences for society. This idea originates from the USA while the fear that population ageing has dire economic and social consequences subsequently spread worldwide.¹ In the Nordic countries the population has been gradually ageing since the mid-18th century.

¹ The negative consequences of an ageing society were first outlined by Preston (1984) where he pitted youth against the elderly as beneficiaries of public measures. Callahan (1987) argued that population ageing will incur such escalation in health costs that health care should be rationed to, or even withheld from, elders. Perhaps the most influential of all neo-liberals is Kotlikoff (1993). His *Generational Accounting* framework focuses on ways to reform social and economic policy so that supposed intergenerational inequalities, which are assumed to favour the elderly, are addressed. The criticisms of his approach have however been voluminous and persistent. (1) Diamond (1996) points out that Kotlikoff fails to recognize the difference between public spending on consumption and investment – the latter will be beneficial for future generations, but not for the present, while the opposite can be said about consumption; (2) The policy implication of Generational Accounting is that taxes have to be cut today to save future taxpayers from incurring too heavy a tax-burden, Burton (1995) argues. The net savings of the present generations are not, however, included in the Generational Accounting calculations although future generations benefit from them. Burton (1995) concludes that the assumptions Kotlikoff has based his framework on are oversimplified and ideological rather than scientific; (3) Norton (1992, p. 115) highlights the position Kotlikoff has had on the political scene in the following sentence: “A year ago Kotlikoff was writing in obscure journals; this year the Bush Administration devoted a chapter of the fiscal 1993 budget to his approach”.

Nobody can however argue that the last 250 years have been a stagnant economic period in the Nordic countries (Rauhut *et al.* 2008).²

It is easy, however, to be enticed by the rhetoric of how negative the future will be due to an ageing population. The causality between demographic change and its economic performance effects is however anything but clear-cut. It is ambiguous to say the least – both in terms of direction and magnitude. A population decline can lead to positive as well negative economic development depending on the institutional and organisational changes that take place at the time of the population changes (Rosenberg & Birdzell 1994, Easterlin 1996, Kelley & Schmidt 1994, Coppel *et al.* 2001 and Coale & Hoover 1958). This is actually acknowledged by United Nations (2001) when they say

“As the impact of population ageing on society’s socio-economic conditions may be amplified by the speed with which occurs, it is important to consider not only the degree but also the pace of the changes in the age structure. When the proportion of older persons in the total population increases dramatically in a short period of time /.../ it becomes particular difficult for social and economic institutions to adjust” (United Nations 2001, p. 1f.).

Population ageing is a slow process to which we – and society as a whole – have plenty of time to adjust (National Research Council 2001). Demographic ageing is, however, not a phenomenon that has suddenly emerged; the trend towards population ageing was highlighted by a number of demographers as far back as the 1940s (Kirk 1946, Hofstee 1950, Liebenstein 1954, 1957). It has taken almost 50 years for politicians and socio-economic institutions to react to the process of ageing. Such a tardy response cannot however be blamed on the sudden emergence of ageing but instead relates to a number of identifiable political and institutional factors.

Point of departure

The point of departure for this study is that ***demography is not a destiny***, that is to say, the future of the Nordic countries will be influenced not only by demographic processes (low birth rate, ageing population etc.), but also by the political and economic choices made by individuals and institutions in the ongoing adjustment process designed to help utilise scarce resources more efficiently. The size of the labour force and the share of the labour force that is actually in work are, however, short-term aspects of economic growth, prosperity and welfare. Long-term economic growth, prosperity and welfare are determined by factors such as e.g. the capability to produce technological innovations, the social capability to adapt to new technology, the educational level of the labour force and the values in society towards economic activity and existing institutions (Abramovitz 1956, 1995; Gerschenkron 1952; Kuznets 1966; Lucas 1988; Romer 1986, 1987, 1990; Rostow 1960, 1990; Solow 1956, 1957. See also ITPS 2008). In the political debate today the short-term aspects of economic growth have a tendency to constitute the main focus of debate while the long-term aspects are seldom considered.

A second central point of departure is that we do believe that ***the larger the share of the population of working age who are actually in work, the better for economic growth and welfare within one and the same technological paradigm***. There are huge regional differences in unemployment, the number of persons in labour market schemes, the number of persons on long-term sickness leave and those opting for early retirement. These groups

² In the Nordic countries the population has been gradually ageing since the mid-18th century (SCB 1999, Statistics Norway 2007, Statistics Denmark 2007). Although e.g. the median age increased in Sweden/Finland from 23 years in 1750 to close to 40 today, or that life-expectancy in Norway has increased by about 30 years since 1821, the last 250 years cannot be described as a stagnant economic period in the Nordic countries.

constitute a latent labour force reserve, a reserve which has been created due to labour market problems (Cf. Rauhut *et al.* 2008, Andersen *et al.* 2007).

At all administrative levels, a new strategic approach to ageing is noticeable. It can be argued that the ***regional level becomes more important*** in this respect. The regional level has an advantage because it is in close proximity to the complex interaction of factors that describe different patterns of demographic change thus enabling corresponding policy responses on ageing to develop. Regions now also have certain capabilities in terms of policy delivery. They have growing political autonomy and financial recourse to develop ageing strategies that cut across different policy areas and region specific aspects. As such different kinds of combinations of regional ageing strategies dealing with factors related to ageing can be identified.

The regional governance reforms in the Nordic countries are mostly bonded to welfare service provision and to the betterment of administrative efficiency. The pressures on service provision have however resulted in a need to clarify responsibilities between the various administrative levels. In many cases, ***regional authorities will take the lead in the process of policy delivery***, especially where regional ageing strategies have already been launched. Broadening the scope of regional ageing strategies, there is a danger that poor policy coordination between the national and regional levels may lead to the delivery of contradictory policy actions. National-regional policy coordination is thus particularly important as attempts to develop ageing strategies are being driven by the regions. National frameworks and regulation nevertheless remain pivotal factors in determining a number of important aspects in the setting out of ageing strategies. National frameworks still decide the most important aspects of the ageing agenda, such as questions relating to retirement, to the structure of welfare services and the labour market. They might not always however correspond to priorities in regional strategies.

A statistical overview of the Nordic countries

So far in this chapter serious doubts have been raised about the importance of demography on the development of welfare. To show that the demographic trends in the Nordic countries have little to do with economic growth and welfare we will provide the reader with a statistical overview for the period 1980-2007 on the development of the dependency ratio, the dependency burden and the modified dependency burden for each country.

The dependency ratio is a pure demographic indicator showing the ratio between the total population and the age-group 20-64 years; the dependency burden and modified dependency burden are economic indicators for the welfare burden. The dependency burden shows the ratio between the total population and the population 20-64 who are employed and the modified dependency burden shows the ratio between the total population and the population 16-74 years who are in work (employed minus persons on sick leave and parental leave).³

It is now a common belief that an increasing dependency ratio i.e. the welfare burden becomes heavier is becoming a significant future problem. Figures 1.1 to 1.5 show with great clarity that current economic indicators already show a much worse burden than many of the projections of the future dependency ratios made by the national statistical offices.

³ See chapter 4 (Data and method) for a more detailed discussion of these indicators.

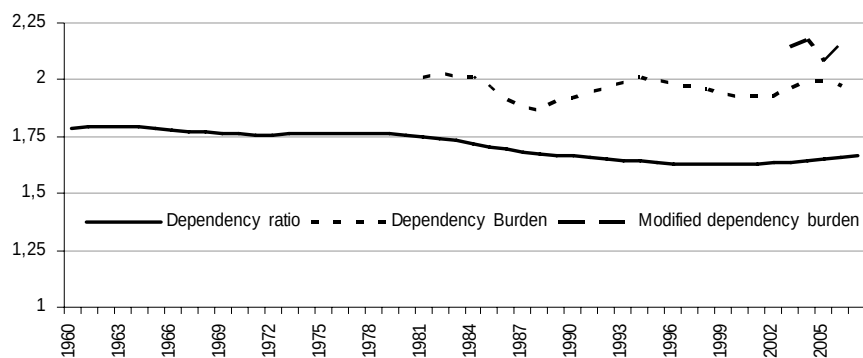


Figure 1.1 The dependency burden, dependency ratio and modified dependency burden in Denmark 1960-2007.

Source: Calculations from Statistics Denmark

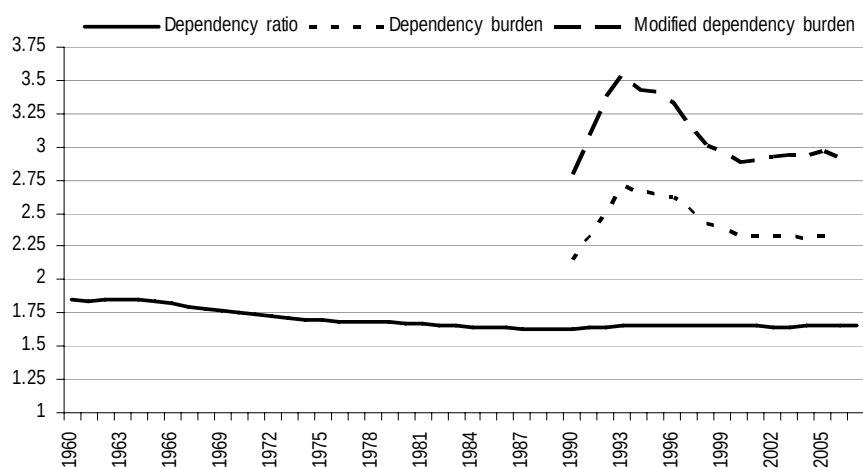


Figure 1.2 The dependency burden, dependency ratio and modified dependency burden in Finland 1960-2007.

Source: Calculations from Statistics Finland

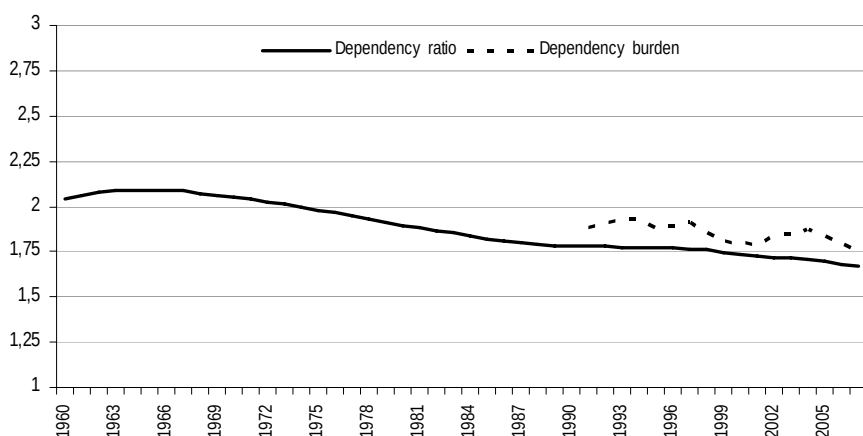


Figure 1.3 The dependency burden, dependency ratio and modified dependency burden in Iceland 1960-2007.

Source: Calculations from Statistics Iceland. (No data available for the calculation of the modified dependency burden)

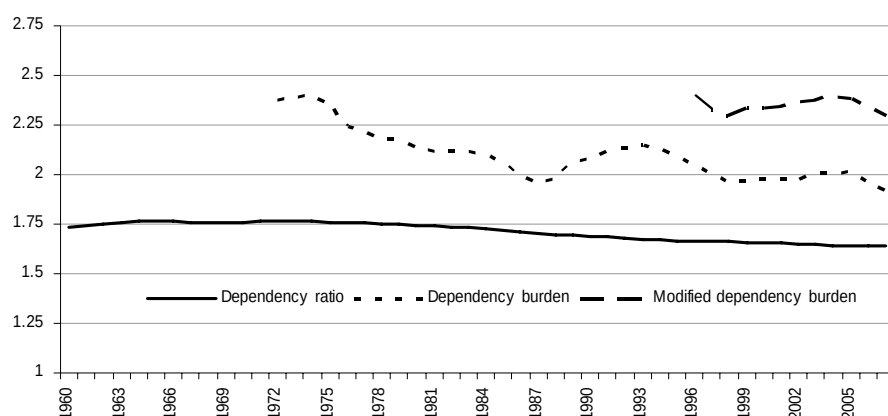


Figure 1.4 The dependency burden, dependency ratio and modified dependency burden in Norway 1960-2007.

Source: Calculations from Statistics Norway

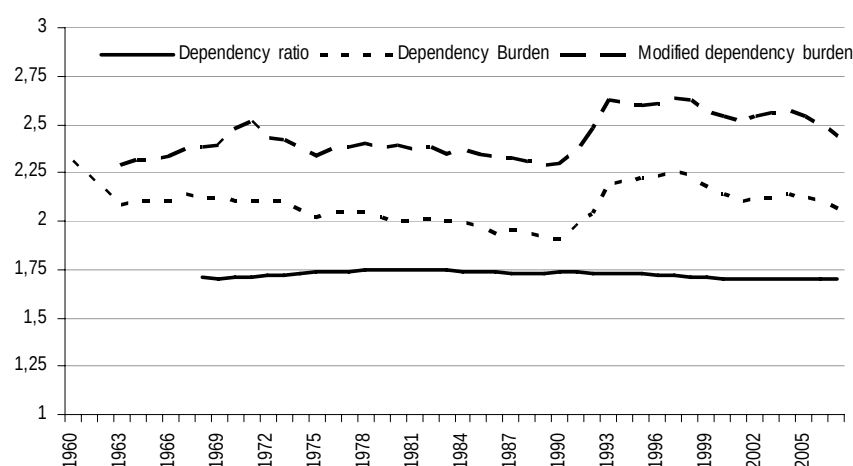


Figure 1.5 The dependency burden, dependency ratio and modified dependency burden in Sweden 1960-2007.

Source: Calculations from Statistics Sweden

Table 1.1 Correlations between annual GDP growth and the dependency burden, dependency ratio and modified dependency burden in the Nordic countries 1980-2007.

Source: own calculations of data from the national statistics offices.

Indicator		Denmark	Finland	Iceland	Norway	Sweden
Dependency ratio	α -coefficient	negative	positive	positive	positive	negative
	R^2	0,0089	0,0588	0,0458	0,0032	0,1578
Dependency burden	α -coefficient	positive ^b	negative ^d	positive ^a	positive	positive
	R^2	0,153 ^b	0,0082 ^d	0,0874 ^a	0,0678	0,0426
Modified dependency burden	α -coefficient	^e	positive ^f	n.a.	positive ^c	positive
	R^2	^e	0,0686 ^f	n.a.	0,0117 ^c	0,0209

a 1991-2007

c 1996-2007

e Data covers only 2003-2006

b 1981-2006

d 1992-2007

f 1995-2007

What are the effects on economic growth, and thereby implicitly on welfare? Table 1.1 shows that there are (a) no statistically significant correlations between the three indicators on the welfare burden, on the one hand, and economic growth, on the other, for the period 1980-2007, and (b) the α -coefficient shows both a negative and positive correlation. The conclusion from table 1 is that there is no clear evidence for a general *negative correlation* between ageing and economic growth.

Tables 1.1-1.5 and table 1.1 only show developments at the national level; behind the national level however significant regional variation may exist. The regional profiles – for all Nordic regions – are found in appendix A.

The Aim of the Study

The aim of this study is to analyse the future regional welfare burden in a regional perspective. Three research questions are raised in this study: **(1)** will the effects of the demographic changes on welfare (in a broad sense) and the size of the labour force be relatively limited? If so, why? **(2)** Is the regional level important when analysing this issue? Again, if so, why? **(3)** Are the policy options at hand limited? If so, why?

Unfortunately, the debate around the issues dealt with in this study is not always well-balanced and objective. Parts of the report may appear polemic, but this is only to reflect the state of the art in research terms. In the final chapter the reader will find carefully reasoned practical policy advice about how to minimise the negative impacts of ageing and a dysfunctional labour market.

An Outline

In chapter 2 a brief overview of the current regional trends in the Nordic countries is given. The chapter also contains a ‘state of the art’ review of the implications on welfare of the current trends in population ageing. Data and methodological issues are described and discussed in chapter 3. The fourth chapter contains the theoretical framework of this study and in this chapter empirically testable hypotheses are also generated. Chapter 5 provides a ‘state of the art’ review of the current labour market rigidities (labour shortage, mismatch etc.) in the Nordic regions. In chapter 6 a typology is constructed to select regions for the case studies undertaken in the context of chapter 7. The case studies focus on 12 Nordic regions and the development of the welfare burden since 1990. The eighth chapter uses simulations and scenarios to analyse potential development in the case study regions for the period 2020-2030. The policy implications of the results obtained in this study are discussed in chapter 9 while in chapter 10 the study is summarised and the main conclusions are discussed.

2 The Demographic Trends

Trends

Current trends in migration and demography in the Nordic countries

A recent study on demographic trends in the Nordic countries summarises the current trends (Rauhut *et al.* 2008). The population projection shows that the total population of the Nordic countries will increase by 5.5 million inhabitants up to 2020, from 24.8 million to 30.3 million, with an annual growth rate of approximately 0.4%. Most projections show a *population increase* for the Nordic countries, *not* a declining population.⁴

The ageing population is often explained by low fertility levels, higher average life expectancy and the out-migration of young people which aggravates the problem and creates depopulation and other related problems. When analyzing population development the different cohort sizes have a significant impact on future development. The logic here is quite simple as large cohorts will naturally reproduce large cohorts and *vice versa*. As such then current developments cannot simply be explained by low fertility rates and the out-migration of young people alone. Long-term changes in the economy and in prevailing social conditions have, and will, continue to be of great importance for age structure development.

Convergence at the national level has taken place across the Nordic countries during the period 1960-2004 in respect of the periodical TFR. At a regional level Finland shows a regional divergence in the TFR during the period 1991-2004, while Denmark and Norway show a regional convergence for the same period. In Sweden there is a regional convergence for 1991-1999, and a divergence for 1999-2004. The latter divergence is related to a 'baby-boom' in the larger cities. The analysis also indicated that the TFR is higher in smaller regions in Denmark and Finland, while no indication of the size-effect is visible for Norway. In Sweden the size effect has diminished: from a higher fertility level in smaller regions to a state where no size effects of significance are visible.

The Nordic countries are in many ways world leaders when it comes to high life-expectancy levels and low mortality levels. A certain level of uneven development however exists in the Nordic countries. The differences between men and women as well as regional differences seem to be converging but this development will not continue if social differences are polarized over time while socio-economic and educational factors remain the main contributors to changes in life-expectancy and mortality. In the future growing problems with obesity will pose new demographic challenges as this, in a long term perspective, will affect life-expectancy and mortality. A similar development was noted during the 1960's when cardiovascular diseases grew among men due to unhealthy lifestyles and obesity will probably have the same development effect in the future (Rauhut *et al.* 2008).

Internal migration within the Nordic countries remains dominated by movements from peripheral regions to the metropolitan areas. Young adults dominate domestic inter-municipal mobility. Every second domestic migrant is aged between 20-35 years. The composition of domestic migrants is fairly similar in all Nordic countries and is rather sustainable over time. The ongoing out-migration of young people to regional and national centres however aggravates the problem of keeping population numbers stable. Many international studies show

⁴ According to the estimations of the national statistical institutes in the Nordic countries the Nordic population will increase by 2.2 million inhabitants, to 27 millions, up to 2030. According to the Eurostat estimations in *Europop2008* the Nordic population (Iceland excluded) will reach 27.2 million inhabitants, *i.e.* an increase of 2.4 million persons. In contrast, the calculations in United Nations (2000) indicate a population decline in the Nordic countries.

that the costs and benefits of migration are gendered. Women gain less from migration compared to men in terms of career and income (Neubauer *et al.* 2007, Rauhut *et al.* 2008).

Sweden has been the prime country of destination for immigrants in the Nordic area and today continues to attract almost half of all immigrants to the Nordic countries (Eðvarðsson *et al.* 2007). In general, the typical immigrant to a Nordic country is a native Nordic citizen who is returning home, or is a Nordic citizen moving to another Nordic country. Immigrants from neighbouring countries to *Norden* (e.g. Germany, Poland, the U.K. and Russia) are placed in the third largest group of immigrants (Rauhut 2007a, Rauhut *et al.* 2008).

Two of the areas that remain the subject of much debate are depopulation and immigration. Historical occurrences of population decline with a possible depopulation potential have probably, most typically, been a small area phenomenon in Europe and have been a rare phenomenon in the Nordic countries (ESPON 2005). To what extent the demographic processes we are experiencing today will actually lead to depopulation is unclear (Foss & Juvkam 2005). Immigration can mitigate the bottle-necks in the labour market, but immigration can neither change the population structure, nor solve the deficits looming in the public purse (Coppel *et al.* 2001). Immigration can only offer a short-term solution, while the problems ahead remain structural and as such require long-term solutions (ESPON 2005, Eðvarðsson *et al.* 2007, Rauhut *et al.* 2008). Prominent scholars in the field argue that the relative success of immigration in the USA is unique (Borjas 2001). Rauhut *et al.* (2008) question whether the American experience can be easily transferred to the Nordic countries, especially if the experiences in the USA are deemed exceptional.

Implications for Welfare

“In the scientific literature it is not difficult to find authors who deny that population decline is a problem”, Malmberg and Korpi (2000, p. 9) argue. They then provide examples from Malthus and Malthusians, as well as a misinterpreted quotation from Adam Smith. No further “evidence” is presented. According to their argument economic growth and welfare are determined by demographic development, especially on the age structure of the population (Malmberg & Korpi 2000, Malmberg 1994, Lindh & Malmberg 1999, 2000, Malmberg & Sommestad 1999, Lindh 2000).

In the field of economic-demography Malthusianism has however long been regarded as obsolete.⁵ The misinterpretation of Smith deals with the fact that the division of labour is limited by the extent of the market; their conclusion is that a declining population will limit the division of labour. It is however important to understand here that Smith is talking about the *international* division of labour. In Rauhut (2004) no evidence is found for a global population decline, neither is there any evidence for a declining Nordic population.⁶

⁵ Malthus failed to include the implications of technological improvements and progress into his analysis; in modern science the presence of technological changes are postulated. The Malthusian analytical scheme has been analysed thoroughly by e.g. Boserup (1965) and Simon (1986); their conclusion is that the Malthusian theory on population and its effects on the economy are no longer applicable, nor did it when Malthus presented his ideas. See also Easterlin (1996) and Rostow (1998) for a further discussion.

⁶ See footnote no. 3.

A leading scholar in economic-demography, Richard Easterlin, has another argument. Any examination of historical evidence will raise doubt in respect of the arguments of the alarmist theses, he says.⁷ “In the last century growth rates of real *per capita* income in developed countries have trended upwards despite a downward trend in population growth. Also, in the post World War II period, economic growth rates have differed sharply between periods, with little or no differences in dependency” (Easterlin 1996, p. 125). Historical evidence shows that the major instruments used for dealing with shortfalls in the labour supply are related to educational, institutional, organisational and technological change. Easterlin concludes that the alarmist rhetoric of a changing age structure in the labour force and ageing, and the policy implications of these arguments, “would divert the policymakers from issues more central to long-term economic growth” (p. 126). The alarmist rhetoric has other aims, according to him: “Malthusianism has been a bulwark of opposition to reform from Malthus’s *First Essay* through contemporary attacks on poverty programmes. The dependency burden⁸ analysis provides a rationalization for an assault on yet another pillar of the welfare state – social security – and reinforces pressures for private provision of old-age support” (Easterlin 1996, p. 127).

The alarmist arguments are also rejected by other researchers. In a study by Canadian researchers, it is argued that Canadian scientists have “created a considerable body of research that shows apocalyptic demography for what it is – a set of beliefs that do not stand up to empirical examination” (Gee & Gutman 2000, p. 2). Of course this has an impact on policy implications and policy recommendations on the effects of demographic change and population ageing.

The population structure and population development will influence the competence supply for employers, which will have consequences for production. Employers must, in one way or another, adjust to the new labour market situation (Ohlsson & Broomé 1988). The various branches and sectors of the economy will be affected differently depending on their ability to adjust and respond to the challenges raised by the labour force generation shift (Ohlsson & Broomé 2003). According to them, *quantitative changes* of the labour force have simply not occurred as they note that “the general fear that Sweden is heading towards a situation characterised by a weakening labour force is unfounded and incorrect” (p. 9). Other changes will, however, occur:

“*Qualitative changes* will occur due to the upcoming labour market generation shift, as 40 percent of the current labour force, which possesses the experience, insight, overview, adaptation capacity, mentorship and cross-sectoral capacity will disappear from the labour market. In a more or less difficult personnel restructuring process within companies, this group will be replaced by a somewhat larger group of young people who lack experience, but have a whole range of other skills and talents. This group of young people has knowledge and competence, particularly technical competency, in several new areas. They possess new

⁷ The theoretical arguments linking population to slower economic growth, in general, either concern the impact of population change on the aggregate demand for goods or relate to the supply or production capabilities of the economy, according to Easterlin (1996). The *demand-side* argument postulates that the population growth rate governs the growth rate of the market and thus of the demand for both consumer goods and capital goods (e.g. housing, factories and machinery). Hence a declining population growth will discourage business since markets expand less rapidly, if at all. The *supply-side* arguments focus on the effects of factor supply and factor productivity. It is postulated here that a low or negative population growth will lower the average quality of the labour force, reduce the rate of capital accumulation and lessen the rate of technical change. In his thorough analysis Easterlin (1996) concludes that an examination of historical evidence raises serious doubts about the validity of the alarmist prophecies. The postulates are a-historical and are not based on empirical facts. See also Rostow (1998) for a thorough discussion on this issue.

⁸ The definitions of the *dependency burden* are different in Easterlin (1996) and in this study. The dependency burden in Easterlin (1996) is defined as the *dependency ratio* in this study.

values and outlooks, physical vigour, youthful energy and commitment. It is this qualitative change that the labour force generation shift is mainly about.” (Ohlsson & Broomé 2003, p. 9. Italics by Ohlsson & Broomé)

The main argument in Ohlsson & Broomé (1988, 2003) is that the institutional structure of the labour market will have to adjust to the new situation due to the labour force generation shift and the outcome here will depend on how dynamic the institutions are.⁹

It is important to remember that the Nordic countries are not, in fact, facing a situation of declining populations at a national level – the Nordic populations will actually continue to grow until – at least – 2030. At the regional level the situation is however rather different; some regions have already experienced population decline and others rapid population increases. This development highlights the importance of the regional level in analyses of ageing and its implications. It also stresses the importance of factors other than demography.

A recent study on the demographic challenges to the Nordic countries concluded that the “demographic challenges” did not contain much demography (Rauhut *et al.* 2008). The major problem however appears to be a rather different one, namely, that of matching problems in respect of the labour market. The study identified some of the most interesting causes of matching problems: (1) Geographic mobility is low and often flows in the wrong directions. Young adults in particular move from the periphery to the centres and thereby accentuate the regional population imbalances further biasing the age-structure in peripheral regions. (2) The insider-outsider dilemma is particularly related to the phase of establishing oneself on the labour market. The best way to get a job is to have a job and if a person fails in this, their position in the social security system will be just as weak. (3) Locking in processes to a certain profession or employer (or both!) leading to health problems, long-term sickness and early retirement. (4) Exclusion from the labour market, often experienced by persons who have an immigrant background together with labour over the age of 50, single mothers and young adults etc. (5) A segmented labour market, with three segments, does not improve the matching process. The first segment is attractive, the second is attractive when needed, and the third is unattractive. Even if there is a shortage of labour, the labour in the third segment will not be called on.

To resolve the issue of matching problems on the labour market mobility in general has to be increased to reduce the bottlenecks that develop. The current situation is not sustainable from a social perspective. These are problems which challenge the welfare institutions of the Nordic countries independently of the issue of demographic change. It is however obvious that demographic change is likely to make the situation even worse, though it should be reiterated that these demographic changes are not the cause of the problems *per se*. (Rauhut *et al.* 2008, *Cf.* Andersen *et al.* 2007). The link between the dependency burden and labour market has been previously discussed by Rauhut & Malmberg (2003); their conclusion was that an ageing population has had no negative effect on GDP growth in Sweden 1960-2002 and that the best way to improve the dependency burden is to increase the share of population in work.

Implications

Previous research has revealed some important aspects that have to be taken into account when analysing the impacts of demographic change in the Nordic countries. In a study by the U.S. National Research Council three problems were highlighted regarding policy implications and policy recommendations:

“First, there are uncertainties about how some of the demographic forces will play out /.../ Second, because population ageing generally is a gradual phenomenon, its socioeconomic consequences tend to appear gradually as well,

⁹ See also the essays in Broomé & Ohlsson (1989) and Bengtsson (2003).

and in some cases with a high degree of predictability /.../ third, most statements about ageing individuals tend to reflect averages and mask a great deal of diversity in the population” (National Research Council 2001, p. 2)

The *first* point refers to the extent to which technological changes will interact with demographic changes and how demographic change will change our way of life which, in turn, will interact with e.g. ongoing technological change. The *second* point deals with the fact that even if we accept the reality of an ageing society we retain the ability to adjust policies, lifestyles, infrastructure, the labour market etc., to make the transition easier. Finally, the *third* point touches upon the fact that the analyses only deal with national analyses of the average population. Significant levels of individual diversity (e.g. gender, class, education, and ethnicity), as well as regional and local diversity also however, exist. This point also deals with the problem of the definition of “elderly”; who is an “elderly” person? Someone who has passed 50? Over 65 years old? Or someone over 80 years old?

Depending on how these three problems are dealt with the policy implications and policy recommendations in respect of demographic change and population ageing will vary, not only in the U.S., but also in the Nordic countries.

The solutions to the future demographic challenges do not lie in the neo-liberalism of the apocalyptic, or alarmist, demography, according to Gee (2000). “Rather, social policy in an ageing society should recognize the past and present contributions of older persons at both the societal and the familial (i.e. intergenerational) levels and encourage them to continue to contribute; be based on human (and not market) values; recognize the value of care work; and understand that failing to provide adequate incomes for the aged can be more costly in the long run” (Gee 2000, p. 21)

Scotland’s Futures Forum takes a futures look at some of the issues around ageing, and is specifically aimed at stimulating public debate on the positive aspects of Scotland having an ageing population. The study focused on four themes – finance, employment, intergenerational issues and wellbeing – and a range of questions that need to be considered in order to realise a positive society for elderly citizens. The common assumption is that once you retire you become dependent but this is not necessarily so as the boundaries between work and retirement are changing and blurring. Older people wish to work for three main reasons: *health, financial and social*. We need to create a culture of flexibility to allow individuals to make the best choices throughout their educational, working and older lives. The report argues that it is crucial that society gets to grips with having an ageing population and that an older population need not cost more if, in the near term, resources are used flexibly and more effective ways of working together can be found. Older people are now the most flexible consumer group in society and the workforce of tomorrow can only come from drawing more ‘older’ workers into the workforce. Solutions should not just be aimed at the current older generation; instead, a wider approach must be taken encompassing all age groups, particularly young people (Scotland’s Futures Forum 2006).

A report by the European Policies Research Centre argues that in the past, population ageing has often been treated as a ‘pensions and care’ issue, but there is growing awareness that it is critical for policies related to economic growth, employment and social cohesion. The report acknowledges that employment and migration patterns can interact with trends in life expectancy and fertility rates to produce particular spatial characteristics and territorial effects. An influx of retired people can test the capacity of regional infrastructures, while the out-migration of young people can leave older people isolated in deprived urban centres or in peripheral, rural areas. At the same time, the negative consequences of ageing can be avoided if it stimulates incentives for the more efficient utilisation of existing resources. Indeed, population ageing can provide a potential driver for a regional economy if older people who are capable of working, but who are not drawn into the labour market, can contribute to a region’s economic and social cohesion, for example as consumers and as politically and socially active citizens. Responses to demographic ageing can provide opportunities for accelerating

economic growth and strengthening social inclusion by supplementing the labour force, developing entrepreneurship and expanding services and markets for older consumers (European Policies Research Centre 2006).

Some scholars stress the fact that population ageing is a slow process to which we have plenty of time to adjust. The transition will however be smoother the sooner we tackle the problems posed. Carrière (2000, p.42) points out that “the policy changes that will have to be made to respond to the challenges of population ageing should not respond to the false assumptions about its consequences on the health care system (or other social programs)”.

In contrast, the policy implications of the alarmist or apocalyptic demography proponents call for a significant reduction in public spending on social security and welfare programmes. If public spending is not cut now future tax payers will be “drained for every cent they manage to earn” just to pay for the welfare demands of the increasing share of aged persons. It would be more just if all persons paid for their own welfare, *i.e.* less collective action through the public sector (Preston 1984, Callahan 1987, Kotlikoff 1993). “The Reagan administration’s increase in investment incentives and longer-term cuts in social security benefits in the early 1980s constitute redistribution away from current old and young generations toward future generations that may more than offset the redistribution toward current generations from future generations associated with the Reagan tax cuts”, as Auerbach & Kotlikoff (1988, p. 181) note.

Policies at Hand

Global level

The United Nations have facilitated the discussion of population ageing on several occasions. Policy dates back to the adoption of the International Plan of Action on Ageing in 1982 in Vienna (also known as the Vienna Plan). The cornerstone of current policy on population ageing is the Madrid International Plan of Action on Ageing, adopted by consensus by the Second World Assembly on ageing in 2002 (United Nations 2002). The Madrid Plan offers the framework to integrate discussion of population ageing into the debate on development at the international level and the carrying out of national policies to respond to the process of building societies for all ages. Emphasis in the Madrid Plan is laid on ensuring that population ageing forms an integral element of the international development agenda. The overall target of the Madrid Plan is the concept of ‘*society*’. The *World Economic and Social Survey 2007* (United Nations 2007) facilitates and furthers the discussions in implementing the Madrid Plan. The United Nations has placed significant emphasis on the concept ‘*a society for all ages*’, which is viewed as the elemental aim of social integration in order to give every individual despite their age an active role in society. The concept stresses that it is important to build a comprehensive society in which older people can participate fully and without discrimination (United Nations 2002).

The Organisation of Economic Cooperation and Development (OECD) has long played an important role in stimulating and encouraging debate on the policy implications of demographic change (e.g. OECD 1988). The OECD has dealt extensively with issues concerning public pensions and the requirements to restructure national pension systems and also issues relating to the impact of ageing on future expenditures in respect of welfare services in order to cope with population ageing (e.g. OECD 2006a; 2006b). The OECD emphasises in these reports that financial incentives to stay longer in working life are not sufficient, while there is also a need to give older people better job opportunities and to change their own attitudes towards working longer and attaining new skills. The report *Live Longer Work Longer* (OECD 2006a) presents a new agenda for restructuring which would not only counteract the negative consequences of population ageing on the public finances and economic growth, and at the same time enhance individual choice for older employees. The fundamental message for policy making here is that population ageing is both a challenge and an opportunity.

European level

The European Commission (2006 p. 12) has argued that ‘member states are facing a problem of retirement rather than a problem of ageing’. In many countries, the statutory retirement age is 65 years, but the effective retirement age is closer to 60 years. We may say that this is the most fundamental reform option in the European Union. The intention here has been to raise the effective retirement age either through growth in the statutory retirement age and/or through constricting access to early and disability pension schemes (European Commission 2006).

The Green paper *Confronting Demographic Change* (European Commission 2005) called for a new era of solidarity between the generations, and proposed a return to population growth by encouraging the birth rate and careful use of immigration. It also aimed to ensure balance between the generations in the distribution of the benefits of growth and to find new linkages between activity and inactivity in both the old and young ages. The European Union set for itself, in the context of the Lisbon process, the target of increasing the employment rate of older workers by 50 percent by the year 2010. The European Union’s targeted policies are designed to increase the quality of investment in R&D, infrastructure and human capital. However, the Union’s approach also links a clearly active ageing policy to economic growth; one of the objectives of the Lisbon strategy is to raise the employment rate of older people (c.f. European Commission 2004a; 2004b; 2006). The Lisbon Strategy does not solely lay emphasis on economic growth but also draws attention to how to increase the labour market participation of ageing people through the promotion of active ageing, discouraging early retirement and improving the potential to link work and private life. The emphasis on *active ageing* is then an essential element in the Lisbon strategy. Skills and ‘flexicurity’ policies are considered the most important topics for employment security and mobility between jobs while vocational training has also had to respond to the challenge of active ageing (European Commission 2007).

Nordic level

Nordic labour market cooperation is based on the Co-operation Programme Labour Market and Working Environment 2005-2008 (*Nordisk Ministerråd* 2005). The Nordic Council of Ministers suggests in the programme a number of structural conditions which will affect inter-Nordic cooperation during the programme period. One of the most important themes in this programme is the need to devote increasing attention to meeting the requirements of population ageing in the labour market and the need to develop an active and inclusive working life. The programme includes two independent priorities: working life policy in the Nordic countries and Nordic working life policy in relation to EU/EEA and other international forums.

The programme advocates the benefits of keeping older workers in working life as long as possible. The challenge is how to develop employability and the abilities of older workers, while sustaining the motivation, wellbeing and capacities of employees as they age. Such acts should include resisting discrimination and negative images of older workers, while the working environment and the available employment possibilities have to be appropriate for the various age groups on the labour market. Older workers also have particular needs in respect of work organisation and the content of work. Their preferences have to be taken into account, in order to facilitate their continuing in working life until and possibly beyond the statutory retirement age. The development of such activities requires the identification of older workers’ needs and preferences.

As we have noted, each Nordic country has different approaches and instruments in respect of taking action as regards the prolonging of the individual working life. The structural problems and challenges of population ageing are, nevertheless, more or less identical across the Nordic countries. The labour market standards which render the Nordic countries almost

identical in this regard include close co-operation between employers, employees and government, an active labour market policy and the guarantee of a healthy and safe work environment. The implementation of the programme contributes to strengthen the change of information and to introduce a series of measures under the main priorities. The purpose here is to influence the working procedures while the public sector in particular is now beginning to react actively to the issue of managing age-related questions in employment (e.g. Piekola 2006).

The Nordic countries have implemented general programmes for active ageing and well-being in the workplace, promoted by tripartite cooperation between employees, employers and the state. The purpose of this is to influence work practices, which are seen as a natural extension of the wide coverage of health services provided for workers. Employers, particularly in the public sector, are starting to respond positively to age-management principles, given the anticipated future labour shortages. Active ageing policies in the Nordic countries and in Finland in particular, may indeed show the way forward for the whole of Europe, although they have thus far been strictly limited to labour market issues.

The challenges in meeting the requirements of ageing people are very much comparable in the Nordic countries. There is a need then to reassess the traditional institutions and values essential for the sustainability of the Nordic model. The Nordic model however currently faces the most severe social and political challenge of its venerable history. Now the model needs to be reformed and its policies and institutions reassessed, and this should take place in close cooperation between the Nordic countries. The Nordic model has many characters, which need and indeed ought to be preserved; however, the major challenges are not dealt with by closer cooperation between the Nordic countries.

National level

In anticipation of the challenges of population ageing **Denmark** has recently implemented a number of important measures aimed at reinforcing employment incentives and the employability of older workers (OECD 2005). The statutory retirement age is 65 years in most western countries, and the trend has been to raise the age, but in Denmark the statutory retirement age was reduced in 2004 from 67 to 65 years (OECD 2006a). The action plan 'More people in work' was introduced by the government in 2002. The plan intended to enhance the employment opportunities of the unemployed in general, but stressed a need to increasingly focus on work for older unemployed persons, who opt out of work early or have to exit labour market but then find it hard to re-enter (OECD 2006a).

Finland has applied a number of national programmes to cope with population ageing since the late 1990s. The various programmes have aimed to support and improve the position of older people in labour markets and to encourage older people to continue their careers after the statutory retirement age (European Policies Research Centre 2006; OECD 2006a). Thereafter the Finnish government decided in 2002 on a substantial pension reform which came into effect in 2005. The reform was to become the cornerstone of national pension policy promoting later retirement and a profound restructuring in wage-related pensions. The reform rewards postponing retirement in the hope of having valuable welfare effects and positive implications for economic growth (Lassila & Valkonen 2007). Key issues in the Finnish approach to population ageing here have centred on increasing pension costs, potential labour shortage and especially on social and health care provision. Finland has been a frontrunner in applying new modes of ageing policies. According to Committee of the Regions (2003), Finland is the only EU Member State where an integrated policy approach has been applied to population ageing. Population ageing is also a core issue in different official research activities. The Finnish Ministry of Labour (from 1.1.2008 onwards, the Ministry of Employment and Economy) launched the employment policy research programme in which ageing population is one of the central premises for the present research programme (Finnish Ministry of Labour 2007). The Finnish Government declared ageing as one of its main tasks,

and emphasised the ageing population as one of the most crucial factors influencing future economic trends (Finnish Prime Minister's Office 2008).

The age distribution of the population in **Iceland** is rather positive compared to other Nordic countries, and the number of retirees remains low. The statutory retirement age is 67 but early retirement is almost unheard of with workers generally not leaving the labour market until the age of 70 (Mishkin & Herbertsson 2006). Thus Iceland's system does not deploy any specific instruments in respect of the reduction or prolongation of the labour market participation of older workers. The Icelandic pensions system was reformed at the end of 1990s with no further changes being planned in the near future. In 2003, the Ministry of Social Affairs published a report in which the committee proposed that the government should begin a five year programme to further develop the position of the elderly people on the labour market. The programme targets the generation of a positive dialogue on how the image of elderly people on labour market can be advanced and their image improved.

In **Norway** growing awareness exists of population ageing. However, the concept of active ageing has not received much attention, and the grounds for policy reformulation have been based on a negative definition of ageing as such (Christensen 2003). The overall aim of the government has been to maintain high employment rates. The Norwegian government has determined some policy approaches to cope with population ageing, for instance the government and social partners have agreed on some issues in order to improve the labour market position of older workers (Christensen 2003; Cf. OECD 2004). On the other hand, Norway is better placed than many other countries to cope with challenges of population ageing (OECD 2004): the population is ageing slower, labour market outcomes are relatively good and Norwegian public finances retain substantial assets because of the continuing petroleum revenues. The OECD report on Norwegian ageing and employment policies (2004) stresses the need to enhance the labour market prospects of older workers; applicable policy approaches require a comprehensive reform strategy in order to enhance the work incentives set out in the welfare system. This demands a broader economic approach in opposition to the traditional social and health care-based policy approach. The Norwegian pension system is coming under increasing pressure because fewer new workers are entering the labour market and life expectancy is increasing. The government is currently reforming the pension system and the aims here include encouraging greater flexibility with regard to the age of retirement and a stronger commitment from the social partners to share positive attitudes; on the whole, the intention is to follow the integrated system emphasised in the OECD country report (e.g. Haukaas & Malmedal 2007).

Sweden has taken a number of crucial steps in respect of ageing and has implemented some important measures to address the challenge of early retirement. In 1999, a reform of the public pension system was introduced, which also included possibilities to combine work and pensions more flexibly. The OECD (2003b) country report on Swedish ageing and employment policies emphasised that Sweden should aim for a more comprehensive reform strategy in order to improve the position of older workers in labour market. Applied policies and reforms should not develop solely along the lines of the different work incentives related to welfare services, but should also seek to improve actions on the demand side. The fundamental problem here, as in many other countries, centres on the rigid attitudes of employers in respect of hiring older workers (Cf. *Finansdepartementet* 2007).

The government committee *Globalisation Council* recently published a report with the message of encouraging immigration. By 2050 about 10 per cent of the Swedish population is estimated to be aged 80 or more; who is going to take care of them if not immigrants? (Legrain 2008). The elderly care and health care sectors are assumed to be the sectors with the greatest difficulties in attracting future labour. Large regional differences can also be assumed in respect of future labour supply – where peripheral and industrial regions with a high share of poorly educated labour in particular will be exposed to future labour shortage problems. To solve these problem simpler rules for labour immigration have been proposed (*Näringsdepartementet* 2006. Cf. *Finansdepartementet* 2004).

Regional level

While the Nordic countries as a whole display a combination of high and increasing life expectancy and low fertility rates, the outcomes of these wider demographic processes are becoming increasingly noticeable in various ways at the regional level. Ageing population is affected by many different policies at the national level targeted at particular social groups, ethnic groups and geographical locations; therefore the consequences and impacts of population ageing vary spatially and socio-economically. This has a long-lasting and profound impact on the ability of the regions to respond to the question of ageing. New modes of regional policy-making lay greater emphasis on the operational implementation of measures directed towards the needs and demands of ageing people.

The regional level and regional organisations are gaining in importance in respect of the governance of all European Member States, and the strategies and policies they develop and deliver will thus have an important impact on the economic and social development of their regions. These regional strategies and policies are being developed at a time of profound change both within Europe and internationally. These regional governance reform processes have however been primarily influenced by internal pressures, not external ones. As regional governance structures have to consider how best to take action on the new opportunities thrown up by economic and political change, a consideration of the diversity of the population in the region has also to be made. Regional governance structures are then currently facing a significant challenge in understanding how ageing not only concerns 'old people' but simply people as producers, consumers, stakeholders, politicians etc. Within regions 'ageing' interacts with many other factors such as migration and employment development. These interactions produce small but important demographic variations between and within regions, which in turn impacts across all areas of policy from the economy to welfare service provision.

It is necessary for regional strategies and policies to understand the impact of population ageing and the necessity to develop a strategic response. Regional demographics are often unique and regions thus require detailed assessment and responses. The regional level needs to retain a strong emphasis, mainstreaming the regional dimension into national policies and structures. There is, moreover, a need to apply greater functional coordination between the national and regional levels but also between the regions themselves. Possible future actions should include supporting effective coordination at the regional level and facilitating information exchange.

The Demographic Challenges Revisited

The predictions on the effects of the future ageing population and dire demographic development are based on several assumptions which can be questioned: (1) most predictions are mere extrapolations of the current demographic situation, government expenditures, etc. That things actually could change in the future is seldom included in the models. (2) Most predictions keep all but the demographic variable constant, *i.e.* they are *ceteris paribus* calculations (Lindh 2002). If one variable changes, so will other variables – they will not remain unchanged. To base the predictions on *ceteris paribus* calculations is simply not realistic, but scientifically very convenient (3) Historical experience shows with great clarity that the economy – regardless of time and space – has a great capacity to adjust (Dillard, 1967; Rider, 1995; Easterlin 1996, Cameron, 1997; Landes, 1998). Apocalyptic demography is an exaggeration (Easterlin 1996, Gee & Gutman 2000, Ohlsson & Bromée 2003). Finally, (4) Ageing, problems with the labour supply and the dependency burden – to mention only a few challenges – will not be evenly distributed over a country. On the contrary, recent studies indicate that there will be significant regional variations in respect of these challenges (Rauhut *et al.* 2008, Eðvarðsson *et al.* 2007, Gaspar *et al.* 2005, ESPON 2005).

Despite the public and political debate, demographic ageing is not a phenomenon that has suddenly emerged. During the 20th century, fertility has fallen sharply in most of the countries

of the western world while life expectancy has increased as people generally live longer. One indication of this is the higher median age in the population. This trend was pointed out by a number of demographers as far back as the 1940s (Kirk 1946, Hofstee 1950, Liebenstein 1954, 1957). We would like to stress moreover that no clear-cut evidence exists, theoretically or empirically, that any particular demographic development will lead to a certain economic development. No unified or general theory of fertility, mortality and migration exists. Instead, different theories and models are used when they are analysed. The theoretical approaches to fertility, mortality and migration are quite different in terms of their explanatory power. All are, however, important in selecting indicators and in arguing for certain analyses. Any population decline could then conceivably have either a positive or a negative impact on economic development (Easterlin 1996, ESPON 2005, Gaspar *et al.* 2005, Eðvarðsson *et al.* 2007, Rauhut *et al.* 2008). The key factor then is *the ability to adjust* to the new situation. The Nordic countries have however generally been rather good at doing this historically (Eðvarðsson *et al.* 2007, Rauhut *et al.* 2008).

It is of the utmost importance however to distinguish between long-term and short-term problems in relation to the issue of labour supply. Situations of long-term labour shortage have led to labour being replaced through technological, institutional and organisational changes historically, leading to productivity improvements. This has resulted in increased growth, and the creation of an economic surplus through economic growth as a condition of welfare. Short-term labour shortage is however a constantly recurring problem. If the distinction between long-term and short-term labour supply problems is not made, the risk of an attempt being made to solve long-term problems with short-term measures, and *vice versa*, becomes very high. If this happens, the challenges now faced, be they demographic or otherwise, may become even more troublesome (Rauhut *et al.* 2008, ESPON 2005, Gaspar *et al.* 2005, Eðvarðsson *et al.* 2007).

“Labour shortage” is essentially a pricing problem. If wages are raised in the sectors where “labour shortage” exists the vacancies will be filled though the price elasticity will change (decrease) the demand for such services. The result will be a structural transformation of the economy where the expensive factor commodity – in this case labour – will be substituted for other factor commodities through institutional, organisational and/or technological changes (Björklund *et al.* 1996, Begg *et al.*, 1987; Wonnacott & Wonnacott, 1986; Elliott 1991; Fallon & Verry, 1988).

No consensus exists on either the implications of these implications, or on how to solve (or at least mitigate), them. Firstly, our *knowledge is rather limited* in respect of the causality between demographic change and economic performance. In the Nordic countries the population has been gradually ageing since the mid-18th century. Nobody can however argue that the last 250 years have been a stagnant economic period (Foss & Juvkam 2005, Rauhut *et al.* 2008, *Cf.* Easterlin 1996) More research is then needed to fill the knowledge gaps in respect of the relationship and causalities between demographic change and economic performance. The second point deals with how to deal with these *challenges*. These demographic challenges are only to a minor extent really *demographic*. If central *institutions*, such as the labour market and the welfare systems/models, are dynamic, they will be able to adjust to whatever challenges lie ahead. This leads us to a third point, which is that the level of *policy awareness* regarding these and related issues is low.

Furthermore, there is no universal solution to these challenges. All Nordic countries have a large number of persons in the labour force who are on long-term sick leave and a relatively high number of persons retiring early. Persons with an immigrant background also have a higher relative unemployment rate than natives. Getting these groups back into work will then have a significant impact on the economic dependency ratio. Another partial solution is to solve the mismatch problems on the labour market and minimise unemployment. Widening the labour market regions, creating a more flexible labour market and enforcing ‘zero tolerance’ on all kinds of discrimination could also provide partial solutions here. The raising of fertility also

constitutes an important partial solution. Furthermore, given that a number of specific conditions are addressed, labour immigration can also contribute here (Rauhut *et al.* 2008).

Summary

Ageing does not have a negative impact on economic growth and welfare *per se*. Institutional adjustment is possible since ageing is a slow process. At the national level the Nordic populations will continue to grow, while regional population imbalances will be accentuated. To large extent ageing and the troublesome issue of welfare service provision is a regional challenge. Furthermore, labour market institutions in particular will be placed under great stress and adjustments to a new population structure will be needed.

Few, if any, long-term policies have been launched to deal with the upcoming challenges of ageing. Short-term policies have, however, been launched, *e.g.* raising the retirement age, enabling older persons to work longer, changes in labour market legislation to favour older workers and promote labour immigration.

As is to be expected, the issue of how to build the post-industrial and ageing society, and to organise its welfare remains highly ideological.

3 Theoretical considerations

Institutional Economics

The causality – both in terms of direction and magnitude – between demographic change and its economic effects is, to say the least, unclear. Prominent scholars in the field have concluded that depending on the institutional and organisational changes that take place at the time of the population changes, a population decline could lead to positive as well negative economic development (Rosenberg & Birdzell 1994, Easterlin 1996, Kelley & Schmidt 1994, Coppel *et al.* 2001 and Coale & Hoover 1958).

Most analyses are based on *neoclassical* economic theory and, to some extent, *new classical* economic theory. These two theoretical approaches find very negative implications from demographic change. Other economic theories, with different points of departure indicate other results, though they are seldom heard (*e.g.* Ohlsson & Broomé 2003).

Institutions and political stability

Institutions can contribute to both change and stability in political, social and economic life. Instead of being mere echoes of social forces, institutions, by transcending moral individualism and self-interest, buffer or transform social currents and define the norms, interests and beliefs in society (March & Olsen 1989). According to North (1999) institutions play an important role in a society reducing uncertainty by establishing a stable, though not necessarily efficient, structure to human interaction.

“Institutions are the rules of a game in a society or, more formally, are the humanly devised constraints that shape human interaction. In consequence they structure incentives in human exchange, whether political, social, or economic” (p. 3) /.../ Institutions affect the performance of the economy by their effect on the costs of exchange and production. Together with the technology employed, they determine the transaction and transformation (production) costs that make up total costs” (p. 5f.).

Resource input in the production from land, labour and capital are involved in the transformation of physical attributes into goods and in transacting. Together they constitute the total costs of production. In consequence, the institutional framework can stimulate or obstruct economic change with regard to production inputs (North 1999).

This institutional dynamism is vital for progress, economic or social. The more dynamic are our institutions the more prosperous is our society. A prosperous society however leads to vested interests with the aim of rent-seeking, which, in turn, will reduce institutional dynamism. If the dynamism in institutions disappears, so will the prosperity of a country (Olsson 1982, Rosenberg & Birdzell 1986, North 1999, Schön 2000).

The structural cycle in economics

The structural cycle contains an economic cycle with a duration of approximately 45-60 years. The first half is characterised by structural change and economic renewal; the economic structure and branches changes, new requirements on competence development are placed on the labour force, old institutions become obsolete etc. The second half is characterised by structural rationalisation. Production becomes standardised, not only in terms of goods but also in terms of competence. International competition puts pressure on profitability. At the

end of the structural cycle an economic crisis will occur, where old production patterns will be unprofitable and disappear, while new production patterns will emerge with new branches and companies, *i.e.* give way to a structural change in the economy.

There were two such identifiable structural cycles during the industrial era in the Nordic countries: 1890-1930 and 1930-1975. The key components in the 1890-1930-cycle are chemistry, electricity and the combustion engine, while motorisation, electrification and air traffic were the key components in the 1930-1975-cycle. After 1975 a new structural cycle has emerged; it is sometimes termed 'the service economy' cycle and sometimes the 'post-industrial' cycle. The key components are bio-chemistry, the micro-chip and ICT. These key components form a development block to which a certain demand for labour and competence is related (Schön 1994, 2000).

According to standard economic theory, the demand for labour depends on the fluctuations of short-term business cycles. In a short-term perspective, the opportunity cost of replacing labour with capital, *i.e.* investing in new technology, will be too high. If the labour shortage continues, or even worsens, over time, the opportunity cost of not replacing labour with capital will be too high. In a long-term perspective, labour shortage is not about being short of labour, but about lacking the capacity to adjust to the structural changes in the economy (Begg *et al.*, 1987; Wonnacott & Wonnacott, 1986; Elliott 1991; Fallon & Verry, 1988).

It is possible to estimate the effects of changes in the relative prices of a factor commodity, according to economic theory, especially when it comes to the demand for that specific factor commodity and substitution effects. Given the assumption that a company is profit-maximising, the shortage of a factor commodity will result in an increase in its price. As a consequence, this specific factor commodity will be replaced by another, cheaper, factor commodity. If it is labour that is in relative shortage, capital will be substituted for labour. Elliott states that the "substitution effect distinguishes the firm's reaction to the change in the relative price of capital and labour, holding constant the scale of production" (Elliott, 1991: 236).

An increase in wages is to be expected when labour is scarce, which leads to an increasing wage ratio in the production. When the marginal cost of a continued increase in production is higher than the marginal cost of substituting capital for labour, institutional, organisational and technological changes will be required in order to replace the scarce and expensive factor commodity labour in production (Fallon & Verry, 1988).

In a market economy, there is really no such thing as a true shortage. If you want more of something, you can simply pay more to have it. When employers say that there is a shortage of workers, what they really mean is they cannot get enough workers at the price they want to pay. If employers raise wage levels more labour is willing to pick up that work, *i.e.* the supply of labour will increase (Björklund *et al.* 1996).

The conclusion here is that the labour supply can speed up or slow down the process of structural change in the economy.

Rent-seeking, social rigidities and institutions

Olson (1982) argues that institutions, in the form of organisations and vested interests, can actually create social and economic rigidities due to their rent-seeking activities. According to him (p. 41), "stable societies with unchanged boundaries tend to accumulate more collusions and organisations for collective action over time". Olson (1982) follows the reasoning of Weber (1947) here, arguing that an organisation can retain its power and influence after its original purpose is long gone. Organisations for collective action take a long time to establish themselves, but when they are established social collapses etc., are needed to make them disappear. The longer the period of time they manage to function the deeper they are able to penetrate society.

“Distributional coalitions slow down a society’s capacity to adopt new technologies and reallocate resources in response to changing conditions, and thereby reduce the rate of economic growth”, according to Olsson (1982, p. 65). By supporting subsidies for unprofitable production and an obsolete economic structure the rent-seeking organisations obstruct the structural change in the economy. Furthermore, they also have a tendency to obstruct innovations in the workplace which would increase productivity, but reduce labour. This issue is a sensitive one during economic recessions.

Olsson (1982, p. 73) also argues that “the accumulation of distributional coalitions increases the complexity of regulation, the role of government, and the complexity of understandings, and changes the direction of social evolution”. More and more complicated regulations arise from the rent-seeking sectors of society, regulations that must be administrated. For this, specialists are needed, specialists who will have no incentive to change the current order; they make a living from the current order, so why ‘rock the boat’? At this point, greater effort is spent on preserving the current order than on production and ‘growing’ the economy.

The institutions and interest organisations of the industrial economy are still strong and are trying to maintain the structure of the industrial society. A structural change towards a post-industrial or service society would benefit society in general and promote economic growth. The remnants of industrial society and the vested interests they represent would however be the losers here.

Segmented Labour Market Theory

The underlying theme of segmented labour market theory is that the labour market is composed of self-contained sub-markets or segments. One such segment may consist of high-waged, white, male workers, for example, and another of low-waged, female, non-white workers. Ignoring the different identities of these segments and the constraints they place on the workers concerned makes it difficult to understand the nature of labour market disadvantage. Working conditions in the primary segment are generally favourable; there is steady employment and job security, and the rules that govern the organisation of employment are well defined and equitable. The characteristics of secondary employment, on the other hand, are less favourable. Work here has little job security and there are high turnover rates. There are few opportunities for training or advancement and the work tends to be menial and repetitive.

One way of explaining why segmentation occurs focuses on the evolution of the product markets, from the competitive and the localised to the producer dominated, and from the national to an international market. Technological change makes capital-intensive methods of production possible. Employers, however, are unwilling to undertake large-scale investment unless the product demand is stable and predictable; when demand is variable, labour-intensive techniques are preferred. A growing division is found between firms which cater for stable markets and those in unstable markets. Employers with stable product demand create primary conditions of employment, including, notably, job security. Employers who face unstable demand operate in the secondary segment of the labour market (McNabb & Ryan 1990, Doeringer & Piore 1971).

The key institutions in this study are related to the labour market and the social welfare system. If a shortage of labour appears the relative price for labour will increase, *i.e.* employers will have to pay higher wages if they want to keep/attract labour. As a result employers will respond by charging the consumers higher prices and/or raising taxes (short term perspective) and reduce the input of labour in the production of services or goods (long term perspective). This process can be promoted or obstructed by institutions and the outcome depends on which segment of the labour market sees the change of relative prices for labour taking place.

According to Piore (1979) Wages not only reflect supply and demand for labour, but also status and prestige. Trying to attract domestic labour by increasing wages when there is a labour shortage is expensive and distorts the wage hierarchy; if wages are raised for groups in the lower

labour market segment, *i.e.* at the bottom of the wage hierarchy, in order to attract labour, all other groups in the wage hierarchy will demand wage increases as well as compensation for the biased wage structure. That there is a demand for someone to do the jobs that no one else wants is built into the system, something which generates a demand to import labour to carry out the work that the domestic labour force does not want to do for a low wage. To reduce the demand for immigrant labour requires radical changes to the economic structure and its organisation, according to Piore (1979).

The *radical changes to the economic structure and its organisation* Piore is talking about are in fact a *structural change* in the economy. The existence of institutions at the segmented labour market favouring a demand for cheap labour to do the work nobody else wants to do imply the existence of strong vested interests. They also, however, imply that these institutions are obstructing a structural change in the economy by their attempt to preserve the current order, hierarchy and structure of the labour market.

New Economic Geography

The theory of new economic geography takes into account social, cultural, and institutional factors in the spatial economy when studying the location, distribution and spatial organization of economic activities. This theory is based on a concept in which the introduction of labour mobility between regions implies that the spatial distribution of economic activity becomes endogenous (Krugman 1991). The central message of the new economic geography is that regions with larger populations have a more diversified economy and better grounds for economic potentiality than sparsely populated or small regions. However, new economic geography reflects regional differences with strong endogenous underpinnings, in which regional differences may or may not emerge. In this respect, we may consider new economic geography as a first successful attempt to clarify why similar regions do not undergo the same level of economic development (Behrens & Thiesse 2007).

We may recognize, regionally, some policy issues which are the consequences of these economic geography developments. In general, country specialization in specific branches of the economy and the concentration of industries in regions or countries has conventionally been treated as closely related economic phenomena, if not one and the same (Krugman 1991). Economic activities may have to specialize in order to achieve the increased amount of interactions and thus the learning and growth stimulating processes. Enterprises in different clusters may also build learning networks in regions where the scale of economic activity is rather low (Cooke 1997). If economic activities from urban regions spread out into other regions, do they attract people and jobs away from more disadvantaged regions or do they distribute growth also to these regions? We may say that within the limits of the population size in a region, an increase in the dynamics of employment is also a way to promote density. Operational labour markets will offer better employment possibilities for people and at the same time more employees to select from for the employer. A flexible labour market can facilitate a transfer of labour from economic sectors in decline to expanding economic activities

The new economic geography has been the foundation for an urban based regional policy. Key concepts in the spatial policies have been economics of scale, regional specialization, dynamic institutions and the flexibility of labour market. The core regions have advantaged environments, with a diversified demand, supply of qualified workers, efficient infrastructure and innovative capacity. Peripheral regions are far from the centre of demand (the core regions), have much lower domestic demand, but offer the compensating factors of cheaper production (Gatrell 1999).¹⁰ The new economic geography approach formalizes the gains and losses of agglomeration by emphasising the causality in location choices: economic activities are likely to locate near the market and the market increases where economic activities are located. Well performing regions tend to represent successful private businesses and branches, but some lagging regions are also characterized by such developments that may reflect the impacts of regional policy measures (c.f. Ceccato & Persson 2001). Regional policy does not solely aim at equity, but intends to enhance efficiency, competitiveness and accumulate growth as well.

Maskell (2001) argues that regions without specialisation in advanced economies are not necessarily left in the backwaters of economic development. Adaptation entails the ability to acquire and combine different tangible resources (like skilled and inexpensive labour) and intangible assets (knowledge, partnerships, social relations and institutional trust) to form better local competence for enterprises. This means that enterprises' competences may be put up to create 'localised capabilities' ensuring that the regional environment is unique (Malmberg & Maskell 2002). The agglomeration advantages may be driven on the basis of regional differences in the physical or locational nature, or alternatively on the basis of human capital or external assets, which stimulate regional growth differences as the driving force of agglomeration. It can, moreover, be argued that the most significant hindrance to employing agglomeration advantages in the Nordic peripheries is not physical accessibility, but rather the capability (or lack thereof) to increase the effective use of their institutional structures and operational environment.

¹⁰ In theory it may be the case that the relative prices for factor commodities – and in this case labour – will be different in different regions of a country. In reality this is not the case in general and especially not in the Nordic countries. Due to the existence of strong trade unions the deviation in wages is relatively small between the regions of a Nordic country and the taxes on labour are equal regardless of where in the country a person is employed.

A Theoretical Synthesis

By using the theories discussed earlier in this chapter, a theoretical synthesis can be undertaken. This theoretical framework will then be used in the analysis. In figure 3.1 below the theoretical framework is illustrated.

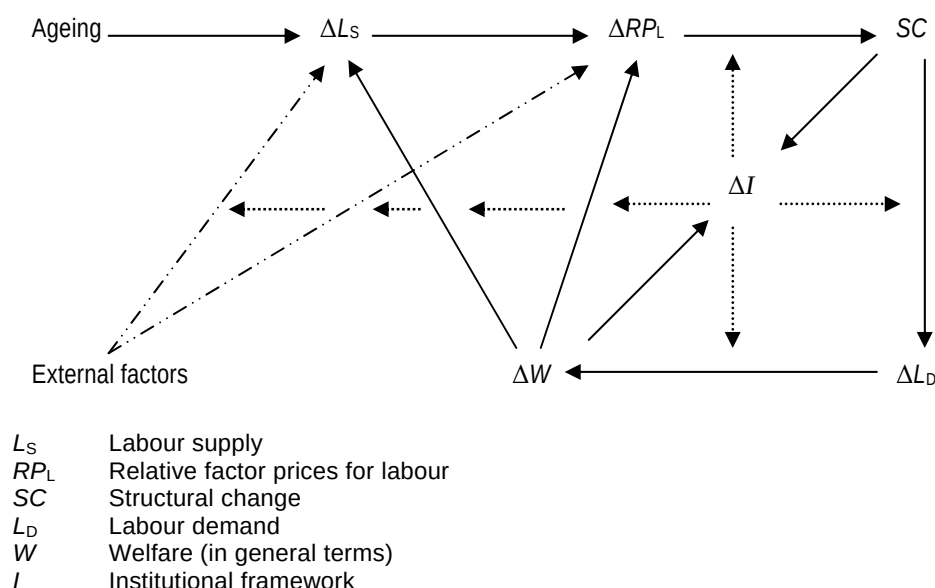


Figure 3.1 A theoretical framework

Ageing will cause a change in the relative supply of labour, ΔL_s , something which will lead to a change in the relative factor price for labour, ΔRP_L . This will stimulate a structural change, SC , in the economy. A structural change in the economy will lead to a relative change in the demand for labour, ΔL_D , qualitatively and quantitatively. A consequence of a change in the relative demand for labour will be that welfare, ΔW , in general terms, will also change. Both the relative supply of labour, L_s , and the relative price for labour, RP_L , will be affected by a relative change of welfare in a broad sense.

The links between L_s and RP_L , between RP_L and SC , and between SC and L_D will, to a large extent, be determined by the flexibility in the institutional framework, ΔI .¹¹ I contains elements from institutional economics, the segmented labour market theory and New Economic Geography. If the institutional framework is dynamic the adjustment to new conditions will be relatively rapid and easy while a static and un-dynamic institutional framework will, to a large extent, obstruct a structural change in the economy. The result will then be a long and painful process of adaptation to the new conditions.

Three distinct implications from I can be identified: (i) it is theoretically possible for the actors to keep I at a constant level, i.e. no institutional changes take place although changes in L_s , RP_L , SC and L_D take place. (ii) Even if it is theoretically possible to keep I constant when the other variables in the model change. (iii) I is strongly dependent on the context in which it

¹¹ I will then be related to three (metaphoric) elasticities – RP_L , SC and W – that are derived from the synthetic theoretical framework. Two of these variables – SC and W – as well as I cannot be translated to prices or quantities, which is the reason for viewing the elasticities as metaphoric terms. It is, however, theoretically possible to express SC , W and I – in broad terms – together with quantitative indicators. Although the interplay will be very complex in reality, it is theoretically likely that the three elasticities are so strongly correlated with each other in the model that they can be assumed to be functions of one single variable, I .

operates. The laws, regulations, norms and alliances that are the lubricants of one economic and social structure may constitute bottlenecks in another. At a higher level of abstraction flexibility may then be expressed as a tendency by I to respond to – *i.e.* be determined by SC and ΔW . If we assume that the flexibility in the institutional framework, I , has a value between 0 and 2, *i.e.* $0 < I < 2$, the flexibility in I can be quantified.¹²

There are several other factors that can change the supply of labour and change the relative factor prices for labour. This means that the causes of a structural change do not have to be triggered by demographic factors at all. Eðvarðsson *et al.* (2007) show that the Nordic regions have experienced an ongoing process of de-industrialisation since the early 1990's; this de-industrialisation is nothing but a structural change. The causes of this structural change in the Nordic regions are mainly connected to increasing competition and globalisation (Andersen *et al.* 2007, Neubauer *et al.* 2007, and Eðvarðsson *et al.* 2007). This has, in turn, changed the relative factor prices – not only for labour.

Since not only the supply of labour has an influence on the relative factor prices for labour it is a good idea to use the relative factor prices for labour as a point of departure in the theoretical framework. The model below summarises the reasoning:

$$\frac{\partial SC}{\partial RP_L} \cdot \frac{\partial L_D}{\partial SC} \cdot \frac{\partial W}{\partial L_D} = \frac{\partial W}{\partial RP_L} \quad (3.1)$$

The model shows that the marginal change of RP_L will determine the marginal change of welfare, W . The institutional framework and dynamics must, however, be included in the model. This is done in equation 3.2:

$$I = \frac{\partial W}{\partial RP_L} \quad (3.2)$$

Since the focus in this study is the welfare burden the model can be expressed as

$$\partial W = \partial RP_L \cdot I \quad (3.3)$$

The model has to be supplemented by a spatial dimension to control for regional differences, both in terms of labour supply and welfare but also in institutional dynamics. The regional differences will be included as i in the model. Furthermore, all changes in the model will not take place immediately after one of the indicators changes; time lags are to be expected and they are labelled $t-n$.

$$\partial W_{i,t} = (\partial RP_{L,i} \cdot I_i)_{t-n} \quad (3.4)$$

In equations 3.3 and 3.4 the importance of a functioning labour market, with dynamic institutions, is in focus; dynamic labour market institutions have an implication on the relative factor prices of labour *e.g.* through the matching efficiency at the labour market (*e.g.* Fallon & Verry, 1988, Elliott 1991, Björklund *et al.* 1996).

By using this model several testable hypotheses can be generated.

¹² Theoretically it is possible for I to be infinite, *i.e.* I will have a value between 0 and ∞ : $0 < I < \infty$. To simplify the model I will have a value between 0 and 2, *i.e.* $0 < I < 2$, in this study.

Hypotheses

Derived from the theoretical synthesis 5 main hypotheses will be tested in this study:

- A. Regional ageing – *i.e.* demography measured by the dependency ratio – has a direct influence on regional economic performance – measured in annual regional GDP growth – and will result in a distinctive negative bivariate correlation. This is the zero hypothesis ($H=0$) and the determination coefficient (R^2) should be 0.3 or higher.¹³ If $H \neq 0$ the determinant for regional GDP growth has to be found in factors other than demography.
- B. If institutional aspects – e.g. an efficient and functioning regional labour market – have an influence on regional economic performance a positive correlation between the regional number of persons employed or in work and regional economic performance will occur ($H=0$). The more persons employed the higher the economic growth. The regional dependency burden and regional modified dependency burden will be used as indicators.
- C. The number of persons employed or in work which is occupied in unproductive labour will produce a negative correlation with the regional economic performance ($H=0$). In this case it can be assumed that the structural change in the economy has been delayed or even obstructed.
- D. An ageing population will reduce the labour supply as well as the labour reserve in a region ($H=0$).
- E. Since the number of persons employed and in work are fewer than the number of persons aged 20-64 a potential labour reserve exists from which labour, at least theoretically, can be transferred from ($H=0$). With dynamic labour market institutions this is possible. Ageing has little or no influence on the supply of labour in this case.
- F. Increasing immigration will increase the labour supply and will thereby create a more favourable situation regarding the welfare burden ($H=0$). The welfare burden is measured by the modified dependency burden, dependency burden and dependency ratio.

¹³ In bivariate analyses it is common to set the level of statistical significant at 0.3.

4 Method and data

Data

The population data used in this study and the data on regional GDP growth has been collected from the national statistical offices in the Nordic Countries. In some cases, the material has been complemented by data from the *Nordregio* database and *Eurostat*. The data in the *Nordregio* database and *Eurostat* originally comes from the national statistical offices in the Nordic Countries but has been harmonized in order to make it more comparable between the countries, e.g. labour force survey adjusted employment figures.

In addition the information on the number of persons on sick-leave and parental leave was collected from various sources. The Danish data comes from the Labour Market Committee (*Arbejdsmarkedsstyrelsen*) and *Statistics Denmark*. The Finnish data originates from the Social Insurance Institution of Finland (*KELA - Kansaneläkelaitos*). For Norway the statistics has been collected from the Norwegian Labour and Welfare Administration (*NAV - Norske Arbeids- og Velferdsetaten*). In Sweden the statistics used is taken from the labour force survey (AKU) by *Statistics Sweden*.

Statistics Iceland does not collect data on the number of persons who actually are in work and there is no data on regional GDP growth in Iceland. All other data for Iceland has been collected from *Statistics Iceland*.

The Level of Analysis

Furthermore, the choice between a *macro and micro economic approach* to the problem will have an impact on the outcome of the analyses. Thus far most analyses have only dealt with national analyses of the average population or have simply focused on the impact on individuals. The existing regional and local diversity is, however, ignored. This is surprising since e.g. the European Union is currently advocating stronger regions. The absence of a *meso level* in the analyses is surprising, and is something that has been pointed out in other studies (e.g. Edvardsson *et al.* 2007). The meso level, i.e. the *regional level*, contains a lot of heterogeneity and variation, both in regard to welfare (ESPON 2006) and demography (Rauhut *et al.* 2008. See also Gaspar *et al.* 2005, ESPON 2005).

Time Dimension

Most of the previous studies do not distinguish between *short and long term effects*, declining population and labour shortage when they analyse the economic effects of ageing. What can be a devastating effect from a short term perspective can also produce successful effects in the longer term, and *vice versa*. This *lacunae* in respect of the short and long term economic effects of e.g. ageing, declining population and labour shortage narrows the possibilities for policymakers to make good decisions (ESPON 2005).

The welfare burden

The most common indicator used to illustrate who is feeding who is the *dependency ratio*, which is a purely demographic indicator. The dependency ratio, K , can be formally expressed as

$$K = \frac{P}{N} \quad (4.1)$$

where P is the total population and N is the number of persons aged 20-64. The higher the ratio, the higher is the burden for those persons aged 20-64. It must be stressed however that no economic aspects, *e.g.* labour force participation, are taken into account in this indicator. This is, in fact, one of its major shortcomings.

The demographic ratio presented thus far does not include any economic aspects at all when measuring the burden. This is a problem. (1) A relatively significant share of the population retires early, long before they reach the age of 65. (2) A relatively significant share of the population aged 20-64 actually studies, is on sick-leave, is unemployed etc. If we are going to analyse the effects of demography on economic performance these problems must be controlled for.

A simple model for controlling some of these problems is to use the *dependency burden* as an indicator. The dependency burden, F , can be formalised as shown in equation 4 below:

$$F = \frac{P}{N - (U + E)} \quad (4.2)$$

P is the total population, N is the number of persons aged 20-64, U is the number of unemployed and E is the number of economically inactive persons aged 20-64. Once again, the higher the ratio, the higher is the burden for the employed part of the population.

The dependency burden has one major drawback however: it only takes into account the number of persons who are *employed*. Persons who are absent, *e.g.* due to sickness and parental leave, constitute a “burden”, but they are not controlled for in the model. Rauhut & Malmberg (2003) suggested that the number of persons *in work* should be used instead of the number of persons employed. As a result, the variable for the working part of the population must be expanded. This modified model is called the *modified dependency burden*, F^* , and it can be expressed as

$$F^* = \frac{P}{N^* - (U + A + E)} \quad (4.3)$$

where P is the total population and N^* is the number of persons aged 16-74. The age-span has been widened since a relatively high share of the persons aged 16-19 and 65-74 are economically active. U is the number of unemployed and E is the number of economically inactive persons aged 20-64. A is the number of employed persons who are absent due to *e.g.* sickness or parental leave; A is estimated by subtracting the number of persons present at work, W^* , from the number of employed persons, W . The higher F^* is, the higher is the burden for the part of the population in work. Rauhut & Malmberg (2003) concluded that the most important factor in determining the “burden” is the number of persons in work, not the share of population in different age-groups.

Both the dependency ratio and the modified dependency burden are synthetic indicators: the dependency ratio shows the ratio between the total population and the working age population 20-64 years and the modified dependency burden shows the ratio between the total

population and the share of population which is really in work. While the first paints a rather dark future, the latter gives a far more nuanced picture of what we can expect for the future (Rauhut *et al.* 2008, Landgren-Möller 2007).

What then are the theoretical implications of this? Even if we keep P , U and N^* constant, F^* will worsen if A and E increase. Analogous to this, F^* can also decrease, given that P , U and N^* are kept constant, if A and E decrease. Since N^* will decrease in the future, due to a relative ageing of the labour force, measures must be taken to counter-balance this. One way to counter-balance a decreasing N^* is that U , A and E also decrease; the more U , A and E also decrease the less impact will a decreasing N^* have.

Thus far only the modified dependency burden at the national level has been discussed. This study will, however, analyse the problem at a regional level, which means that equation 4.3 must be modified. The variables F^* , P , N^* , U , E and A will be analysed by the region i , which means that the model will be formulated as:

$$F_i^* = \frac{P_i}{N_i^* - (U_i + E_i + A_i)} \quad (4.4)$$

This model will be contrasted against the regional dependency ratio

$$K_i = \frac{P_i}{N_i} \quad (4.5)$$

and the regional dependency burden

$$F_i = \frac{P_i}{N_i - (U_i + E_i)} \quad (4.6)$$

A potential labour supply

One of the key variables in this reasoning is the number of persons who are actually in work, W – the higher the denominator is the more favourable will F_i^* be. Variables such as U , A and E indicate a potential labour supply. The labour supply is calculated the following way:

$$L_S = W + U + E \quad (4.7)$$

A potential labour supply, L_S^* , is estimated by replacing W by A . This can also be analysed at a regional level for the region i :

$$L_{S,i}^* = A_i + U_i + E_i \quad (4.8)$$

5 Labour Market Rigidities

Some points of departure

Labour shortage and lack of adjustment

In short, the evolution towards a post-industrial society is, first and foremost, characterized by a transition from goods-producing to service-handling activities, where services such as education, health and other professional services become central in society (Bell, 1973). Theories of structural transformation in advanced capitalist societies stress the combined impact of major technological changes where information-communication technologies play a leading role, the formation of a global economy, and a process of cultural change whose main manifestations are the radical change in respect of women's role in society and the rise of ecological consciousness (Castells, 1999).

During periods of structural transformation the demand for labour with certain competences and skills will exceed supply. Problems with mismatch and with the allocation of labour will also occur. A labour shortage occurs when the demand for labour exceeds the labour supply at a specific wage level. The shortage is said to be *relative* if the imbalance can be fixed by a change in prices (wage or reservation wage). Otherwise the shortage is said to be *absolute*. Absolute labour shortages thus reflect the difficulty of finding a worker, in the working age population, with the adequate skills without transferring them from a similar employment (OECD 2003).

Labour shortages can be “partial” and “general”. A *partial* labour shortage occurs when there is a shortage of labour in a specific profession or sector of the economy, e.g., farm workers, nurses, bus drivers or construction workers. A *partial* labour shortage can also be geographical, i.e. there is a labour shortage in a defined geographical area. A *general* labour shortage is a result of demographic changes in the population, i.e., there is a shortage of labour in all professions and sectors of the economy (Rauhut, 2002).

Historically, situations of long-term labour shortage have led to labour being replaced through technological, institutional and organisational changes. This has meant that productivity improvements have resulted in increased growth. The creation of an economic surplus through economic growth is a condition of welfare (Dillard 1967; Rider 1995; Easterlin 1996, Cameron 1997, Landes 1998 and Rostow 1998). Technological, institutional and organisational changes, however, require a dynamic economic structure (Rauhut 2002).

Mismatch problems

A central condition for any efficient labour market is that the matching process between vacancies and job searchers functions well. Information and search costs are central in this process (Elliott 1990). In the economic literature the matching process is described as a function stating the causality between, on the one hand, the number of job positions, A , and, on the other hand, the number of vacancies, V , and unemployed, U . This can be formalised as

$$A = A(V, U) \quad (4.1)$$

The labour market is frequently troubled by matching problems and these problems are often related to structural changes in the economy at branch or sector levels. The matching efficiency of the Nordic labour market has decreased in recent decades, something which means that the mismatch has increased (Johansson & Persson 2001). Examples include the fact that

geographic mobility has decreased, that the labour force rejects low paid low status jobs and that people are rejected from the labour market. The matching process is also affected by the segmentation of the labour market.

There are several aspects to the *geographic mobility* of the labour force. When moving from one geographical entity to another is often related to e.g. changing employers, changing profession, changes in the labour market status (from e.g. unemployed to employed or from studies to work etc.). Whether it is a one-person household or two-person household, namely, whether there is/are one or two adults as 'breadwinners' in the household also affects geographical mobility (e.g. Björklund *et al.* 1996, Furåker 2003, Johansson & Persson 2001).

The *insider-outsider dilemma* is mainly related to the phase of establishing oneself in the labour market. Usually, insiders are already employed and outsiders unemployed (Björklund *et al.* 1996). Persons who have been unsuccessful in establishing themselves on the labour market easily end up in a vicious circle; higher education and qualification conditions raise the thresholds for entering the labour market and the social security systems. Young adults, persons with an immigrant background and single mothers are particularly exposed to the insider-outsider dilemma (Salonen 2000). Employers are also hesitant to hire a person who has been unemployed for more than 6 months. The best way to get a job is then to already have a job (Ackum-Agell 2002).

A threat to matching efficiency comes from the fact that a part of the labour force is *locked into* certain professions and workplaces. The potential to change profession or employer without moving is very small if a person is 'locked in'. For those who are locked in both in a profession and at a specific workplace this means that they work in a profession and for an employer for whom they do not wish. In a Swedish survey undertaken in 1997 it was shown that 36% of the labour force with a permanent position and 62% with temporary positions were 'locked in'. At the same time, those who are locked in in this double sense outlined above constitute some 20% of the labour force with permanent positions and 40% of the labour force with temporary positions (Aronsson *et al.* 2000, Aronsson 2002).

While some parts of the labour force are locked into professions and workplaces they dislike, other parts of the labour force are rejected, i.e. *excluded*. Persons with an immigrant background often face this problem, and this is related to the structural changes in the economy resulting in a lowering of demand for low or un-skilled labour. Swedish research has shown that employers, if labour reductions are needed, are more likely to fire persons with an immigrant background than natives and that the unions do not protect persons with an immigrant background to the same extent as they protect natives (Vilhelmsson 2002). Employers also reject persons with an immigrant background if they believe that "the market" will punish them for having too many employees with an immigrant background (e.g. Broomé *et al.* 1998, 2001, *Välfärdspolitiska rådets rapport* 1998, 2002).

Job security in Norway and Sweden is among the highest in the world, while Denmark and Finland have a more relaxed attitude to legislation on job security (Bergh 2008). A high degree of job security makes an employer more reluctant to hire a new employee, which reduces labour market mobility.¹⁴ Marginal groups in the labour market – immigrants, young adults, single mothers etc. – will be most affected in a negative way by a high job security threshold in legislative terms.

The *segmented labour market* also creates problems in the matching process. The first segment contains employees with a key competence for the employer. They have permanent positions and good working and employment conditions. The workforce is also assumed to be flexible in the sense that they can change between different tasks. The second segment contains labour on temporary contracts, with poorer employment conditions than the first segment. This labour segment does not have the same competence requirements as the first segment and flexibility basically means that they are available for the employer when needed. The third segment on the

¹⁴ The Swedish Institutes for Growth Policy Studies published a study in 2006 on different aspects of the connections between mobility, economic growth and the job security legislation, *Arbetsrätt, rörlighet och tillväxt*, edited by Daniel Rauhut and Björn Falkenhall.

labour market contains quite a large group of persons with little attachment to the regular labour force. This group is, to some extent, dependent on welfare benefits and the informal (black) market (Lundh 2002, Aronsson & Sjögren 1994). Increased segmentation does not improve the matching efficiency of the labour market.

When the mismatch between vacancies and job searchers increases, i.e. the matching efficiency decreases, it is often seen as a *labour shortage*. Matching problems can and do occur on occasion then when, in reality, there is no shortage of labour at all. When the job requirements do not match the competence profile of the unemployed, labour is located in the “wrong” geographic area or labour is, for some reason, rejected the inefficiency in the matching process creates problems on the labour market.

A Nordic overview

A literature review

In the coming decades the population in general and the workforce in particular will become older in the Nordic countries. This process of ageing will be unevenly distributed across the Nordic regions. Young adults are moving out of the periphery, relocating to the metropolitan areas, with the result that ageing in the periphery increases even more. The metropolitan areas will have a significantly more favourable age-structure due to this. Labour immigration can only cover for some of the labour needs in the Nordic regions, partly because labour immigrants are reluctant in moving to peripheral areas (Eðvarðsson *et al.* 2007). One way to solve the issue of labour demand is to analyse the domestic labour supply and the *potential* labour supply in the Nordic regions. There are, in fact, quite a few potential supplies of labour which are currently not fully utilised, but could in the future be used to increase the number of persons in work in the Nordic countries.

In general young adults in Sweden have problems in establishing themselves in the labour market. Researchers usually mention structural problems in the labour market and a lack of connection between education and the labour market. Almost 25 per cent of those persons aged 20-24 were unemployed or inactive in 2001 (*Näringsdepartementet* 2002). Between 1996 and 2006 unemployment for persons below 24 decreased from 28 per cent to less than 19 per cent in Finland, and from about 12 to 9 per cent in Norway (*Eurostat* 2008). About 26 per cent of those persons aged 15-24 were unemployed in Iceland in 2002 (*Statistics Iceland* 2003). For young adults with an immigrant background the situation is even worse in Sweden. (*Näringsdepartementet* 2002). The same development has taken place in Denmark in respect of young adults with an immigrant background (*Välfärdspolitiska rådet* 2002). The situation *in general* regarding the integration of immigrants in Norway is similar to that in Denmark and Sweden (Duvne & Cavli 2007). In Finland the main problem relates to inexperience with a multicultural society and the capacity to positively integrate immigrants (Forsander 2002).

The construction of the unemployment insurance systems in the Nordic countries significantly affects the potential labour supply for low-skilled unemployed persons (Bolvig *et al.* 2007). Significant regional differences in the Nordic countries exist regarding employment, unemployment and persons involved in labour market schemes (Neubauer *et al.* 2007). Unemployment and persons involved in labour market schemes constitutes a direct potential labour supply. Therefore, it can be assumed that there will also be a regional heterogeneity in the potential labour supply in the Nordic countries.

Persons with an immigrant background are over-represented among the unemployed and those persons involved in labour market schemes. A higher employment participation rate exists among natives and other Nordic and western immigrants as compared to the non-western immigrants according to Eðvarðsson *et al.* (2007). Non-western immigrants do, however, increase their labour market participation after some years of living in the Nordic countries, but their employment rates are still far below that of the natives. Iceland deviates

somewhat from other Nordic countries in this respect however with high participation rates among immigrants. At the regional level labour market participation is somewhat more homogeneous among both natives and other Nordic and Western immigrants, while the participation rates vary significantly among persons from the new EU-10 countries and non-western countries.

Recent OECD studies show a very troublesome development in respect of the integration of immigrants into the labour markets of Sweden and Denmark. From a situation where the labour market outcomes of immigrants in the late eighties, at least with respect to employment rates, seemed relatively favourable, Sweden now finds itself with an immigrant workforce that is significantly under-represented among the ranks of the employed. The evidence concerning discrimination suggests that this is not an insignificant impediment to employment in Sweden (Lemaître 2007). What is especially striking in the Danish context is the fact that employment gaps relative to the native-born are across-the-board – they are longstanding and they are found for both OECD and non-OECD immigrants and even for offspring of immigrants from both OECD and non-OECD countries, at all attainment levels. Even returns to Danish education are lower for children of immigrants than for children of non-immigrants. Outcomes seem to be improving recently, but the general backdrop remains. Testing results have shown that immigrants and their children were ignored in the recruitment process, even when they had similar characteristics to native Danes (Liebig 2007). The situation for immigrants in Norway is *in general* similar to that of Denmark and Sweden (Djuvne & Cavli 2007). Such a poor reputation will, on the one hand, undoubtedly lead to a reduction in the supply of immigrants willing to migrate to the Nordic countries.¹⁵

The changed employment participation rates for immigrants in the Nordic countries are related to the changed demand for immigrant labour. The structural change has resulted in a significant decline in industrial jobs in rural and peripheral regions and a significant increase in modern service sector jobs in the urban and metropolitan regions. This process has had a number of consequences for the level of demand for immigrant labour: the industrial sector, with standardised production, can use immigrant labour to supplement native labour, but this sector has declined since the 1960s. Using immigrant labour is only possible to a limited extent in the service sector, where immigrant labour, in general, is used as a complement to native labour (Rauhut *et al.* 2007. Cf. Dall Schmidt & Sandholt 2008)). In other words, the supply of labour with an immigrant background is higher than the actual demand.

Particularly in Finland a fear exists that too many people are leaving the labour market before reaching retirement age (*Socialdepartementet* 2000). This is also an acute problem in Sweden. If long-term sick and early retired persons are included, every fourth person aged 55-64 was not working in 2001 (*Näringsdepartementet* 2002). In Denmark long-term sickness leave lasting more than 52 weeks has increased by 91 percent 2002-2006. A counter-cyclical pattern can however be observed in Norway over the last couple of years regarding the number of persons on sick-leave. Sickness-leave in Iceland is a minor problem only (*Nordisk Ministerråd* 2007).

¹⁵ In line with the theoretical framework this will have an impact on the relative factor prices for labour; given a number of assumptions a reduction in the supply of labour will help stimulate a structural change in the economy thus leading to productivity increases. If the relative prices for labour become relatively high, labour will be substituted for capital. This, in turn, will lead to increasing prosperity and rising international competitiveness. At the same time all labour cannot be substituted for capital, especially not in the sector for personal and social services. Depending on how dynamic the process is will determine whether the reduction of labour will lead to positive or negative effects in respect of structural transformation.

The wave of cheap immigration to Sweden in the 1960s actually delayed the structural transformation of the Swedish economy. As a result, when the economic crisis finally hit Sweden it was exacerbated by the continuing existence of its now obsolete economic structure (Lundh & Ohlsson 1994, 1999). The supply of cheap immigrant labour has also delayed *e.g.* the structural transformation of the Swiss agricultural sector (Maillat 1974).

Sweden and Norway have experienced significantly higher levels of long-term sickness leave and early retirements than Denmark and Finland. For all countries there are significant regional differences (*Nordisk Ministerråd* 2007). A comparison of eight countries (Sweden, Denmark, Finland, France Germany, the Netherlands, Norway, and the U.K.) in respect of long-term sickness showed that the differences between Sweden and the other countries could not be explained by factors such as sex, age, economic structure, employment regulation or part-time work. Nor could the differences between Sweden and the other countries be explained by ownership of the sickness insurance. One of the major explanations appeared to be the need to be on sick-leave for different diseases and sicknesses in different countries (*Socialdepartementet* 2003). A Nordic comparison confirms the existence of different acceptance levels in respect of sick-leave in the Nordic countries (*Opinion* 2007).

There are, however, good reasons for including persons in long-term sickness leave and persons who have been allowed early retirement in the analysis – the correlation between long-term unemployment, on the one hand, and long-term sickness leave and early retirement, on the other, is very strong indeed (*e.g. Socialdepartementet* 2000, Larsson *et al* 2005, Hetzler *et al.* 2005). The miss-use of a labour supply, leading to social exclusion and exit from the labour market must be discussed when analysing the potential labour supply (Holm & Lingärde 2007).

The structural changes in the economy at branch or sector level frequently trouble the labour market with matching problems. In recent decades the matching efficiency of the Nordic labour markets has decreased, *i.e.* the mismatch has increased (Johansson & Persson 2001). Large regional differences also exist in labour market matching efficiency (Kangasharju *et al.* 2005, Hynninen *et al.* 2006). Examples of this include the fact that geographic mobility has decreased, that the labour force rejects low paid low status jobs and that people are rejected by the labour market. The segmentation of the labour market also has an influence on the matching process.

When the mismatch between vacancies and job searchers increases, *i.e.* the matching efficiency decreases, it is often seen as a *labour shortage*. Matching problems can and do occur on occasion then when, in reality, there is no shortage of labour at all. When the job requirements do not match the competence profile of the unemployed, labour is located in the “wrong” geographic area or labour is, for some reason, *rejected* or *locked in* the inefficiency in the matching process creates problems on the labour market (Rauhut *et al.* 2008).¹⁶ Rothstein & Boräng (2006) argue that the very low mobility in the Swedish labour market is the main reason behind the high long-term sickness-leave and early retirement rates in Sweden. An increased geographical mobility in respect of the labour force could lower the number of persons on sick-leave and early retirement. Finnish studies emphasise this but also the importance of mobility. If labour demand suddenly decreases in a Finnish regional labour market relative to other regions, most of the laid-off workers will transit out of the labour force, some become unemployed, while only a few move out of region (Kangasharju & Pekkala 2002a, 2002b).

A statistical review

The discussion here will focus on aggregate national level here, while the regional level will be analysed in the coming chapters. It is one thing to have a theoretical discussion on what effects discrimination has on the matching efficiency at the labour market, but it is not always so easy to provide evidence for such discussion via the use of some simple indicators. Some indicators are vague and fuzzy (*e.g.* labour shortage, insider-outsider dilemma, rejection and ‘locking in’), while others are quite clear and well-defined (geographical mobility). Alas, this section can only

¹⁶ Examples of “rejection” are the *insider-outsider*-dilemma and *discrimination*. The existence of a *segmented labour market* also creates problems for efficient matching in the labour market. A further threat to matching efficiency comes from the fact that a part of the labour force is *locked into* certain professions or workplaces. The potential to change profession or employer without moving geographically is very small if a person is ‘locked in’.

produce a very simple overview of some of the indicators discussed above. Much work lies ahead to construct robust and efficient indicators covering all aspects of labour market efficiency.

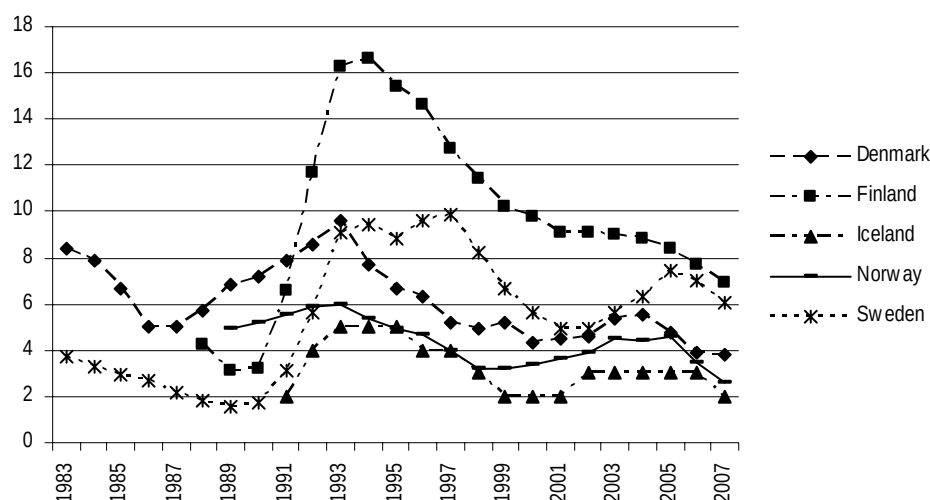


Figure 5.1 Unemployment rates (%) in the Nordic countries 1983-2007

Source: Eurostat

Figure 5.1 illustrates the national unemployment rates in the Nordic countries 1983-2007. The regional unemployment rates may differ from the national unemployment rates, both in magnitude and timing. For all Nordic countries a cyclical pattern in the unemployment rates is present.

What does unemployment actually indicate? Unemployment is not a homogenous concept; it can mean several things. Total unemployment is a mix of all these three aspects; (1) cyclical unemployment arises due to fluctuations in the business cycle, affecting the level of demand for goods and services in an economy, and, consequently, also the demand for labour. (2) Frictional unemployment involves persons who are voluntarily between two jobs. (3) Structural unemployment is related to a *mismatch* between job vacancies and jobseekers due to different skills offered and demanded. It can also involve e.g. rejection and discrimination (Björklund *et al.* 1996). Previous research has shown that the matching efficiency has decreased in the Nordic labour market in recent decades (e.g. Johansson & Persson 2001).

The demand for labour in an economy can also be measured by the employment rate. The employment rate measures the share of persons in working age who is employed.¹⁷ Figure 5.2 illustrates large differences between the Nordic countries. It is important to remember that unemployed persons participating in labour market schemes (e.g. paid educational or training programmes) are officially employed in the statistics while they, in reality, are unemployed. Again, a cyclical pattern emerges in figure 5.2.

¹⁷ Working age is defined as 16-66 years in Denmark, 16-74 on Iceland, and 16-64 in Finland, Norway and Sweden

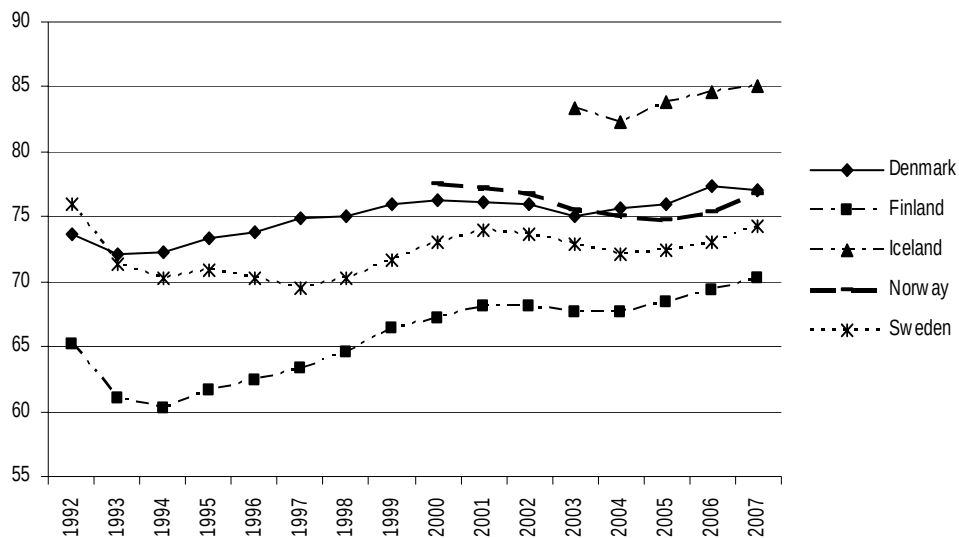


Figure 5.2 Employment rates (%) in the Nordic countries 1992-2007

Source: Eurostat

Some researchers consider the causes of long-term sickness leave to be related to processes of 'locking-in' labour in professions or specific jobs, which is a problem related to a dysfunctional labour market in general and the matching problem; "exit" from the current job or profession is not possible, so long-term sickness becomes "exit" instead (Rothstein & Boräng 2006). Generally, 15-20 percent of employed persons were absent due to sickness and parental leave in the Nordic countries during the period 1976-2007 (see figure 5.3). This group definitely constitutes a potential labour supply on a more efficient labour market.

Figure 5.4 illustrates the number of persons in working age who are not in the labour force in the Nordic countries 1995-2007. For e.g. Sweden this group has constituted approximately 1.2 million persons 1976-2004, which equals about 25 per cent of the labour force. This group contains persons who are early retirees and persons about to enter early retirement due to long-term sickness and reduced work capacity, involuntary students, house wives etc.

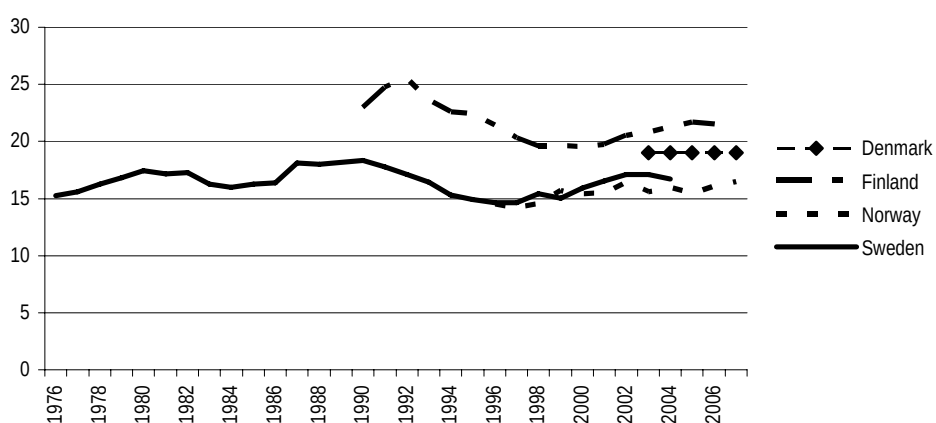


Figure 5.3 The share of employed absent from work (%) in the Nordic countries 1976-2007 due to sickness leave, parental leave or on leave due to a sick child

NOTE: No data available for Iceland. The data for Denmark is constructed differently, which only enables a rough estimation.

Source: Own calculations of data from the national statistical offices for Denmark, Norway and Sweden, and KELA for Finland.

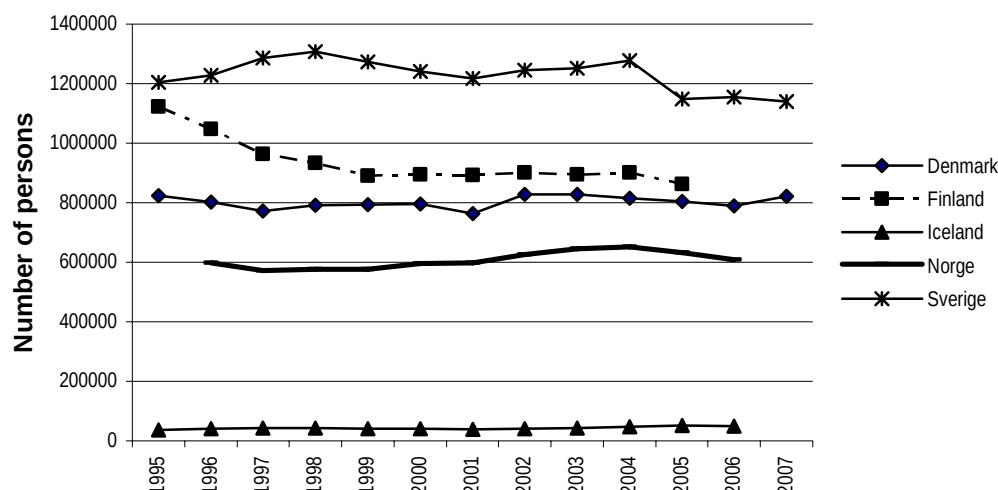


Figure 5.4 The number of persons in working age who are not in the labour force in the Nordic countries 1995-2007

NOTE: Working age is defined as 16-66 years in Denmark, 16-74 on Iceland, and 16-64 in Finland, Norway and Sweden

Source: National Statistics offices

Between 2002 and 2005 2 out of every 3 Nordic regions experienced a negative domestic net migration rate. The domestic migration flows were headed for the capital and metropolitan areas. Every second Nordic domestic migrant is aged 20-35 and the reason for reallocation is going from study-to-study or work-to-work; in the Nordic countries few migrants move from unemployment-to-employment. Young women of fertile age in Finland and Sweden show a high willingness to migrate. “The Finnish and Swedish peripheries in particular face serious distortions of their gender and age structures due, in the main, to the over proportional mobility in this group /.../ As a consequence those populations face a ‘double-whammy’ in terms of ageing and thus appear to ‘grey’ faster” (Neubauer *et al.* 2007, p. 36). That so few domestic migrants in the Nordic countries migrate from unemployment to employment and asymmetric migration flows are related to the (in)efficiency of the labour market institutions.

Institutions do not always change at the same time and the same pace as the economy and labour force. Old institutions have a tendency to obstruct mobility; the removal of old institutions or the introduction of new ones appears to stimulate mobility. The wealth of a modern country depends on the mobility of the labour force since mobility in production factors have an equalising effect on regional and sector imbalances. Although only a minority of the migration is related to work, economic reasons tend to be the underlying reason for migration (Lundh 2006).

Summary

The economic crisis which hit Sweden and Finland in the early 1990s is, to large extent, related to the changing international demand for manufactured goods. In theoretical terms this can be expressed as the relative factor prices for capital and labour changed and became unfavourable for Sweden and Finland in particular; Denmark and Norway were hit by a recession a few years previously since they were in a different phase of the business cycle.

The changes in relative factor prices triggered a structural change, which affected some regions more than others. The result was a significantly reduced number of full time equivalents employed in the production and construction sector, but also in services related to the production and construction sector. Most regions that were heavily dependent on the primary sector and on the processing of primary goods were also hit severely. In other word,

the structural change resulted in a reduced demand for a certain type of labour with a certain competence. In a way this increased the labour supply.

Unemployment, long-term sickness leave and early retirement have increased far above pre-recession levels. If the laid-off labour was transferred from stagnating professions/jobs and regions to more expansive regions and professions the efficient functioning of the labour market would have solved many problems. Geographical mobility has, however, decreased since the 1990s and the segmented labour market makes it difficult for persons from the lower segment to enter the higher one. The best way to get a new job is to already have a job, which indicates the presence of the insider/outsider-dilemma. For immigrants and young adults about to enter the labour market the result has been rejection. A question worth asking here then is whether the labour supply at hand is used efficiently on the Nordic labour markets. This is a question about institutional efficiency.

Furthermore, the welfare burden has increased due to the lowered demand for labour; fewer persons actually in work have to provide for more persons; at the same time almost no changes have occurred in the pure demographic dependency ratio. This indicates that the problems with the welfare burden are not purely related to demography, but to the functioning of the labour market. This conclusion is further strengthened by the fact that while unemployment, long-term sickness leave, early retirement and the number of persons involuntarily enrolling at university have increased employers continue to complain about an increasing labour shortage. Obviously the matching efficiency of the labour market is low, which means that the labour market institutions are not functioning efficiently. It was previously concluded that matching problems can and do occur on occasion then when, in reality, there is no shortage of labour at all; these problems occur when the job requirements do not match the competence profile of the unemployed, labour is located in the “wrong” geographic area or labour is, for some reason, rejected or ‘locked in’. Again, the question must be asked, do the labour market institutions deal with labour supply in an efficient way?

6 A Typology of Nordic Regional Families

Introduction

For the simulations utilised in chapter 8 it was necessary to create a typology in this chapter. The basic idea here is that simulations will be made for a limited number of regions, but that the selected regions should be representative of a wider body of regions. The typology made for the selection of regions in this study is based on three existing typologies: a 6-type typology on regional structural change, a 6-type typology on regional population development, and a 3-type typology on sector dominance in the regional economy.

Regional Structural Change

Eðvarðsson *et al.* (2007) use the six-type typology developed by Carlsson *et al.* (1991, 1993) in their analysis of the regional structural change in the Nordic regions 1991-2005.¹⁸ With this method it is also possible to obtain an indication of the preconditions and transformation in the various Nordic regions during the various phases - transformations that resulted in the Nordic regions' present structures.

Table 7.1 Typology on regional structural change

Type	Regional characteristics
1 NSE(+)<Diff(+)	Positive structure, faster branch changes than changes at the national level. Both the structural and the branch effect result in faster growth than that at the national level. This case is termed <i>MG-Winner</i> (Modern branch structure, fast branch growth and winner).
2 NSE(+)>Diff(+)	Positive structure, slower branch changes in the region than at the national level. The positive structural effect is larger than the negative branch effect which results in faster growth in the region than at the national level. This case is termed <i>MS-Winner</i> (Modern branch structure, slow branch growth, but winner relative to national-level development)
3 NSE(+)>Diff(-)	Positive structure, slower branch changes in the region than at the national level. The positive structural effect is not large enough to neutralize the negative branch effect. The result is slower growth in the region than at the national level. This case is termed <i>MS-Loser</i> (Modern branch structure, slow branch growth and loser).
4 NSE(-)<Diff(+)	Negative structure, faster branch changes in the region than at the national level, which results in faster growth in the region than in the national economy. This case is termed <i>OG-Winner</i> (Obsolete branch structure, fast branch growth and winner).
5 NSE(-)>Diff(-)	Negative structure, slower branch changes in the region than at the national level. Both the structural and the branch effects reinforce each other resulting in slower growth than in the national economy. This case is termed <i>OS-Loser</i> (Obsolete branch structure, slow branch growth and loser).
6 NSE(-)<Diff(-)	Negative structure, faster branch changes in the region than at the national level. The positive branch effect is not large enough to neutralise the negative structural effect. The result is slower growth in the region than at the national level. This case is termed <i>OG-Loser</i> (Obsolete branch structure, fast branch growth but loser).

Source: Edvardsson *et al.* (2007)

A positive sign indicates that the hypothetical development - the structural effect (NSE+) - in the Nordic regions is more positive than the development on the national level. Here we see many of the rapidly growing branches and few of the stagnating or retarding branches with respect to national employment changes. A negative sign (NSE-) indicates the reverse. Here we see many of stagnating or retarding branches and few of the fast growing ones. It must,

¹⁸ For a more detailed discussion on this typology, please see Carlsson *et al.* (1991, 1993) and Eðvarðsson *et al.* (2007).

however, be borne in mind that the term “modern” in the reasoning below refers to employment development and not to technical renewal or innovation capacities. These employment cases are illustrated in a schematic manner below. It must however be noted here that slow branch growth is a relative concept in the sense that it can also include regions with negative branch changes (BE-).

Population development

In table 7.2, regions with respect to sustainable regional demographic development, six different types are defined and based on total population change, natural population change and migration are classified. The typology is adapted from ESPON (2005) and developed in Copus *et al.* (2006). This typology has been applied to the Nordic regions at NUTS3-level using data for the period 1991-2005, in order to examine the distribution of regions according to the 6 types of population sustainability (Rauhut *et al.* 2008).

Table 7.2 A typology with regard the regional demographic development

Type	PT (Total change)	PN (Natural change)	PM (Migration)	Regional characteristics
1	PT>0	PN>0	PM>0	Double positive regions - In-migration and young population/"high" TFR. High sustainability both in the short and the long term. The most favourable case
2	PT>0	PN>0	PM<0	Growth regions with out-migration - Out-migration and young population/"high" TFR and natural population increase. Short term – sustainability. Long term – eroding sustainability because of lopsided age structure (out-migration).
3	PT>0	PN<0	PM>0	Growth regions with natural decrease - In-migration of people with low TFR. Natural population decrease because of lopsided age structure and/or low TFR. Dependent on in-migration. No sustainability in long term – weak reproduction potential
4	PT<0	PN<0	PM>0	Declining regions with in-migration - In-migration and lop-sided age structure (old population)/low TFR. In-migration of elderly people and/or singles, low reproduction potential. Dependent on in-migration. Low sustainability both in short and long run.
5	PT<0	PN>0	PM<0	Declining regions with natural increase - Out-migration but still young population/"high" TFR. Traditionally high fertility regions. Falling TFR -> low sustainability
6	PT<0	PN<0	PM<0	Double negative regions - Out-migration and lop-sided age structure with old population/low TFR. No sustainability in short as well as long term. Depopulation. The worst case.

Source: ESPON (2005) and Copus *et al.* (2006).

Sector dominance

The dominant branch of employment varies between the Nordic regions. In many regions employment is still highly dependent on one or a few employers or employers belonging to one sector. The main export markets for the Nordic countries are still the other Nordic countries and the EU 15 (excluding Denmark, Finland and Sweden). Thus far, globalisation has not caused any major changes in traditional trade relations. The dominant export commodity varies between the Nordic countries and some of the commodities are dependent on heavy transport. In Denmark petroleum, medical and pharmaceutical products and manufactured articles constitute the greatest share. In Finland, the largest share consists of paper and paperboard and telecommunication products. In Norway, petroleum and gas are outstanding export commodities. In Sweden, medical and pharmaceutical products and road vehicles assume the highest share of the export commodities (*Nordregio* 2008).

The very rough typology of sector dominance is based on the dominant sector of employment. The three types in this typology are: (1) primary production, (2) manufacturing

including construction, and (3) services (public and private. In appendix B a map of the regional sector dominance is shown).

Regional families – a typology

By putting the three typologies together a “regional family”-typology can be made of regions with very strong similarities. First, all regions are categorised into six types by the typology of structural change; for each type the regions are then categorised by their demographic development. The third step categorises the types of demographic development by sector dominance.

In this study 64 regions in the Nordic countries have been categorised by this “regional family”-typology.¹⁹ In table 7.3, 37 of the 64 regions have been listed; 6 regions belong to “families of identical regions and 4 regions have no regions that are identical to them. There are 31 regions constituting 6 regional families including three or more regions; 6 more “families” exist with two regions and 15 regions have no identical regions in the Nordic countries. For a full list, see Appendix B. The chosen 12 regions in table 7.3 have been selected to include the large regional families and some unique regions. The selection of regions represents 37 of the Nordic regions, which is about 58%.

Table 7.3 Regional families in the Nordic countries

	Structural change	Demographic development	Sector dominance	N = 37
Uppsala (SE)	1	1	3	6
Stockholm (SE)	1	1	3	6
Hovedstaden (DK)	2	1	3	1
Åland (AX)	3	1	3	3
Finnmark (NO)	3	5	3	1
Rogaland (NO)	4	1	2	7
Kymenlaakso (FI)	4	6	2	1
Itä-Uusimaa (FI)	5	1	2	9
Etelä-Karjala (FI)	5	6	1	3
Västernorrland (SE)	5	6	2	3
Nordjylland (DK)	6	1	1	1
Etelä-Pohjanmaa (FI)	6	5	1	2

Table 7.3 should be read the following way: the region of Uppsala (SE) has 5 identical regions in the family 1/1/3 (structural change/population development/sector dominance); Rogaland (NO) has 6 identical regions in the family 4/1/2. Hovedstaden (DK) is the only region in the family 2/1/3. The variations within the regional families, with regard to structural change, demographic development and sector dominance, are small, but the variation between the regional families is larger. When the regional families are analysed, only one region in the regional family is analysed, which means that the chosen regions represents a larger number of regions.²⁰

The selected regions from the “regional family”-typology will now be used in the simulations in chapter 8. The selected case-study regions are illustrated in figure 6.1 below.

¹⁹ Denmark – 5 regions plus Bornholm, Finland – 20 regions, Iceland – 2 regions (Reykjavik region and the rest of the country), Norway – 19 regions, and Sweden – 21 regions

²⁰ The only exception is Stockholm and Uppsala which, despite large differences, both belong to regional family 1/1/3.



Figure 6.1 The selected regions in the typology of regional families

7 Case study analyses

Introduction

This chapter contains a more in-dept analysis of developments in the selected case study regions since the early 1990s. The analysis will include the economic structure in the selected regions, the development of employment as well as demographic aspects.

The regional structural change

The general trend

The Nordic economies have passed through successive structural transformations since the middle of the 1960s. Around 1965 employment in manufacturing industry reached its highest level in the Nordic countries, with the economy having expanded continually since the end of the Second World War. But during the second half of the 1960s the growth rate slowed and during the 1970s the Nordic economies generally experienced stagnation and decline even if there was some dissimilarity between stages and branches. This structural transformation was generally expressed in the de-industrialisation process and the rapid growth of services in both the private and the public sectors.

The Nordic regions subsequently underwent a structural change in employment terms in the 1990s. Employment in the Nordic countries, with the exception of Finland and Sweden which suffered from a major labour market crisis in the 1990s, increased by 0.3 per cent per year. The structural change consisted of a rapid process of de-industrialisation balanced by a rise in employment in the new service sector. This structural change saw a decline in the level of demand for employment in primary and secondary industries, and thus for unskilled workers. The change to employment in services has been most pronounced in Norway and least so in Finland (Eðvarðsson *et al.* 2007).

Development in the selected regions

What have the selected case study regions experienced in the process of structural change?²¹

Stockholm (family 1/1/3) has created a modern branch structure with fast branch growth, leaving them as economic winners in the structural change process. The region experienced a significant decline in the size of the production and construction sector in the early 1990s; approximately 50 000 jobs disappeared during this time. Thereafter, the number of employed in the production and construction sector has however remained relatively stable. The service sector experienced a decline in job numbers during the same period. After the mid-1990s however the service sector did recover and employment levels are now far above the pre-recession level. The primary sector is insignificant in Stockholm.

Uppsala (family 1/1/3) has, like Stockholm, created a modern branch structure with fast branch growth, leaving them as economic winners in the structural change process. The region lost about 5 000 jobs in the production and construction sector during the recession in the early 1990s as did the service sector. The service sector has, however, increased in size by approximately 30 per cent between 1985 and 2004. The primary sector is insignificant in Uppsala.

²¹ The description of the case study regions is based upon the figures and data material in Appendix C.

Hovedstaden (family 2/1/3) has a modern branch structure but with slow branch growth. Still, the region has gained from the structural change relative to the rest of the country. The region has witnessed a decline trend in the production and construction sector since the late 1980s while the service sector has expanded significantly since the mid-1990s. The primary sector is insignificant.

Åland (family 3/1/3) has a modern branch structure but with slow branch growth, leaving them as losers in the structural change process. The region has experienced a continuous decline in the primary sector and a cyclical development in the production and construction sector. The service sector has expanded in a cyclical way.

Finnmark (family 3/5/3) has, just like Åland, a modern branch structure but with slow branch growth, leaving them as losers in the structural change process. The region has experienced a continuous increase in the primary sector while the production and construction sector has experienced a continuous decline during the same period. The service sector shows a relatively stable performance over time.

Rogaland (family 4/1/2) has an obsolete branch structure but with fast branch growth. Nevertheless, this leaves the region as an economic winner. The region has experienced a continuous increase in the production and construction sector, while the primary sector has not changed. The service sector also shows significant growth.

Kymenlaakso (family 4/6/2) has, like Rogaland, an obsolete branch structure but with fast branch growth. Nevertheless, this leaves the region as an economic winner. The region has experienced a continuous increase in employment in the primary sector. The production and construction sector experienced a significant decline between 1990 and 1993 when 1 in 3 jobs disappeared; after that the development of the production and construction sector has remained relatively unchanged. The service sector shows the same development as the production and construction sector.

Itä-Uusimaa (family 5/1/2) has an obsolete branch structure with slow branch growth. This leaves the region as a loser in the structural change process. It has experienced a similar development of the primary as well as production and construction sectors as Kymenlaakso; between 1990 and 1993 about 25 per cent of the jobs in the production and construction sector disappeared. The service sector has, contrary to the Kymenlaakso experience, expanded to its pre-recession level. **Etelä-Karjala** (family 5/6/1) shows a similar development as Itä-Uusimaa.

As with Itä-Uusima and Etelä-Karjala, **Västernorrland** (family 5/6/2) has an obsolete branch structure with slow branch growth, which leaves the region as an economic loser. The region has experienced a continuous increase in employment in the primary sector and in the production and construction sector. Almost 50 per cent of the jobs in the production and construction sector disappeared between 1985 and 2004. The service sector shows a cyclical development with a stable trend in employment.

Nordjylland (family 6/1/1) has an obsolete branch structure. Although the region has experienced fast branch growth, this still leaves it an economic loser. The region has experienced a continuous decline in the primary sector while the service sector has experienced a continuous increase over the same period. The production and construction sector shows a cyclical development with no trend.

Etelä-Pohjanmaa (family 6/5/1) has experienced a significant negative trend in employment in the primary sector. The production and construction sector experienced a recession between 1990 and 1993; the sector has almost regained the number of employed since 2004 and the increase shows a cyclical pattern. The service sector shows the same development as the production and construction sector with the exception that it had reached the pre-recession levels in employment at the end of the studied period. The branch structure and branch growth are the same as for Nordjylland.

Winners and losers

Stockholm and *Uppsala* have successfully managed to leave the industrial economic structure and enter a post-industrial service economy; in *Stockholm* the private service sector has expanded significantly, while the public service sector (e.g. schools, higher education, research, health care, elderly care and public administration) has expanded in *Uppsala*. *Hovedstaden* is on its way to following the example of *Stockholm* and *Uppsala*.

Åland and *Finnmark* have managed to create a modern branch structure, but still experience slow branch growth. This can to some extent probably be explained by their peripheral geographical situation and small population – the demand for services is low, *i.e.* the market is too small. Until now they have been unsuccessful in profiting from the structural change in their regional economies.

Rogaland and *Kymenlaakso* are still operating with an obsolete industrial economic structure, but are, nonetheless, very successful. In *Rogaland* the explanation is spelled “oil industry”. Since the industrial structure still works well they will probably not make any major changes to fulfil the process of structural change until they are forced to do so.

As with *Rogaland* and *Kymenlaakso* the regions of *Nordjylland* and *Etelä-Pohjanmaa* are still stuck in an obsolete industrial economic structure, but, contrary to *Rogaland* and *Kymenlaakso*, they are not very successful. One explanation for this may be that a relatively large share of the labour force is still occupied in the primary sector and in the processing of primary products.

Itä-Uusimaa, *Etelä-Karjala* and *Västernorrland* have been unsuccessful in the process of structural change. The peripheral geographical situation and small populations of *Etelä-Karjala* and *Västernorrland* may be the reasons why the demand for an expanding service sector, with its post-industrial economic structure has not yet been successful. The situation for *Itä-Uusimaa* is somewhat different. Since large parts of *Itä-Uusimaa* constitute a part of the functional regional labour market of *Helsinki* a peripheral geographical situation is not the main cause for this region’s trouble in the process of structural change. Since the *Helsinki* area has experienced a significant economic expansion, the structural change in *Itä-Uusimaa* has resulted in people commuting to their jobs in the *Helsinki* region; *Itä-Uusimaa* has thus been inundated in the economic wake of the *Helsinki* region.

The regional labour market

Theoretically a structural change in the regional economy would lead to a demand for labour in the modern and expansive sectors and branches, while the demand for labour in the obsolete and declining sectors and branches will decline.

In table 7.1 the development of the full time equivalent employed persons 1988-2004 is shown. The result indicates that regions that have managed to leave the industrial economy and successfully enter the post-industrial service economy have also seen an increase in the number of full time equivalent employed persons and the share of employed persons in the population (*Stockholm*, *Uppsala*, *Hovedstaden*); regions who have failed in this process (*Kymenlaakso*, *Itä-Uusimaa*, *Etelä-Karjala*, *Västernorrland*, *Etelä-Pohjanmaa*) have also experienced a significant loss of full time equivalent employed persons. *Kymenlaakso*, *Etelä-Karjala*, *Västernorrland*, *Etelä-Pohjanmaa* show a decreasing share of employed persons as well; *Itä-Uusimaa* shows an increasing share of employed in the population, something which indicates that the population probably works outside the region.

The obsolete branch structure in *Nordjylland* ought to result in a declining number of employed, but it has instead resulted in a 1 percentage unit increase. The share of persons employed has also increased. The numbers are, however, small and should be interpreted with some caution.

Rogaland has, like *Nordjylland*, an obsolete branch structure but fast branch growth. The result has been a significant increase in both the number of full time equivalent employed and the share of employed in the population.

Table 7.1 Development of full time equivalent employed 1988-2004 and employment 1990-2004
Source: Own calculations from Appendix C and national statistical offices

	Full time equivalent employed		Employment	
	1988	2004	1990	2004
Uppsala (SE)	100	107	100	100
Stockholm (SE)	100	104	100	101
Hovedstaden (DK)	100	106	100	102
Åland (AX)	100	98	100	106
Finnmark (NO)	100 ^a	99	100 ^b	92
Rogaland (NO)	100 ^a	118	100 ^b	112
Kymenlaakso (FI)	100	79	100	87
Itä-Uusimaa (FI)	100	83	100	102
Etelä-Karjala (FI)	100	80	100	85
Västernorrland (SE)	100	84	100	82
Nordjylland (DK)	100	101	100	101
Etelä-Pohjanmaa (FI)	100	88	100	92

a 1991-2004
b 1993-2004

Regions that have partially managed to enter the post-industrial service economy, but with slow branch growth have experienced a loss of full time equivalent employed persons (*Åland*, *Finnmark*). The numbers are small and should be interpreted with some caution. In the case of *Åland* it is the primary sector (agriculture, forestry and fishing) which has lost approximately 1000 jobs. Åland has, however, also managed to increase the share of employed persons in the population. In the case of *Finnmark* the loss of full time equivalent employed persons is 1 percentage unit between 1990 and 2004, which is a small change. Special subsidises were introduced in Finnmark in 1990 to stimulate the region.²² Nevertheless the share of employed persons has continued to decline.

Regional demographic development

The regions that have managed to leave the industrial economy behind and successfully enter the post-industrial service economy have also experienced a population increase since 1990 (see table 7.2). That economically expansive regions attract labour is not very strange (Stockholm, Uppsala, Hovedstaden, Rogaland), neither is the fact that economically declining regions have a repellent effect on labour (Etelä-Karjala, Västernorrland, Etelä-Pohjanmaa). Some exceptions, however, exist.

Åland has had a declining number of full time equivalent employed persons, but the region has increased not only its total population but also the share of population aged 20-64. One underlying cause is increased immigration; the largest immigration flow comes from Sweden and Finland (ÅSUB 2006).

Finnmark has also experienced a small decline in the number of full time equivalent employed persons, but here the development is different. The total population as well as the share of the population aged 20-64 has declined by 2 percentage points between 1990 and 2007. The active labour market instruments, with the subsidising of labour to move to Finnmark, shows no immediate paid off in the population statistics.

²² The stimulation programme includes lower personal income tax, lower social taxes for employers and an interest rate reduction in private study loans of young adults who choose to move to Finnmark, extra child allowances for families and lowered costs for electricity. Evaluations show that the results have mitigated a vicious circle (*Kommunal – og Regionaldepartementet* 2008).

	Total population		Share of persons aged 20-64 in population	
	1990	2007	1990	2007
Uppsala (SE)	100	113	100	117
Stockholm (SE)	100	115	100	116
Hovedstaden (DK)	100	106	100	102
Åland (AX)	100	109	100	111
Finnmark (NO) ^a	100	98	100	98
Rogaland (NO) ^a	100	116	100	121
Kymenlaakso (FI)	100	95	100	90
Itä-Uusimaa (FI)	100	110	100	108
Etelä-Karjala (FI)	100	96	100	91
Västernorrland (SE)	100	93	100	94
Nordjylland (DK)	100	101	100	102
Etelä-Pohjanmaa (FI)	100	96	100	95

a 1991-2004

Table 7.2 The development of total population and population aged 20-64 in the selected regions for the years 1990-2007

Source: Own calculations from the Nordregio database

Kymenlaakso has, like Rogaland, an obsolete branch structure but with fast branch growth. Although the region can be labelled an economic winner, the number of full time equivalent persons has, contrary to Rogaland, decreased significantly. As a consequence both the total population and the share of population aged 20-64 have decreased in Kymenlaakso.

Itä-Uusimaa has, like Kymenlaakso, experienced a significant decline in the number of full time equivalent employed persons; the region has an obsolete branch structure with slow growth. Contrary to these negative aspects, Itä-Uusimaa has nevertheless managed to increase its total population and the share of population aged 20-64. The explanation for this is most likely related to questions of regional enlargement, *i.e.* becoming a part of the functional labour market of the Helsinki region.

The obsolete branch structure in *Nordjylland* should not only result in a declining number of employed, but also in a declining population and a declining share of population aged 20-64. It has however actually resulted in the opposite. The changes are, however, very small and should, perhaps, be analysed with some caution.

Institutions, regional GDP and dependency

Demography, labour market and economic performance

Hypothesis A predicted that if regional ageing – *i.e.* demography measured by the dependency ratio – has a direct influence on the regional economic performance – measured in the annual regional GDP growth – a distinctive negative bivariate correlation will occur ($H=0$), *i.e.* $R^2=0,3$ or higher. In table 7.3 it is clearly shown that (a) the α -coefficient is positive in 8 of the 12 case study regions, and (b) none of the R^2 -estimates are statistically significant, *i.e.* 0.3 or higher. The conclusion is that we cannot find any evidence for a correlation between ageing and economic performance measured in GDP growth. Hypothesis A is rejected ($H\neq0$); factors other than demography determine regional economic performance.

It is worth noting that Åland has a positive α -coefficient with a R^2 -estimate close to being statistically significant. This would mean that the regional GDP growth would increase when the population ages. With large capital incomes such a result can be possible.

Hypothesis B predicted that if institutional aspects – e.g. an efficient and functioning regional labour market – has an influence on the regional economic performance a positive

correlation between the regional number of persons employed or in work and regional economic performance will occur ($H=0$). The more persons employed the higher economic growth. The regional dependency burden and regional modified dependency burden will be used as indicators. Table 7.3 shows that (a) the α -coefficient for the correlation between regional GDP growth and the dependency burden is negative in 6 of the 12 case study regions, and (b) only for 2 of 6 regions with positive α -coefficients are the R^2 -estimates statistically significant. Regarding the correlation between regional GDP growth and the modified dependency burden the α -coefficient shows both positive and negative values, and none of the R^2 -estimates for regions with positive α -coefficient are statistically significant. The results for the correlation between the regional GDP growth and the dependency burden support the hypothesis in 2 of the 12 case study regions, but are inconclusive for all other regions.²³ Only 1 of 12 regions shows a vague level of support (Stockholm) and 1 a statistically significant result (Rogaland) for the hypothesis regarding the correlation between regional GDP growth and the modified dependency burden. The conclusion in respect of hypothesis B then is that the results are inconclusive. At the same time 2 regions (Uppsala and Itä-Uusimaa) show statistically significant negative results.

Table 7.3 Correlations between regional GDP growth (%) and the dependency ratio, dependency burden and modified dependency burden in selected Nordic regions. Shaded areas are statistically significant.

	Dependency ratio		Dependency burden		Modified dependency burden	
	α -coefficient	R^2	α -coefficient	R^2	α -coefficient	R^2
Uppsala (SE) ^a	negative	0,0481	negative	0,2929	negative	0,3683
Stockholm (SE) ^a	negative	0,0004	positive	0,0622	positive	0,2858
Hovedstaden (DK) ^b	positive	0,0869	positive	0,1393	n.a. ^e	n.a. ^e
Åland (AX) ^d	positive	0,2834	negative	0,0012	negative	0,0027
Finnmark (NO) ^c	positive	0,0288	positive	0,0001	negative	0,0056
Rogaland (NO) ^c	negative	0,0006	positive	0,387	positive	0,3466
Kymenlaakso (FI) ^d	negative	0,0838	positive	0,0022	negative	0,0154
Itä-Uusimaa (FI) ^d	positive	0,1241	negative	0,3434	negative	0,3503
Etelä-Karjala (FI) ^d	positive	0,0019	negative	0,1715	negative	0,2476
Västernorrland (SE) ^a	positive	0,0166	negative	0,0248	positive	0,0003
Nordjylland (DK) ^b	positive	0,0182	positive	4E-05	n.a. ^e	n.a. ^e
Etelä-Pohjanmaa (FI) ^d	positive	0,0028	positive	0,0007	negative	0,0088

a Data for 1994-2005

b Data for 1994-2006

c Data for 1996-2007

d Data for 1996-2005

e Data only covers the period 2002-2006, which is too short

Source: Appendix A

Hypothesis C predicted that if the number of persons employed or in work is occupied in unproductive labour a negative correlation will exist in terms of the regional economic performance ($H=0$). In this case it can be assumed that the structural change in the economy has been delayed or even obstructed. In 2 of the studied regions (Uppsala and Itä-Uusimaa) the results support hypothesis C ($H=0$), i.e. the more persons employed the lower the regions' GDP growth (see table 7.3). Especially in Uppsala a large share of the labour force is employed in low-productive and labour intensive public sector jobs. The relative increase in full time equivalent employed persons in Itä-Uusimaa is most likely also connected to an increase in low-productive and labour intensive public sector jobs (e.g. health care, child care, elderly care, schooling and public administration).

²³ For the 2 regions supporting hypothesis C the correlation is dependent on 1 outlier value in each region (see Appendix A). This means that the result must be interpreted with caution.

Dynamic institutions

Denmark has adopted the *flexicurity* model to ensure social security and maintain a high level of mobility between jobs. Denmark has the highest mobility in the labour force in the European Union. The positive effects are a significantly lower long-term sickness leave level and a higher matching efficiency at the labour market. The relatively small distances between different local/regional labour markets also enables commuting if a desired job is not to be found in one's home town (Rothstein & Boräng 2006). That the regional labour market of a capital city, in this case Copenhagen (Hovedstaden), has a dynamic labour market is not surprising. That a peripheral region with an obsolete branch structure, dominated by the primary sector, should experience a population increase, increasing numbers of jobs (measured in full time equivalent employment), an increased share of employed persons and an increased share of persons aged 20-64 is however surprising. Indeed this is what Nordjylland has experienced. Since no structural change in the economy has caused a change in the level of demand for labour, the institutional context and its influence is the most likely explanation for this remarkable development. The *flexicurity* model might be that institutional factor explaining this development.

As stated above, that the regional labour market of a capital city has a dynamic labour market is not surprising. It appears as if Itä-Uusimaa has become a part of the Helsinki regional labour market and thus has managed to deal with a complicated negative trend. The institutional dynamics in this case relate to *regional enlargement*; Itä-Uusimaa has become a part of a more efficient labour market as regards matching and vacancies than it would as a regional labour market on its own.

Åland and Rogaland remain highly dependent on *international markets*; oil in case of Rogaland and shipping and financial services in case of Åland. To be competitive in international markets labour market institutions must be dynamic – whether the branch structure is obsolete or not, or whether the branch grows quickly or slowly.

Stockholm has made the transition from an industrial region to a post-industrial region quite well. Employment in the production and construction sector has been replaced by increases in the service producing private sector. This transition implies the presence of dynamic institutions in the labour market.

Like Stockholm, Uppsala has a modern branch structure with fast branch growth. The total population has increased, and so has the share of persons aged 20-64; the number of full time equivalent employed has increased, but the share of population employed has remained the same. Contrary to Stockholm service sector expansion has not been in the private sector, but in the public sector. The public service sector (e.g. schools, higher education, research, health care, elderly care and public administration) is low-productive and labour intensive. Since the public service sector has increased its size and share of employed it can be assumed that many of the old vested interests from an obsolete economic era remain quite strong, *i.e.* the dynamics of the labour market institutions can be questioned.

Finnmark has a modern branch structure but without growth, the service sector is the dominant sector and the region suffers from a population decline based on out-migration. The number of full time equivalent employed and the share of employed persons have decreased. Government subsidies keep the region alive, but *staying alive* means maintaining the existing institutional structures.

Regions like Kymenlaakso, Etelä-Karjala, Etelä-Pohjanmaa and Västernorrland are stuck in the economic structures of the industrial society, *i.e. these areas have not experienced any institutional dynamics* – on the contrary, old structures are segmented. They are peripheral regions with obsolete branch structure, dominated by the primary sector (Etelä-Karjala and Etelä-Pohjanmaa) and the production and construction sector (Kymenlaakso and Västernorrland). They have all experienced a population decrease, a decreasing number of jobs (measured in full time equivalent employment), a decreased share of employed persons and a decreased share of persons aged 20-64.

A potential labour supply

The results indicate, so far, that peripheral regions that have not managed to deal with the transition into the post-industrial service economy and, simultaneously, that they also have problems with declining population numbers and thus face a serious challenge in respect of their labour supply. In figures 7.1 to 7.3 the potential labour supply in the studied regions has been estimated.²⁴

The regional potential labour supply as a share of the labour force is actually quite large in most regions. Most remarkable is the fact that peripheral regions with “labour shortage” also show the largest potential labour supply. This indicates that the supply of potential persons to the labour force is not the main problem in respect of the labour supply question, but rather it is that the institutions in the labour market do not seem to be able to allocate labour efficiently and thereby fail to fill the vacancies.

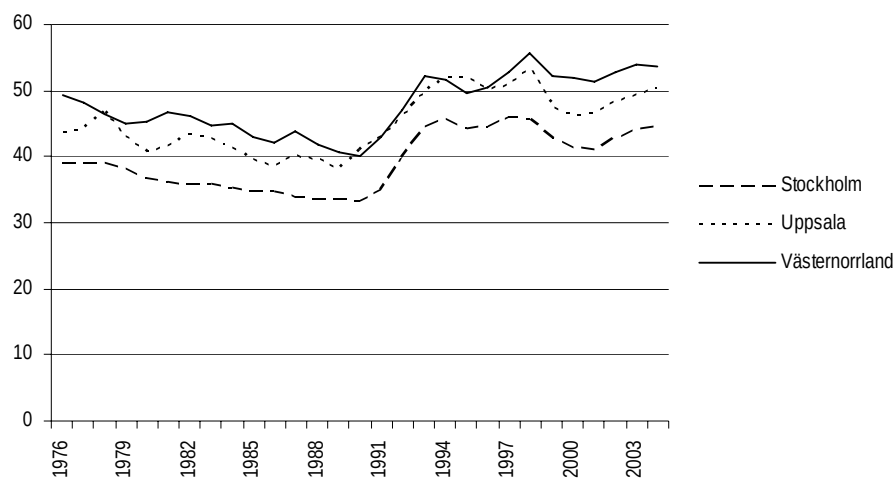


Figure 7.1 The potential labour supply as a share (%) of the labour force in Stockholm, Uppsala and Västernorrland 1976-2005.

Source: Own estimations

²⁴ For Finland and Sweden actual data from *Kansaneläkelaitos* and *Statistics Sweden* have been used for the estimations. For Norway the temporarily absent but employed persons is estimated at 10 per cent. For Denmark the absent employed for the period 1990-1996 is estimated by the average share of absent employed 1997-2006.



Figure 7.2 The potential labour supply as a share (%) of the labour force in Hovedstaden, Nordjylland, Rogaland and Finnmark 1990-2006.

Source: Own estimations

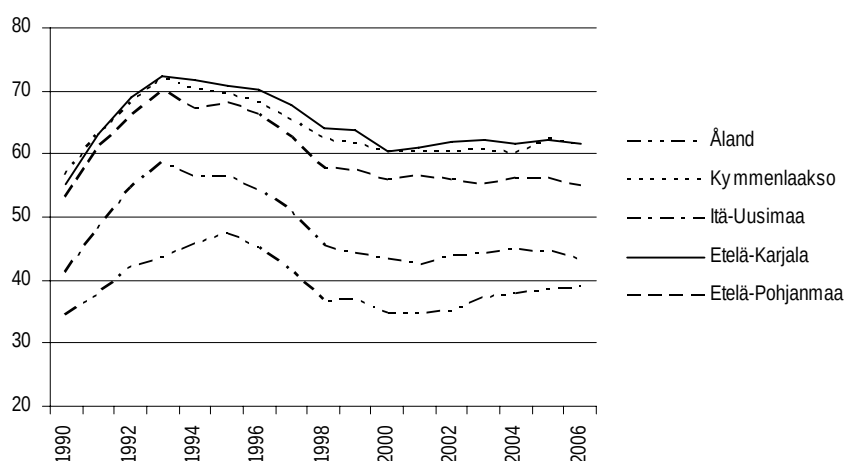


Figure 7.3 The potential labour supply as a share (%) of the labour force in Åland, Kymmenlaakso, Itä-Uusimaa, Etelä-Karjala and Etelä-Pohjanmaa 1990-2006.

Source: Own estimations

Furthermore, figures 7.1-7.3 clearly show the impact of economic cycles in the size of the potential labour supply; the differences lay in the level of potential labour. The three Swedish regions (figure 7.1), despite the fact that they belong to different families of regions, show a similar development. The same is true for the Finnish regions (figure 7.3). In figure 7.2 the two Danish regions and the two Norwegian regions show the same trends. Hence, the functioning of the national labour markets and their institutions appear a more likely explanation to determining the regional potential labour supply than the regional family to which the regions belong.²⁵

It should also be noted that Uppsala with a very young population is just slightly better off than Västernorrland with a very old population; Nordjylland, with a population which is relatively older than the population in Stockholm, is actually a little better off than Stockholm.

²⁵ The regional families are constructed by components of structural change, demography and economic sector dominance. See also chapter 6.

It is not possible to argue that the differences shown in figures 7.1-7.3 are determined by the age-structure of the populations – then Uppsala should be much better off than Västernorrland and Stockholm should be better off than Nordjylland.

Hypothesis E predicts that since the number of persons employed and in work are fewer than the number of persons aged 20-64 a potential labour reserve exists from which labour, at least theoretically, can be transferred from ($H=0$). With dynamic labour market institutions this is possible. Ageing has little or no influence on the supply of labour in this case. Figures 7.1 to 7.3, and the related discussion, supports Hypothesis E, *i.e.* $H=0$. When such a large share of the population in working ages is not in work, a potential labour supply surely exists. The trends and development in the potential labour supply is not linked to demography; Figures 7.1 to 7.3 indicate that the potential labour supply is linked to the national economic cycles.

Summary and conclusion

Demography in general and ageing in particular has not determined economic development in the studied regions. The studied regions constitute a majority of the Nordic regions and cover a majority of the Nordic population. The result confirms the results of Easterlin (1996) and Rauhut & Malmberg (2003).

The results are inconclusive regarding what impact the share of persons in work has on economic development. The theoretical prediction receives support from only one region while the results from the other regions are not statistically significant. Some evidence is found to support the theoretical prediction that the more labour that is employed in labour intensive and unproductive jobs the lower the economic growth rate will be. An implication of this is that a structural change in the economy may be obstructed due to vested interests.

This chapter also showed that a large reserve of labour actually exists – approximately only about 2 of every 3 persons aged 20-64 are in work, while 1 in 3 in the same age groups is either, unemployed, temporarily absent from work or not in the labour force. This potential labour supply must be examined closer in future studies.

The response to questions of how to deal with the challenges in respect of the welfare burden has varied: The regions of Hovedstaden and Nordjylland are affected by the national *flexicurity* policy, regions such as Åland and Rogaland are dependent on the *world market*, Itä-Uusimaa has been a part of a *regional enlargement* around the Helsinki region, and other regions like e.g. Kymenlaakso, Etelä-Karjala, Etelä-Pohjanmaa and Västernorrland appear not to have been successful in renewing their economic structures. A region like Stockholm has successfully passed through the structural change process – from an industrial economy to a post-industrial service economy – something which is related to labour force mobility (which is a vital institution in the labour market).

8 Simulations and scenarios

Simulations 2020-2030

Points of departure for the simulations

The simulations are based on a number of assumptions. The simulations cover the time period 2020-2030, and this period is expressed as $t+1$; present time – 1997-2007 – is expressed as time t .

The first simulated indicator, **dependency ratio**, is calculated from the population projections of the national statistical offices and *Eurostat*. This is a very conventional indicator. The estimated dependency ratio for region i at time $t+1$ is calculated by dividing the projected total regional population by the projected regional number of persons aged 20-64:

$$DR_{i,t+1} = \left(\frac{\hat{P}_i}{\hat{N}_i} \right)_{t+1} \quad (8.1)$$

The remaining three simulated indicators require a description of how they have been calculated.

In the simulation of the **modified dependency burden #1** for $t+1$ the total population in region i at time $t+1$ has been divided by the average share of persons in work (W^*) in region i divided by the number of persons aged 20-64 in region i at time t multiplied by the population aged 20-64 in region i at time $t+1$.

$$MDB1_{i,t+1} = \frac{\hat{P}_{i,t+1}}{\left(\frac{W_i^*}{N_i} \right)_t \times \hat{N}_{i,t+1}} \quad (8.2)$$

The **modified dependency burden #2** has been calculated the same way as the modified dependency burden #1, but with one exception: the share of persons in work (W^*) in region i at time t has been increased by 30 per cent²⁶:

$$MDB2_{i,t+1} = \frac{\hat{P}_{i,t+1}}{\left(\frac{W_i^* \times 1,3}{N_i} \right)_t \times \hat{N}_{i,t+1}} \quad (8.3)$$

The **modified dependency burden #3** has also been calculated the same way as the modified dependency burden #1, but this time the net migration (international) for region i , X_i , has been increased by 50 per cent of the average net migration at time t .²⁷ The number of immigrants

²⁶ Many long-term sick and early retiring persons are *de facto* unable to work and many unemployed will only be able to pick up work with significant vocational training etc. A 30% reduction of the group of long-term sick, early retirees and unemployed appears a very moderate reduction.

²⁷ A 50 per cent increase in the number of net immigrants would most likely pose a significant political challenge for any country. If immigration is a useful tool in solving the problems with the dependency burden, a 50% increase in immigration will make these positive effects visible.

has then been added to the estimated number of persons in work at time $t+1$. The immigrants are assumed to have no family or dependants accompanying them, nor are they assumed to be sick or become parents; all of them are assumed to work.²⁸

$$MDB3_{i,t+1} = \frac{\hat{P}_{i,t+1}}{\left[\left(\frac{W_i^*}{N_i} \right)_t \times \hat{N}_{i,t+1} \right] + 1,5X_{i,t}} \quad (8.4)$$

To create an even more favourable result in terms of immigration for the region i , X has not been added in both the denominator and the nominator – if so the ratio would have remained the same. Instead, X is simply added to the denominator.²⁹

The simulated indicators and the how they are defined has been summarised in table 8.1 below.

Table 8.1 Indicators and definitions for simulations 2020-2030

Simulated indicator	Definition
Dependency ration (DR)	Estimated total population divided by estimated population aged 20-64
Modified dependency burden #1 (MDB ₁)	Unemployment, temporarily absent and not in the labour force in 2020-2030 same as the average for 1990-2006
Modified dependency burden #2 (MDB ₂)	A 30 % increase in the average share of the labour force in work in 2020-2030 compared to 1990-2006
Modified dependency burden #3 (MDB ₃)	As MDB ₁ but with an 50% increase of the average net immigration in 2020-2030 compared to the average net immigration during the period 1997-2007

The results

The results of the simulations for the selected regions in this study are found in Appendix D. The most remarkable result is that an increased net immigration by 50 per cent only results in marginal improvements in the modified dependency burden. If immigration is to solve the welfare burden an extremely large volume of immigrants will be needed; while a 50 per cent increase (as in the simulations) in the number of net immigrants already poses a significant political challenge.

Secondly, the dependency ratio does not rocket, as sometimes is argued in the public debate. Instead a very slow increase in the dependency ratio is expected; the increase in the dependency ratio 2020-2030 is no more dramatic than what we have already experienced. Furthermore, the level of the estimated dependency ratio is not so much higher than today for most of the analysed regions.

Thirdly, the simulations clearly show what is going to happen if the dysfunctional labour market is not dealt with. In regions like *e.g.* Kymenlaakso, Etelä-Karjala and Etelä-Pohjanmaa every person in work will feed approximately 3 more persons. This is not a sustainable development, in social or in economic terms.

²⁸ These are of course completely unrealistic assumptions, but they serve well here to show the effects of immigration on the welfare burden.

²⁹ Mathematically, the immigrants $1,5X$ should be included in both the nominator and the denominator. The result would be that they neutralise each other and the effect from immigration would be zero. A more realistic assumption in 8.4 would be to add $1,5X$ in both the nominator and the denominator *and* Y number of dependents to X in the nominator. This would, mathematically, lead to a negative effect of immigration. In equation 8.4 an *artificially positive situation* has been created by only adding immigration in the denominator, *i.e. the positive effects of immigration will be boosted.*

Finally, a 30 per cent increase in the share of persons actually in work, *i.e.* a reduction in unemployment, temporary absenteeism and in the share of persons in working age outside the labour force, produces the most favourable results in the simulations.

Scenarios 2020-2030

The simulations can be used as a point of departure for regional scenarios. In this study 3 different scenarios will be constructed: “status quo”, “structural change and institutional renewal” and, finally, “immigration as saviour?”

Status quo

The keywords for this scenario are: regional polarisation, asymmetric migration flows, segmented economic structure and static labour market institutions. This scenario is based on the results of the simulation of the indicator MDB#1.

Regions that have successfully managed to leave the industrial economic structure and develop a post-industrial service economic structure will attract labour and enterprises. The economic structure will be dominated by the private service sector producing services for households and companies, but also research and capital intensive manufacturing for an international market. The labour market is characterised by a relatively high level of labour mobility. The transaction costs for getting a job, changing job etc., remain high however due to the dominant labour market institutions.

The economic growth of these regions attracts persons in the working ages, which leads to a favourable age-structure and a relatively high labour force participation rate. The result will be a relatively low welfare burden on the population in work in these regions – every person in work will provide for 1-1.5 more persons.

Regions that have been less successful, or failed, in the attempts to enter the post-industrial service economic structure will be unattractive for both labour and enterprises. The loss of labour will accentuate the demographic ageing process. The economic structure is dominated by labour intensive and low productive jobs in the public sector (schooling, elderly care, health care etc) and manufacturing of products for local and regional markets. The labour market is static and is characterised by low mobility, a relatively high level of sickness leave, early retirement and a relatively large share of the population in working ages outside the labour market. The transaction costs for labour mobility are high, both for employers and employees.

The economic stagnation of these regions discourages persons in working ages, which leads to a relatively unfavourable age-structure. The static nature of the labour market also leads to a relatively low labour force participation rate. Labour shortages are common, but the vacancies cannot be filled since these regions cannot e.g. set their own wage levels and work conditions. The consequences will be a relatively high welfare burden on the population actually in work in these regions – every person in work will provide for 2-3 more persons. Economic transfers from the successful regions are needed for survival.

The distinctive positions of regions have left marks on the structural characteristics of the lagging and productive areas, but there have also been influential processes counteracting this segregation processes. Regional policy measures have been applied to reallocate economic activities in the direction of more lagging regions. The formation and preservation of the welfare state has gained more emphasis in this course of action, and welfare services have been provided in accordance with national regulations disregarding where people have their place of residence. This mode of policy has resulted in improvements in the infrastructure and welfare services of remote regions simultaneously softening the spatially uneven progress of economic restructuring.

Regional diversity today is then accentuated and underlined. The transfers from rich and productive regions to unsuccessful regions, just to keep them alive, hinder the required infrastructure investments in the economically expansive areas. These transfers also keep old

economic structures and institutions alive, something which hinders structural change even more. The result is that the overall competitiveness of the Nordic countries begins to lag internationally. At a certain point the gap between the successful and unsuccessful regions will be so large that the successful regions will not continue to subsidise the unsuccessful regions unless they start transforming their economic structures. The regional welfare burden will play a central role in this situation. The inability to adapt the labour markets to the need for an increasing international specialisation of labour and the importance of recruitment from other competences and production systems will then be very costly for the Nordic countries.

Structural change and institutional renewal

The keywords for this scenario are: regional cohesion, symmetric migration flows, an open and flexible economic structure and dynamic labour market institutions. This scenario is based on the results of the simulation of the indicator MDB#2.

The economically expansive metropolitan regions continue to boost growth rates through the use of the international division of labour. The presence of low cost countries in the vicinity of the Nordic countries represented an advantage to all concerned. The centre regions were to a greater degree able to take advantage of these options to displace specific parts of the value chain to proximate low cost countries. The labour market is characterised by high labour mobility since the labour market institutions have adapted to the international specialisation of labour they are dynamic with low transaction costs for getting a job, changing job etc.

Just as in the status quo scenario, the economic growth of these economically expansive regions will attract persons in working ages, leading to a favourable age-structure and a relatively high labour force participation rate. These regions will experience a relatively low welfare burden on the population in work – every person in work will provide for 1-1.5 more persons.

The regions lagging today have entered a structural change in their economies; most no longer suffer from stagnant growth, depopulation and low investment levels. The economic structure is no longer dominated by labour intensive and low productive jobs in the public sector (schooling, elderly care, health care etc); partly these jobs have been restructured into private sector jobs since it has been too costly for the public sector to run most of these services. The restructuring of welfare services has allowed the private sector a greater role in welfare service provision. The main forces of change have been, besides financial issues, increasing productivity, new consumption patterns and saturated demand for public sector services. As a result sick-leave and early retirement rates have been reduced as private companies cannot afford these problems. Most important of all, the mobility in the labour market has increased and symmetrical migration flows between the metropolitan and economically expansive areas and the former lagging areas. This has been achieved by improving the institutional dynamics of the regional labour markets.

The emergence of more symmetrical migration flows and an increased efficiency in matching will be beneficial for those regions that are currently lagging, if young persons in working ages move in and are in work the welfare burden will slowly be improved. The structural change has also meant that services formerly produced by the public sector are now being produced by the private sector; the private sector has an incentive to keep their labour healthy and in work – it will be too costly for them to neglect problems with high levels of sick-leave and high early retirement rates. The result of this will be that every person in work will provide for about 2 persons. This is a significant improvement from the status quo scenario where the persons in work had to provide for 3 or more persons

The large transfers from rich and productive regions to unsuccessful regions, just to keep them alive, have decreased significantly since the tax-base in the former less successful regions has broadened significantly. Resources have been available for productive investments in both expansive metropolitan regions and in former less successful regions. The result of all this is that a social and territorial cohesion has significantly increased by 2030.

Immigration as a saviour?

The keywords for this scenario are: regional polarisation, asymmetric migration flows, segmented economic structure, static labour market institutions, immigration and transfers of resources from rich regions to poor. This scenario is based on the results of the simulation of the indicator MDB#3.

The capital regions of the Nordic countries were quite open to foreign labour. At the same time other regions in Europe developed strongly and absorbed considerable human resources internationally. The Nordic capitals produced a dual labour market, with lower skilled jobs occupied by foreign labour, while domestic labour got jobs at the higher end of the skill hierarchy. The institutions were not becoming more dynamic; on the contrary they became more static. The result was that the renewal of the knowledge base in the capital regions was slowing as compared to the dynamics observable in other regions of the world and the overall competitiveness of the Nordic countries was therefore initially maintained, but eventually began to lag internationally.

Still, the economic growth of these regions continues to attract persons in working ages. The relatively favourable age-structure and a relatively high labour force participation rate results in a relatively low welfare burden on the population in work in these regions – every person in work will provide for 1-1.5 more persons.

The remaining regions in the Nordic countries increasingly drifted into a 'lagging' situation, with stagnant growth, depopulation and low investments levels. These problems were compounded by the problems of attracting new labour from abroad. Labour did move, but most often to sectors that were very sensitive for business-cycle reasons and not to the peripheral regions; foreign labour never made it to the Nordic regional labour markets. This was especially problematic for the peripheral regions, as their dependence on recruiting labour with certain competence levels in order to help jump-start business transformation was pivotal. The economically expansive metropolitan regions did not face such problems due to the existence of a strong knowledge infrastructure in these regions. The competences needed to foster the necessary transformation; innovation and networks were produced at the prestigious and internationally-acclaimed universities located in the capital regions. These regions' dependence on attracting such competences from elsewhere was accordingly much less pronounced.

Persons in working ages – both native and foreign born – are discouraged by the economic stagnation of these regions. Just as in the status quo scenario the labour force participation rate can be assumed to be relatively low, with labour shortages and problems with continuing high levels of sick-leave and early retirement. In consequence the welfare burden on the population actually in work in these regions will be high – every person in work will provide for 2-3 more persons. The effect of immigration leaves this scenario marginally better off than the status quo scenario.

In this scenario the economic transfers from the successful regions to the lagging regions are still needed for survival. The central problems for economic development in the lagging regions have been neither solved nor mitigated. Without a structural change and institutional renewal this scenario leaves us only slightly better off than the status quo scenario.

Summary and conclusion

It was concluded in chapter 2 that the question of how to manage a future ageing society is highly ideological. This becomes ever clearer in the scenarios presented here; the scenarios contain assumptions with different ideological roots. This has been a deliberate choice since it shows that demography is not the main problem for the future of welfare provision.

Hypothesis D predicts that an ageing population will reduce the labour supply as well as the labour reserve in a region ($H=0$). In chapter 7 it was shown that quite a large reserve of labour actually exists. Only about 2 out of every 3 persons aged 20-64 are in work, while 1 in 3

in the same age groups are either, unemployed, temporarily absent from work or not in the labour force. The simulations in this chapter showed what effect a 30 per cent increase would have on the welfare burden – it would improve it significantly. At the same time the dependency ratio which is used as an indicator for ageing, only changed marginally over the same period. There is no evidence that ageing *per se* will reduce the regional labour supply and labour reserve when 1 in 3 persons aged 20-64 is not in work today. Such a large potential labour supply can, and shall, be used when labour is needed. Again, this regional labour reserve is not related to ageing, but to the dysfunctional nature of the labour market.

Hypothesis F predicts that increasing immigration will increase the labour supply and thereby create a more favourable situation in respect of the welfare burden ($H=0$). The results of the simulations show that immigration will have, at best, a marginal positive effect on the welfare burden, *i.e.* $H \neq 0$. This should indicate that immigration cannot be used as a tool for solving the problems associated with labour supply and welfare. It must, however, be borne in mind that a relatively small number of immigrant specialists can have a very large positive effect on economic development if they solve bottlenecks in the labour market; encouraging a large number of immigrants to take low productive and labour intensive jobs may obstruct the structural change in the economy. The simulation does not *per se* indicate this difference in immigrated labour.

A development as depicted in the *status quo* scenario will lead to regional polarisation, continued asymmetric migration flows, a segmented economic structure and static and inefficient labour market institutions. The economically successful regions will have a relatively favourable age-structure and labour force participation rate. The result will be a relatively low welfare burden on the population in work in these regions – every person in work will provide for 1-1.5 more persons. The economically unsuccessful regions will continue to lag and they will face a relatively unfavourable age-structure and labour force participation rate. The result will be a relatively high welfare burden on the population in work in these regions – every person in work will provide for up to 3 more persons.

The *structural change and institutional renewal* scenario depicts a rather different development. An open and flexible economic structure and dynamic labour market institutions have been created by the structural change in the regional economy; the labour market has increased its matching efficiently partly because of increased labour market mobility and symmetrical migration flows. Productive investments have been made in both the economically expansive regions and the former lagging regions. In this scenario development leads to greater regional cohesion. The successful regions will also, in this scenario, have a favourable age-structure and high labour force participation rate – every person in work will provide for 1-1.5 more persons. The former less successful regions will improve their welfare burden in this scenario compared to the status quo scenario – every person in work will provide for about 2 persons instead of 3 persons in the status quo scenario.

The *immigration scenario* however leaves us only slightly better off than the *status quo* scenario.

9 Policy Implications

The policy relevant results

This study has not found any empirical evidence to support the hypothesis that ageing *per se* has had a negative influence on economic growth in the Nordic countries either at a regional or at the national level. Only 23 out of 64 regions had negative α -coefficients but none had a statistically significant determination coefficient; 41 regions out of 64 had a positive α -coefficient (see appendix A). The simulations and scenarios made for the period 2020-2030 in this study do not indicate that ageing *per se* will have a negative impact on future economic development.

The results of this study clearly indicate that ageing and the increasing welfare burden is a regional rather than a national problem; some regions will experience a population increase and some a population decline, some regions will have a favourable age-structure in the population and some will have an unfavourable age-structure. These regional differences regarding population development and age-structure will put pressure on the labour market. While some regions will experience an excess demand for labour, others will experience an excess supply of labour.

The labour market is already failing to function in an optimal manner, particularly when it comes to the mobility of labour and matching efficiency. The exit from the labour market by the 'baby-boomers' from the 1940's is not about a *quantitative change* (i.e. less labour), but is rather a *qualitative change*. The labour entering the labour market is a post-industrial labour force, with a different education, competences, skills, preferences, ideas etc., than the industrial labour force leaving the labour market.

Static institutions in the labour market will simply have to bend – both at a regional and at a national level – to the fact that labour in the post-industrial society is different from that of industrial society both in terms of geographical distribution, but also in a qualitative sense.

The simulations and scenarios produced for the period 2020-2030 in this study show clearly that more dynamic labour market institutions – particularly in respect of labour mobility and matching efficiency – would result in significant improvements at the regional level. In many regions the welfare burden would be significantly lower than today. These improvements are not sensitive to the geographical location (metropolitan areas or peripheral regions).

Furthermore, the simulations and scenarios also show that increasing immigration by 50 per cent would only have a marginal effect on the welfare burden. This result is in line with previous OECD studies (e.g. Coppel *et al* 2001).³⁰

Finally, the apocalyptic and doomsday demography is about how to build the post-industrial and ageing society and how to organise its welfare. Of course such an issue is highly ideological.³¹

³⁰ If x number of persons immigrate and these persons are assumed to have no families or dependants accompanying them and they are not assumed to be sick or become parents, x will be added both in the nominator as well in the denominator. Mathematically they neutralise each other, leaving no effect on the welfare burden. If the x immigrants have y dependents accompanying them or they become sick or parents, $y+n$ will be added in the nominator while x will be added in the denominator. The two x 's will neutralise each other leaving y in the nominator; the effect will be an increased welfare burden.

³¹ The apocalyptic or doomsday demography has its ideological roots in President Bush (senior's) administration in the early 1990's. There it was used as an argument to cut public welfare spending and lower taxes.

Current policies

Several short-term policies have been launched, *e.g.*, the raising of the retirement age, enabling older people to work longer, changes in the labour market legislation to favour older workers and the promotion of labour immigration. Alas, no long-term policies have been launched to deal with the upcoming challenges of the welfare burden.

The United Nations and the OECD have long facilitated the discussions of population ageing. The emphasis of both organisations has been on preventing the social exclusion of older persons from society and the labour market. Such discussions focus on the living circumstances and lack of involvement and participation by older people as a key issue. The Madrid International Plan of Action on Ageing (United Nations 2002) offers a framework to assimilate the discourse of population ageing; it should not be seen as a plan for older people but rather as an instrument of cultural and political change to ensure that population ageing forms an integral element of policy at the global level. The United Nations has laid stress on the concept of '*a society for all ages*', which involves a life course perspective on ageing issues, and which focuses on relations between age groups. The key term here is comprehensive society.

The OECD has dealt with more concrete issues in relation to population ageing including the need to restructure pension systems and the impact of ageing on future expenditure on welfare services. The very latest policy report *Live Longer Work Longer* (OECD 2006a) brings forth a new policy approach to ageing, which emphasises the individual choices of older employees and their importance not as a burden but as a economic benefit.

At the European level, the main approach to active ageing policy is linked with economic growth. The need to respond to population ageing has clearly featured in the Lisbon strategy since it was re-launched in 2005. In the strategy the employment deficit is recognised in the age cohort 55-65 which will contribute to lower growth rates in the Member States and in the EU economy more generally. EU policy (European Commission 2005) has proposed a return to population growth by encouraging the birth rate and careful use of immigration. As a part of the Lisbon strategy, the intention is also to link active ageing policy to economic growth policy. The Lisbon strategy places significant emphasis on economic growth, but it also draws attention to how to create and increase employment possibilities for older people. The proposed measures to be applied in the Member States include the promotion of active ageing, discouraging early retirement and improving the possibilities to link work and private life. Many Member States have already applied most of these measures more or less successfully.

Nordic countries have proposed and implemented various programmes for the support of active ageing and the promotion of well-being in the workplace. Active ageing policies in the Nordic countries have similar characters in many ways because of the matching structures of population and societies. Nordic countries do undertake common policy approaches at the Nordic level, but it seems that the Co-operation Programme Labour Market and Working Environment 2005-2006 (*Nordisk Ministerråd* 2005) does not really have sufficient influence on policy choices within the Nordic countries. The programme will increase attention in respect of meeting the requirements of population ageing in the labour market and it also includes an effort to promote and develop an active and inclusive working life. The Nordic countries do, however, have different approaches and instruments in respect of taking action to prolong the productive length of individual working life. The Nordic model of the welfare state and labour market has many common characteristics, which ought to be preserved; the major challenges are not, however, cooperatively addressed by the Nordic countries.

Current Nordic policies in this area generally include some sort of reform of the national pension system. Finland has undertaken the most profound changes in the pension system and run through important policy changes, as Norway has awoken more slowly to the challenges posed by population ageing. National differences are clearly the major explanatory factors behind these policy choices. Finland has more or less now recovered from a severe economic restructuring process and has conditioned its policies on the basis of an ageing population, whereas population is ageing slower in Norway while Norway's public financing assets have not made policy reform in this area necessary. Sweden also lacks a comprehensive strategy to advance the labour market situation of older people, with policy choices developed almost

solely on the basis of the different incentives related to welfare services. No targeted policies have as yet been put in place to improve the attitudes of employees towards older people in the work place. Iceland and Denmark have not yet seen any need to reform their pension systems, because older people clearly work longer in relation to other Nordic countries. The statutory retirement age was reduced in 2004 from 67 to 65 in Denmark, and in Iceland it remains 67. However, both countries have over the last few years introduced new policy approaches to bolster the position of older people in the labour market.

Necessary policy adjustments

Which adjustments?

The labour market institutions must adjust to the post-industrial reality. The industrial society, with its specific economic characteristics, will not return. Labour mobility must be increased and more symmetrical migration flows must be established. The matching efficiency must also be increased. The large potential labour supply has to be analysed and, to the best possible extent, used. Policies should not only be launched and implemented at a national level, but also at a regional level.

There is no universal solution to the challenges faced – demographic or otherwise – though several partial solutions may be evident. Another partial solution is to actively work to solve the mismatch problems in the labour market and, needless to say, fight unemployment. In addition, the widening of labour market regions, a more flexible labour market, and zero tolerance towards all kinds of discrimination can also be seen as partial solutions. Measures to raise fertility constitute important partial solutions. Given a number of conditions labour immigration can also provide a partial solution.

Several of the partial solutions mentioned in the sections above are directly related to the functioning of the labour market: mismatch, unemployment, discrimination, labour immigration and enlargement of the regional labour market regions all require a dynamic institutional labour market structure.

At what level?

Some institutional reforms have to be made at a national level, e.g. the introduction of a *flexicurity* social security system, a flexible retirement age (65 to 75 years) and more favourable tax regulations regarding second homes (for work purposes) and long-distance commuting. In other cases regional action is needed. Examples for instance include regional enlargement, the use of the regional potential labour supply and the active use of market mechanisms to attract and retain labour (larger differences in salaries, employee benefit packages, longer vacation, pension deals etc.). Policies to increase fertility should, perhaps, be introduced at both the national and the regional levels.

Contrary to these suggestions, no institutional change at all in the labour market or, even worse, an increase in the number of regulations would place development close to that of the MDB₁-scenario, in which the welfare burden becomes troublesomely high.

When it comes to the matter of national, regional and local structures and especially of setting boundaries between authorities, it is obvious that the discussion mostly concerns the feasibility of operational entities. The matter is not solely related to ideal and possible responsibilities and structures but also to questions of implemented policies. Choices are not so much focused on whether to decentralise in general, but rather which functions to decentralise. In many cases, the main question is not on which level particular services ought to be provided and policies implemented, but rather how to arrange the mutual provision of the services and implementation of the policies on different levels. Various measures have an

enormous potential impact and are able to, if carefully designed and implemented, significantly improve the efficiency of the public sector operations.

What time range?

Rauhut *et al.* (2008) argue in their study that it is of the utmost importance to distinguish between long-term and short-term problems in respect of the labour supply. Situations of long-term labour shortage have led to labour being replaced through technological, institutional and organisational changes historically, leading to productivity improvements. As such they have resulted in increased growth, and in the creation of an economic surplus through economic growth, which is a condition of welfare. Short-term labour shortage is a constantly recurring problem. If the distinction between long-term and short-term problems with the labour supply is not made, the risk of policymakers attempting to solve long-term problems with short-term measures, and *vice versa*, increases.

Possible policies

What policies can be launched, what impacts will they have and in what time perspective can they be expected to work? The discussion is summarised in table 9.1.

Regarding short-term policies the labour force participation rate among Nordic women is very high, which means that the marginal cost of raising it further will be high. Low fertility is supposed to be mitigated by increasing gender equality, increasing possibilities to combine family and work/education, while measures should be taken to stimulate fertility. The Nordic countries have worked actively with policies in these areas for decades but there is no major sign of changing fertility rates in sight.

The Nordic countries have also taken measures to spread higher educational institutions across the country in the hope of encouraging more open access. Nevertheless, young adults still prefer to move to the major university cities, and if they study in a regional university or university college they move to the larger towns to get a job. Unless new jobs in dynamic and expanding sectors are created in rural and peripheral areas this development is set to continue. Government actions to encourage private companies to set up or expand their businesses in rural and peripheral areas cannot be undertaken in the same way today as was possible 30 years ago.

To raise the retirement age is a short term measure. The problem in respect of ageing is simply pushed a few years ahead, but it is not solved. Labour immigration can be good in a short term perspective since it can be assumed to mitigate bottlenecks in the labour market, but in the long term it will counteract the need for structural change in the economy.

Several medium-term policies can be launched to deal with this problem. Regional enlargement will enable labour to commute to a larger extent than is the case today. Tax incentives can induce people to participate in the labour market, to increase fertility, to be willing to relocate etc. A liberalisation of the labour market and a restructuring of the labour market institutions can increase the matching efficiency, increase mobility and mobilise potential labour reserves. An active labour market policy, with vocational training and retraining, should not be seen as contrary to the liberalisation of the labour market, but rather as a complement to it. Vocational training and retraining is a means to make non-working competitive in the labour market in the medium term. The flexicurity system of welfare has been implemented in Denmark with positive results. It must, however, be noted that Denmark has not experienced any economic recession or significant economic stagnation where unemployment can be expected to increase; how the flexicurity system will function under stress as such remains unclear.

Table 9.1 Time range and policies

Short-term policies	Medium term policies	Long-term policies
- Raised retirement age	- Regional enlargement	- Stimulation of fertility
- Immigration	- Flexicurity	- Improved health status
- Improved educational possibilities nationwide	- Tax incentives	- Stimulation of structural change and technological development
- Increased gender equality	- Active labour market policy	
	- Liberalisation of the labour market	

Long-term policies aim at *e.g.* stimulating fertility; it will take 20-25 years before a new baby-boom generation will be ready to enter the labour force, so this is a real long-term policy.³² The improved health status of the population will enable the workforce to work longer, but when these persons leave the workforce they will, obviously, be older; with age comes an increasing need for medical care, especially for the age group 80+ years. So the result of this policy is probably quite neutral in the end. Finally, policies to stimulate a structural change in the economy and to promote technological development will lead to a decline in the demand for labour and higher economic growth. This policy will generate the needed means to pay for the labour intensive and low productive elderly care.

The short-term policies aim at preserving the current institutional structure, while the long-term policies aim at creating something new. The conclusion we make is that the sets of policies – short-, medium- and long-term – should not be viewed as competing, but rather as complementary. To deal with the challenges of the labour market ahead, a mix of all three is needed; policies to create something new as are policies to deal with today's urgent labour market issues.

³² In line with our reasoning family policy in the Nordic countries should also be reviewed and adjusted. In the case of Sweden, Söderström & Meisaari-Polsa (1995) show that family policy was formed during the golden age of industrialism in the 1960s with the explicit aim of increasing female labour force participation. At this time Swedish industry was desperate for labour as was the expanding public sector, which meant that the large labour reserve then constituted by women in the home could be utilised in a better way (Jörberg 1983, Schön 2000). That the family policies may be reviewed does not mean that we argue that women should be sent back home. The demand for female and male labour, as well as the demand based upon competence, age and origin, is different in the post-industrial society as compared to the industrial society. If the current family policy is based on the needs of industry's demand for labour in the industrial society context adjustments may be needed so the family policy will continue to fit the needs of the post-industrial society.

10 Concluding Remarks

The findings

Ageing does not have a negative impact on economic growth and welfare *per se*. This conclusion is based on the analysis of 64 Nordic regions. A similar result is found at an aggregate level for the Nordic countries as a whole.

Demographic ageing is not, however, a phenomenon that has suddenly emerged; the trend towards population ageing was highlighted by a number of demographers as far back as the 1940s. It has taken more than 50 years for politicians and labour market institutions to react to the process of ageing and the increasing welfare burden it presages. Such a late response cannot be blamed on a sudden emergence of ageing, but rather relates to a profound institutional inertia. Institutional adjustments are possible since ageing is a slow process; although valuable time has been lost, there is still time to act.

At the national level the Nordic populations will continue to grow, while the regional population imbalances will be accentuated; some regions will experience a significant population decline while others will experience the opposite. To a large extent ageing and welfare service provision is a *regional challenge*. This challenge relates to the (in)efficiency of the labour market where labour market institutions will potentially be put under enormous stress and adjustments to a new population structure will be needed.

The regional simulations and scenarios produced in this study for the period 2020-2030 indicate that more efficient labour market institutions, leading to a 30% decrease in the large share of persons of working age currently belonging to a potential labour reserve, would lead to a welfare burden similar to what we experience today – in some regions it would even be even better than today. Without any institutional change in the labour market the simulations and scenarios indicate that the welfare burden, in some cases, would almost double as compare to today. Furthermore, the simulations and scenarios for the period 2020-2030 indicate that immigration would only have a marginal effect.

No long-term policies have been launched to deal with the upcoming challenges of ageing. Short-term policies have, however, been launched, *e.g.* raising the retirement age, enabling older people to work longer, changing labour market legislation to favour older workers and promoting labour immigration. Further and more thorough analyses of possible policies and their impacts are however needed.

As is to be expected, the issue of how to build the post-industrial and ageing society and how to manage its welfare is highly ideological.

Implications

Incomplete structural change

To a large extent it can be argued that there is a mismatch between the labour market institutions and the functioning of the production system. While the production system in a post-industrial service economy is different it is often the case that the labour market institutions lag behind and often remain tied to the policies and dictums of the industrial economy. Labour shortages, job seekers and employers do not easily find each other, there is very low mobility, labour market segmentation etc., is high – all are outcomes of the inertia in the labour market institutions to adjust to and enter the post-industrial economy.

It must, however, be borne in mind that the creation of a society, regardless of whether it is today's society or the society of tomorrow, is highly ideological. As was discussed in the theoretical chapter, many of the institutions and interest organisations of the industrial economy are still strong and continually attempt to maintain the structure of the industrial society. A structural change in the direction of a post-industrial or service society would benefit

society in general and promote economic growth. The remnants of industrial society's vested interests groups would however be the losers. The simulations and scenarios produced in this study show what will happen if the power of these rent seekers is either broken or maintained.

The conclusion then is that the development we see today is a predictable outcome of an unfinished or incomplete structural change in the economy. The vested interests of the industrial economy are unwilling to enter the post-industrial economy. Institutional dynamism is therefore vital for progress, both economic and social. If the dynamism of its institutions disappears so will the prosperity of a country.

Medium to long term policies

As illustrated in the context of this study, many short-term policies have been launched, *e.g.* rising the retirement age, enabling older persons to work longer, changing labour market legislation to favour older workers and promoting labour immigration. This report has also shown that few, if any, medium to long-term policies have been launched and implemented to deal with the upcoming challenges represented by the welfare burden. At first glance this may seem odd, but not when the fuller picture is understood.

The introduction of a flexicurity welfare system and a liberalisation of the labour market as well as tax incentives have been mentioned in this study as possible medium-term policies to address the issues discussed. The introduction of flexicurity and a liberalisation of the labour market to *e.g.* improve matching between jobseekers and employers and to increase geographical mobility are not only very ideological in nature, but these suggestions challenge the interests of many vested interest groups. The same can be said of providing tax incentives to make labour move in the desired direction or even to make it (re)enter the labour market.

The very same problem is perhaps even clearer when discussing long-term policies. One of the suggestions of such policies was to promote the necessary structural change in the economy which would enable the post-industrial economy to create its own institutions in the labour market. This would not only lead to other or reformed labour market institutions, but, as was discussed in the theoretical chapter, also to a different type of demand for labour as compared to that of today. Again, this is something which is not welcomed by the vested interests of the industrial economy.

The conclusion here then is that the theoretical framework of this study can explain the absence of medium to long term policies to address the dysfunction of the labour market and the challenges related to ageing. The short-term policies adopted thus far are simply designed to prop up the basic structures of the industrial economy, which suits some vested interests just fine.

Regional and national development differ

Bäcklund (1997) argues in his study of the Swedish experience that one lesson to be learned from the last 150 years' development is that the correlation between structural change at a national level and at a regional level is very multifaceted and difficult to interpret. Sometimes the regional divergence has increased, sometimes it has decreased. Furthermore, the correlation shows complexity since it appears to change shape over time. Finally, structural change means that old structures and static institutional arrangements collapse to make way for new expansive structures and dynamic institutional arrangements. This is especially so at a regional level and for countries/regions dependent on an international market (as the Nordic countries are). Bäcklund (1997) also emphasises that the regions that take the lead in the process of structural change are not always those that will in the end profit most from structural change.

Seen from the perspective of regional welfare burdens the simulations showed that metropolitan regions would profit from *more dynamic labour market institutions* for the period 2020-2030. Regions like Stockholm and Rogaland are good examples of this. Some non-metropolitan regions like *e.g.* Itä-Uusimaa, Finnmark and Uppsala would also profit from more

dynamic labour market institutions. Those regions that are currently lagging – *e.g.* Etelä Karjala, Etelä Pohjanmaa, Kymenlaakso and Västernorrland – clearly showed the relatively largest gain in the simulations in terms of the effect of more dynamic institutions. At the other end of the scale, Copenhagen – a metropolitan region which has been in the forefront of the process of structural change – showed a relative loss in the simulations in respect of the period 2020-2030. This indicates that Bäcklund (1997) may be right in his conclusion. The most successful regions today will not necessarily be the winners of tomorrow.

Suggested research

This study has dealt with many thought provoking questions and many of the findings are highly interesting. One result of this study is that it has identified the need for future research on more limited research fields. The suggested research should dig deeper into the following problems.

The potential labour supply

As this study has shown, significant regional differences in the Nordic countries exist in respect of employment, unemployment, persons involved in labour market schemes, long-term sickness and early retirement, which indicates a regional heterogeneity in the potential labour supply. Potential groups of labour supply – young adults aged 18-24, elderly aged 55+, persons with immigrant backgrounds, unemployed, under-employed, long-term sick and early retirees – will be in focus here. Policies to maximise the number of persons in work for the Nordic countries will be reviewed. Differences between the Nordic regions in respect of policy outcomes and empirical development will be analysed. In many cases long-term sickness and early retirement is preceded by a long period of unemployment; long-term sickness and early retirement can be seen as a miss-use of a potential labour supply.

The aim of this suggested study is to analyse the potential labour supply of the population in working ages in the Nordic regions. For each region the number of persons employed and in work will be used as an indicator of an actual labour supply. The potential labour supply will be estimated for each Nordic region. In our analysis we will undertake some regional simulations of a future potential labour supply.

An *ex-ante* evaluation of policies

Many policies have been launched to deal with ageing and demographic challenges. As we have seen, the demographic challenges are not mainly about demography, but instead concern a dysfunctional labour market. Furthermore, the demographic aspects of the challenges are regional not national. It is of utmost importance that the solutions

- (1) address the right problem. Thus seeking to correct a dysfunctional labour market with *e.g.* policies on demography will fail.
- (2) are implemented at an appropriate policy level. If the problems are at a regional level, a nationwide policy will not solve them.
- (3) that the time perspective of the policy is correct. The challenges ahead, demographic or not, are long-term in nature and will not be solved by short-term ‘fixes’.

An *ex-ante* evaluation of possible policies to address the challenges of ageing and the welfare burden will provide national and regional planners, administrators and decision makers with valuable knowledge on what outcomes certain policies will have. This knowledge will simplify their planning, decisions and implementation in respect of ageing and the welfare burden.

The aim of this suggested study is to evaluate short, medium and long term policies that are addressed to deal with future ageing, the welfare burden and labour shortages. This

evaluation should include *e.g.* necessary pre-conditions for the policies, the level of policy implementation, and the expected effects in a short, medium and long term perspective.

Best practices

In many respects the Nordic regions face similar challenges so there is potential in learning from each other. It would then be useful to make a simple inventory of the existing policies in these areas employed in the Nordic countries and their regions. An analysis of the successful and less successful policies to deal with these issues could lead to a useful guide in terms of best practices.

Many municipalities and regions in the Nordic countries run projects today on ageing, the welfare burden and labour shortage. The practical experiences of this work should be analysed in order to elucidate the ‘state of the art’ in respect of public (and private) policy responses to these future challenges.

Final remarks

Several myths exist concerning future population development in the Nordic countries. Good examples here are *e.g.* the belief that the population in the Nordic countries will decrease, that an ageing society will reduce economic growth and welfare and that an ageing society will suffer from labour shortages. Alas, the same fallacies exist in respect of the functioning of the Nordic labour markets – they are far less efficient than most of us actually believe. This study has dealt with each of these myths and dismissed them in turn. The simulations and scenarios for the period 2020-2030 show that overall population development is not the problem rather it is the dysfunctional nature of labour market.

This study cannot find any empirical evidence for the proposition that ageing *per se* has had a negative influence on economic growth in the Nordic countries during the period 1980-2007. This conclusion is based on the analysis of 64 Nordic regions over the period 1994-2007. A similar result is found at an aggregate level for the Nordic countries as a whole.

To a large extent the question of ageing and welfare service provision is a *regional* problem. While national populations will continue to grow regional population imbalances will be accentuated. Since the regional population imbalances are an already ongoing process, the labour market problems – *e.g.* mismatch and labour shortage – will themselves become very challenging indeed even without demographic ageing. As such, demographic ageing does not cause these labour market problems, it merely aggravates them.

The population challenge now faced relates to (in)efficiencies in the labour market. while ‘ageing’ is a long-term process. It is then of the utmost importance to distinguish between long-term and short-term problems in relation to the issue of labour supply. Situations of long-term labour shortage have led to labour being replaced through technological, institutional and organisational changes historically, leading to productivity improvements. As a result they have resulted in increased growth, and in the creation of an economic surplus through economic growth as a condition of welfare. Short-term labour shortage is a constantly recurring problem. If the distinction between long-term and short-term labour supply problems is not made, the risk of an attempt being made to solve long-term problems with short-term measures, and *vice versa*, increases. If so, the challenges now faced may become even more troublesome.

In most Nordic countries voices have been raised regarding the issue of labour shortage, employers have difficulty in finding the labour they need, and immigration is needed to fill the vacancies. In a market economy however there is really no such thing as a true shortage of labour. If you want more of something you simply *pay more* and have it. When employers say that there is a shortage of workers what they really mean is they cannot get enough workers at the price they want to pay. If the employers raise wages more labour is willing to pick up that work and the “labour shortage” is reduced.

The regional potential labour supply as a share of the labour force is actually quite large in most regions. In reality then peripheral regions with a “labour shortage” also show the largest potential labour supply. This indicates that the supply of potential persons to the labour force is not the main problem in respect of the labour supply, but that the institutions in the labour market continually fail to allocate labour efficiently and thereby fail to fill the vacancies. This potential labour reserve can, however, only be utilised if there is a real demand for the kind of labour which this group contains. If employers continue to reject e.g. persons of 50+ years, immigrants, single mothers, young adults and those from the ranks of the former long-term sick no changes will take place.

The development we see today is a predictable outcome of an unfinished or incomplete structural change in the economy. The labour market institutions must adjust to the post-industrial reality. The industrial society, with its specific economic characteristics, will not return. Labour mobility must be augmented and more symmetrical migration flows must be established while the matching efficiency must also be increased. The large potential labour supply has to be utilised to the fullest possible extent, *i.e.* the dysfunctions of the labour market must be addressed and dealt with and the industrial labour market institutions adjusted to the new post-industrial realities.

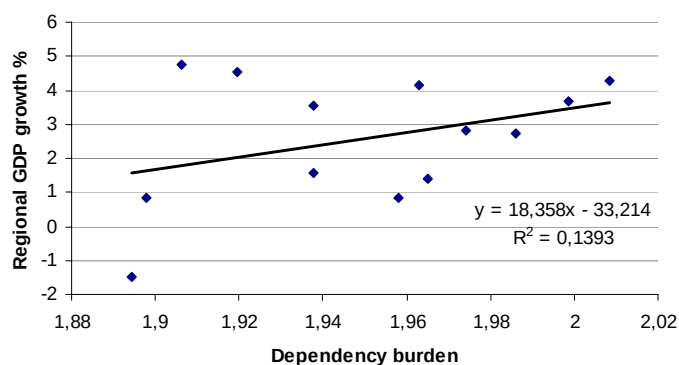
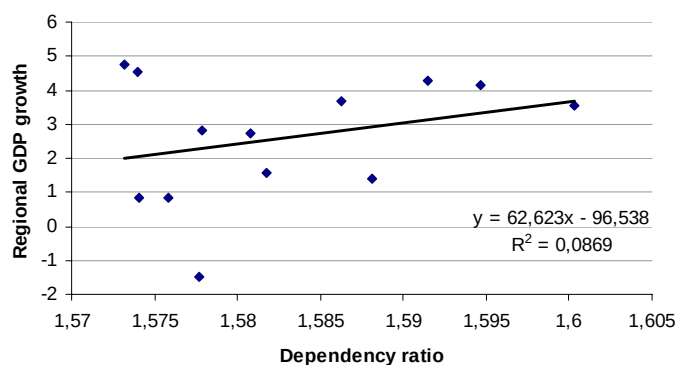
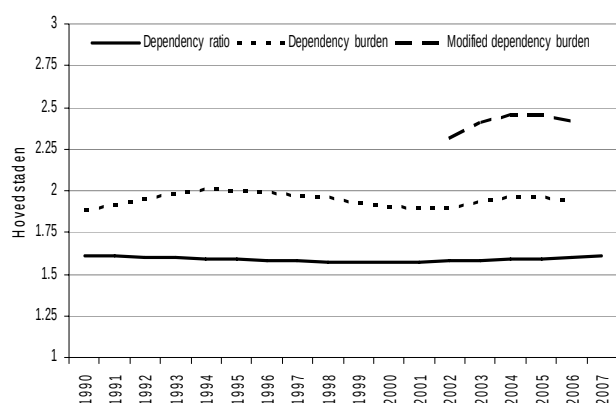
Appendix A: Regional Profiles

Denmark

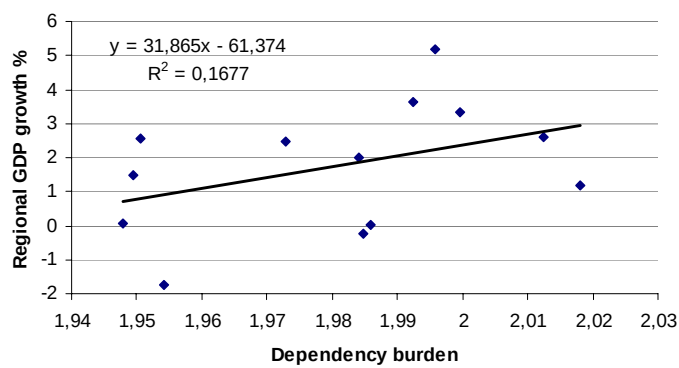
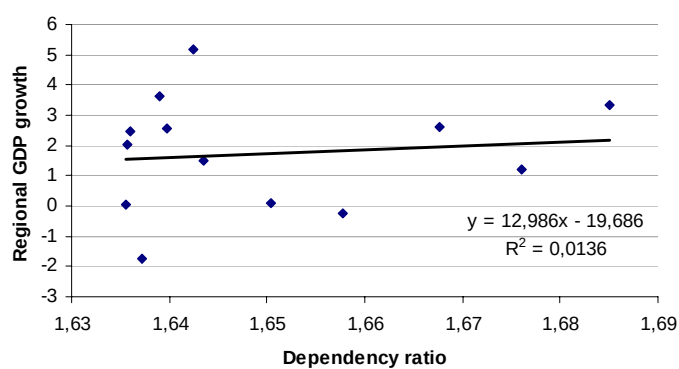
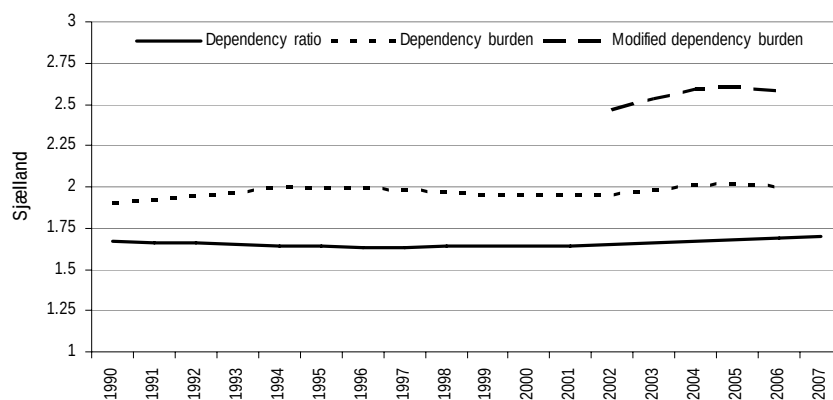
Correlation data for Denmark covers the period 1994-2006.

Data on sick leave and parental leave only covers the period 2002-2006, which is too short to estimate the correlation between regional GDP growth and the modified dependency burden.

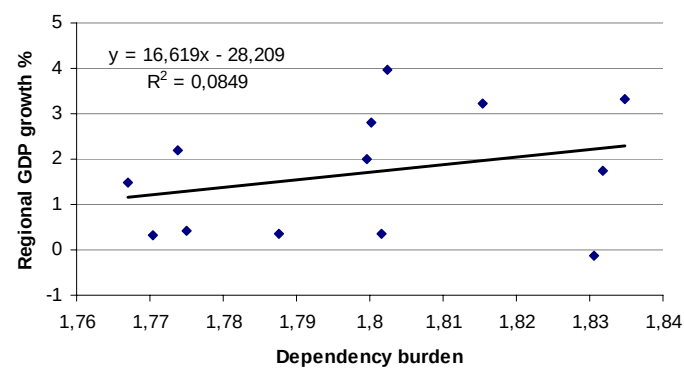
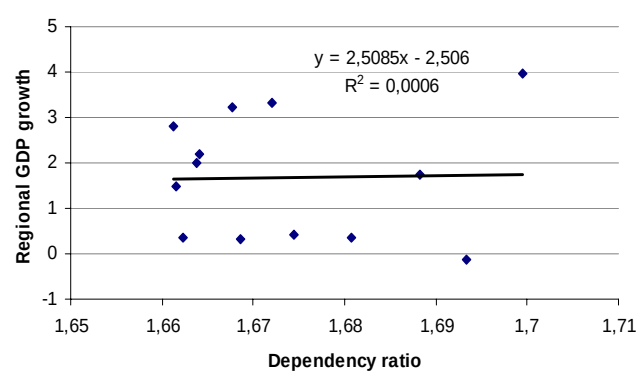
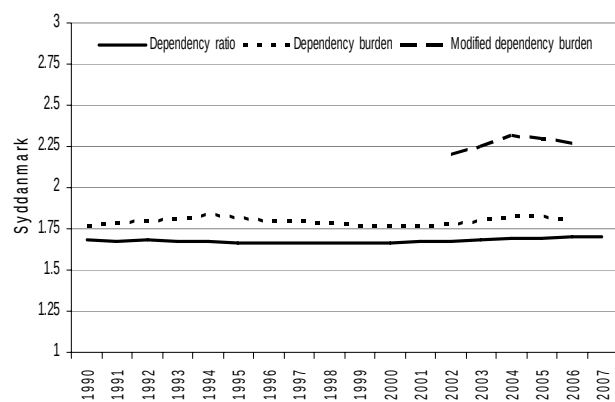
Hovedstaden



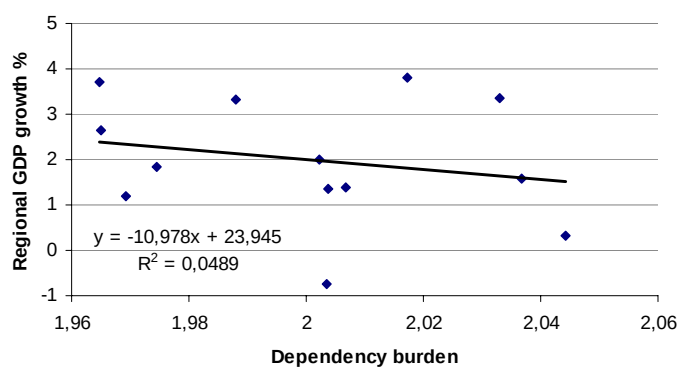
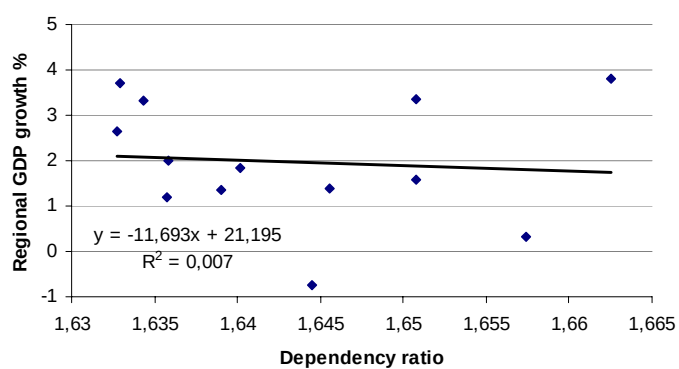
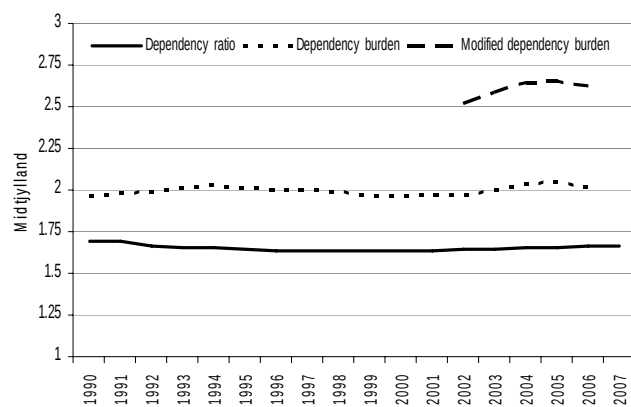
Sjælland



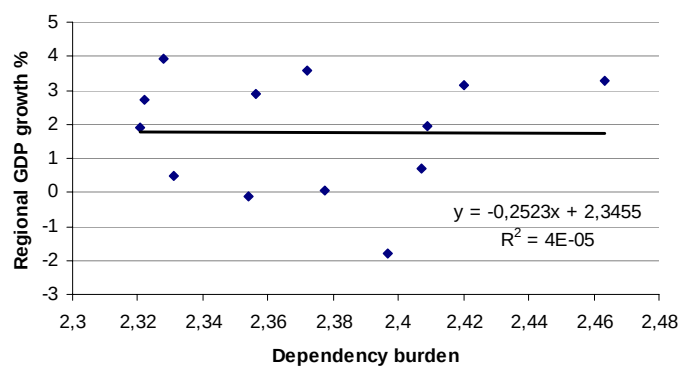
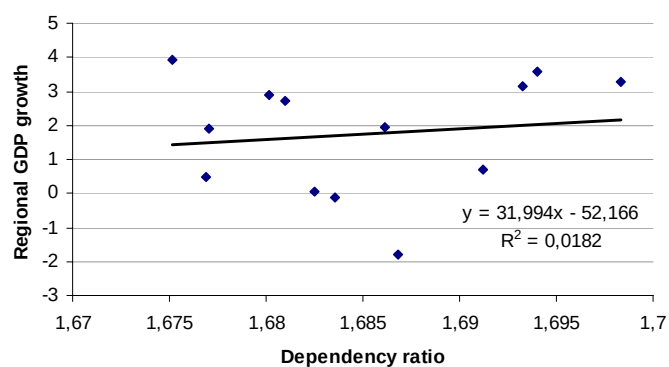
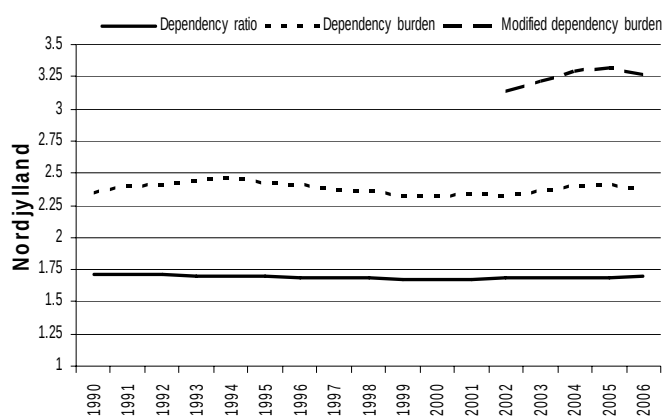
Syddanmark



Midtjylland



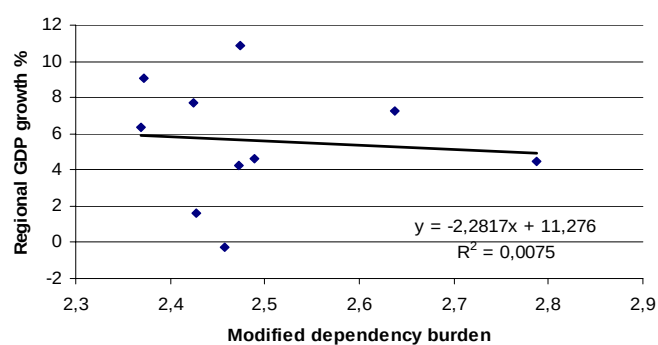
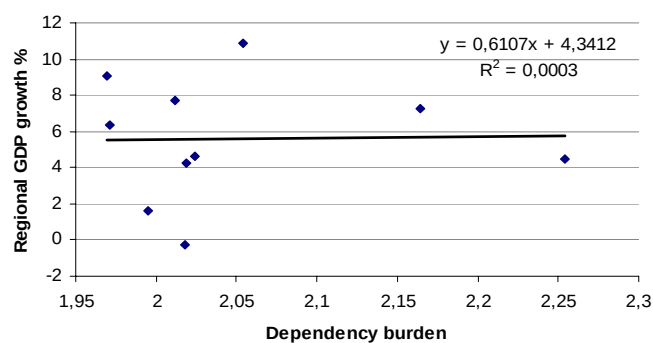
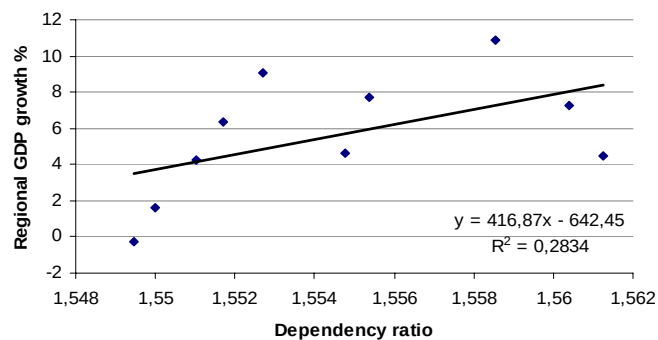
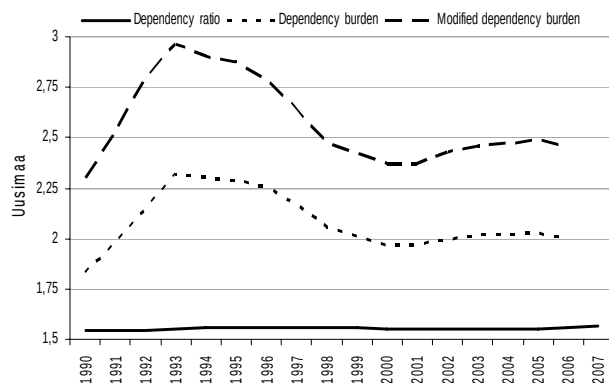
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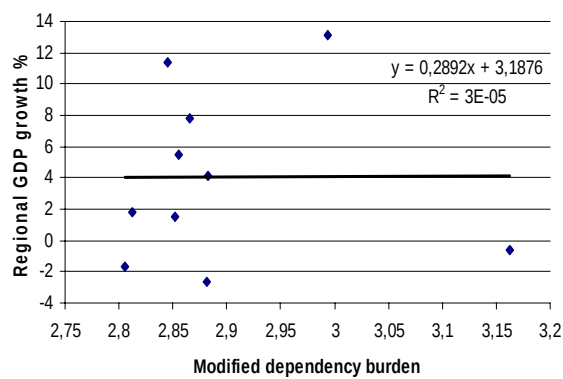
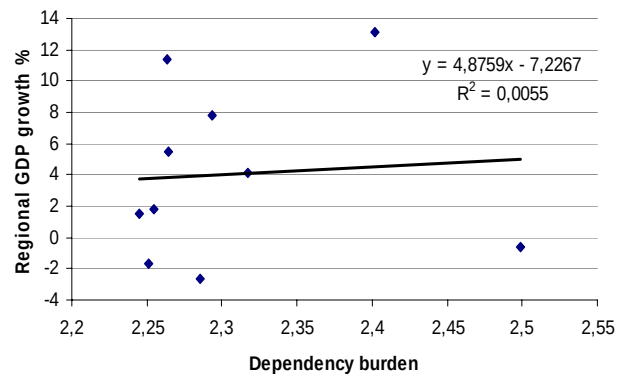
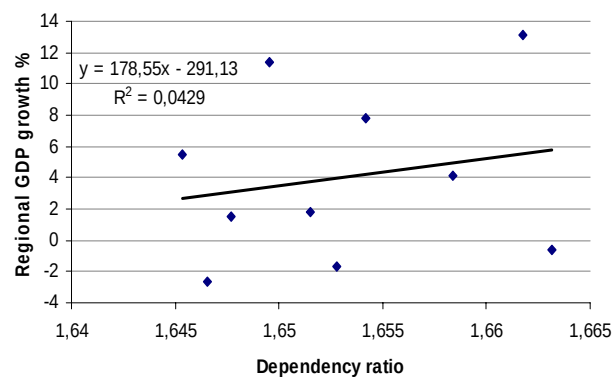
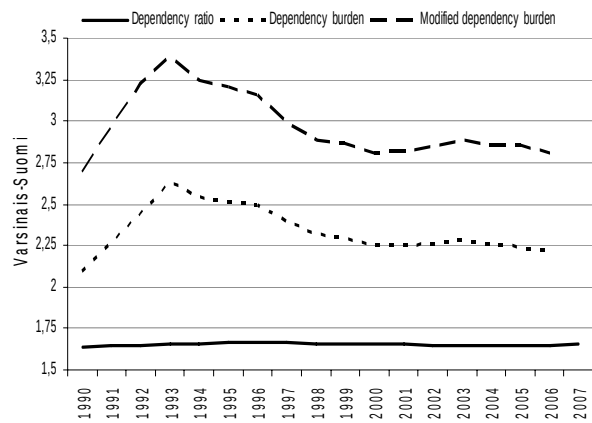
Finland

Correlation data for Finland 1996-2007.

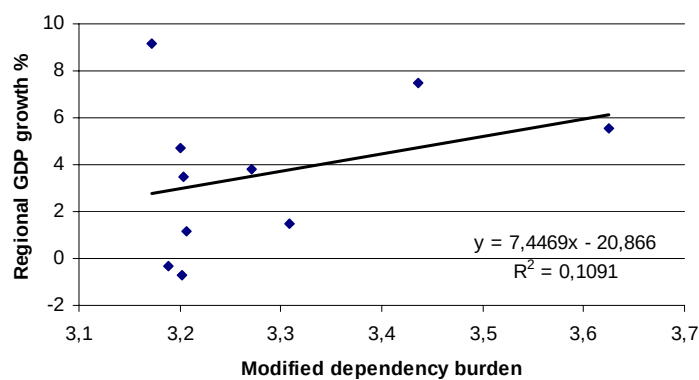
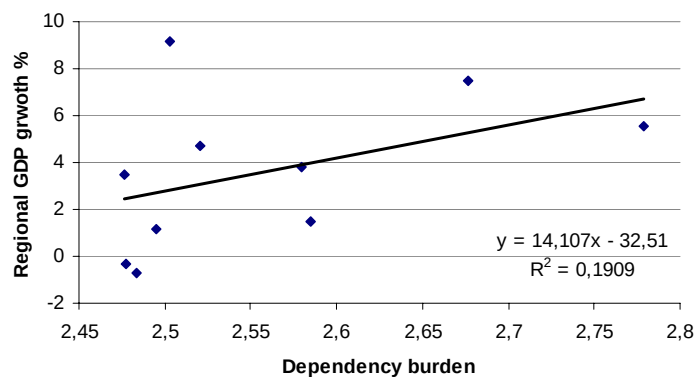
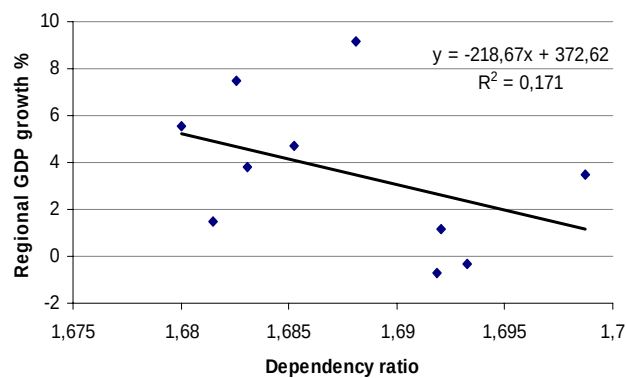
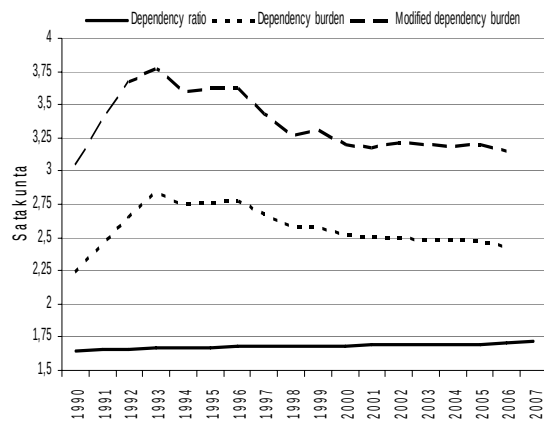
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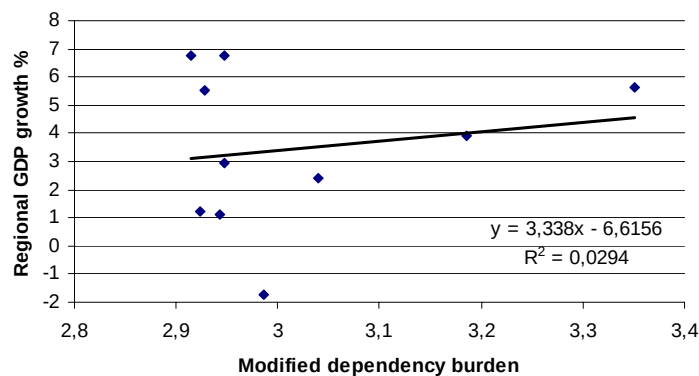
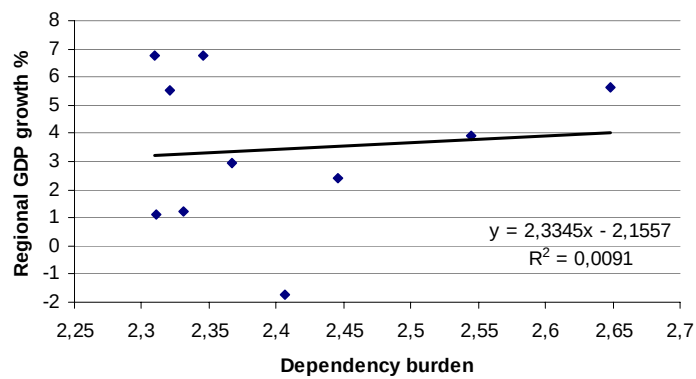
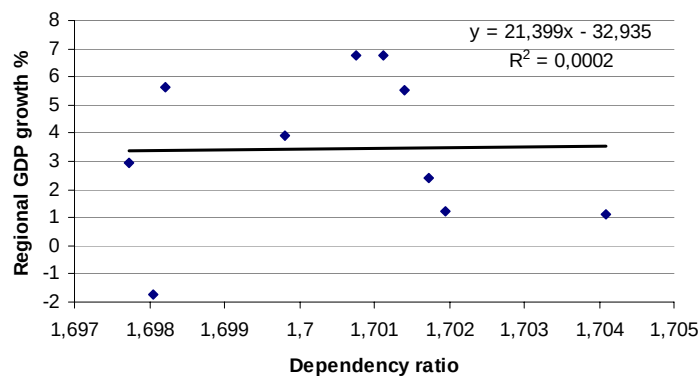
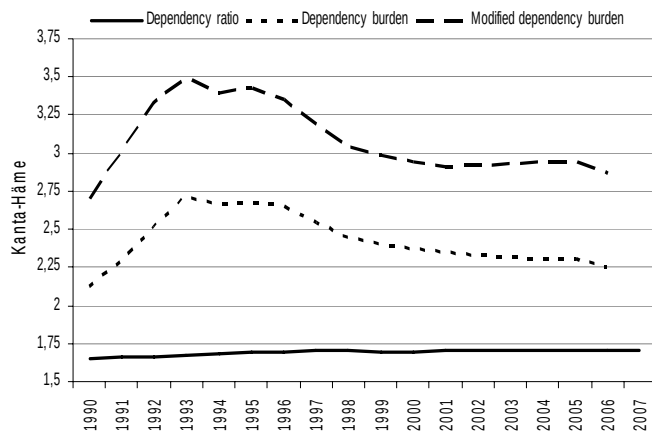
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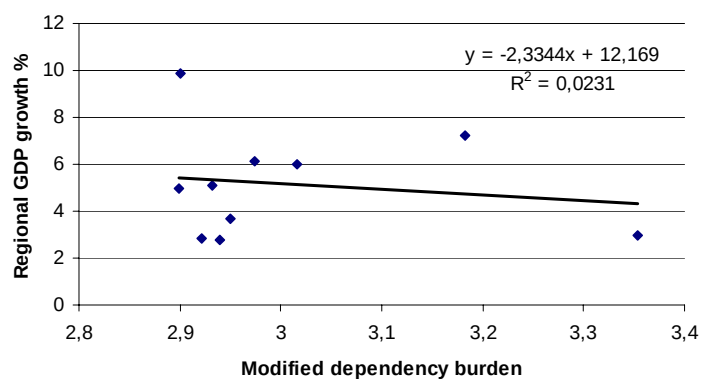
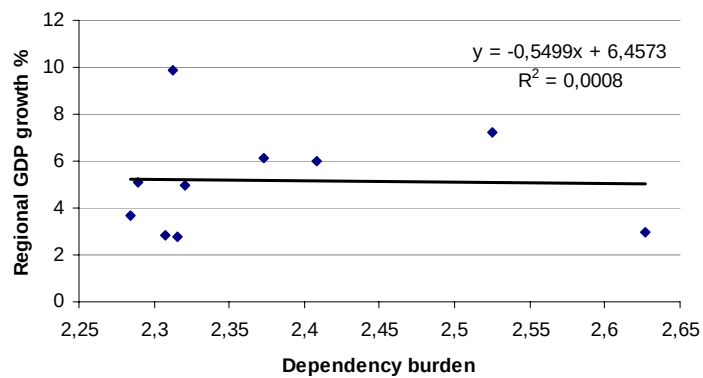
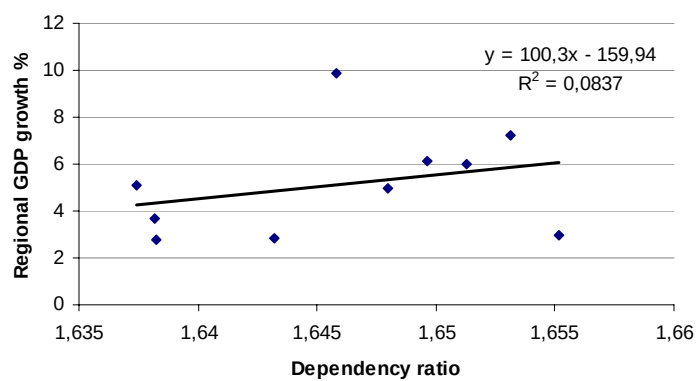
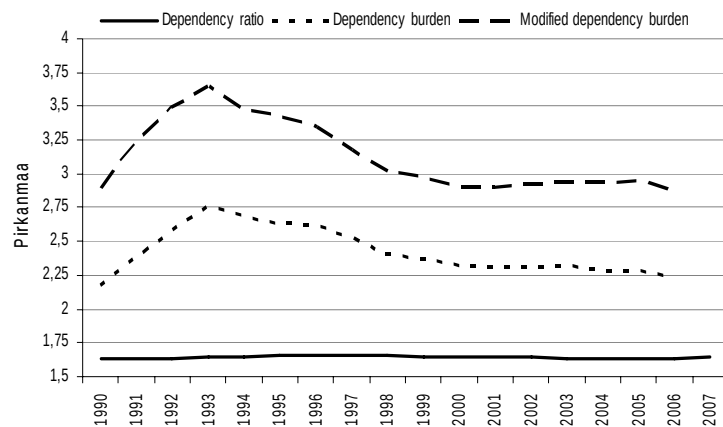
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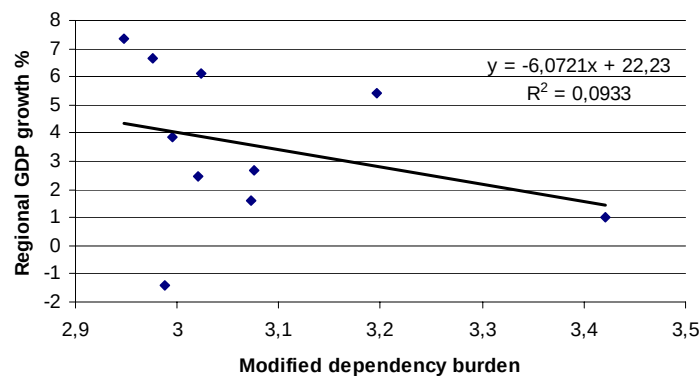
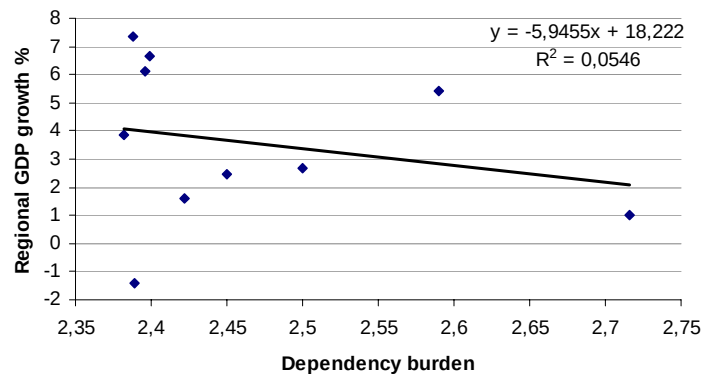
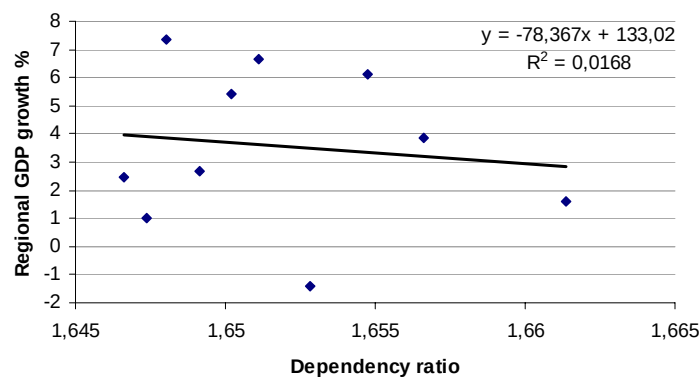
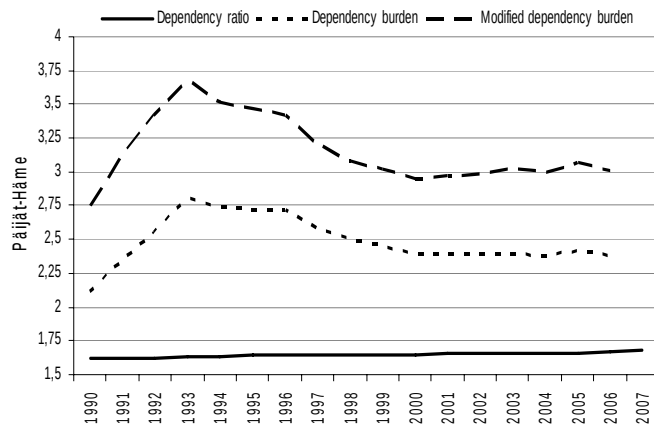
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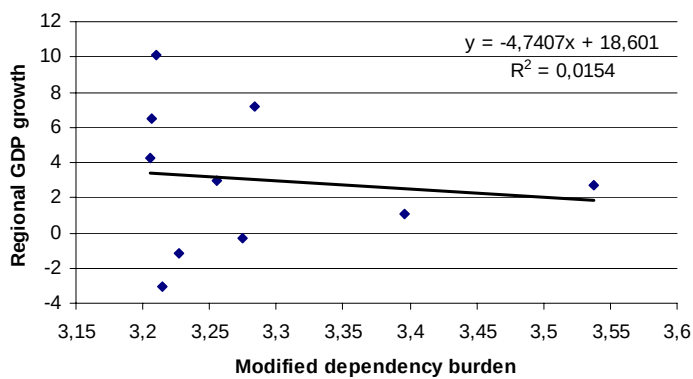
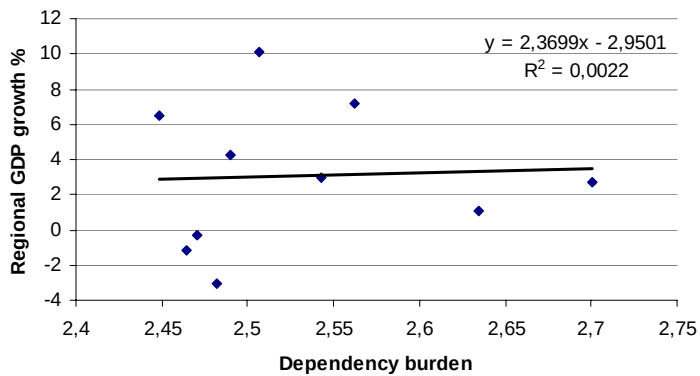
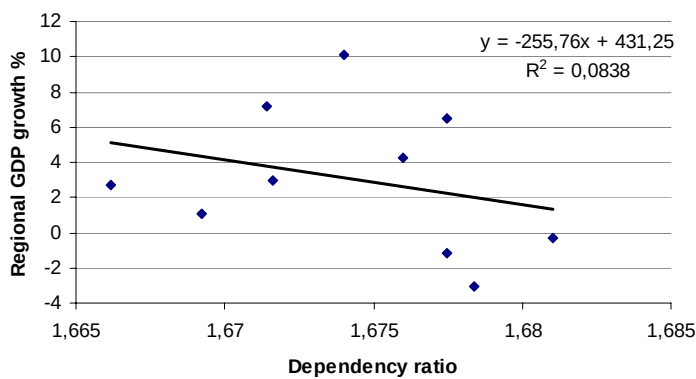
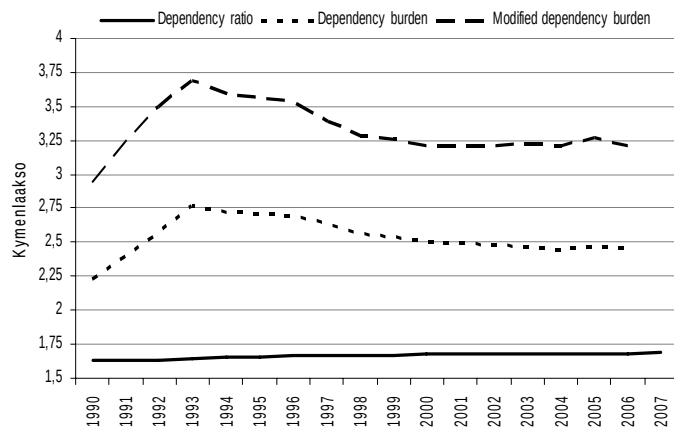
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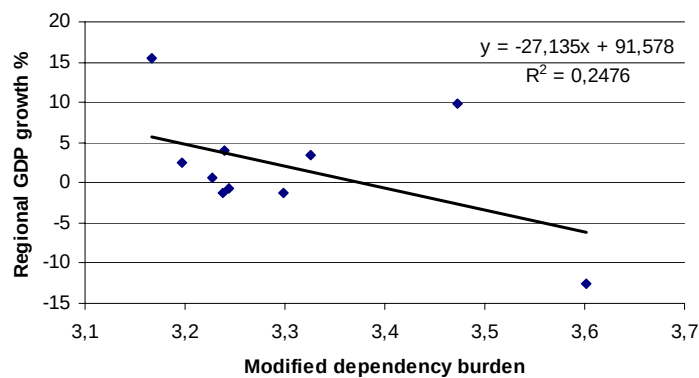
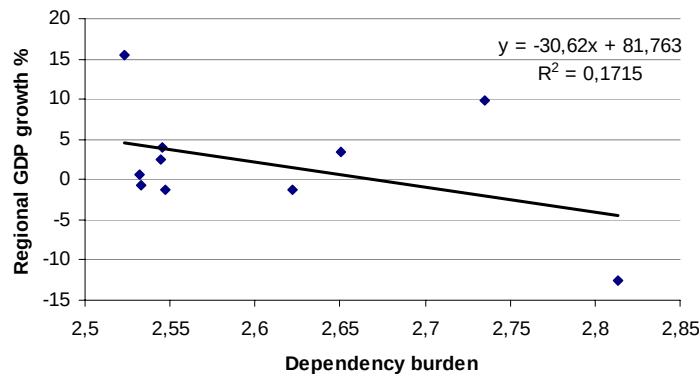
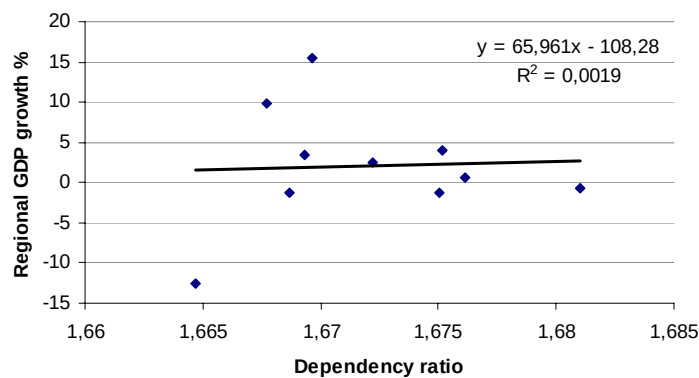
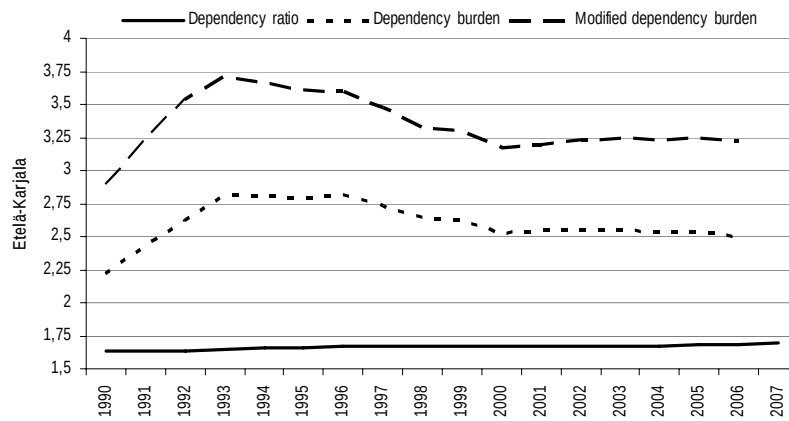
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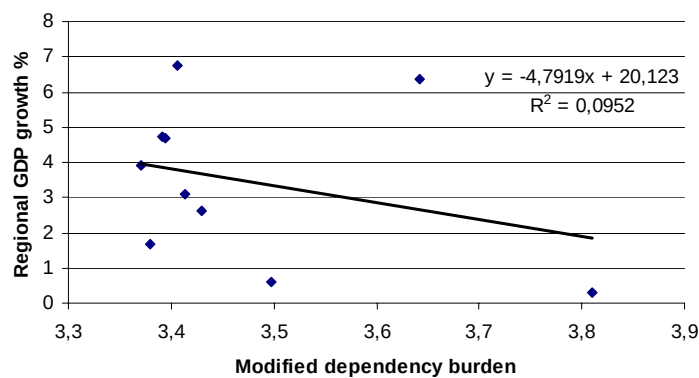
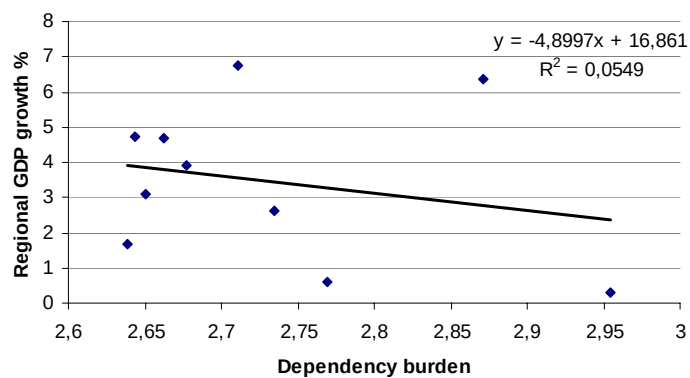
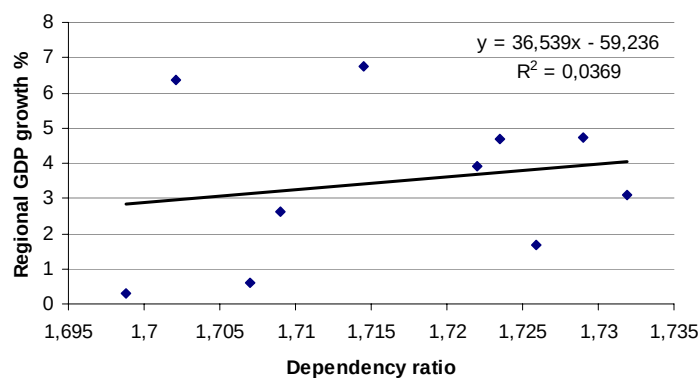
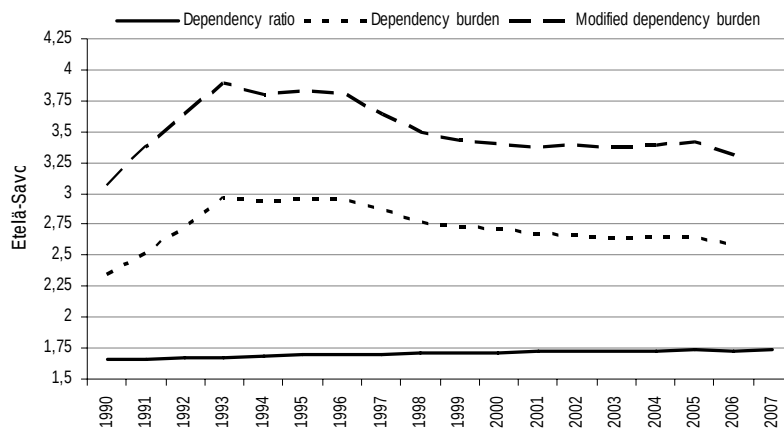
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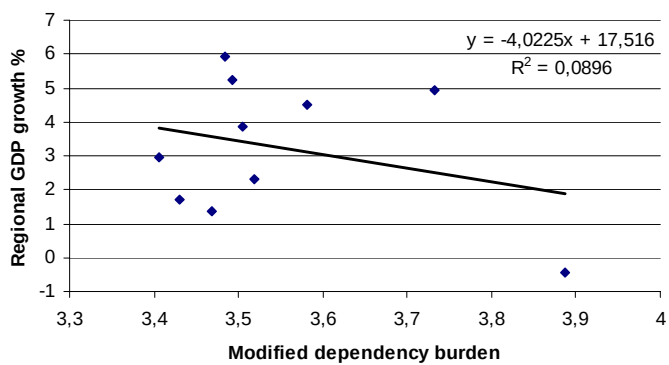
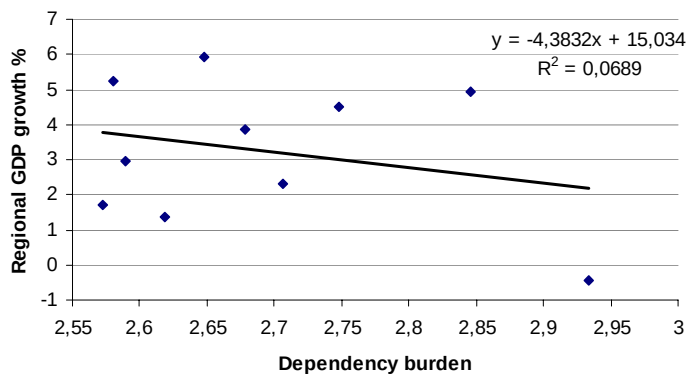
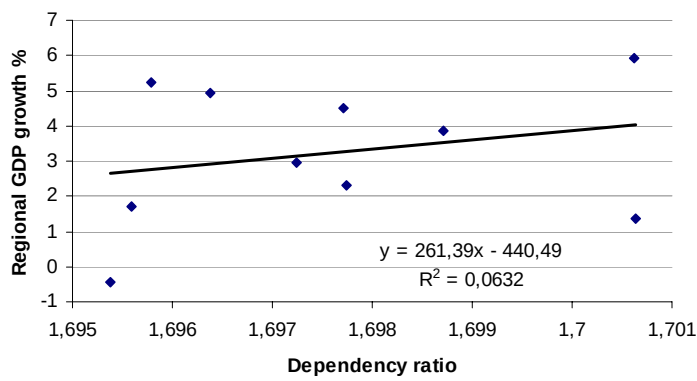
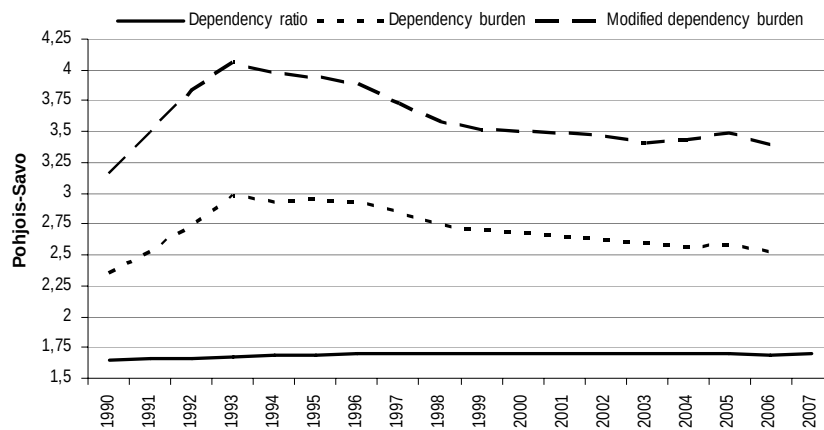
Etelä-Karjala



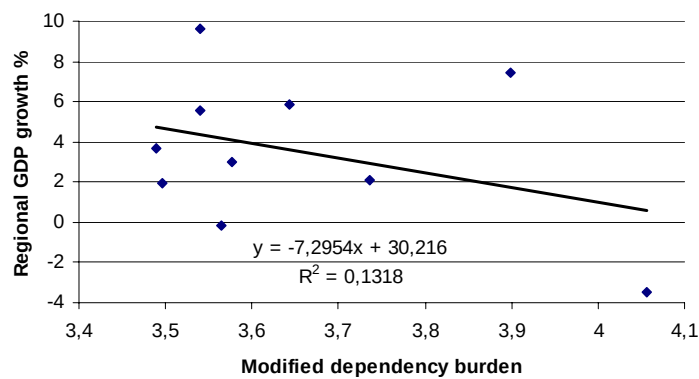
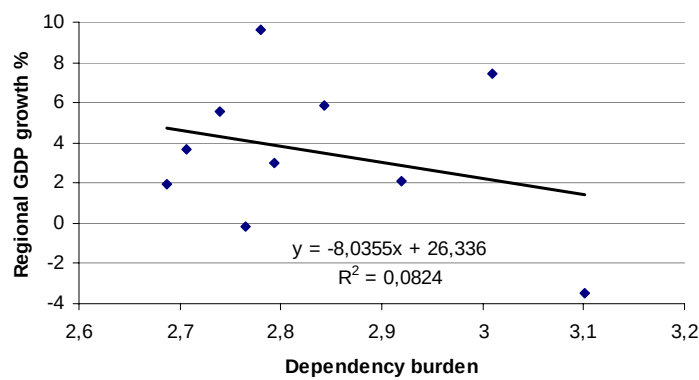
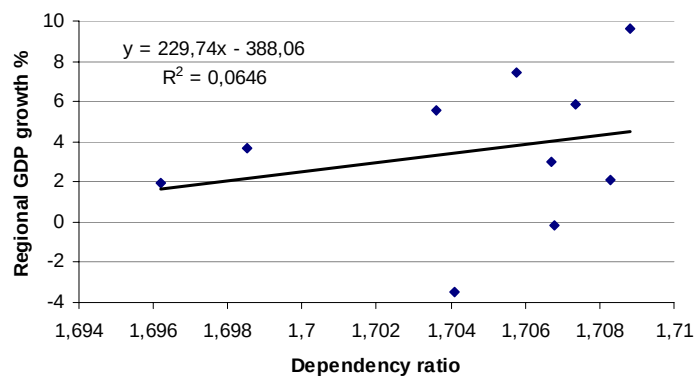
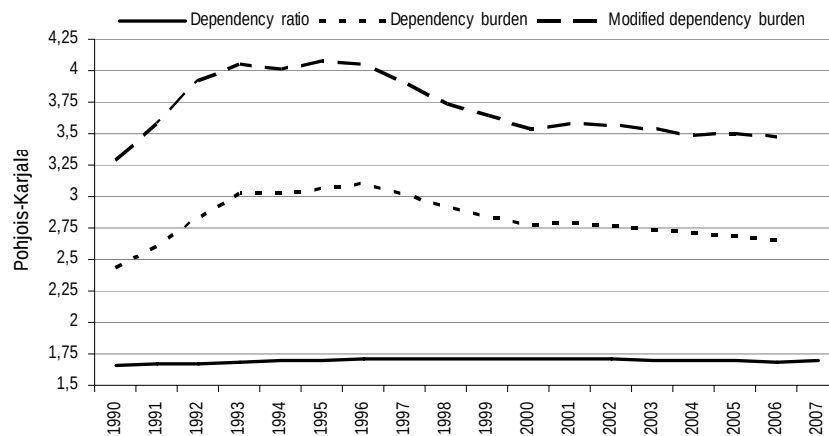
Etelä-Savo



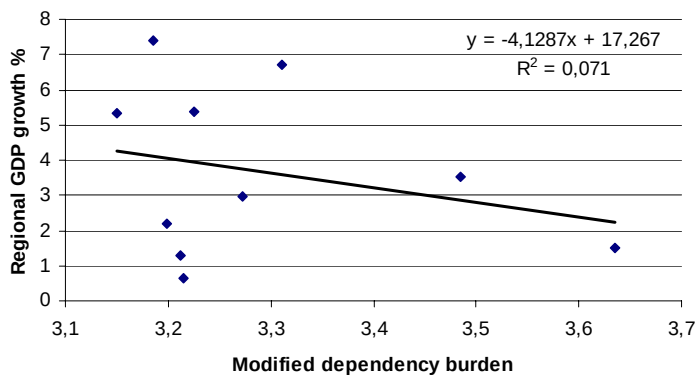
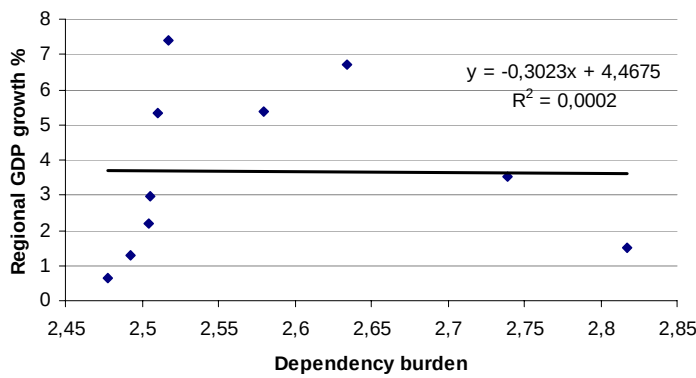
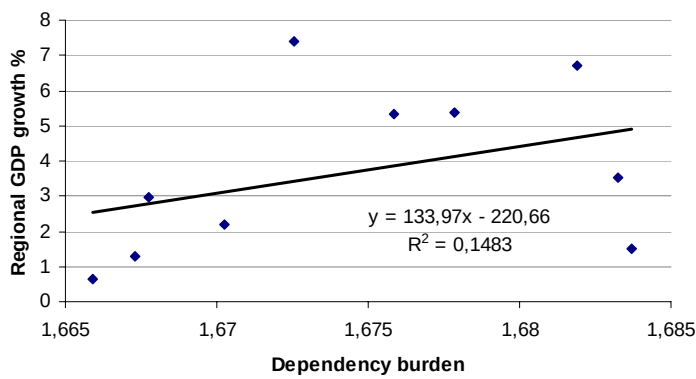
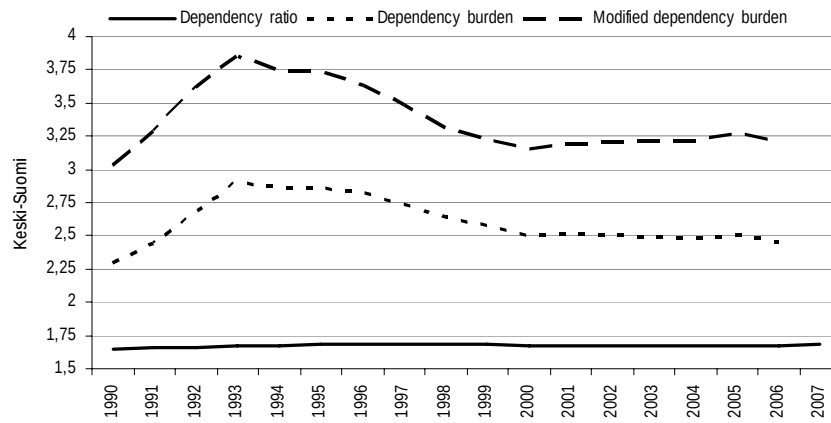
Pohjois-Savo



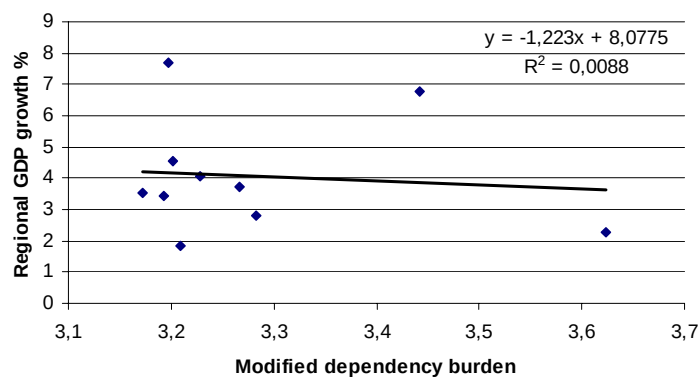
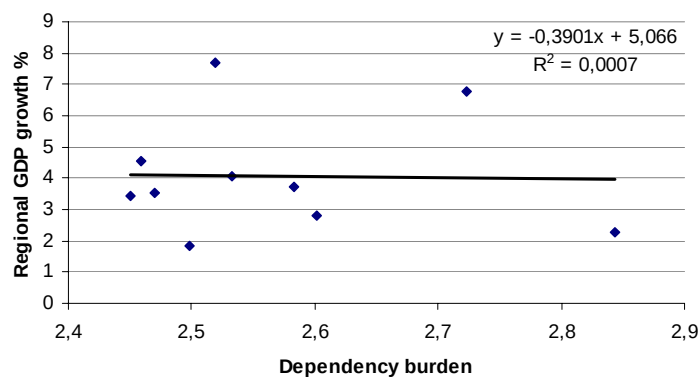
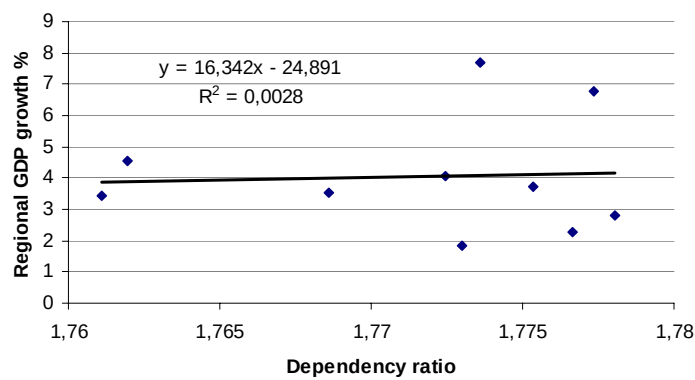
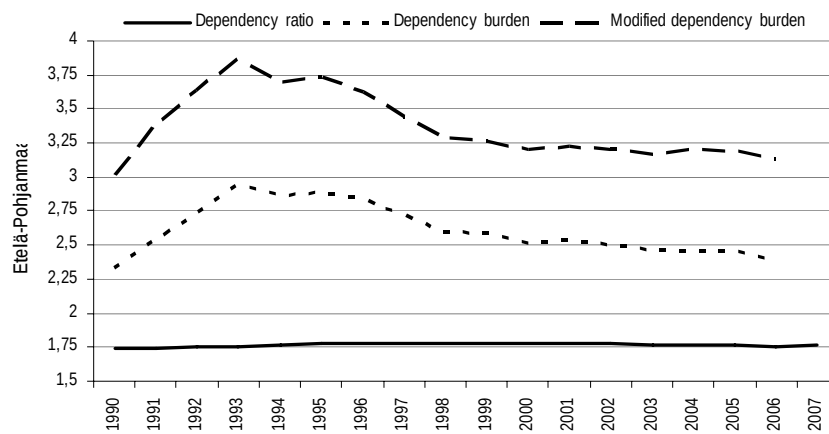
Pohjois-Karjala



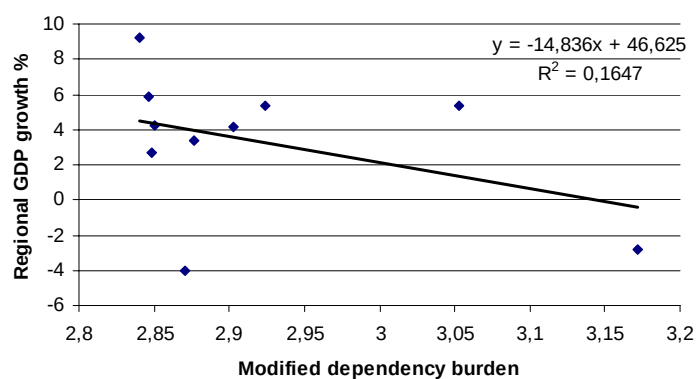
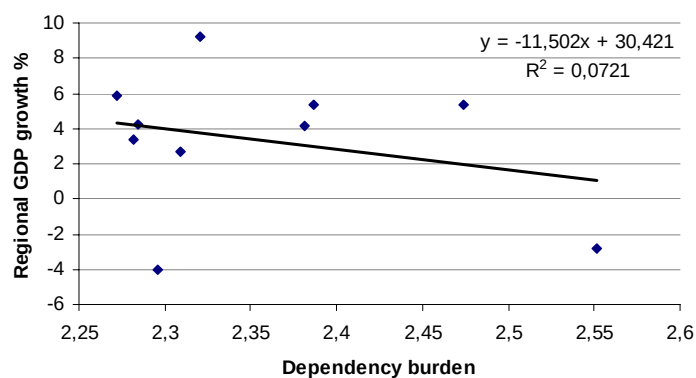
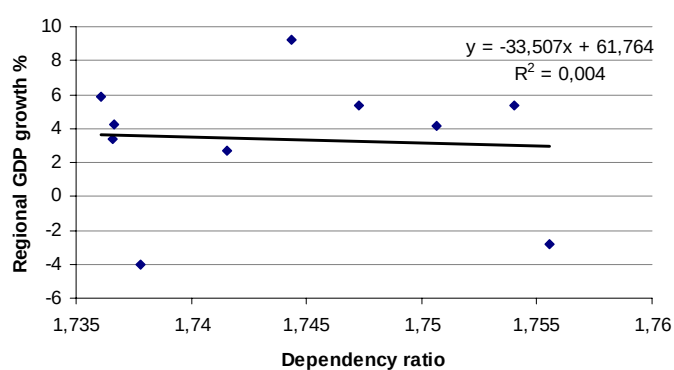
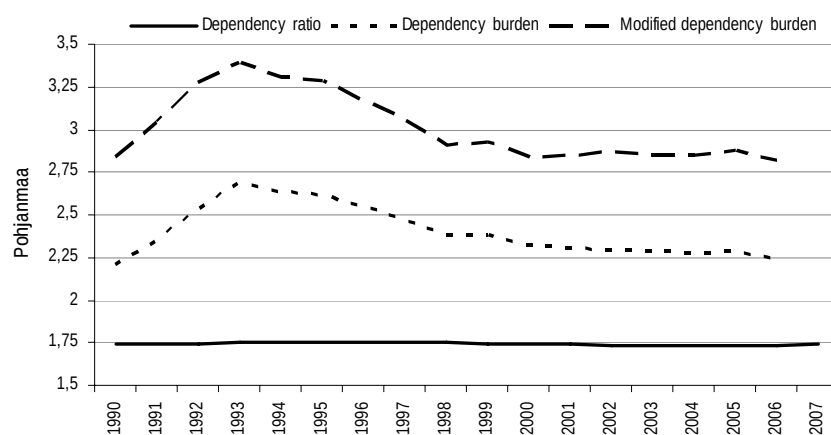
Keski-Suomi



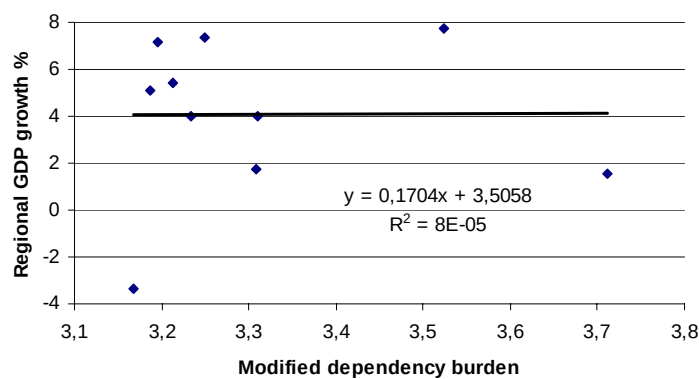
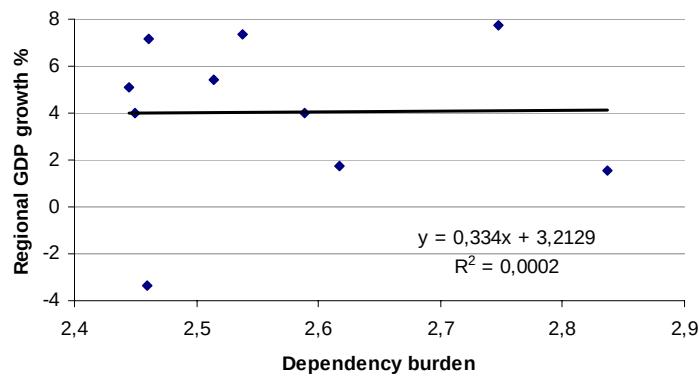
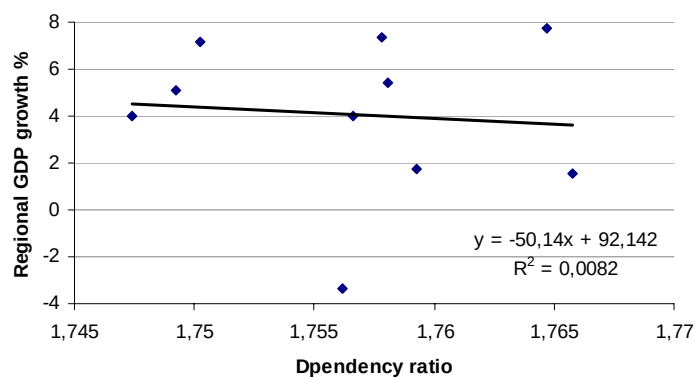
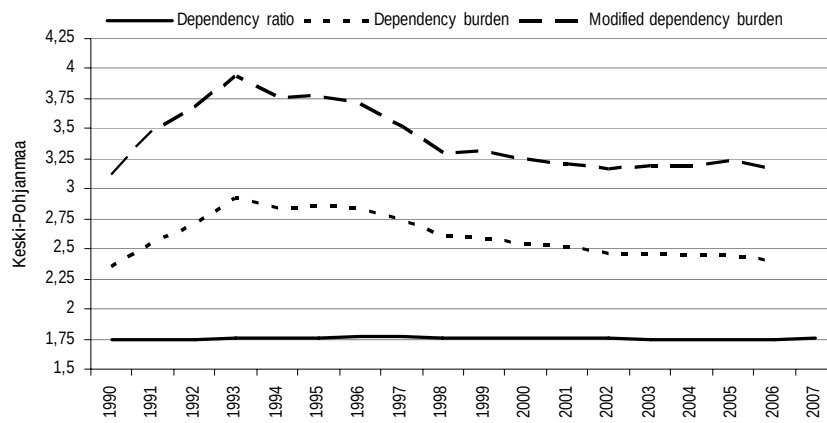
Etelä-Pohjanmaa



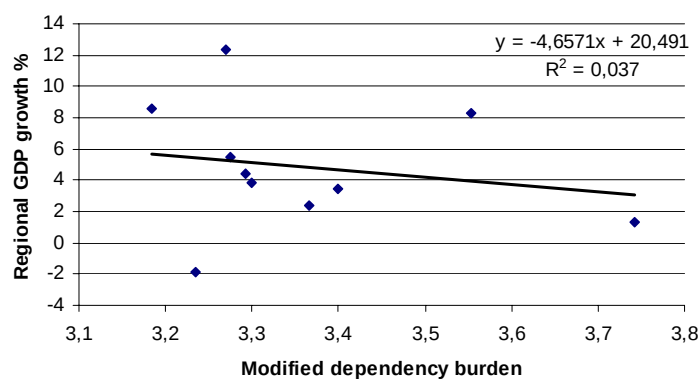
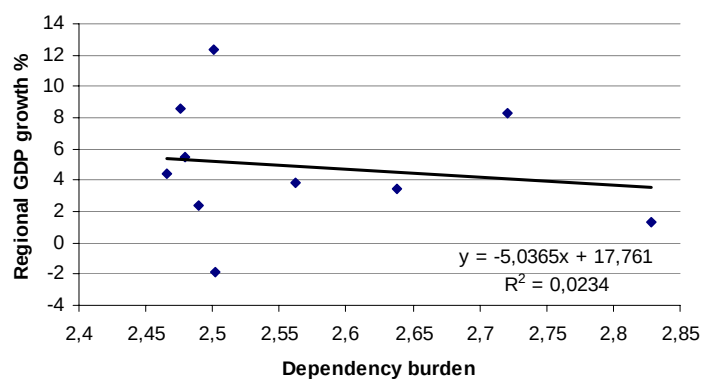
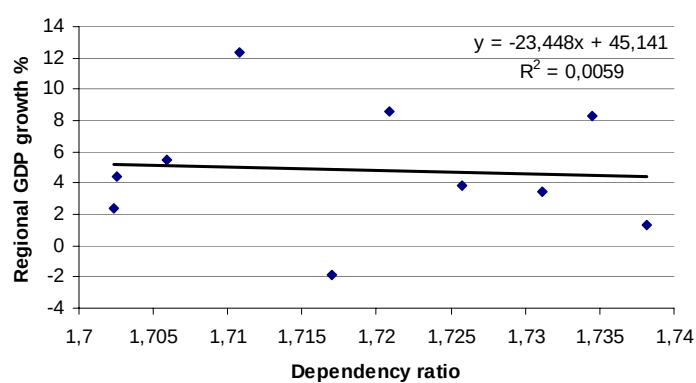
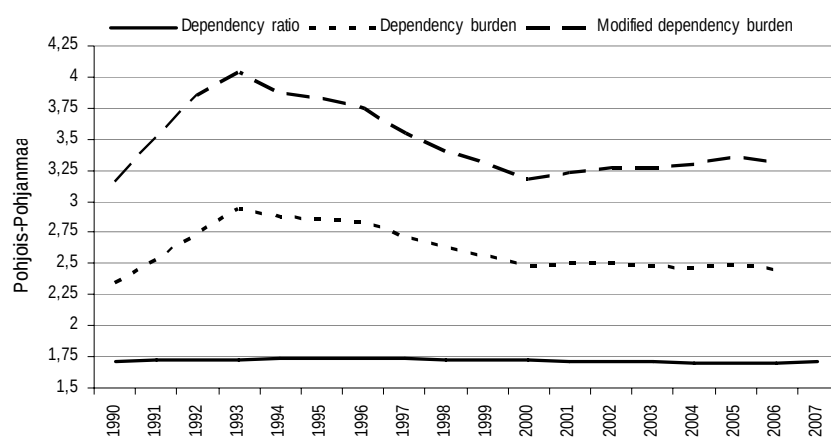
Pohjanmaa



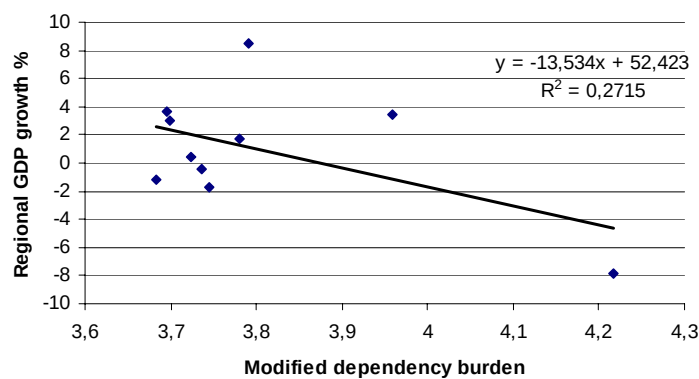
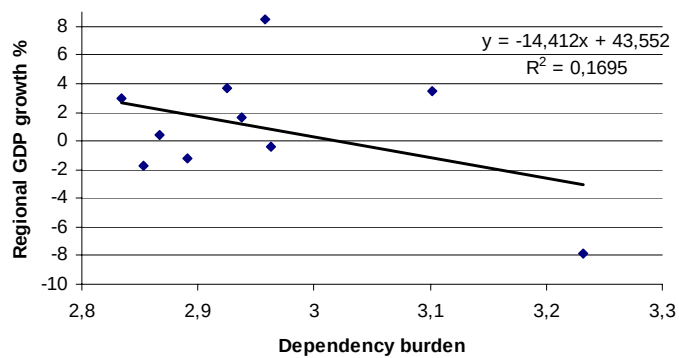
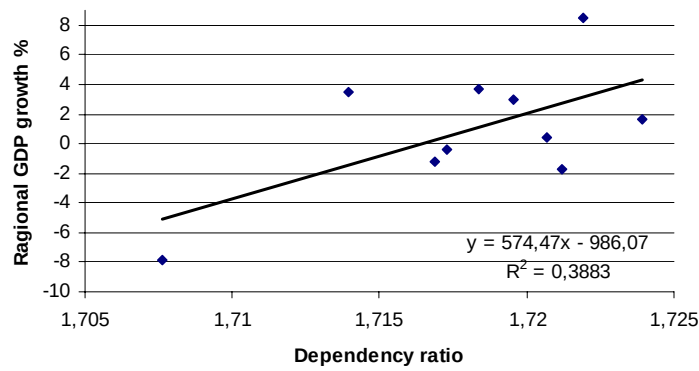
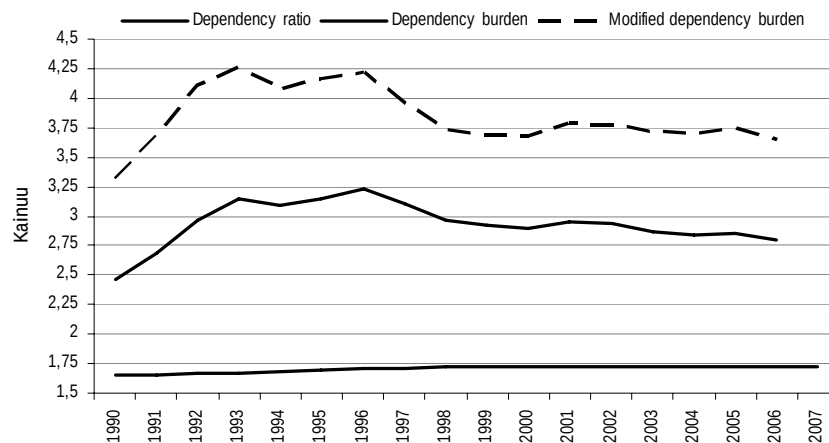
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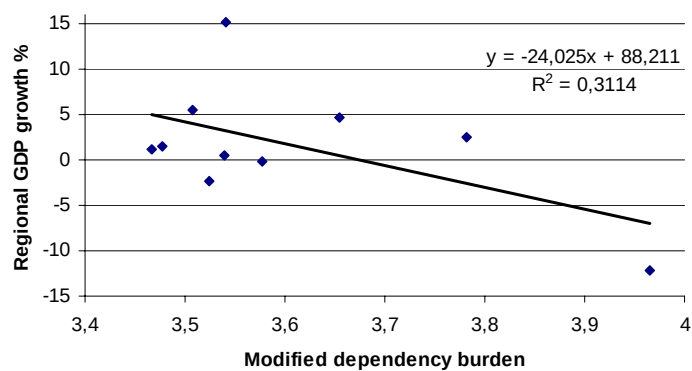
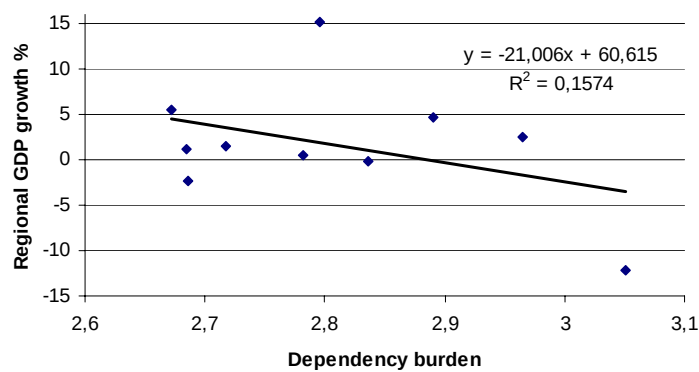
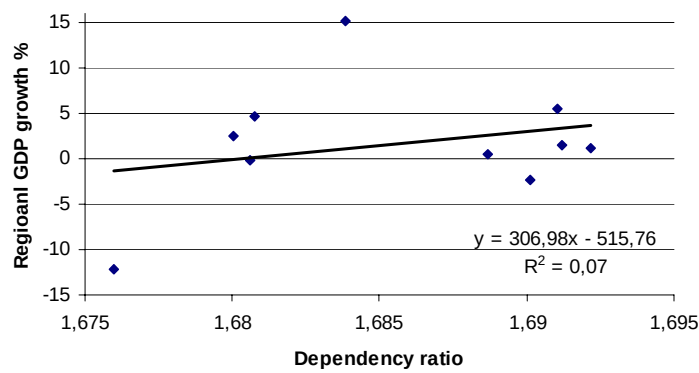
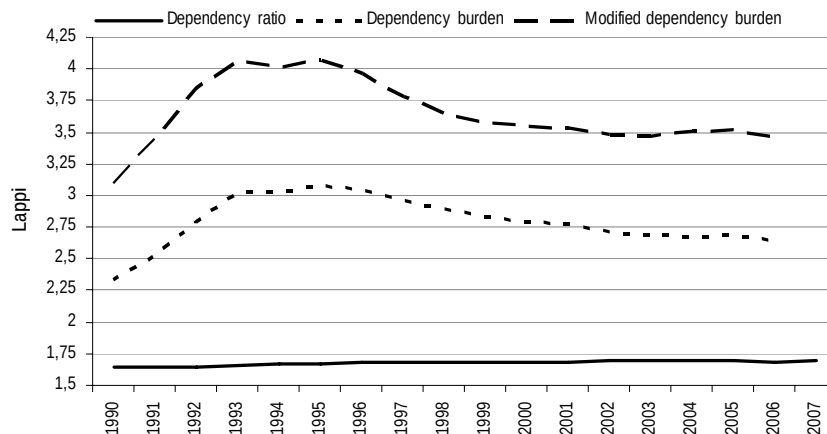
Pohjois-Pohjanmaa



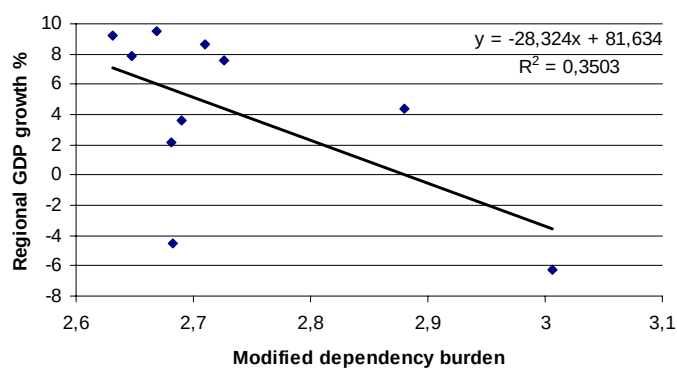
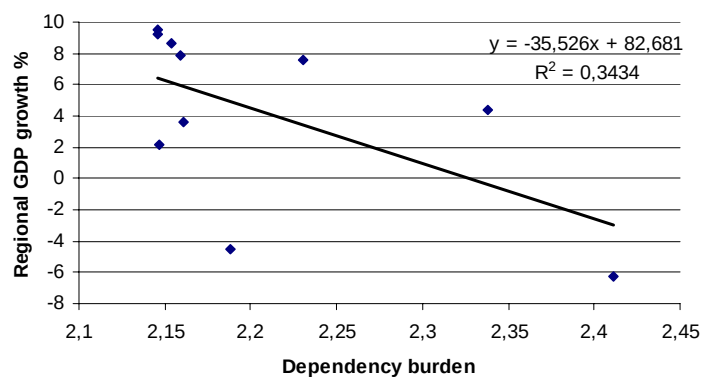
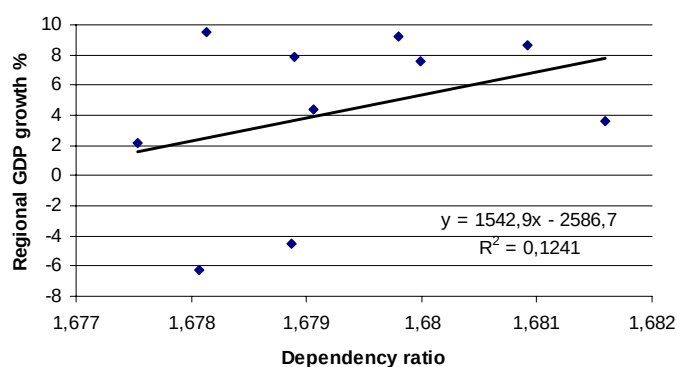
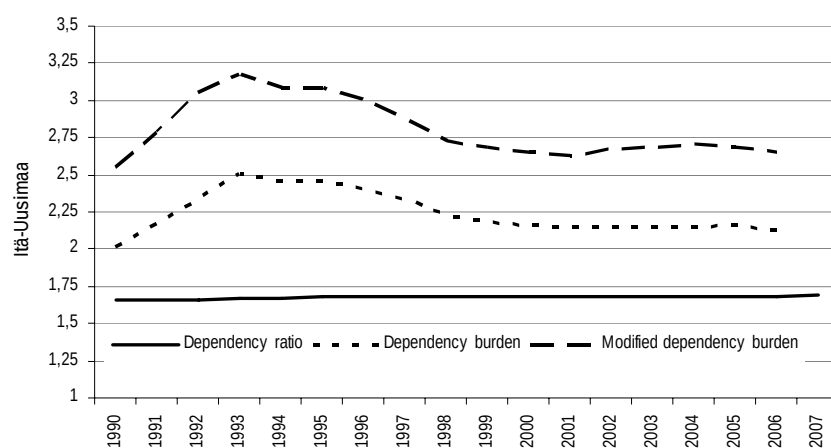
Kainuu



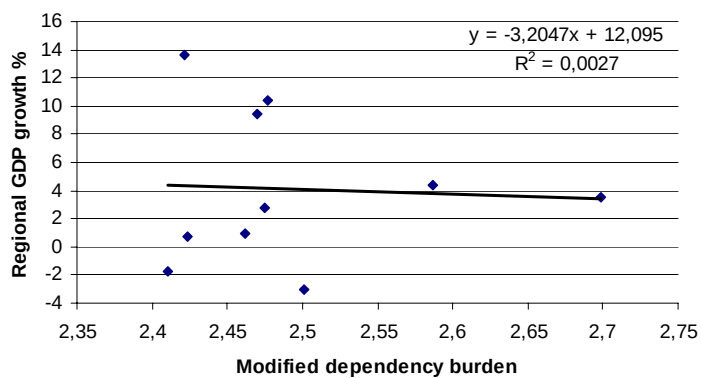
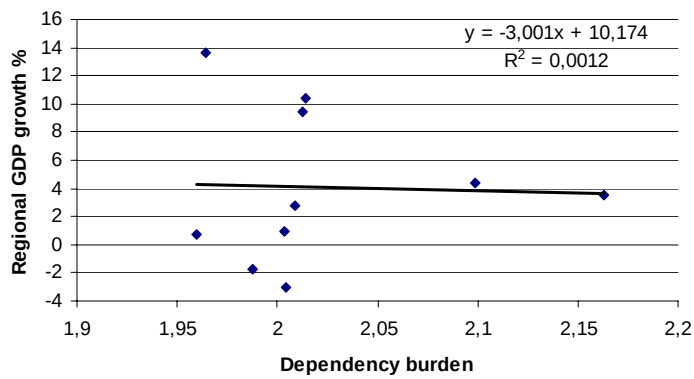
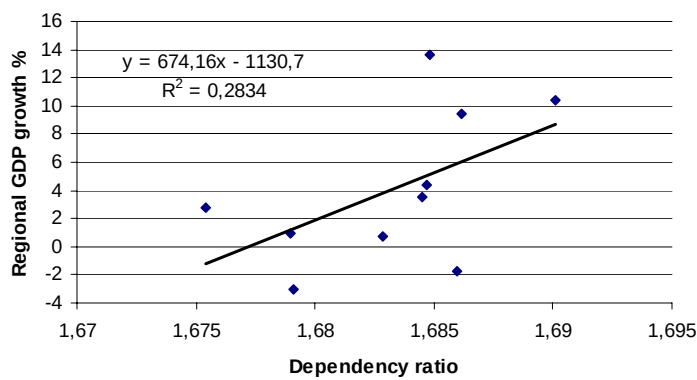
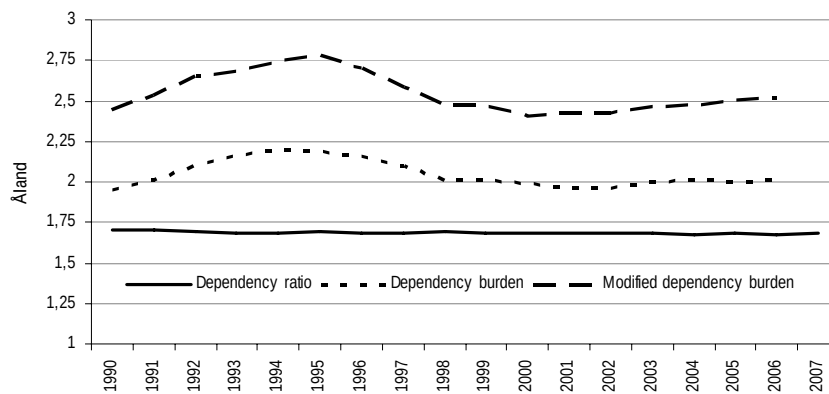
Lappi



Itä-Uusimaa



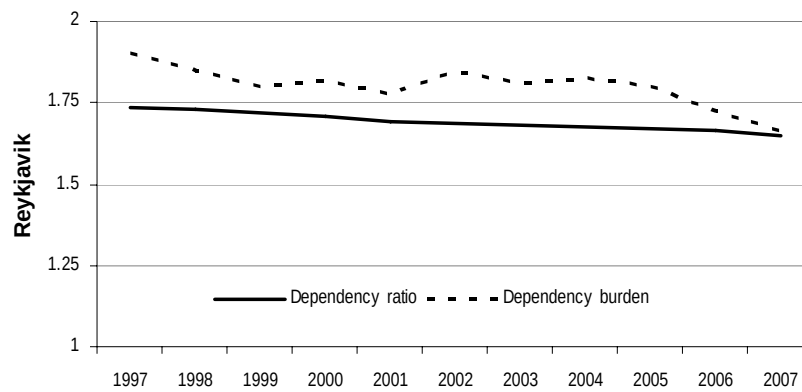
Åland



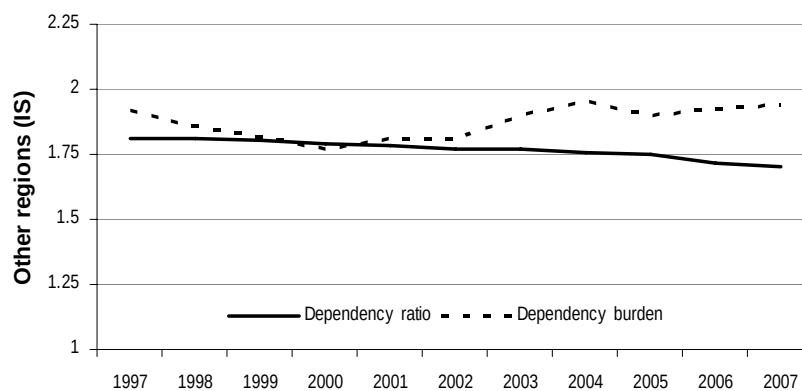
Iceland

No regional GDP growth data for Iceland.

Capital region



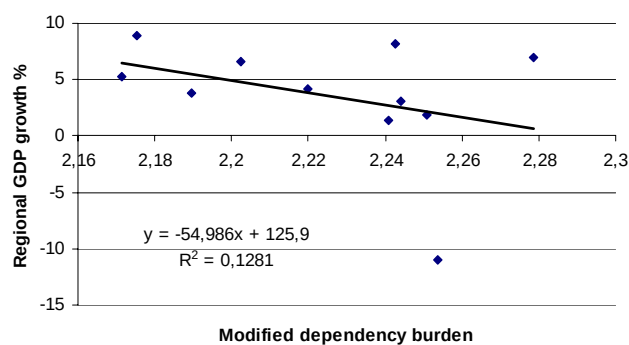
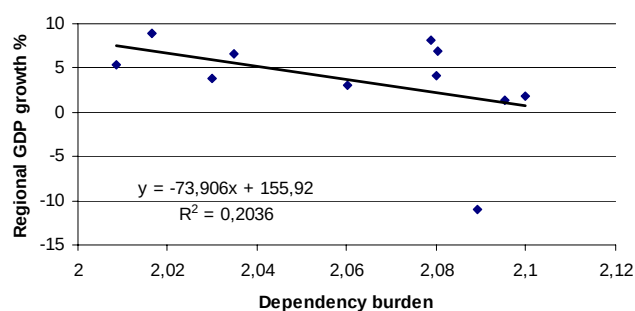
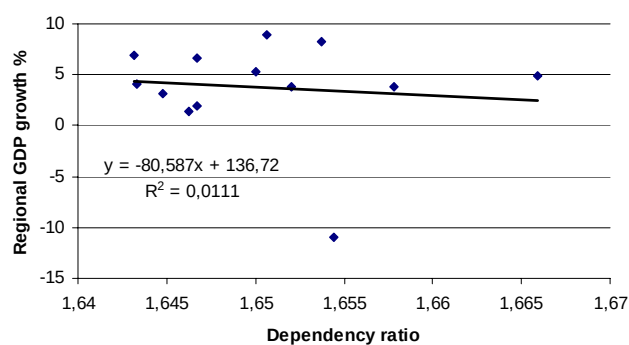
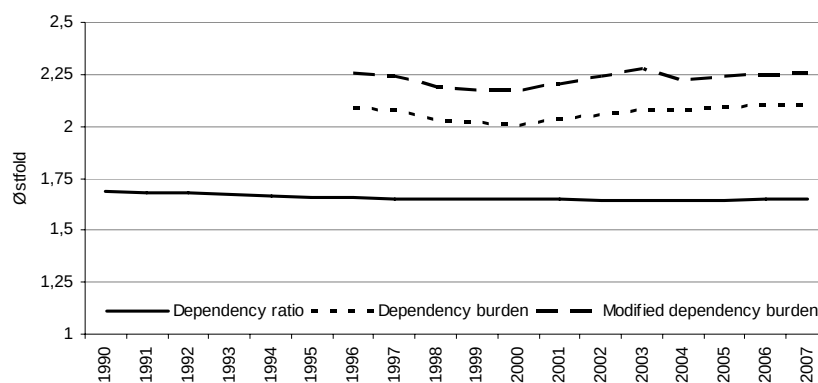
Other regions



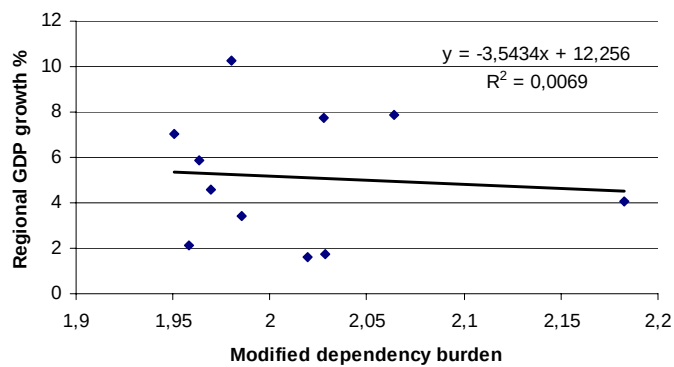
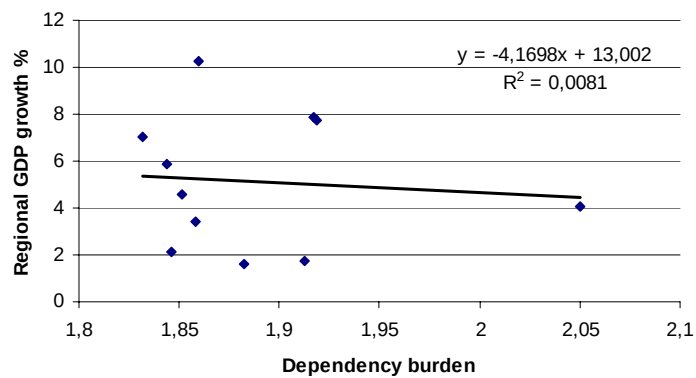
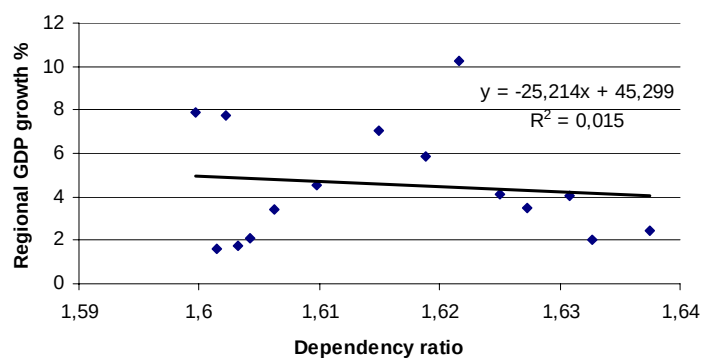
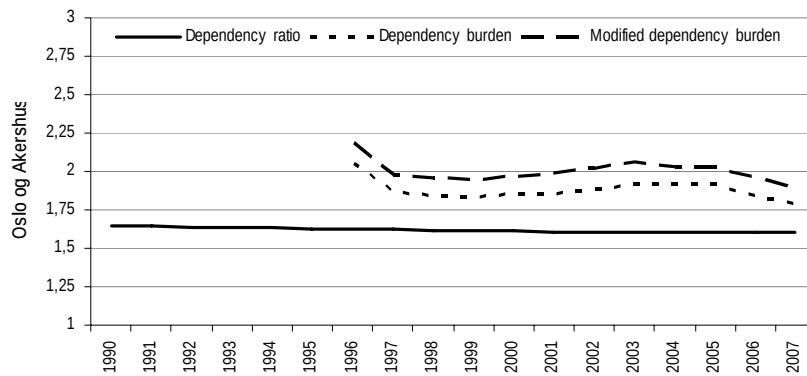
Norway

Correlation data for Norway 1996-2005

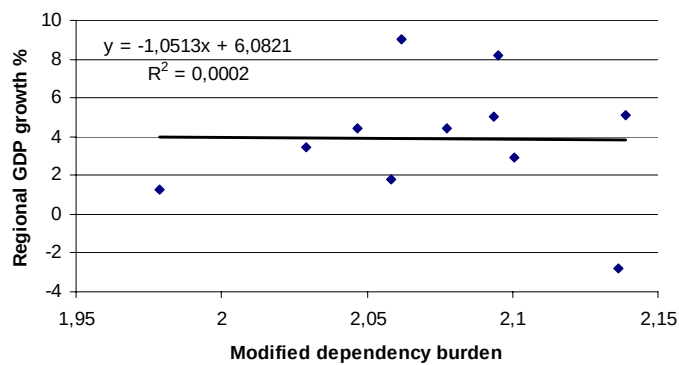
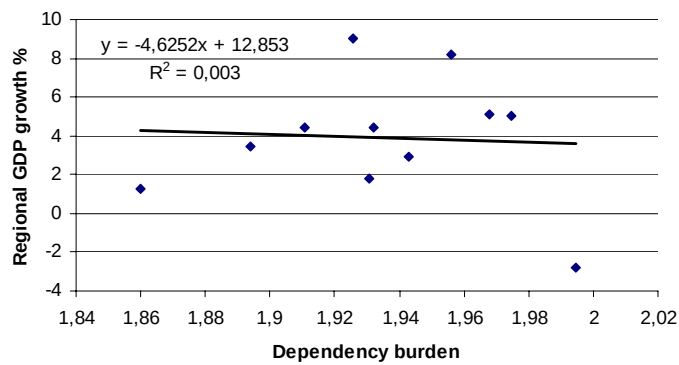
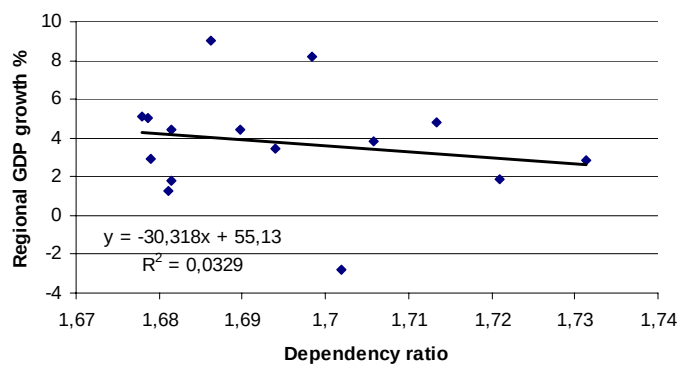
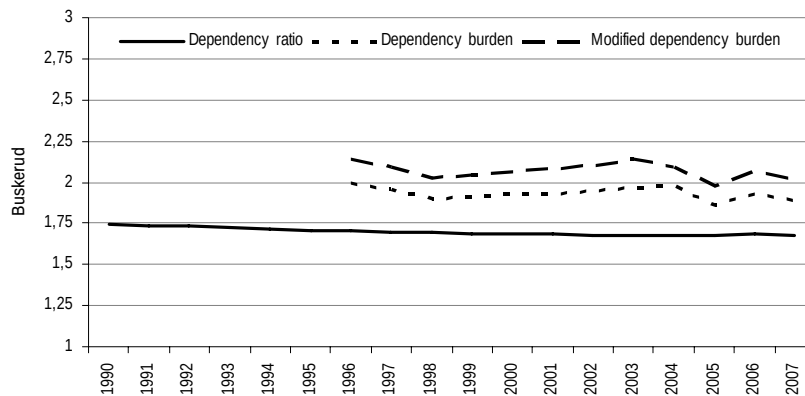
Østfold



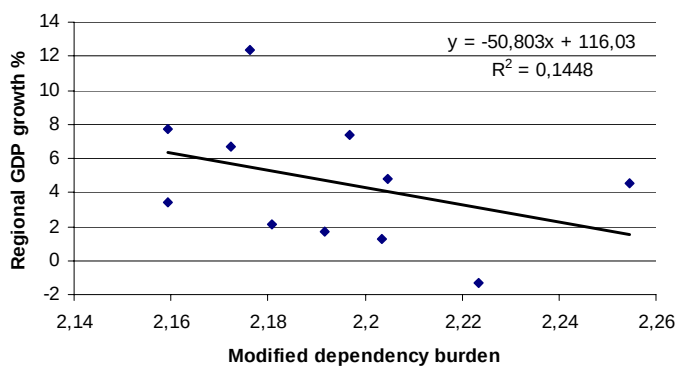
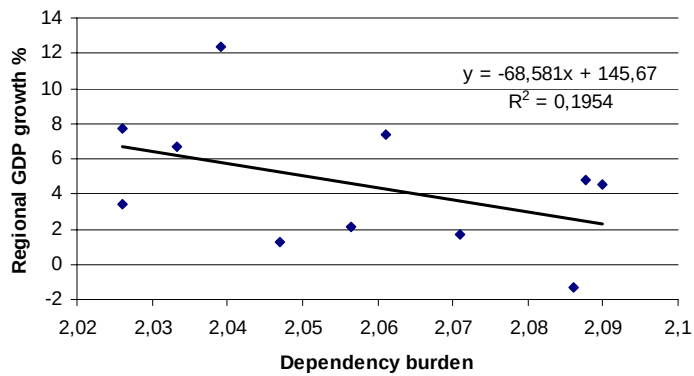
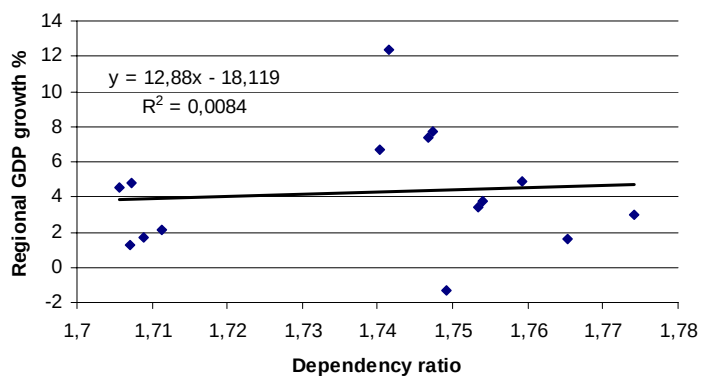
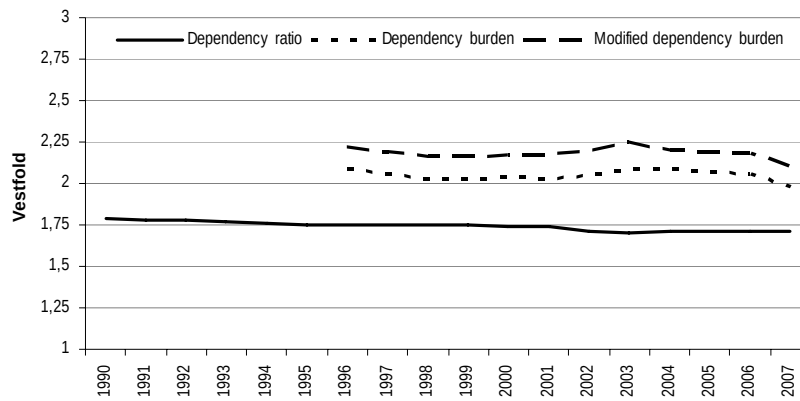
Akershus og Oslo



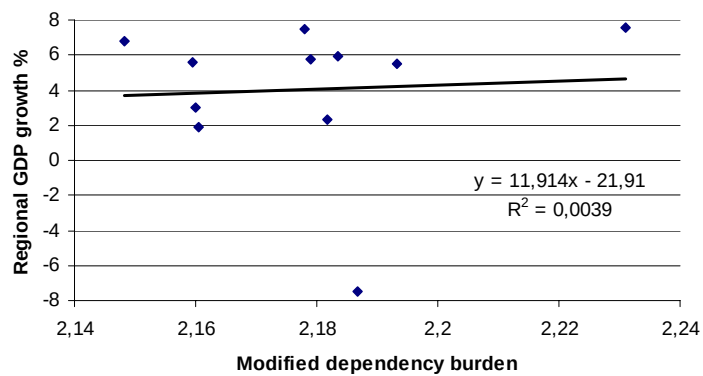
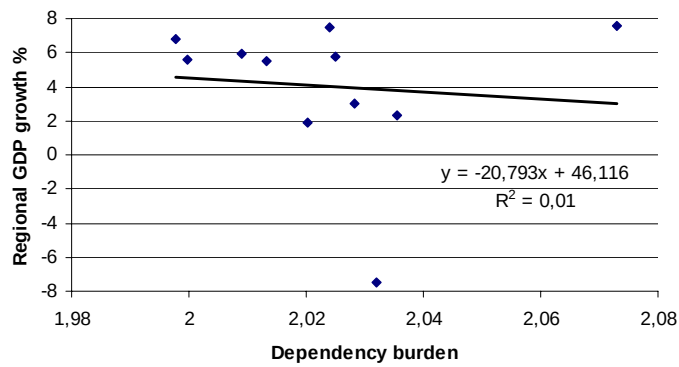
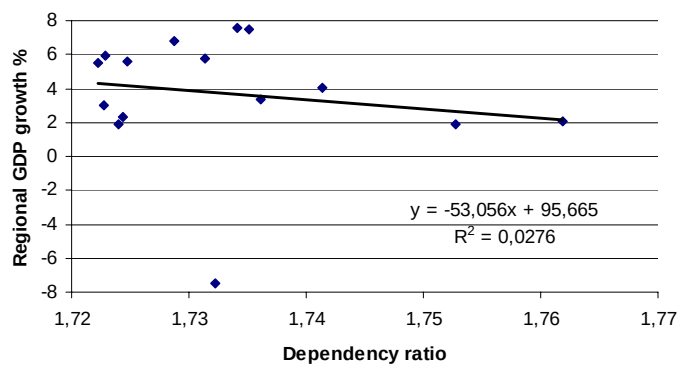
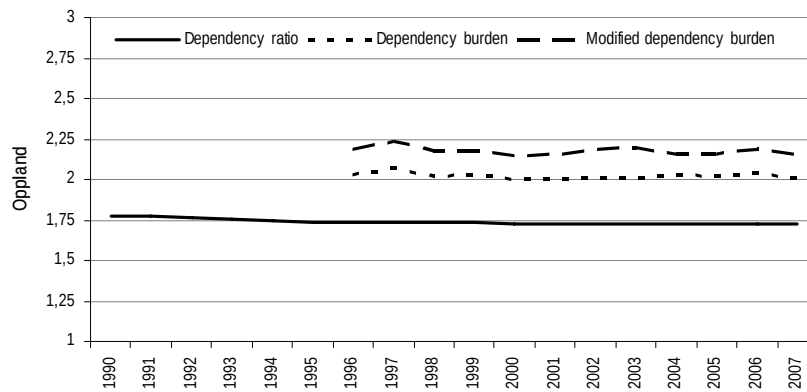
Buskerud



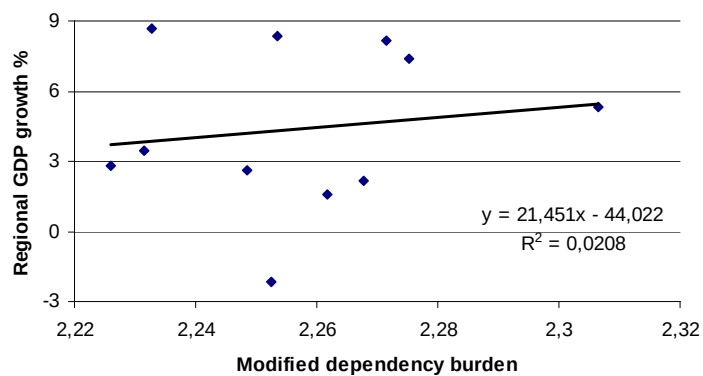
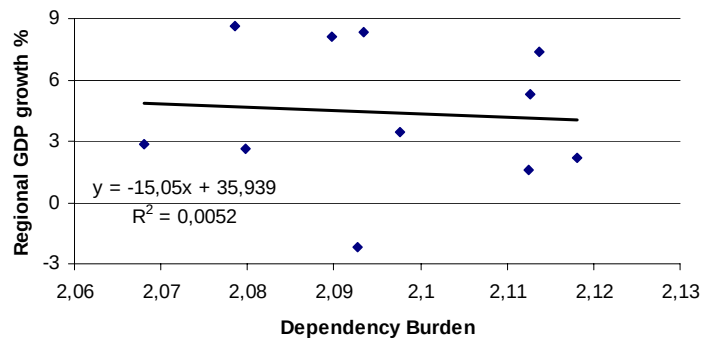
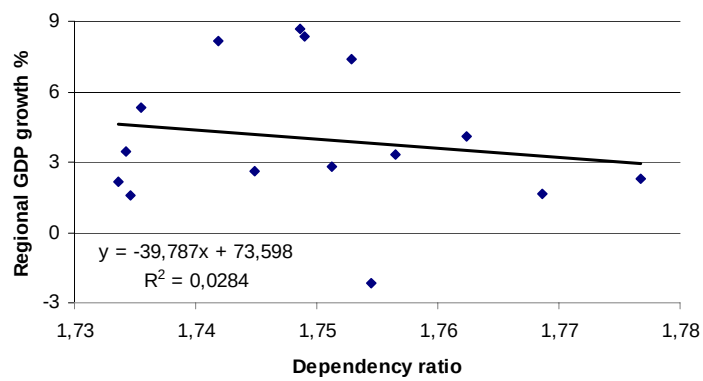
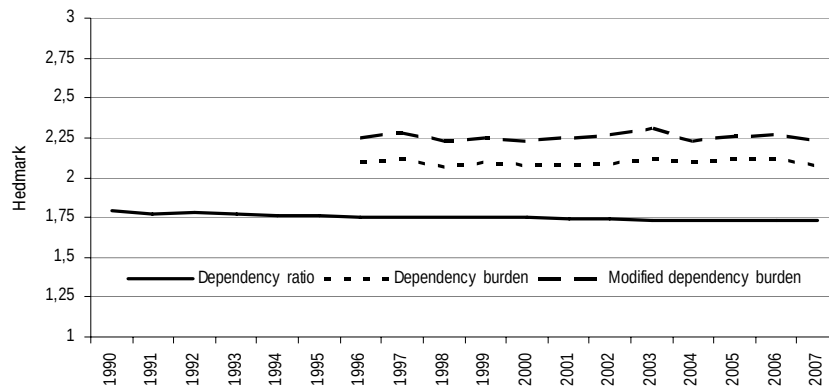
Vestfold



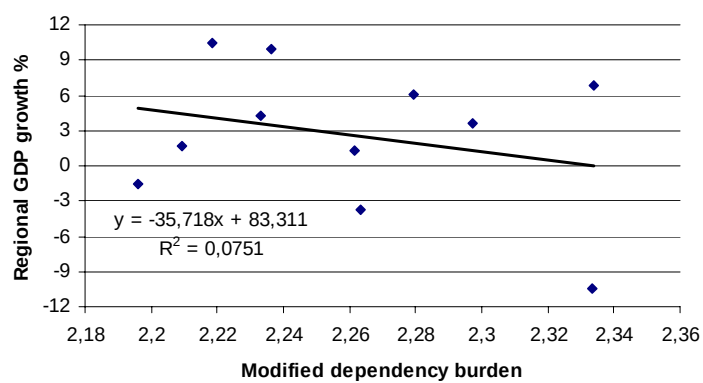
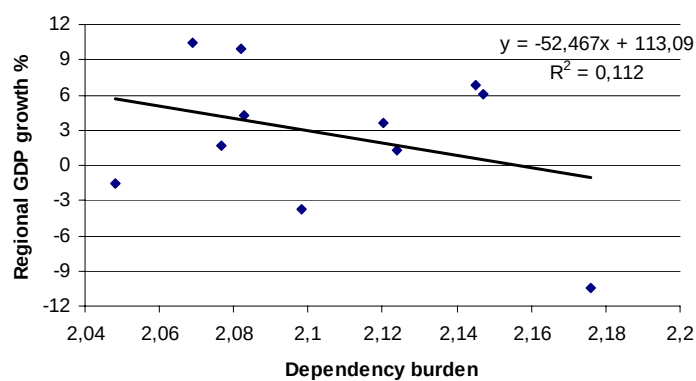
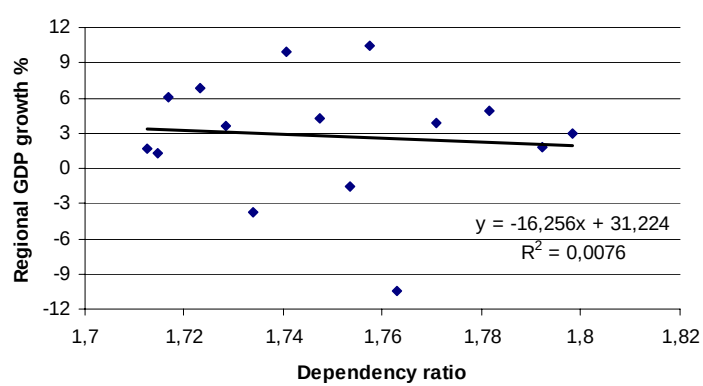
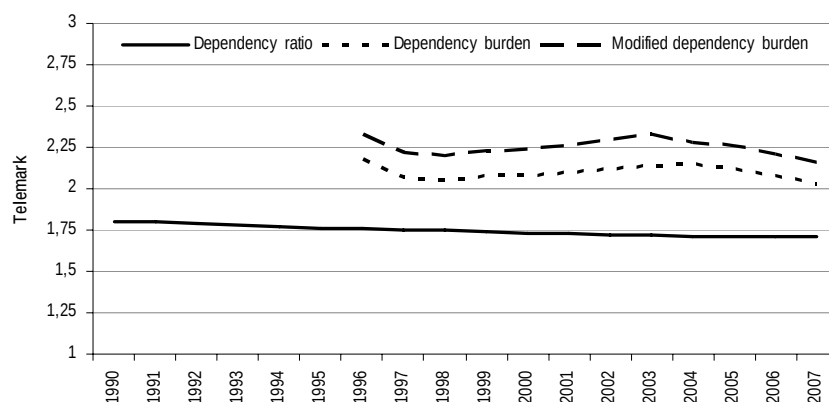
Oppland



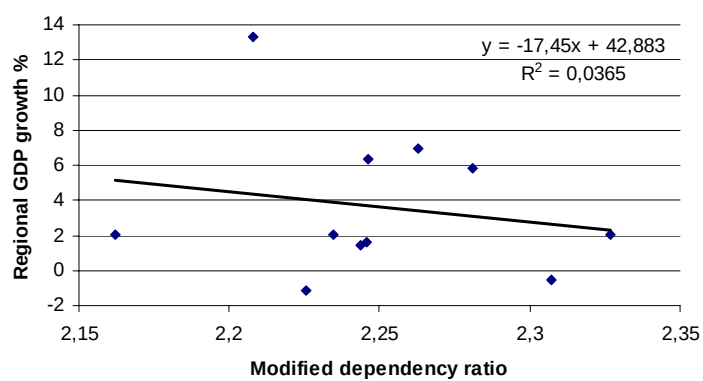
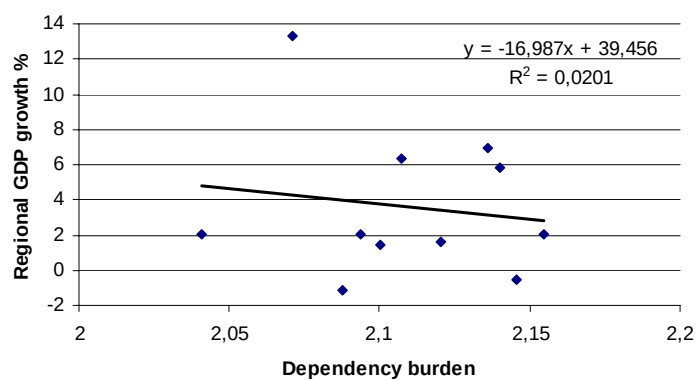
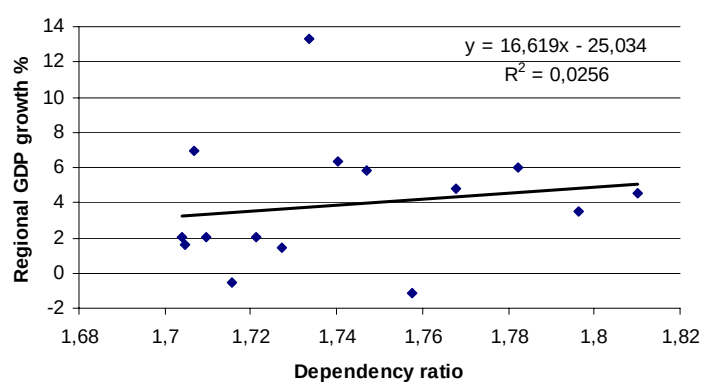
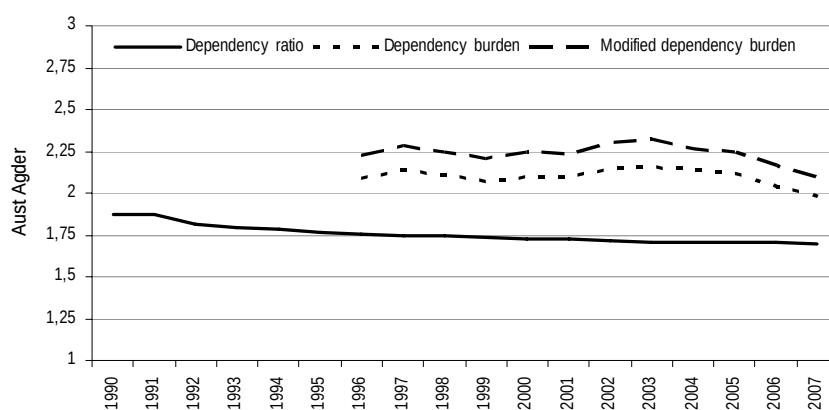
Hedmark



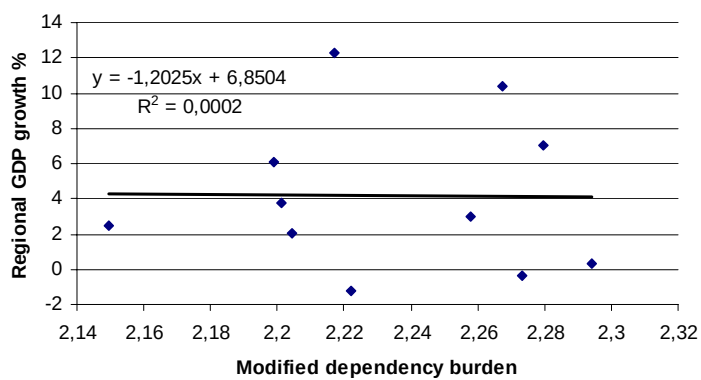
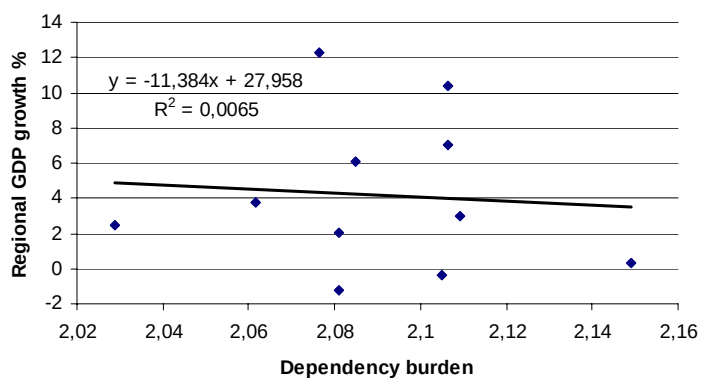
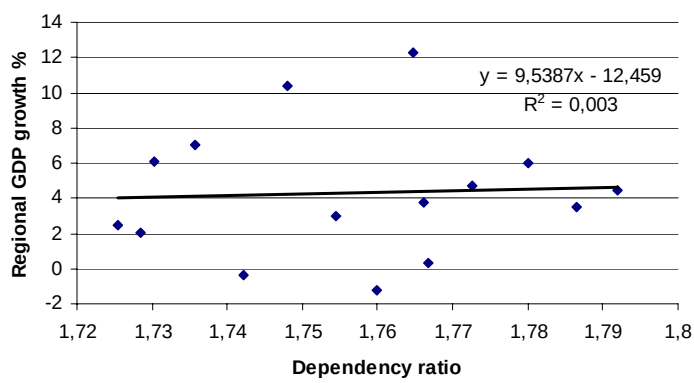
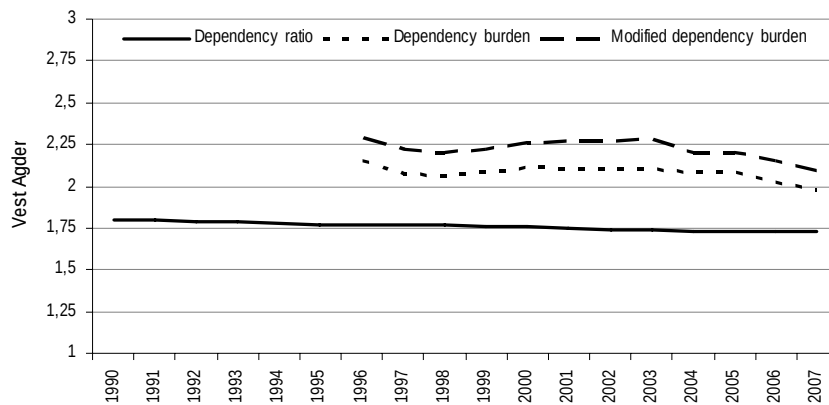
Telemark



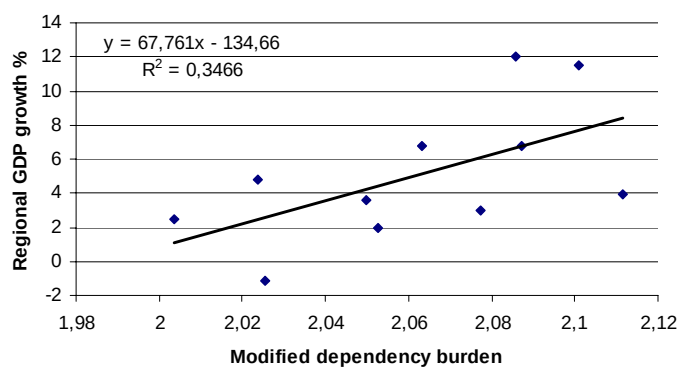
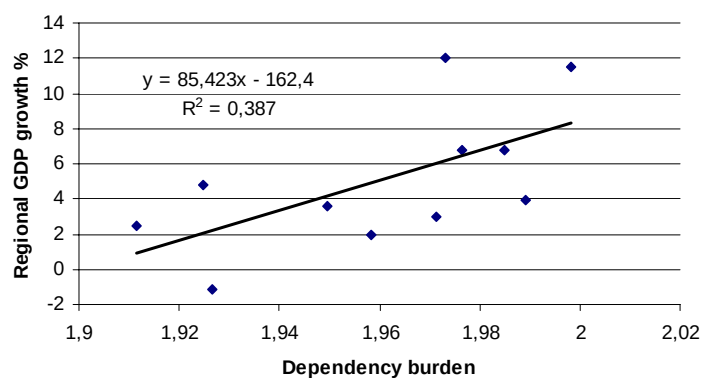
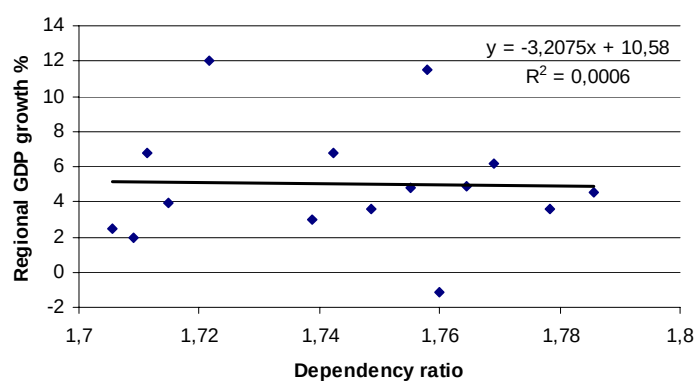
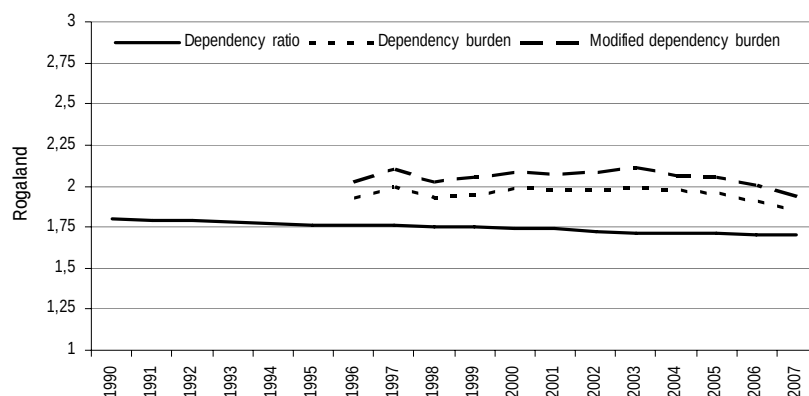
Aust-Agder



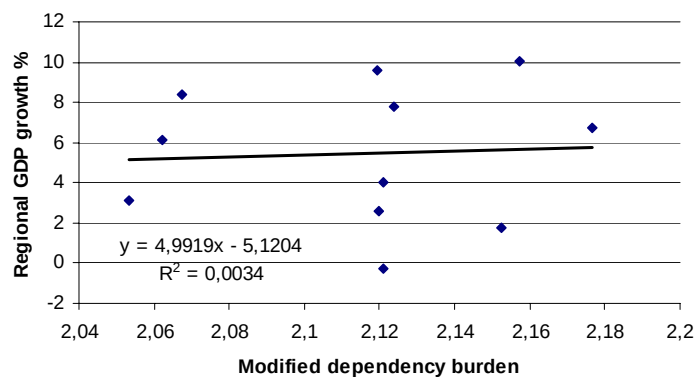
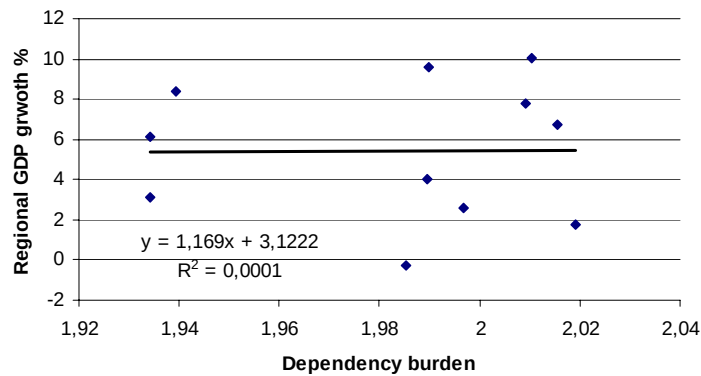
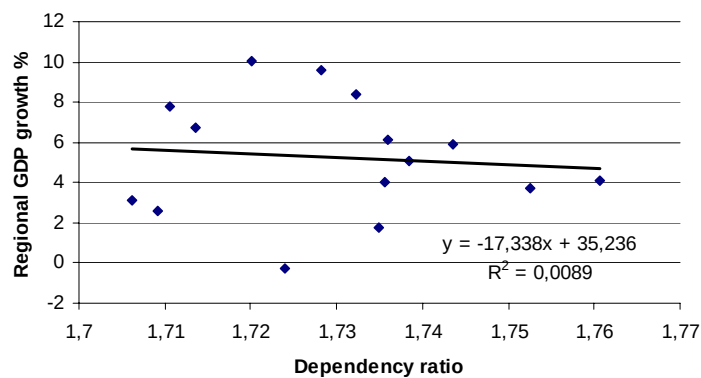
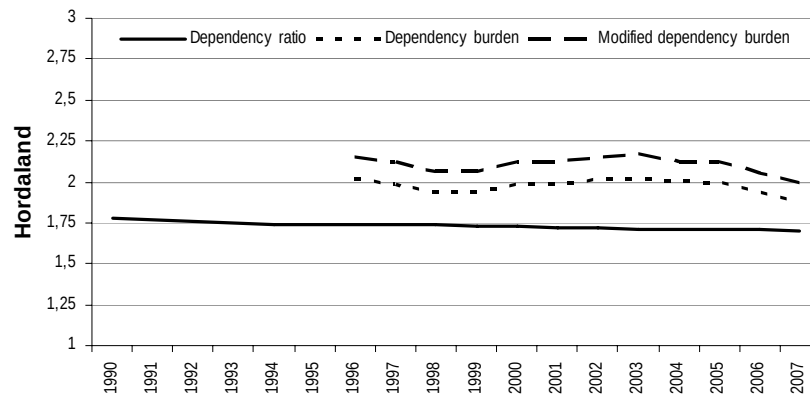
Vest-Agder



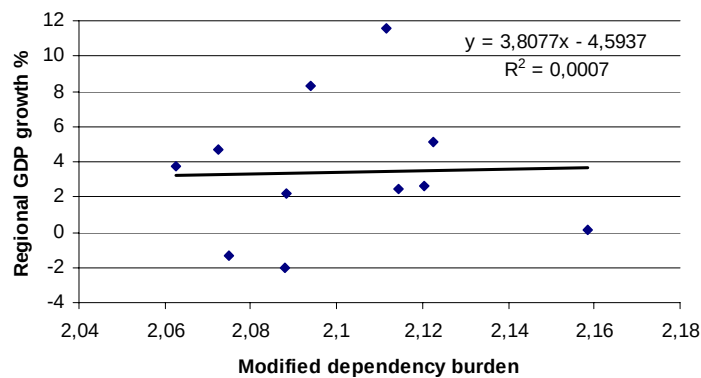
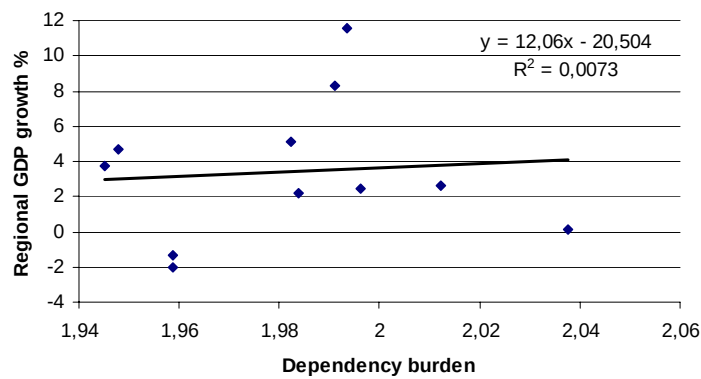
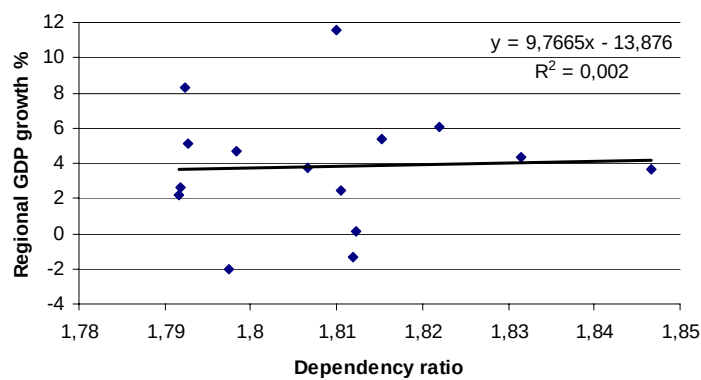
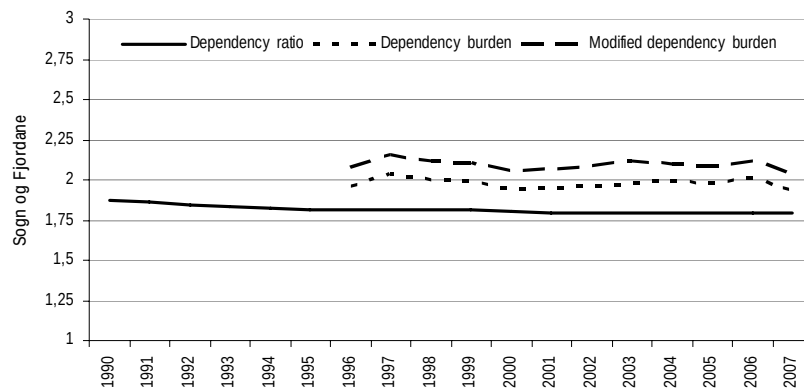
Rogaland



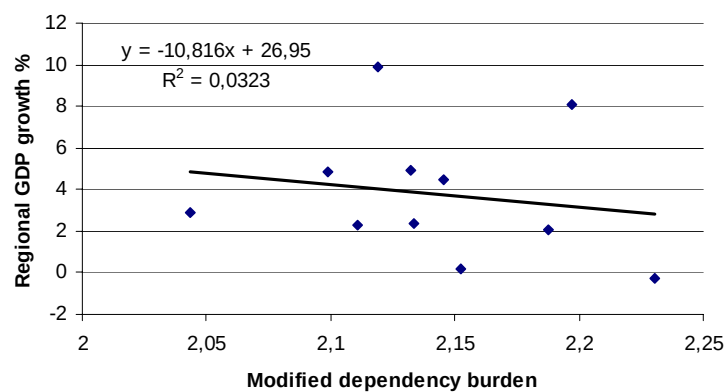
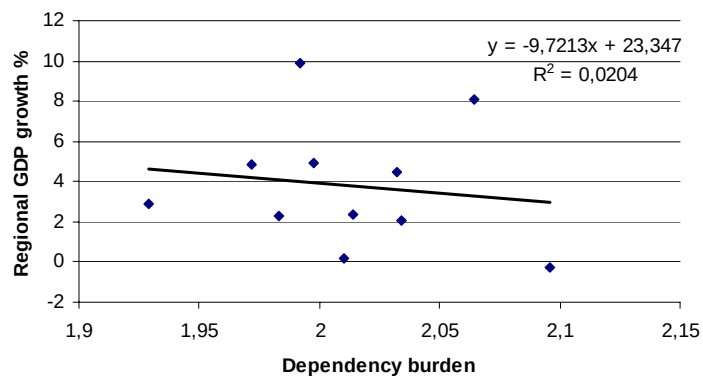
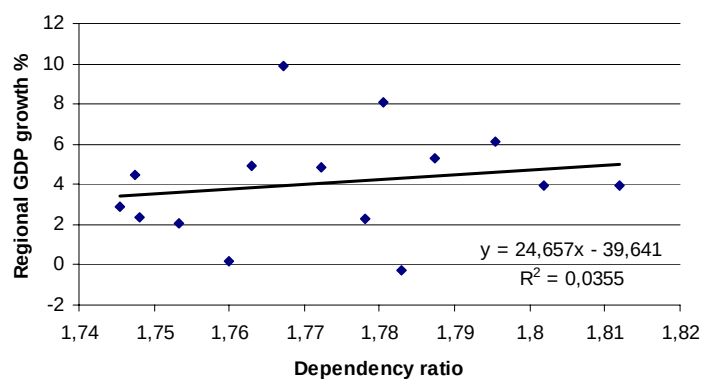
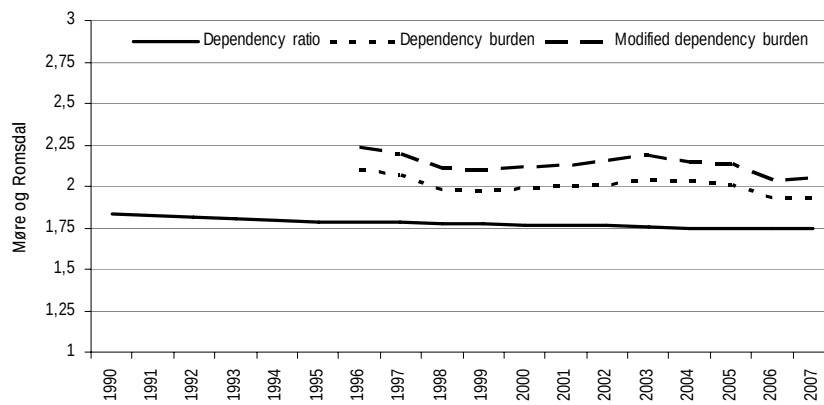
Hordaland



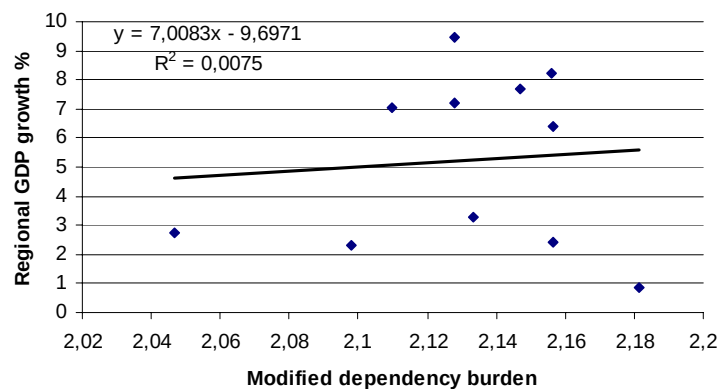
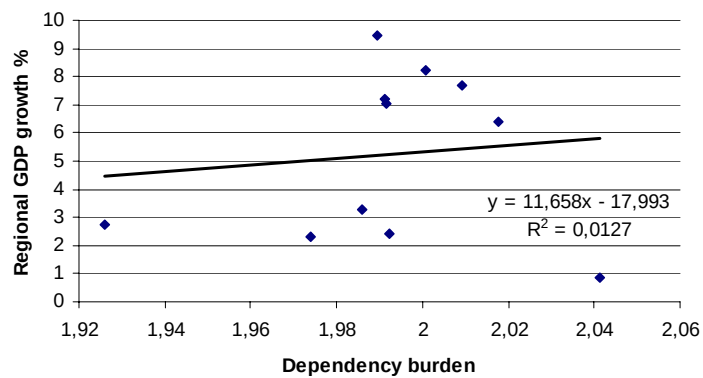
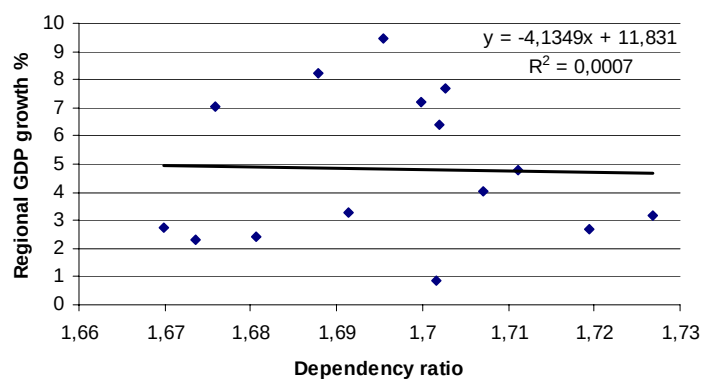
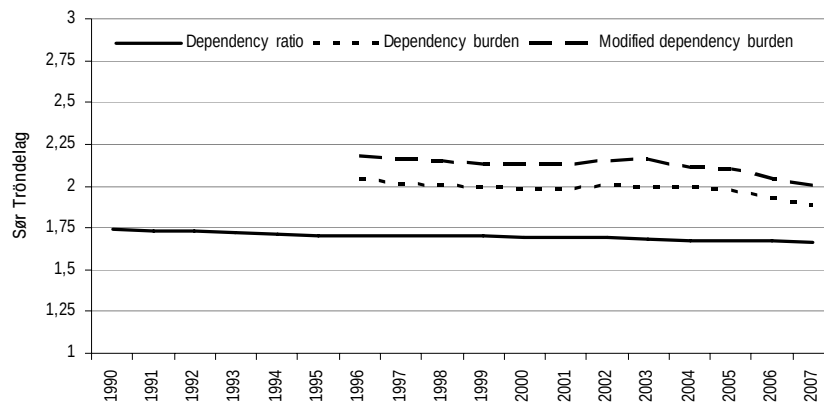
Sogn og Fjordane



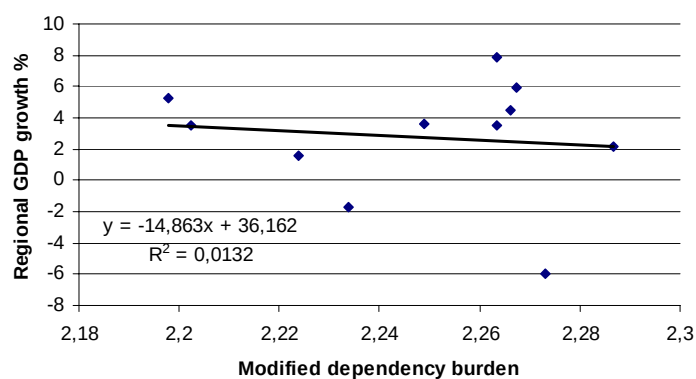
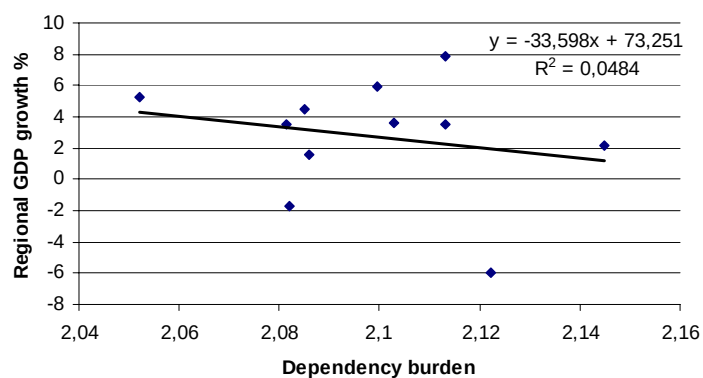
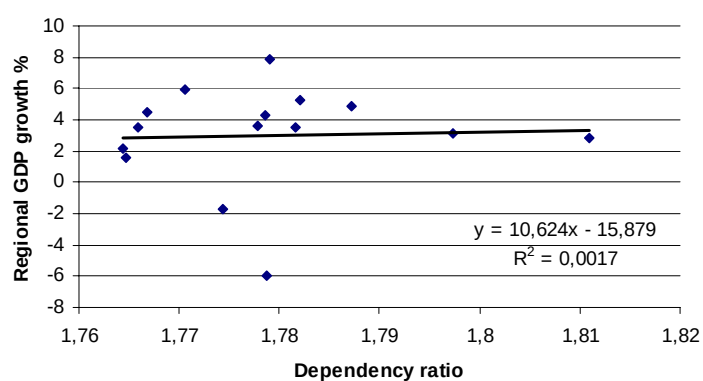
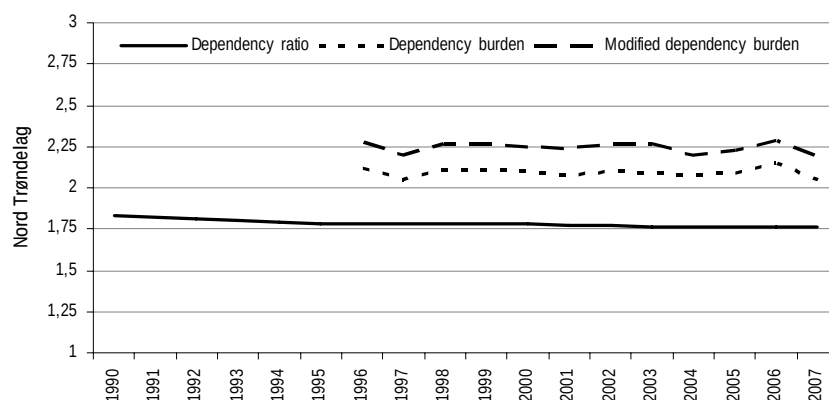
Møre og Romsdal



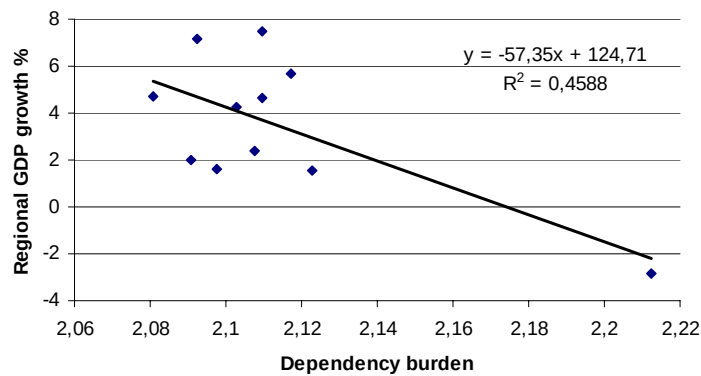
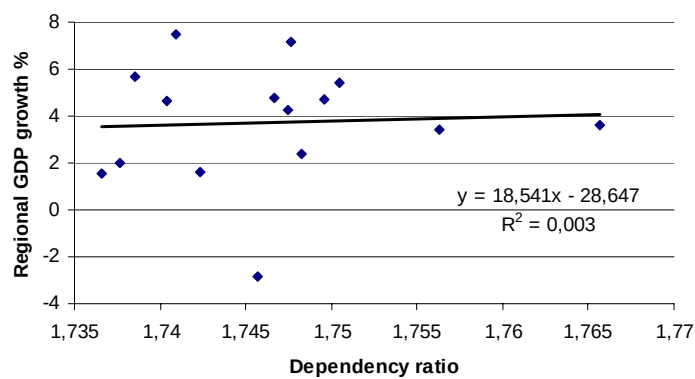
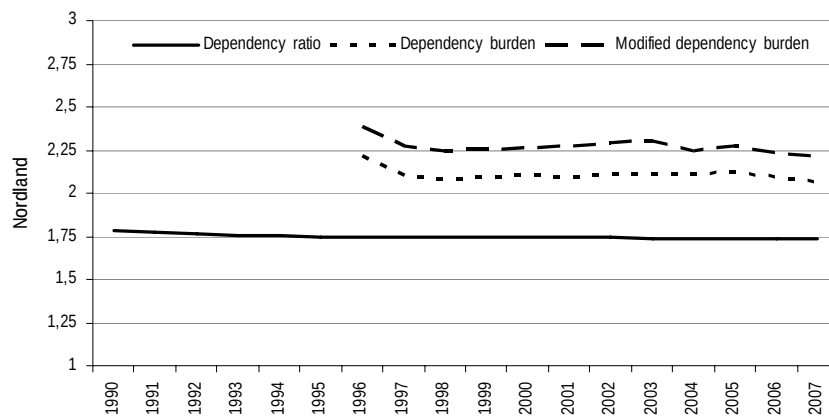
Sør-Trøndelag



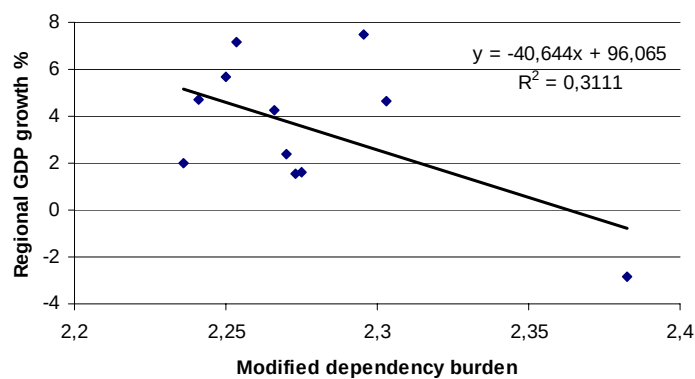
Nord-Trøndelag



Nordland

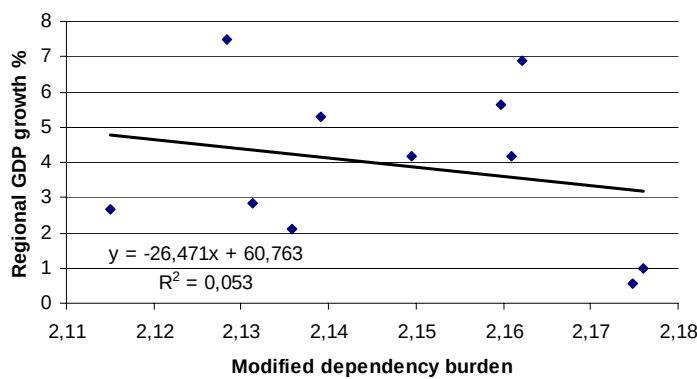
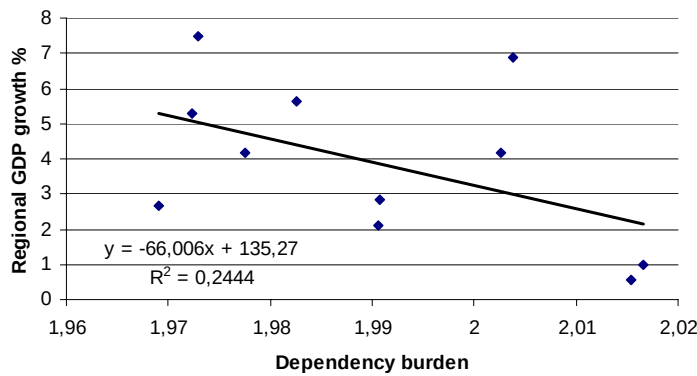
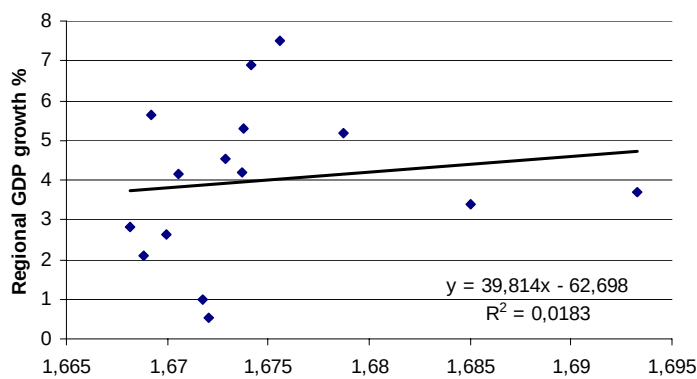
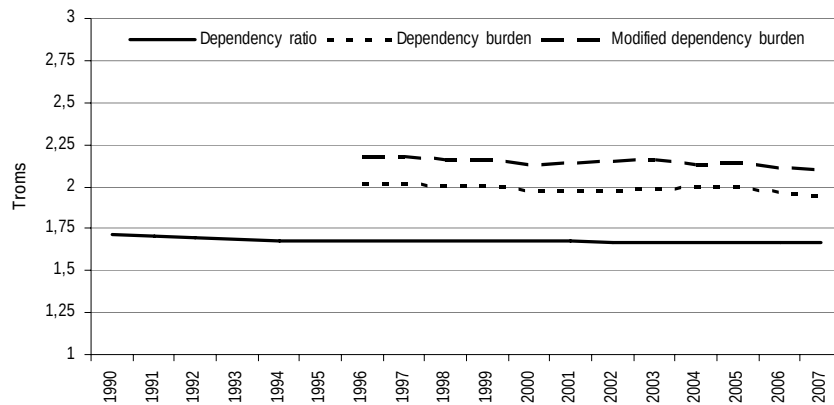


Nota bene:
if the outlier
is removed
the R^2 will
drop to 0,0033

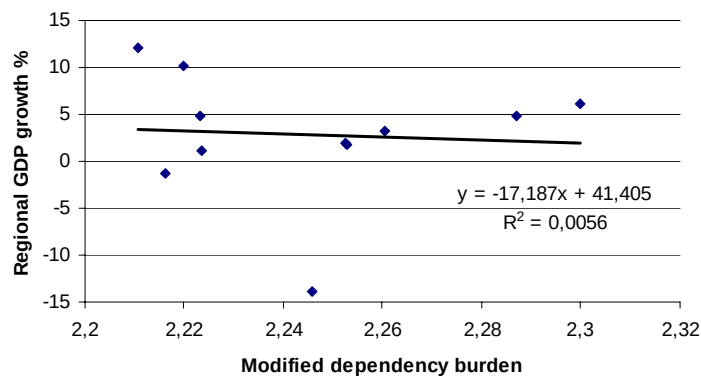
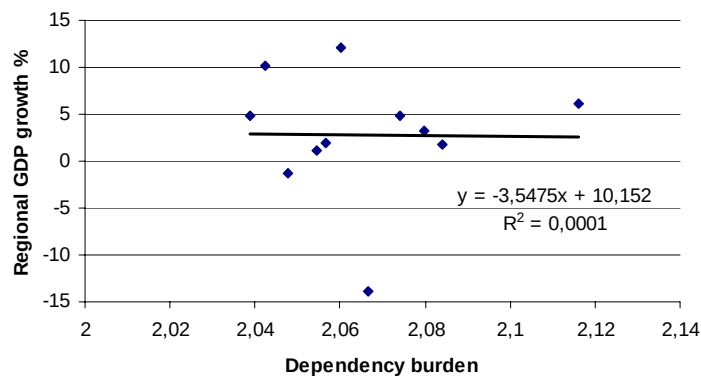
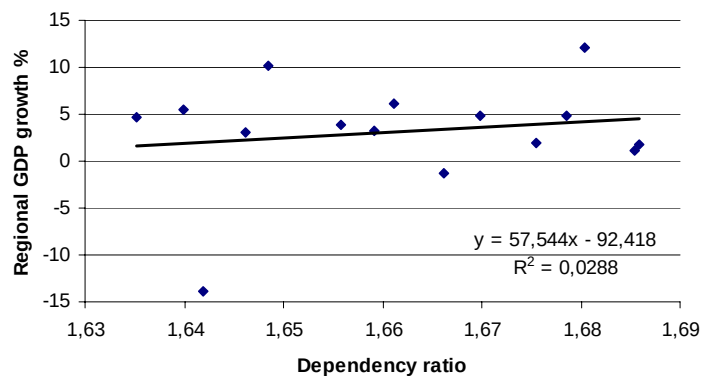
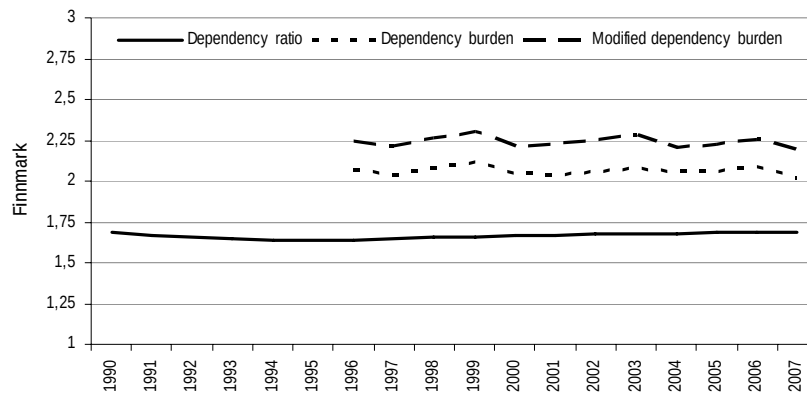


Nota bene:
if the outlier
is removed
the R^2 will
drop to 0,0198

Troms



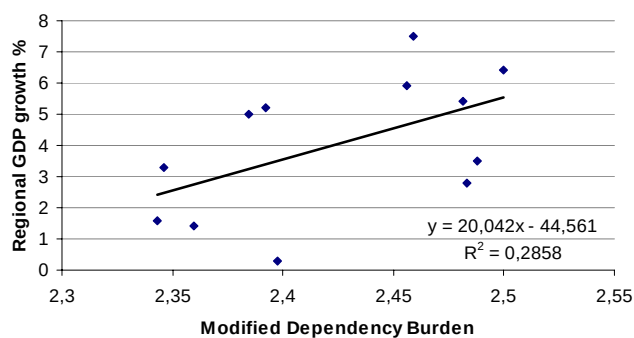
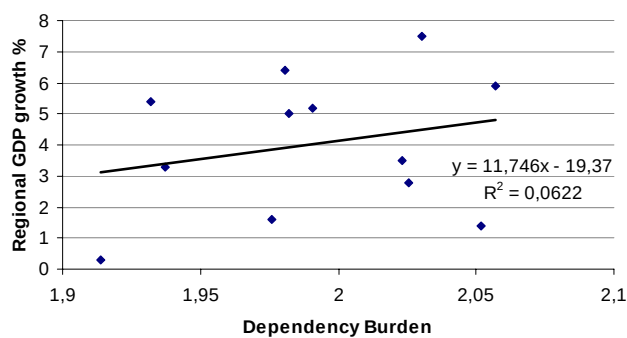
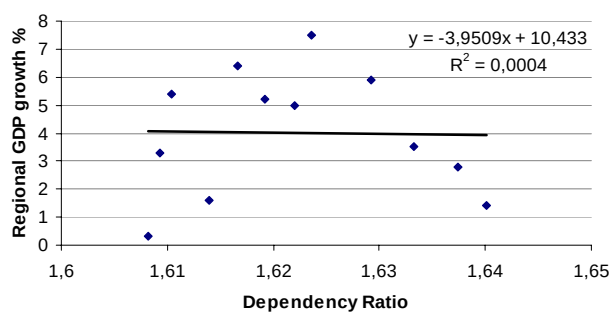
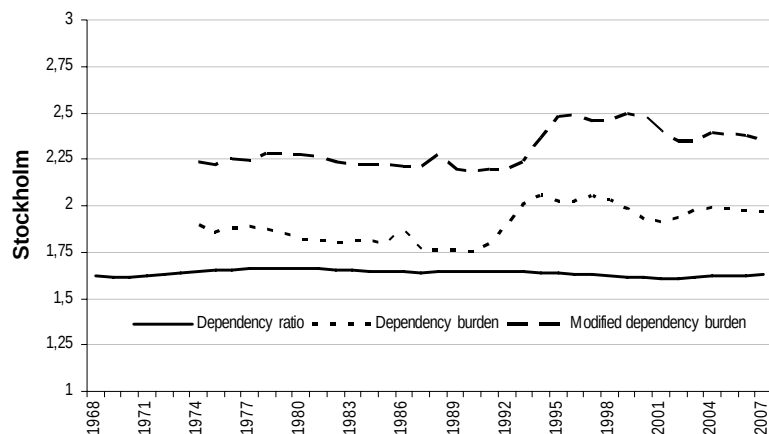
Finnmark



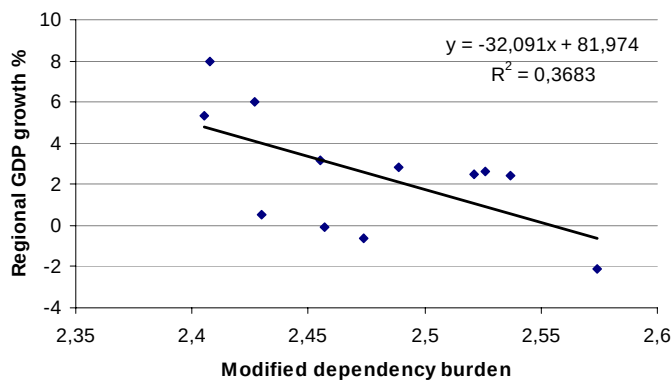
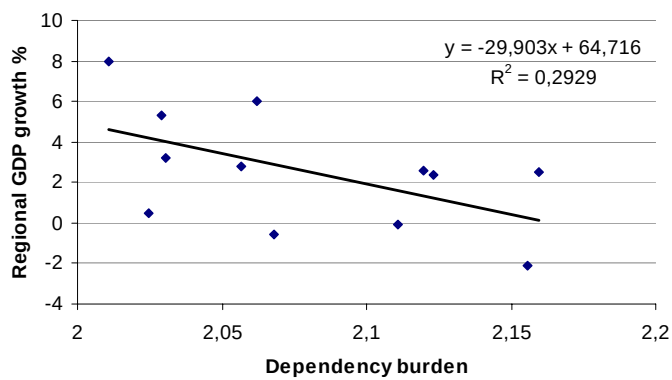
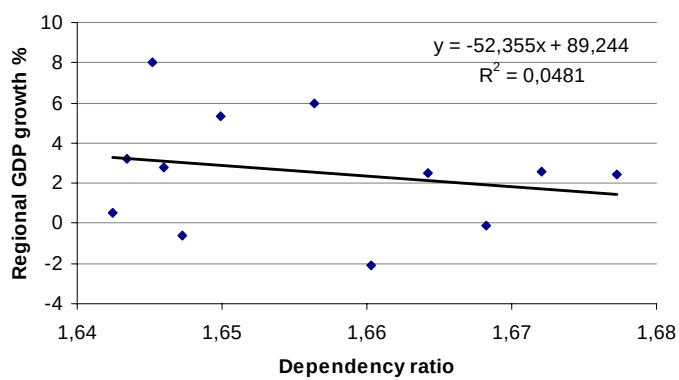
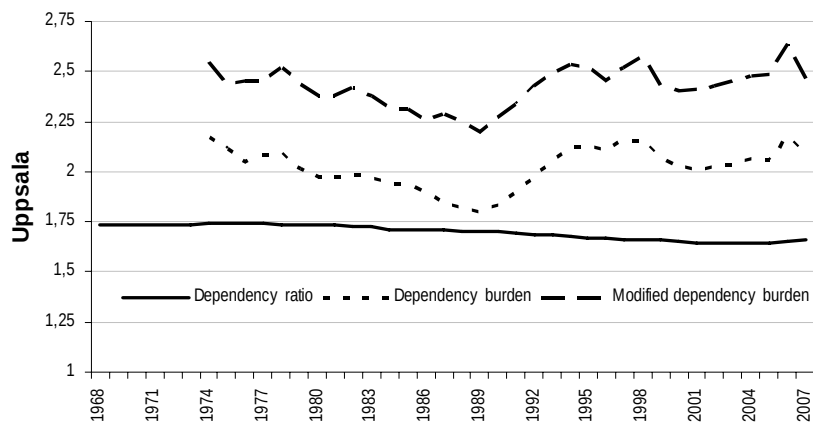
Sweden

Correlation data for Sweden 1994-2005.

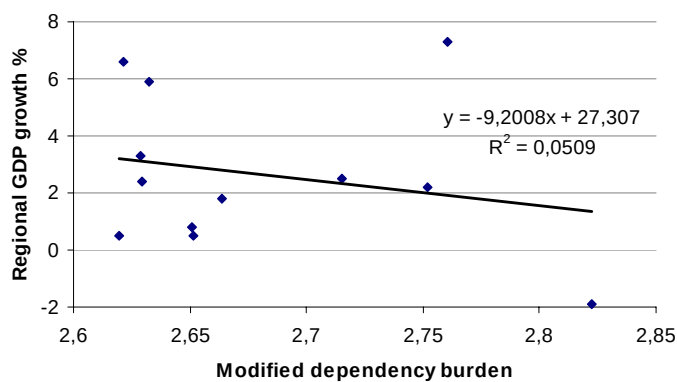
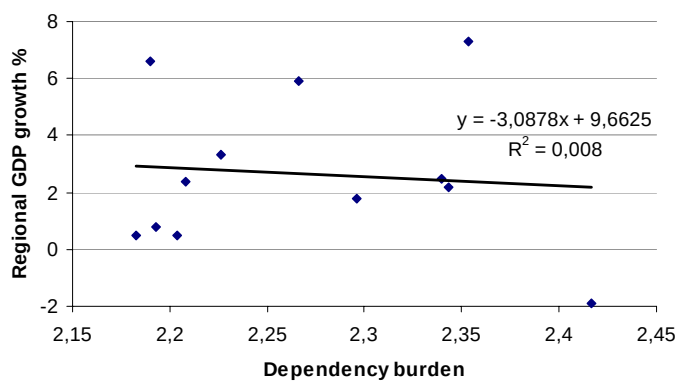
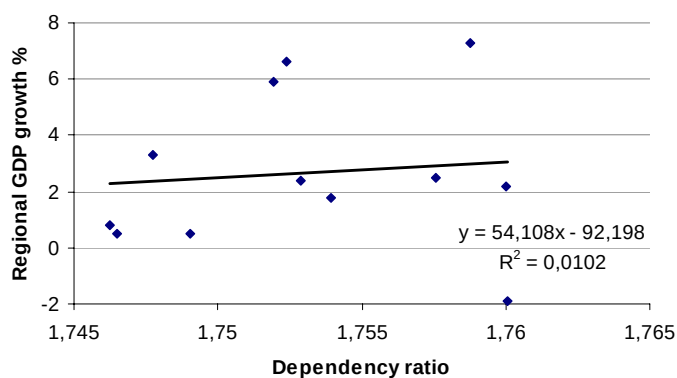
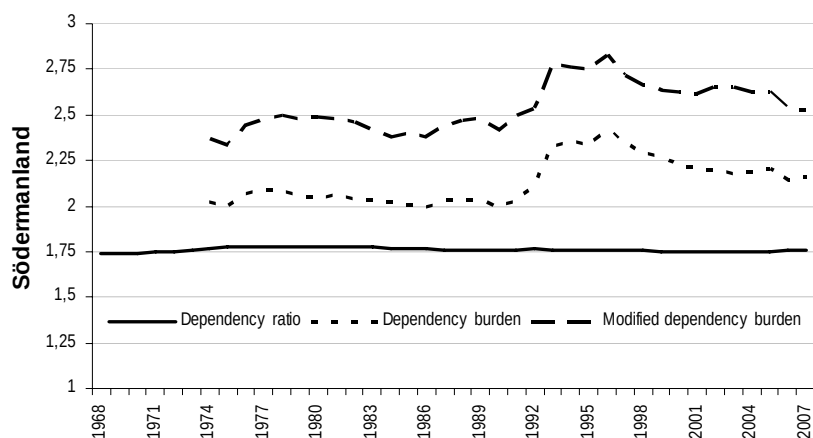
Stockholm



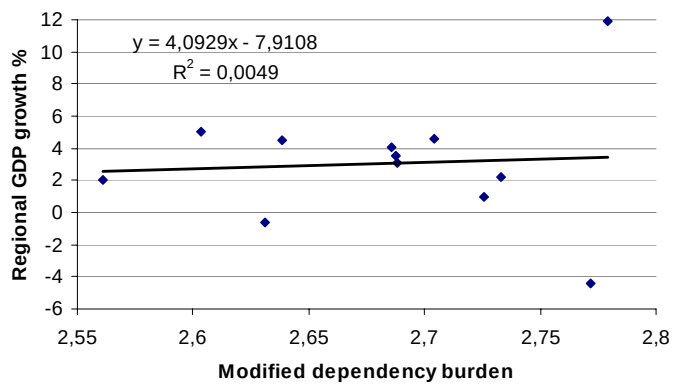
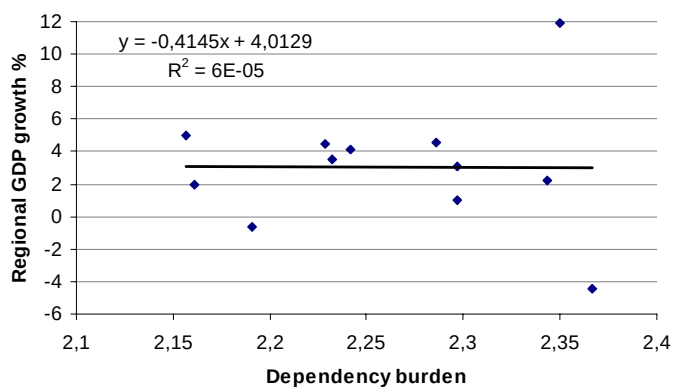
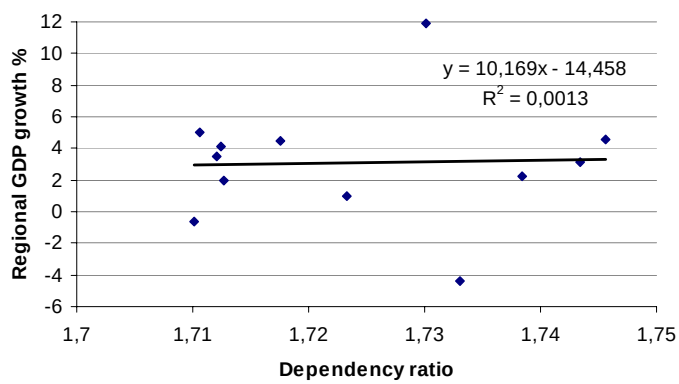
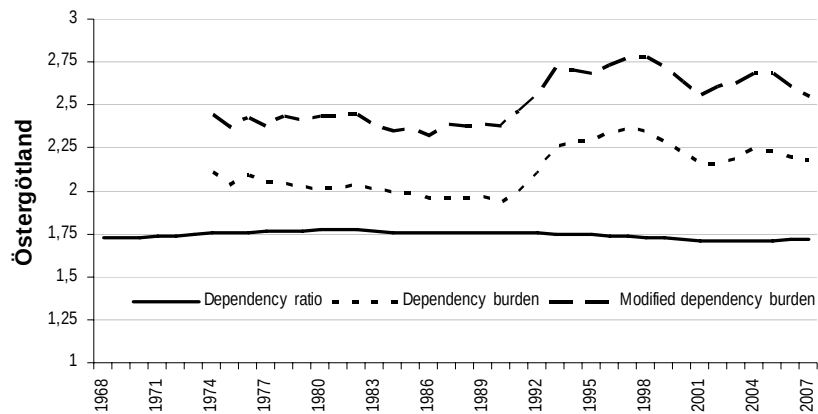
Uppsala



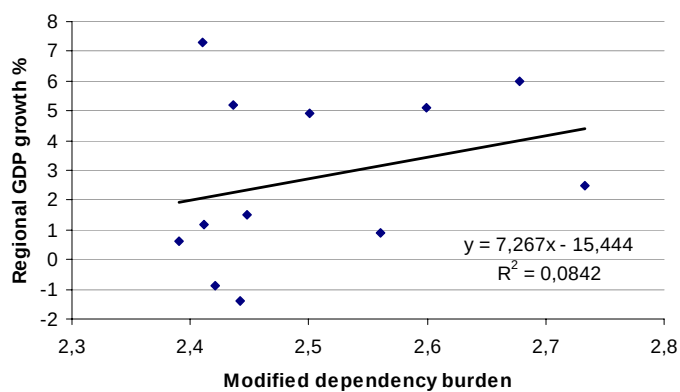
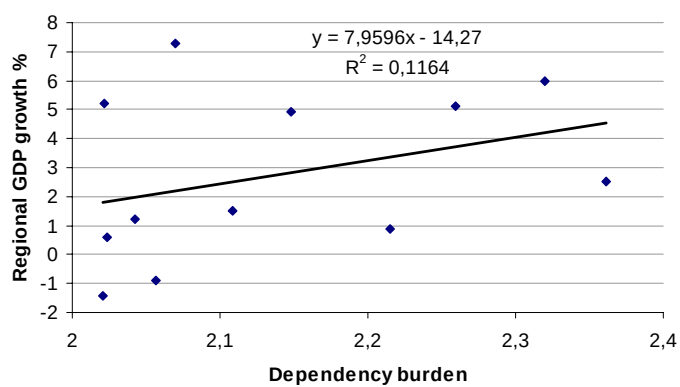
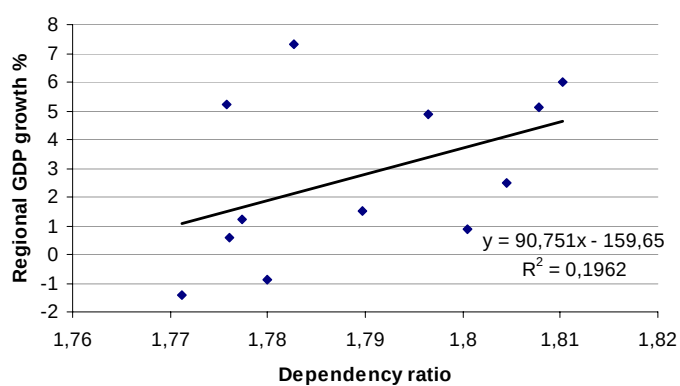
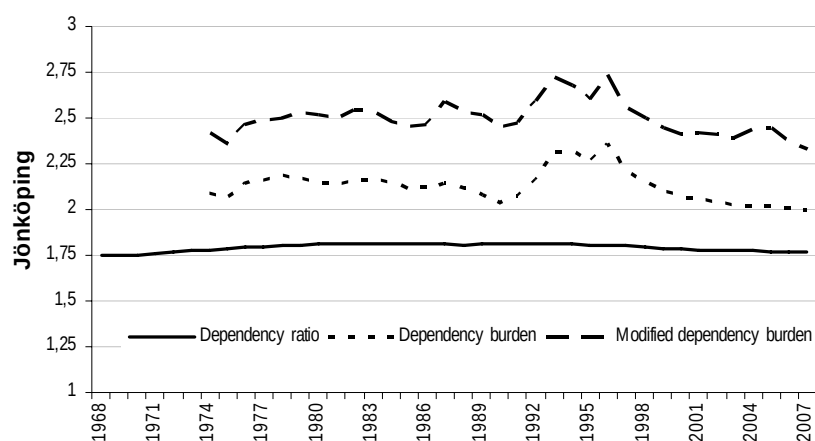
Södermanland



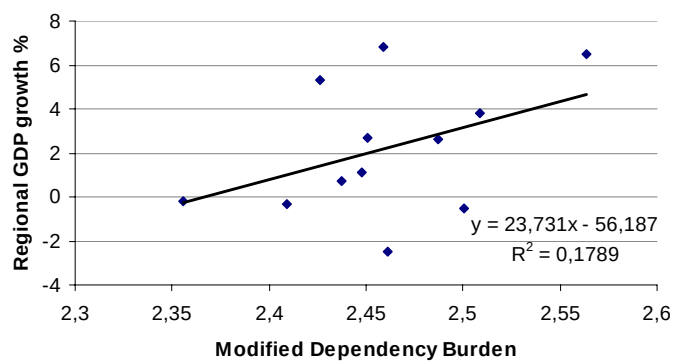
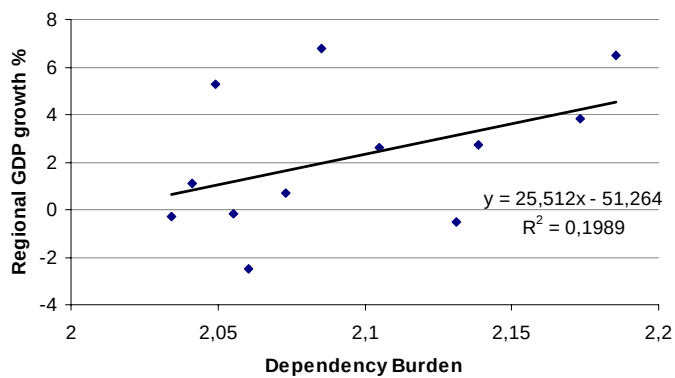
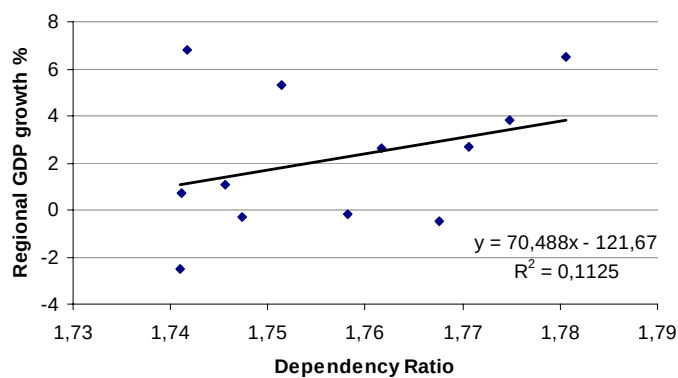
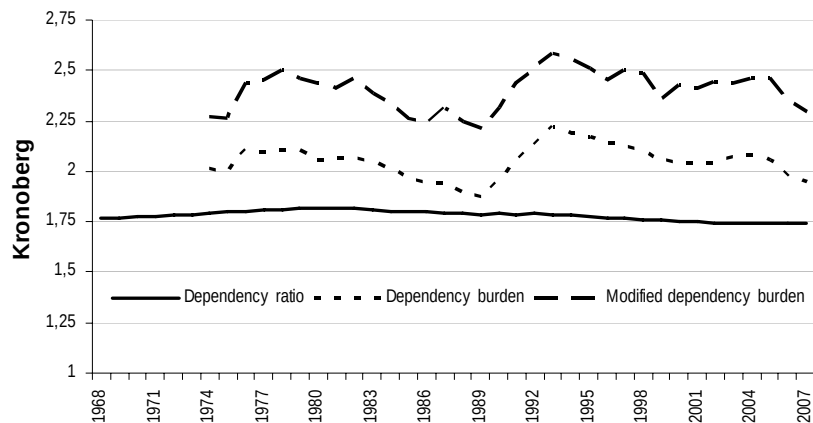
Östergötland



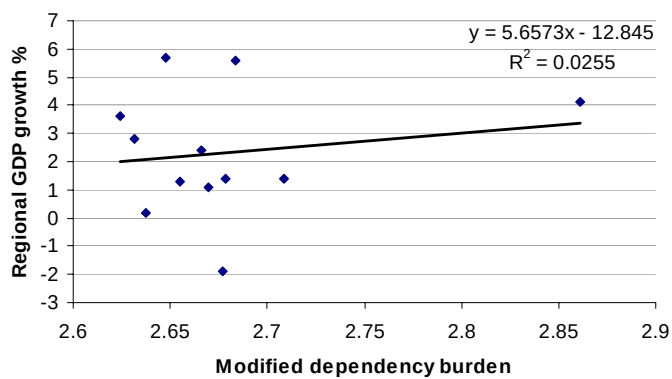
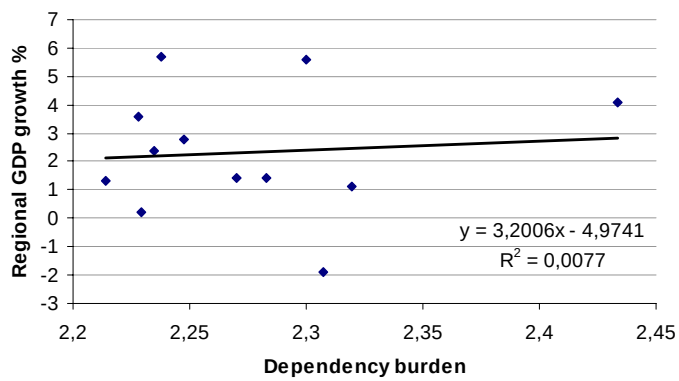
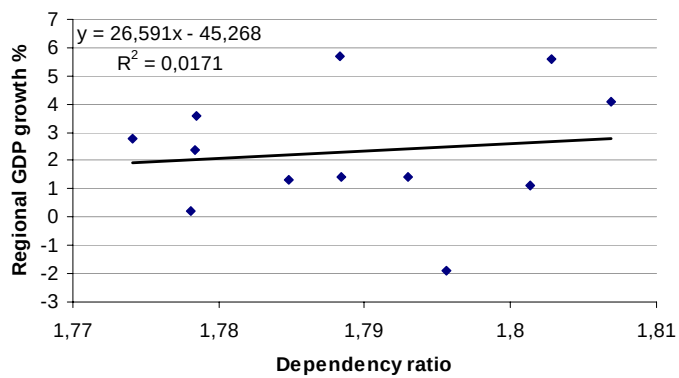
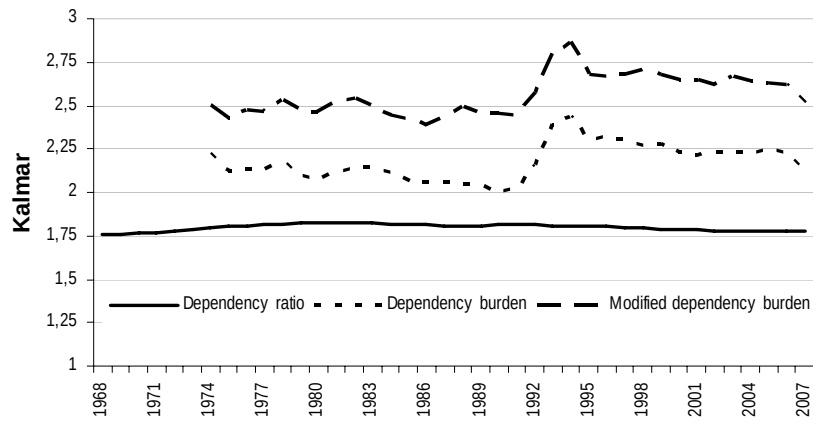
Jönköping



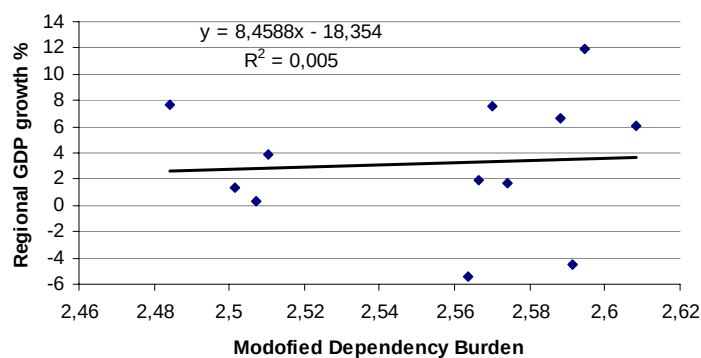
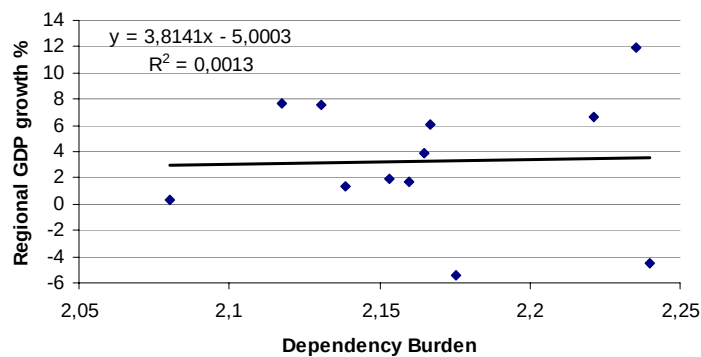
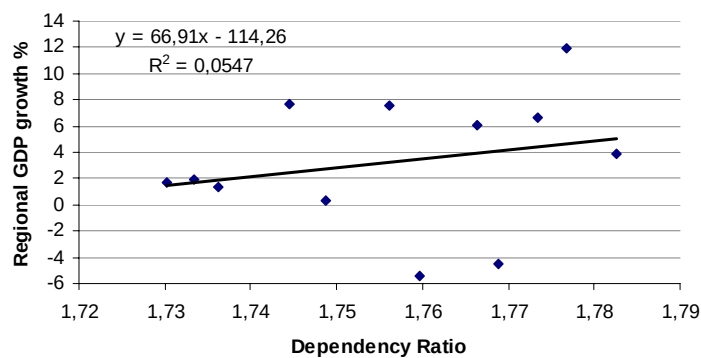
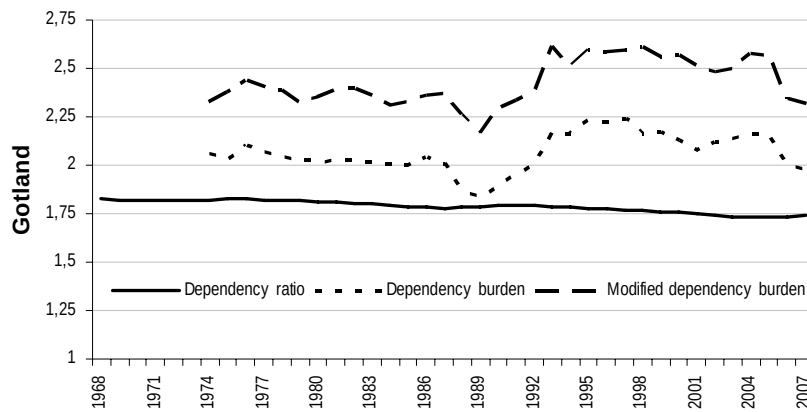
Kronoberg



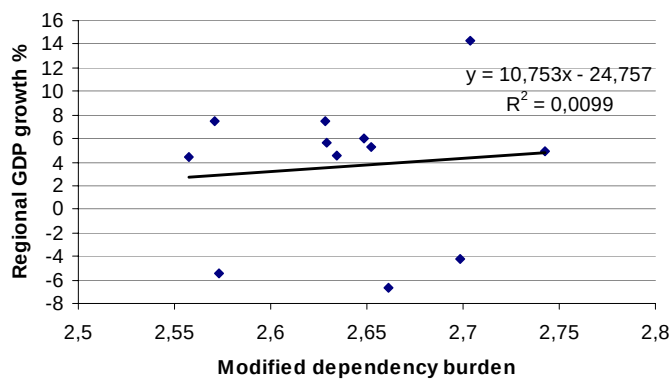
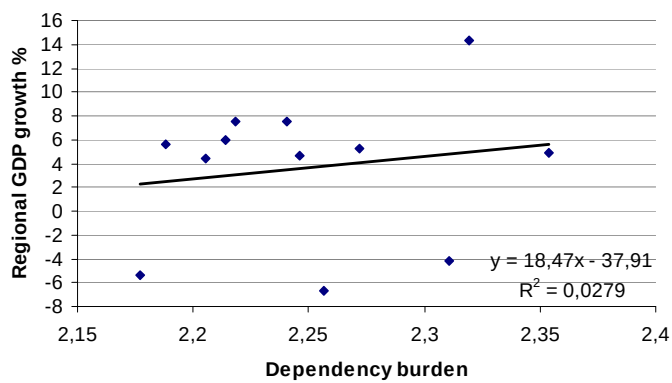
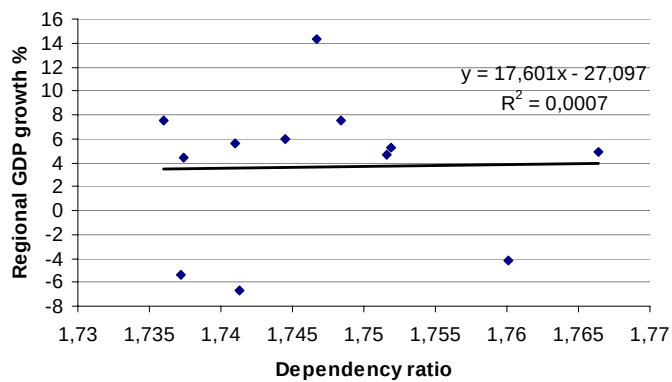
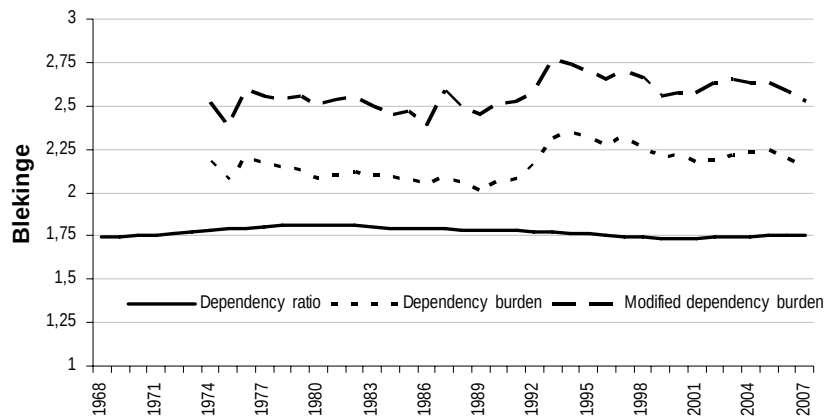
Kalmar



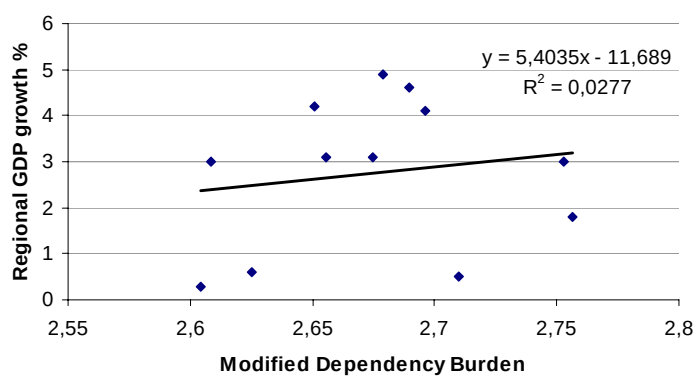
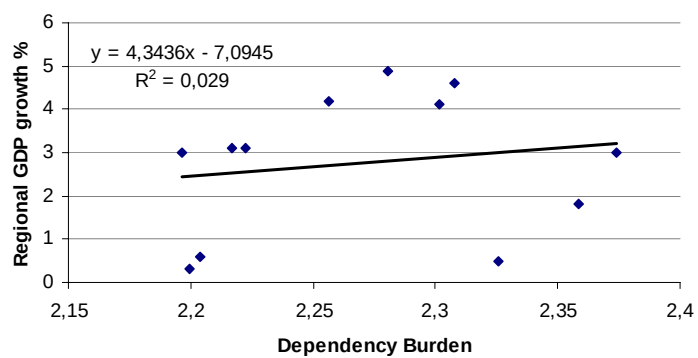
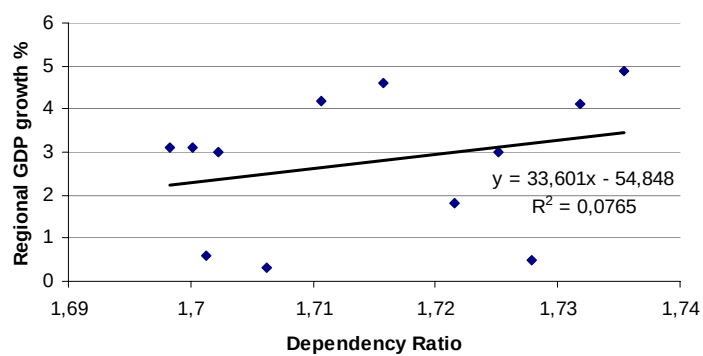
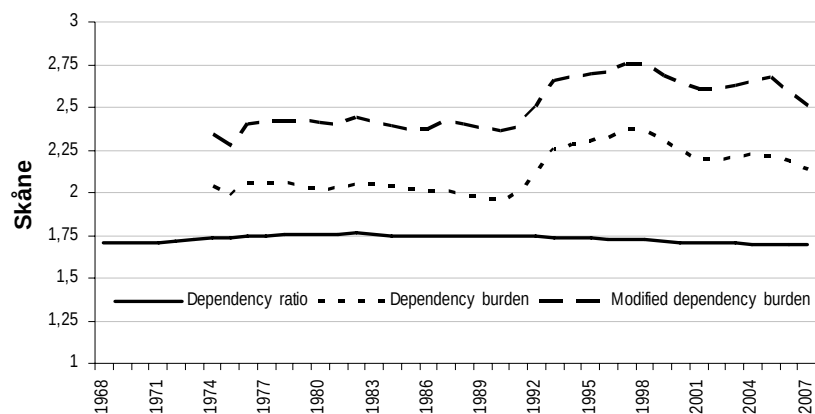
Gotland



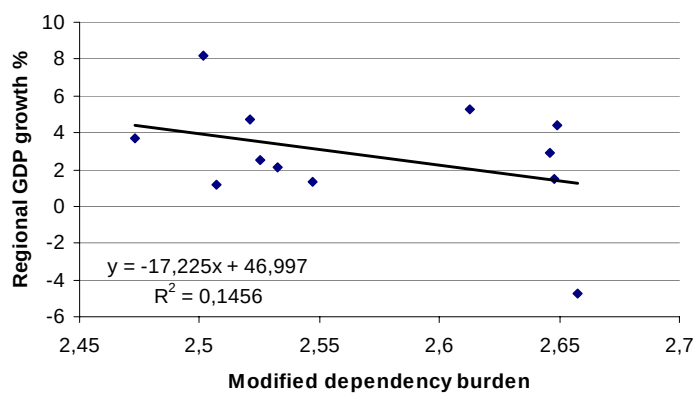
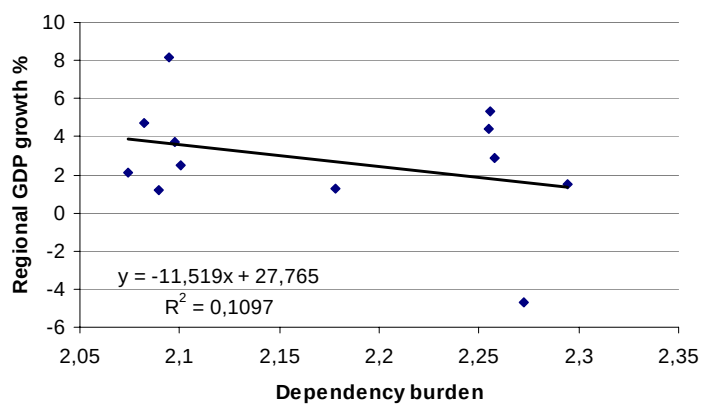
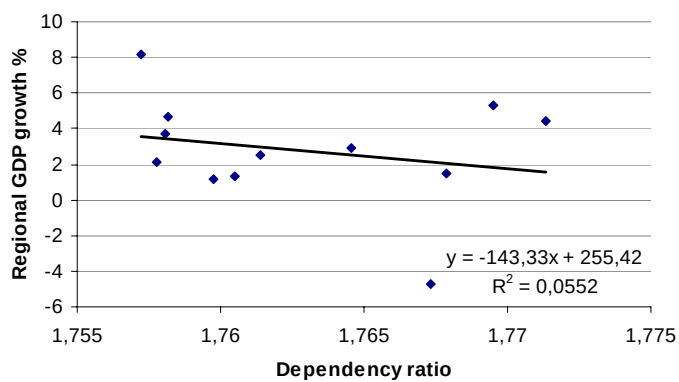
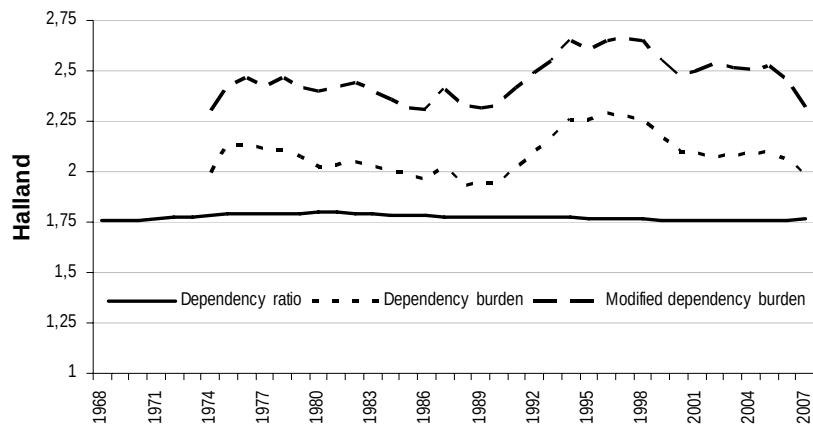
Blekinge



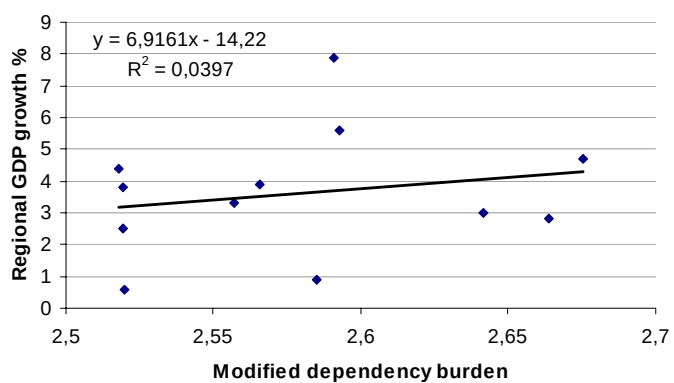
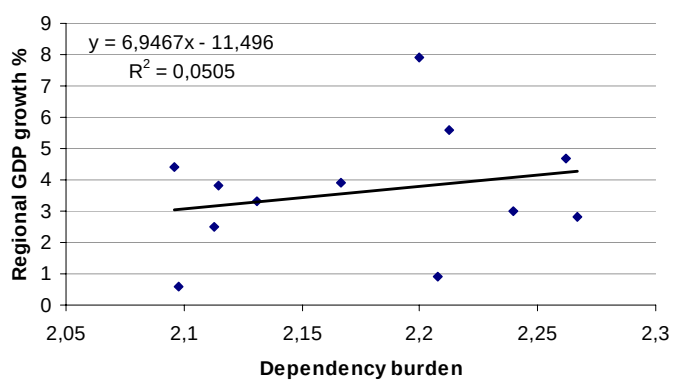
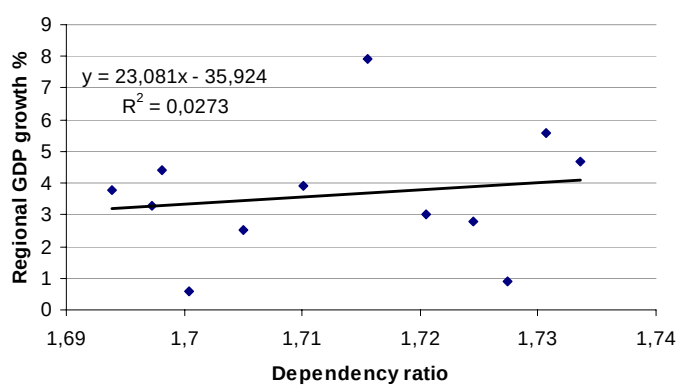
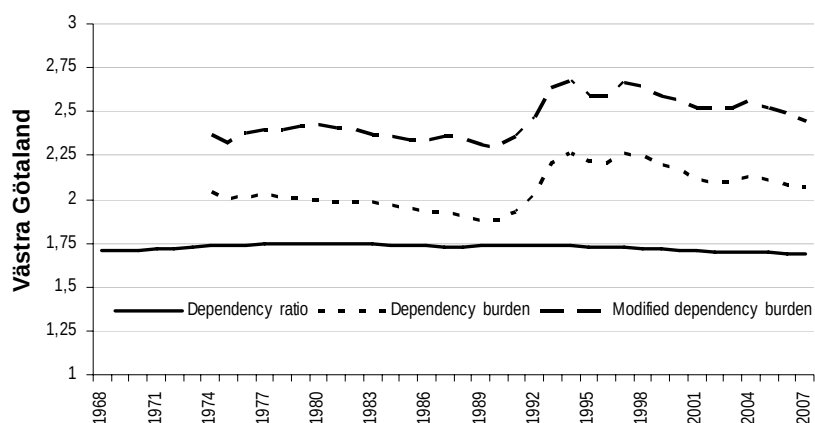
Skåne



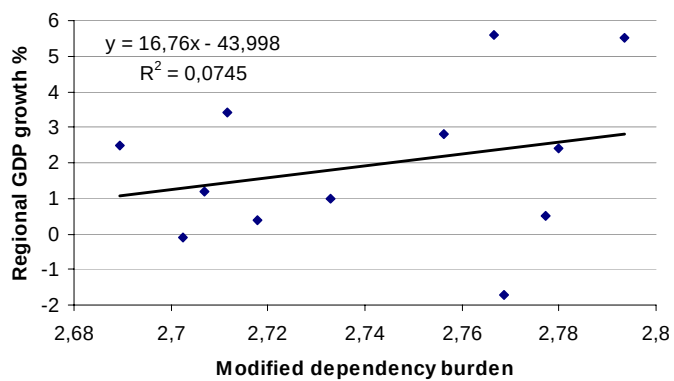
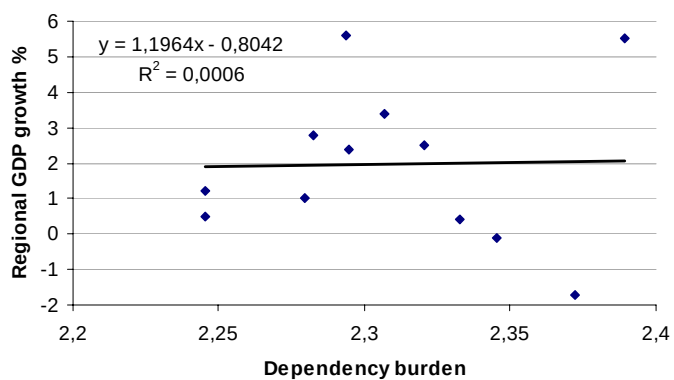
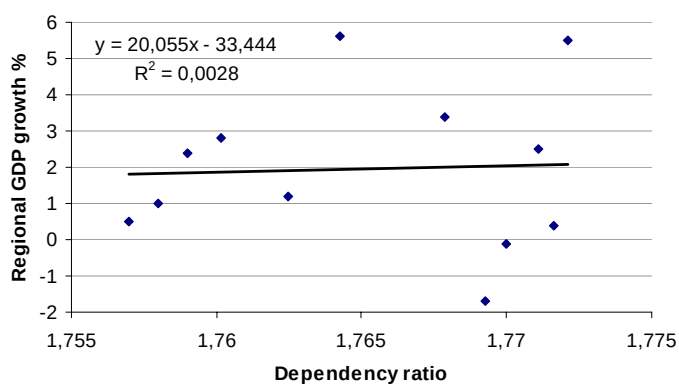
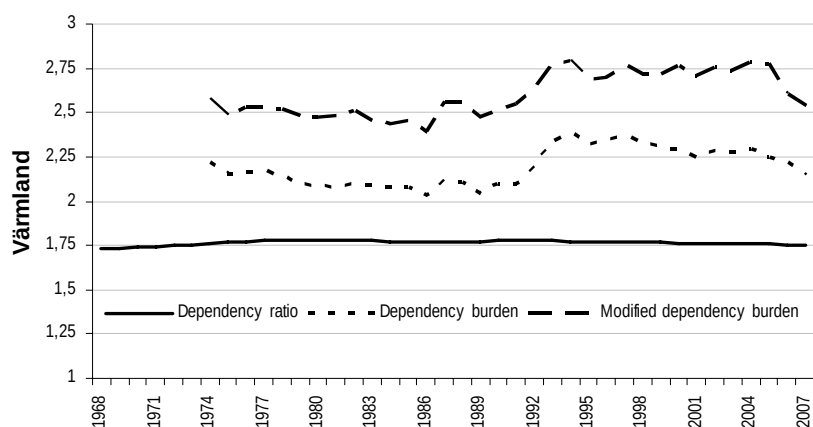
Halland



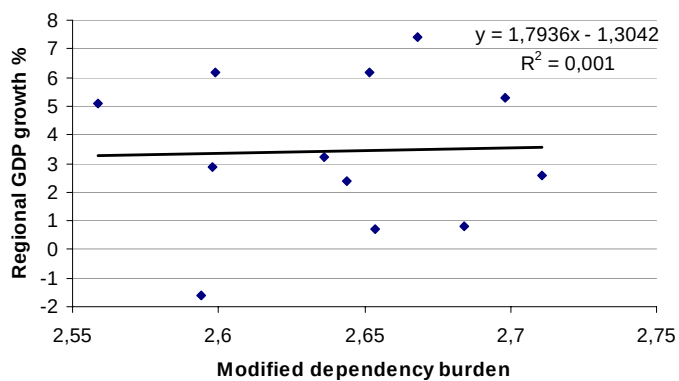
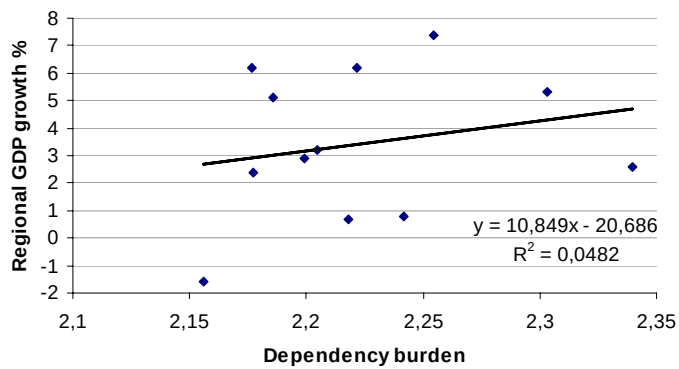
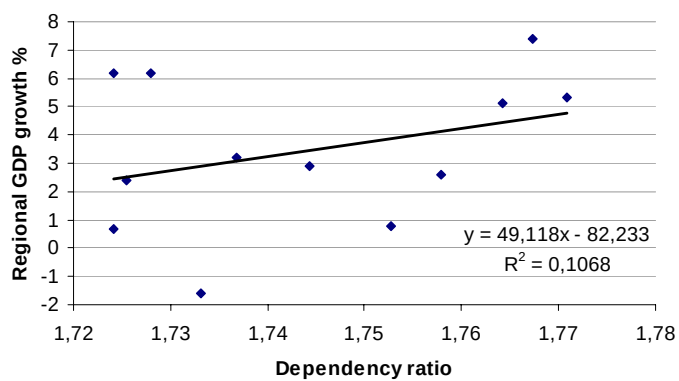
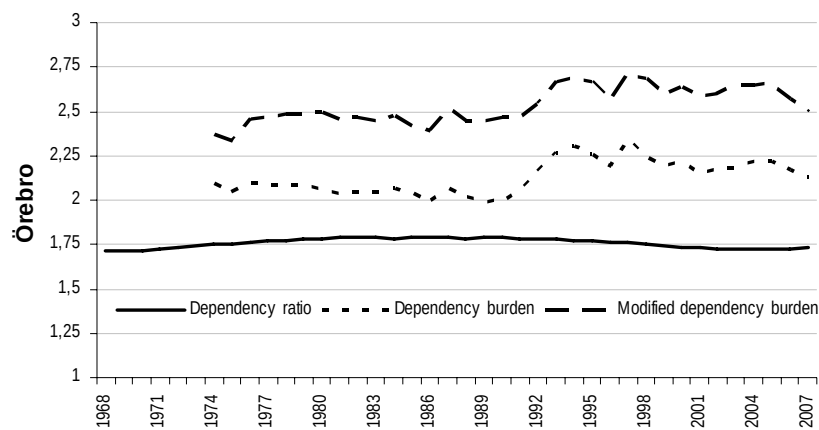
Västra Götaland



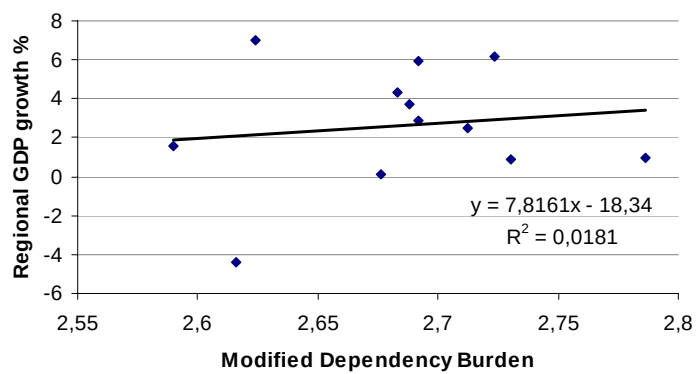
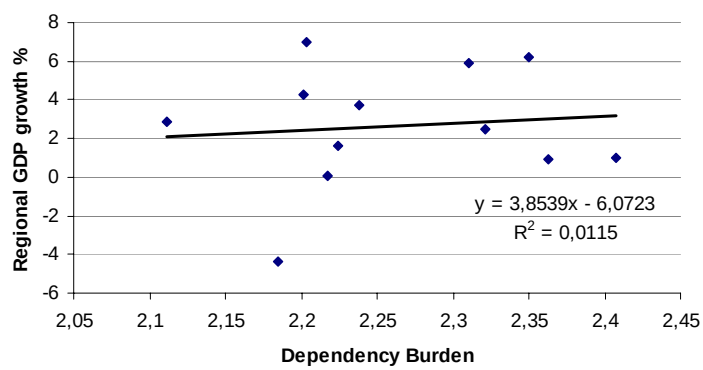
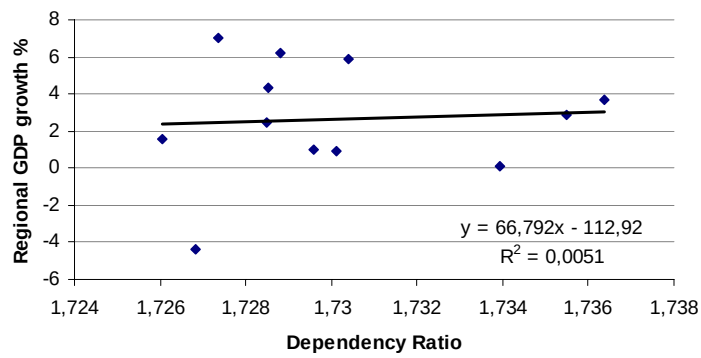
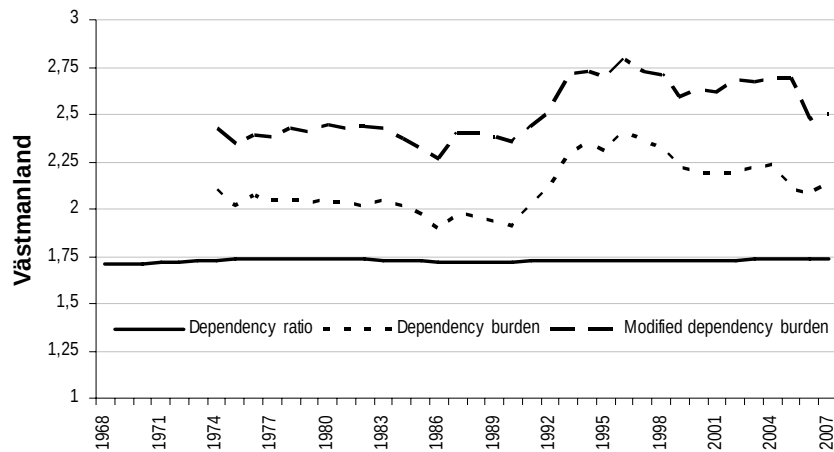
Värmland



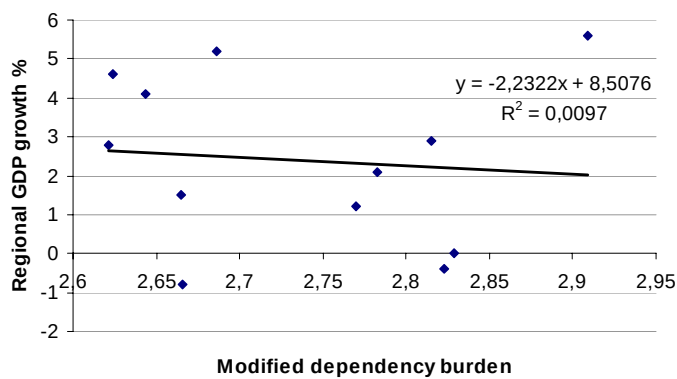
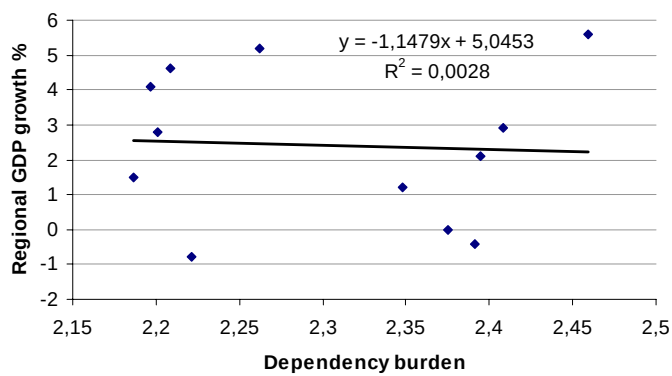
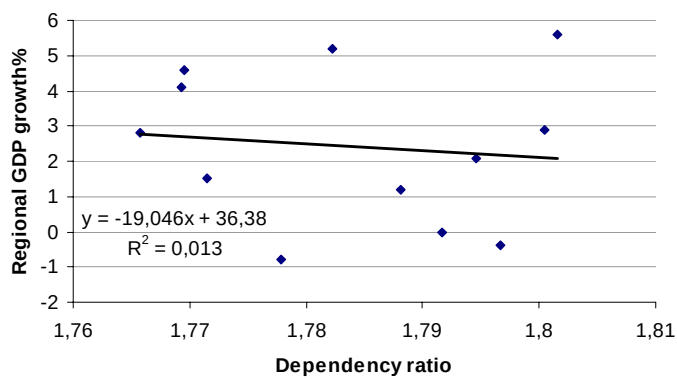
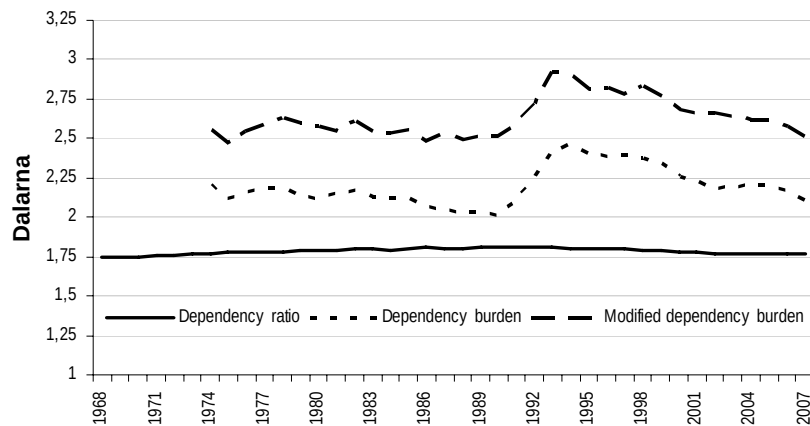
Örebro



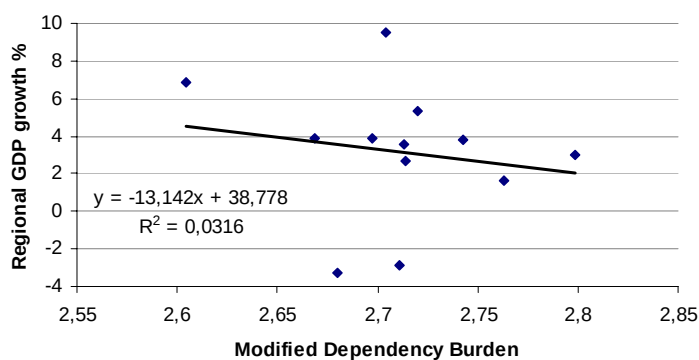
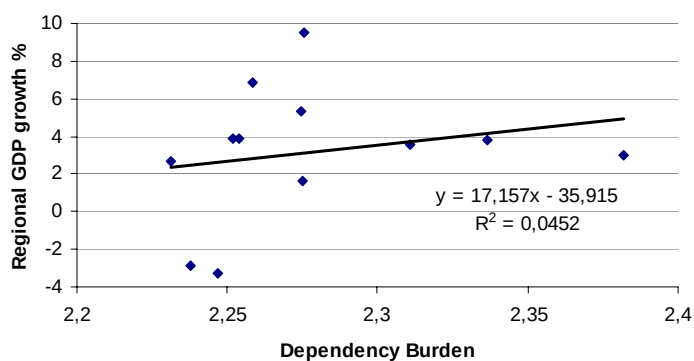
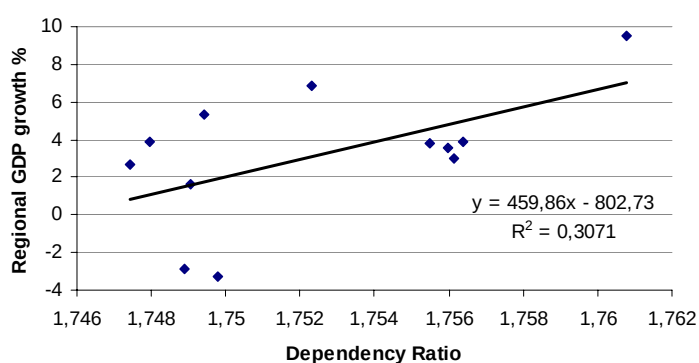
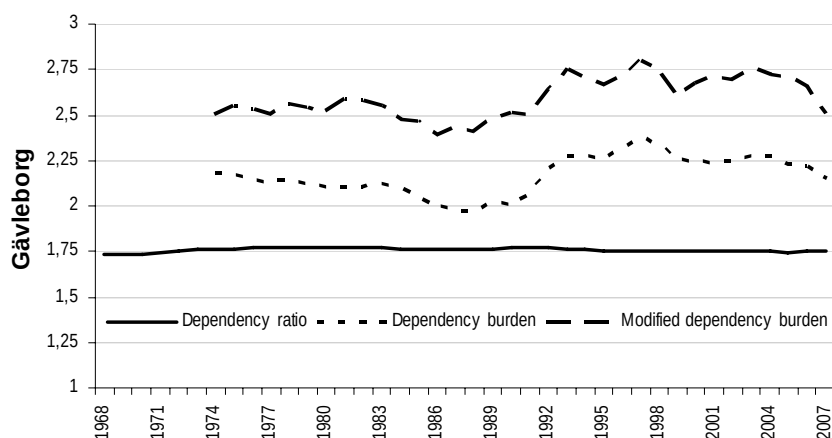
Västmanland



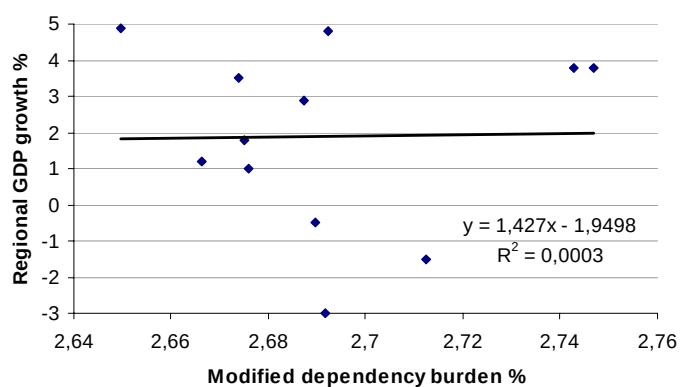
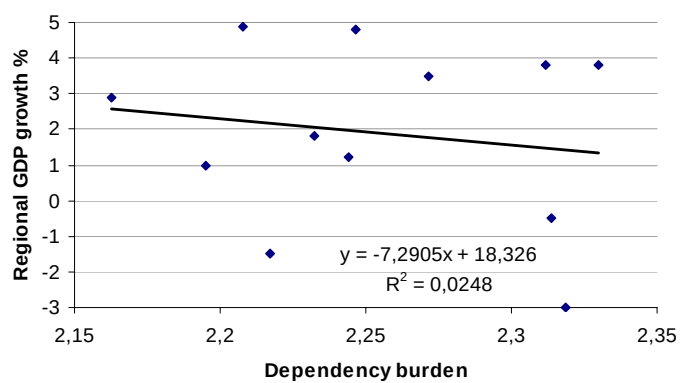
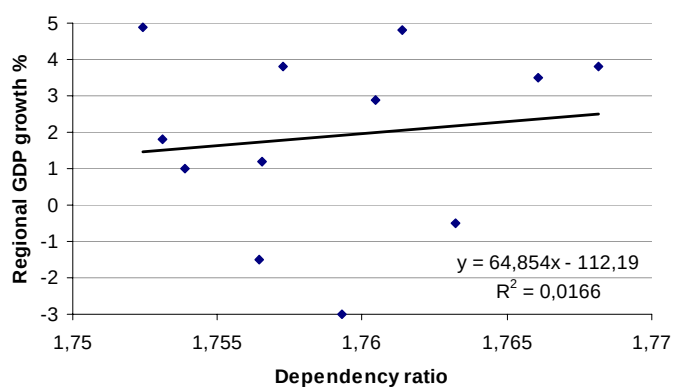
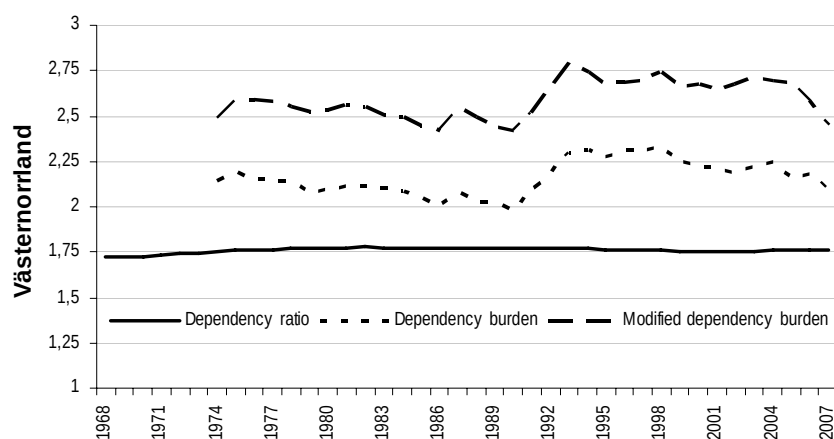
Dalarna



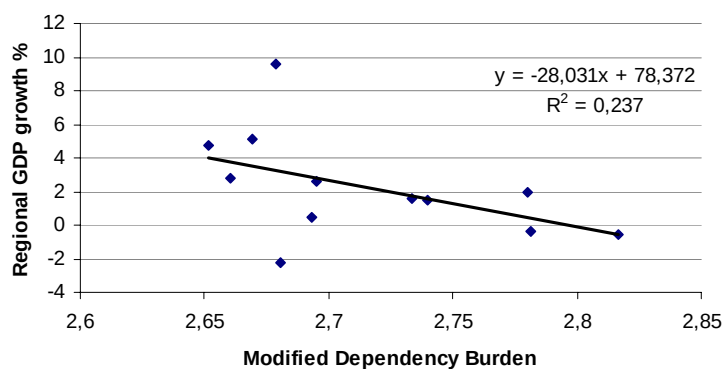
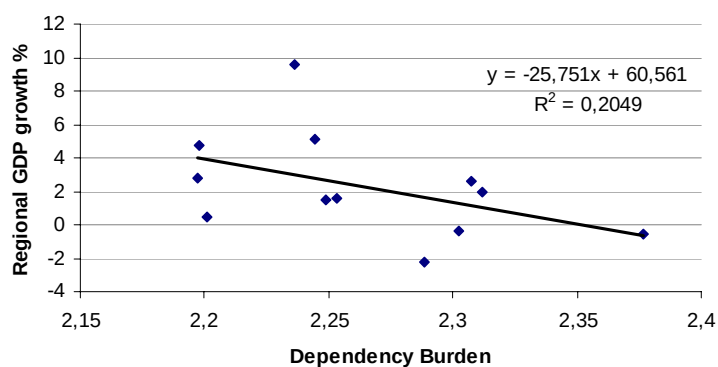
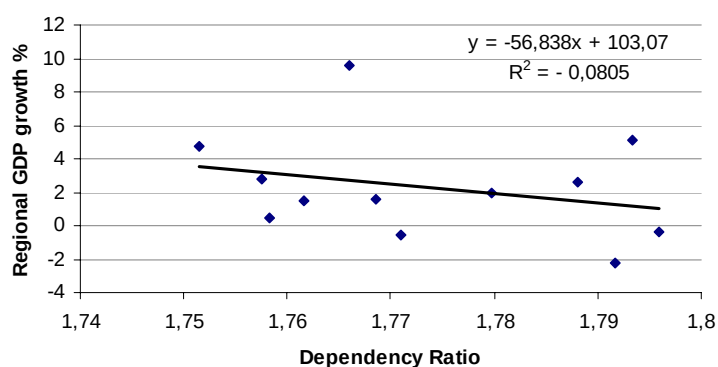
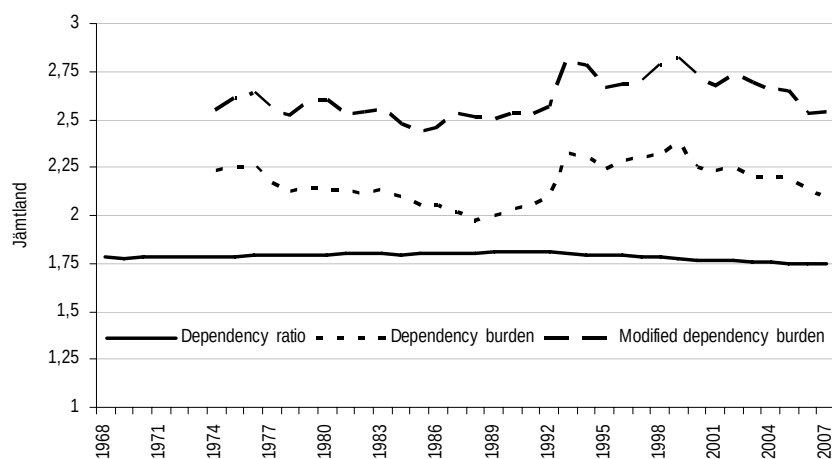
Gävleborg



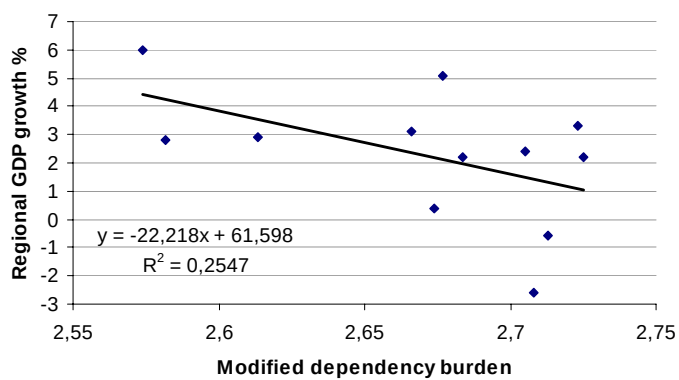
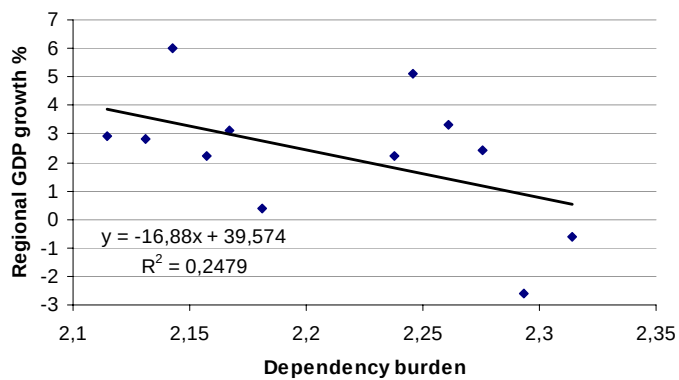
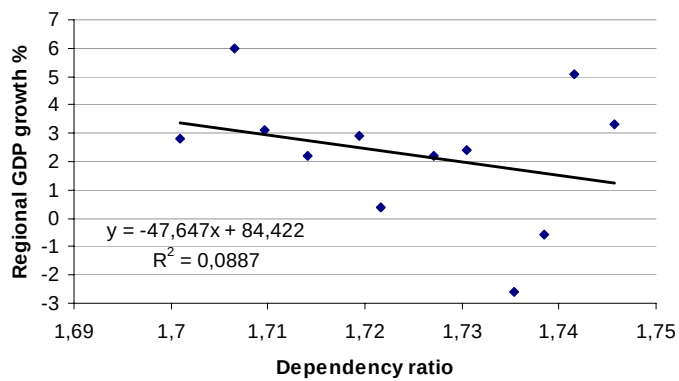
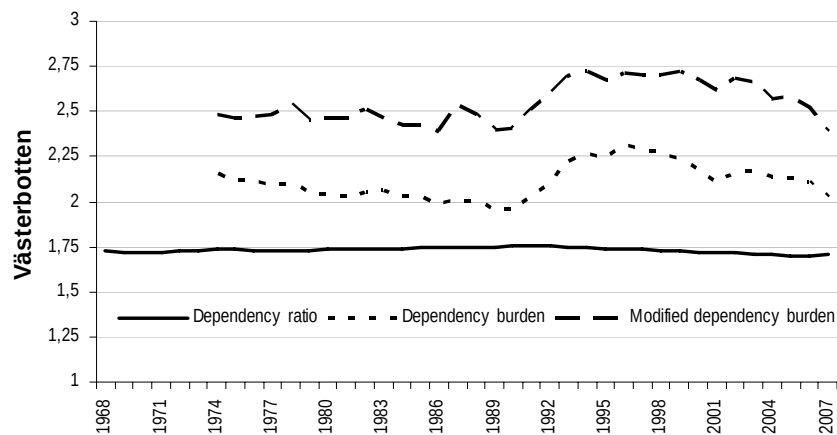
Västernorrland



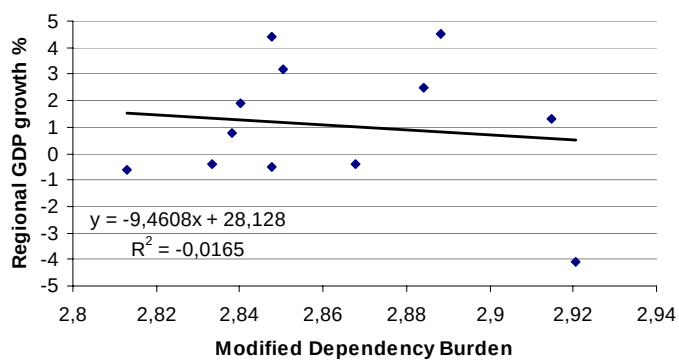
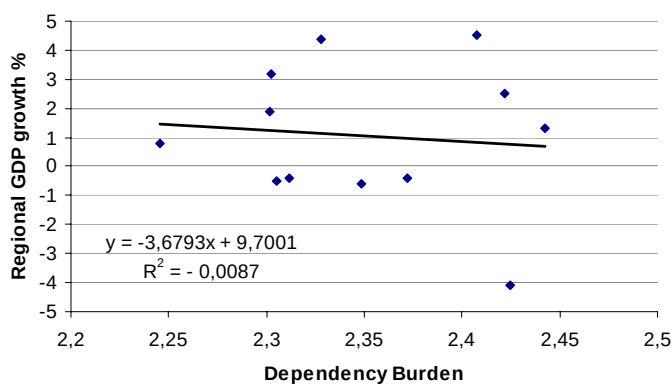
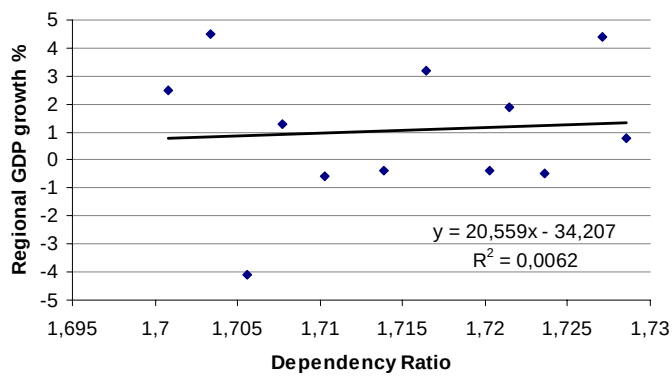
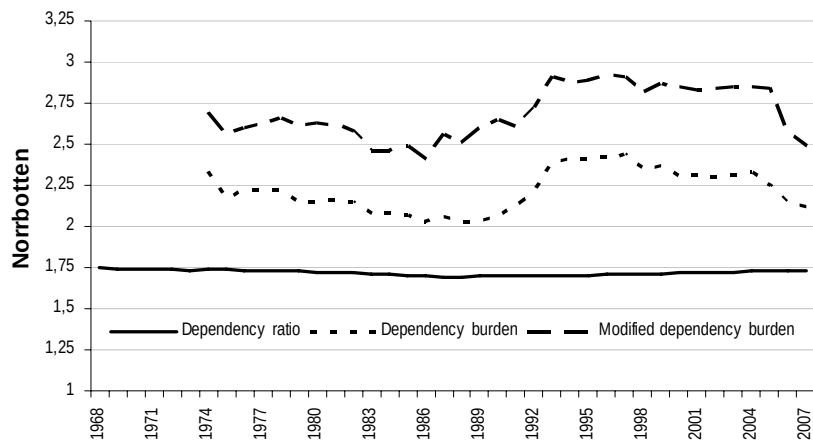
Jämtland



Västerbotten



Norrbotten



Appendix B: Typologies

Map B.1 Dominant branch of employment 2005

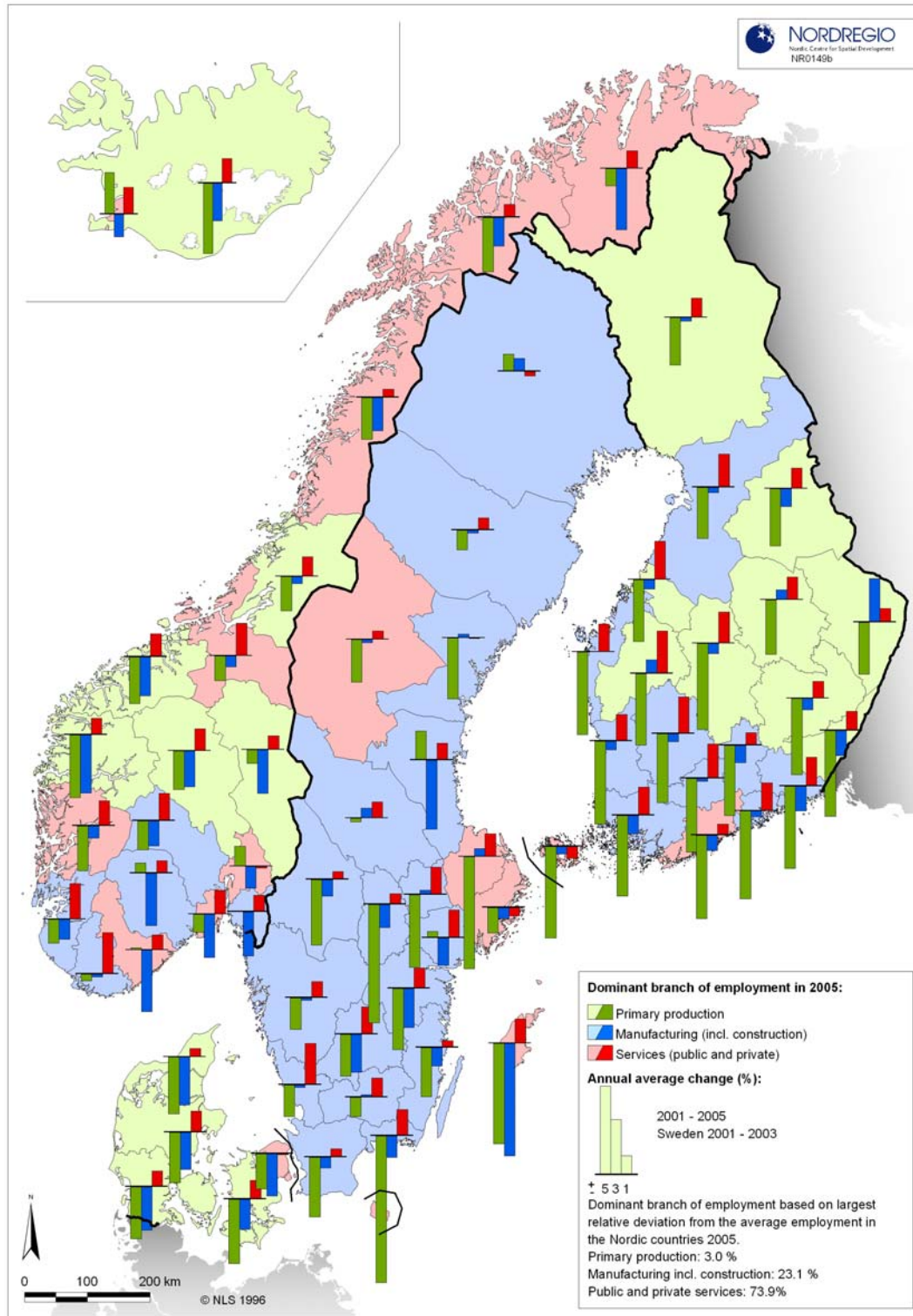


Table B1 A typology based on the structural effect (NSE) in relation to the difference (Diff) between the change in the Nordic regions and the change in the national economies. *Source: Eðvarðsson et al. (2007).*

Regions	Type	Characteristics	Regions	Types	Characteristics
Denmark			Finland		
København og Fredriksberg	2	MS-winner	Etelä-Savo	5	OS-loser
København	2	MS-Winner	Pohjois-Savo	5	OS-Loser
Frederiksborg	3	MS-Loser	Pohjois-Karjala	5	OS-Loser
Roskilde	4	OG-Winner	Kainuu	5	OS-Loser
Vestsjælland	3	MS-Loser	Keski-Suomi	5	OS-Loser
Storstrøm	3	MS-Loser	Etelä-Pohjanmaa	6	OG-Loser
Bornholm	3	MS-Loser	Pohjanmaa	6	OG-Loser
Fyn	3	MS-Loser	Keski-Pohjanmaa	6	OG-Loser
Sønderjylland	3	MS-Loser	Pohjois-Pohjanmaa	4	OG-Winner
Ribe	6	OG-Loser	Lappi	3	MS-Loser
Vejle	4	OG-Winner	Uusimaa	1	MG-Winner
Ringkøbing	6	OG-Loser	Itä-Uusimaa	5	OS-Loser
Århus	4	OG-Winner	Varsinais-Suomi	5	OS-Loser
Viborg	6	OG-Loser	Satakunta	5	OS-Loser
Nordjylland	6	OG-Loser	Kanta-Häme	5	OS-Loser
			Pirkanmaa	4	OG-Winner
			Päijät-Häme	5	OS-Loser
Iceland			Kymenlaakso	4	OG-winner
Capital region	3	MS-Loser	Etelä-Karjala	5	OS-Loser
Other regions	4	OG-Winner	Åland	3	MS-Loser
Norway			Sweden		
Akershus	1	MG-Winner	Stockholm	1	MG-Winner
Oslo	3	MS-Loser	Uppsala	1	MG-Winner
Østfold	5	OS-Loser	Södermanland	5	OS-Loser
Buskerud	5	OS-Loser	Östergötland	5	OS-Loser
Vestfold	1	MG-Winner	Örebro	6	OG-Loser
Telemark	5	OS-Loser	Västmanland	5	OS-Loser
Hedmark	5	OS-Loser	Blekinge	4	OG-Winner
Oppland	5	OS-Loser	Skåne	4	OG-Winner
Aust-Agder	1	MG-Winner	Värmland	5	OS-Loser
Vest-Agder	4	OG-Winner	Dalarna	5	OS-Loser
Rogaland	4	OG-Winner	Gävleborg	5	OS-Loser
Hordaland	4	OG-Winner	Västernorrland	5	OS-Loser
Sogn og Fjordane	5	OS-Loser	Jämtland	3	MS-Loser
Møre og Romsdal	6	OG-Loser	Västerbotten	5	OS-Loser
Sør-Trøndelag	4	OG-Winner	Norrbottnens	3	MS-Loser
Nord-Trøndelag	5	OS-Loser	Jönköping	4	OG-Winner
Nordland	5	OS-Loser	Kronoberg	6	OG-Loser
Troms	1	MG-Winner	Kalmar	6	OG-Loser
Finnmark	3	MS-Loser	Gotland	4	OG-Winner
			Halland	4	OG-Winner
			Västra Götaland	4	OG-Winner

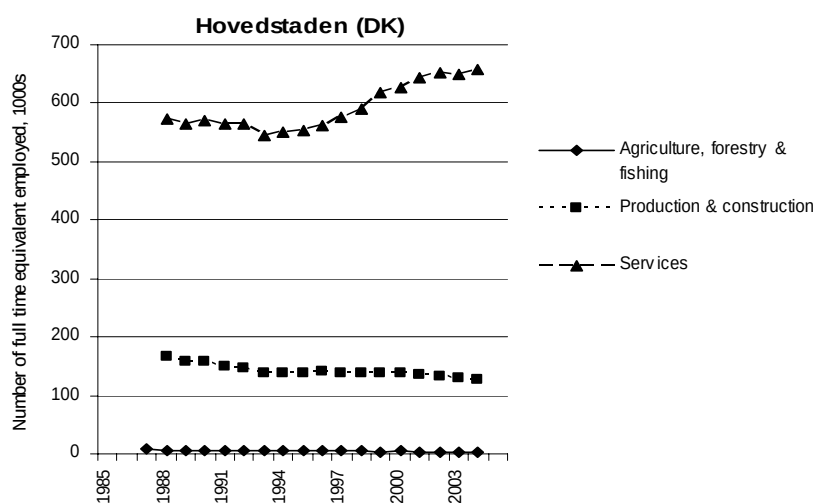
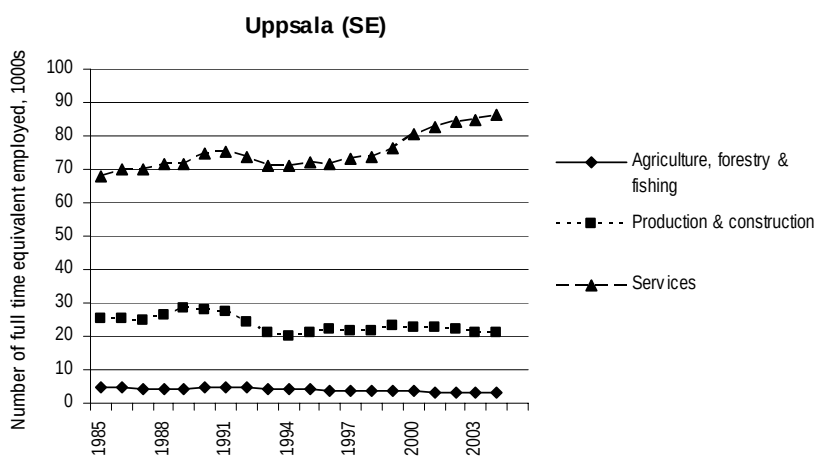
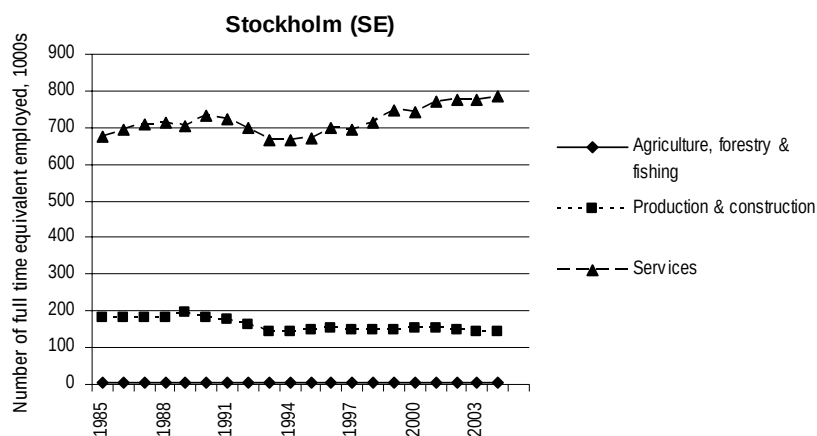
Table B.2 Regional families. Families containing at least three regions are shaded

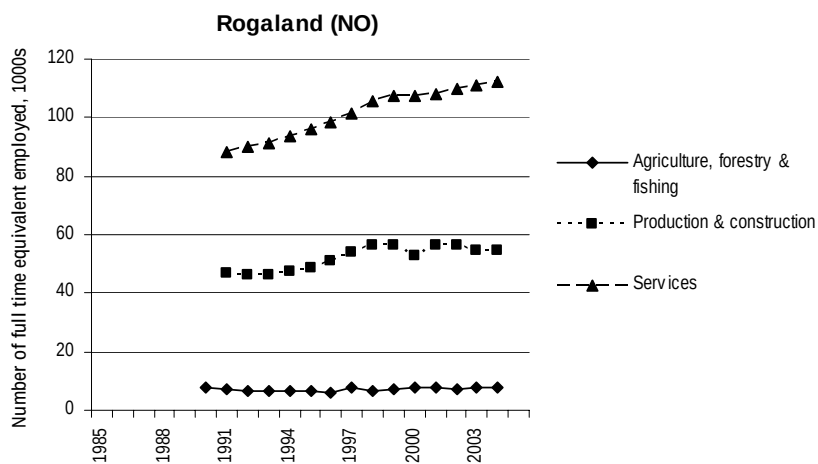
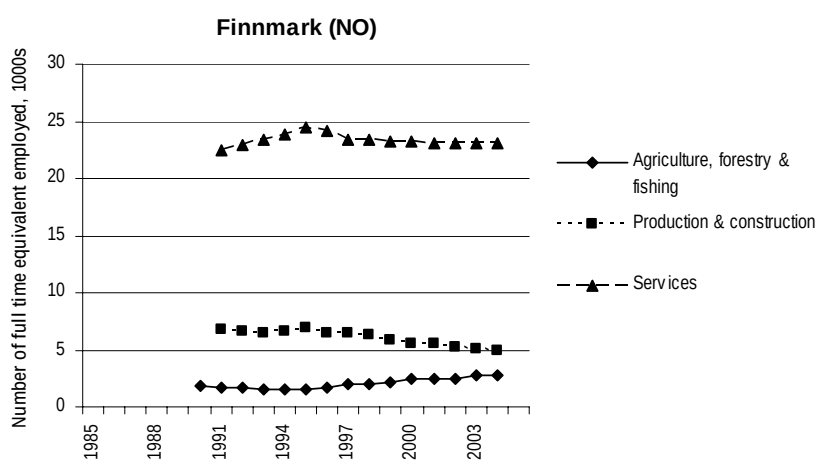
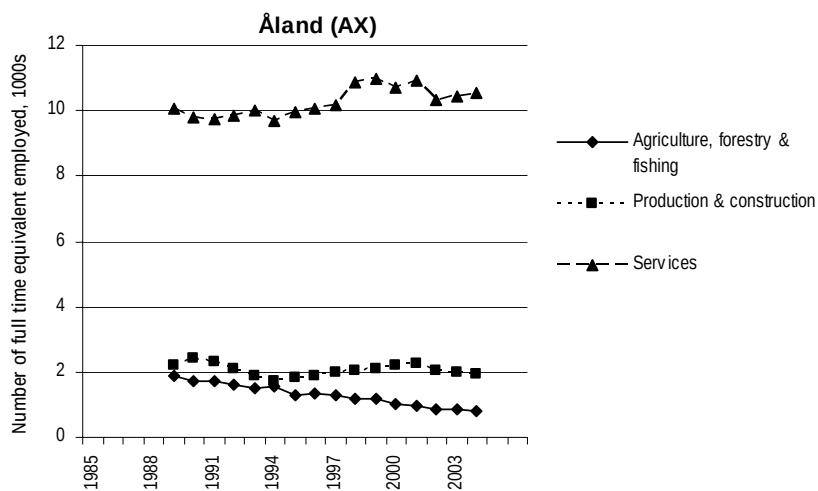
Structural change	Demographic development	Sector dominance	Region
1	1	3	Uusimaa
1	1	3	Akershus
1	1	3	Vestfold
1	1	3	Aust-Agder
1	1	3	Stockholm
1	1	3	Uppsala
1	2	3	Troms
2	1	3	Hovedstaden (DK)
3	1	1	Syddanmark
3	1	1	Sjaelland
3	1	3	Åland
3	1	3	Oslo
3	1	3	Reykjavik
3	4	3	Bornholm
3	5	1	Lappi
3	5	3	Finnmark
3	5	2	Norrbottn
3	6	3	Jämtland
4	1	2	Pirkanmaa
4	1	2	Vest-Agder
4	1	2	Rogaland
4	1	2	Jönköping
4	1	2	Skåne
4	1	2	Halland
4	1	2	Västra Götaland
4	1	3	Hordaland
4	1	3	Sør-Trøndelag
4	2	1	Midtjylland
4	2	1	other regions (IS)
4	2	2	Pohjois-Pohjanmaa
4	3	3	Gotland
4	3	2	Blekinge
4	6	2	Kymenlaakso
5	1	1	Keski-Suomi
5	1	2	Kanta-Häme
5	1	2	Päijät-Häme
5	1	2	Varsinais-Suomi
5	1	2	Itä-Uusimaa
5	1	2	Østfold
5	1	2	Buskerud
5	1	2	Östergötland
5	1	2	Västmanland
5	1	2	Västerbotten
5	2	1	Sogn og Fjordane
5	2	1	Nord-Trøndelag
5	3	1	Hedmark
5	3	1	Oppland
5	3	2	Telemark
5	3	2	Södermanland

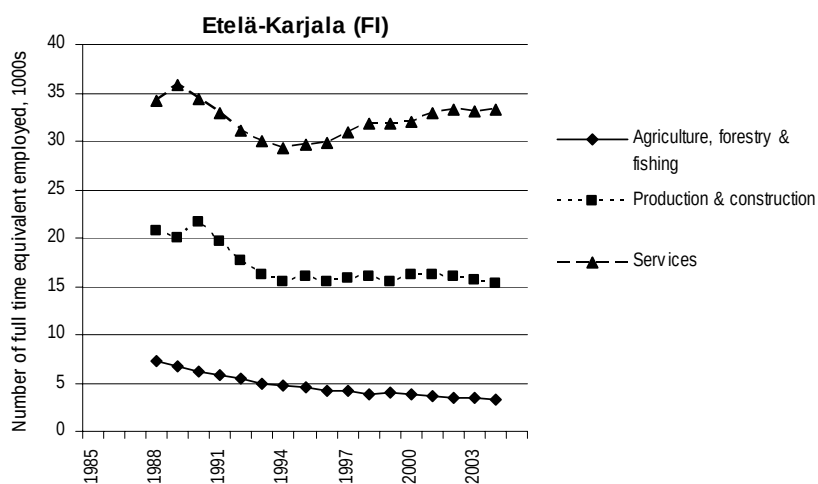
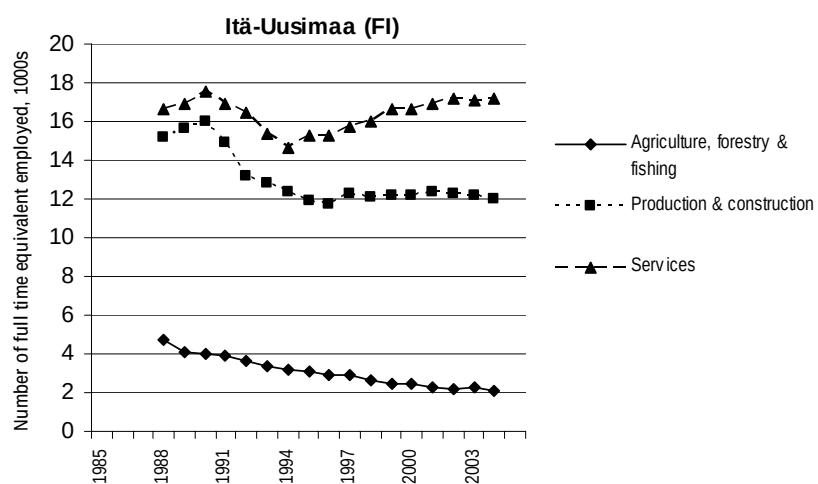
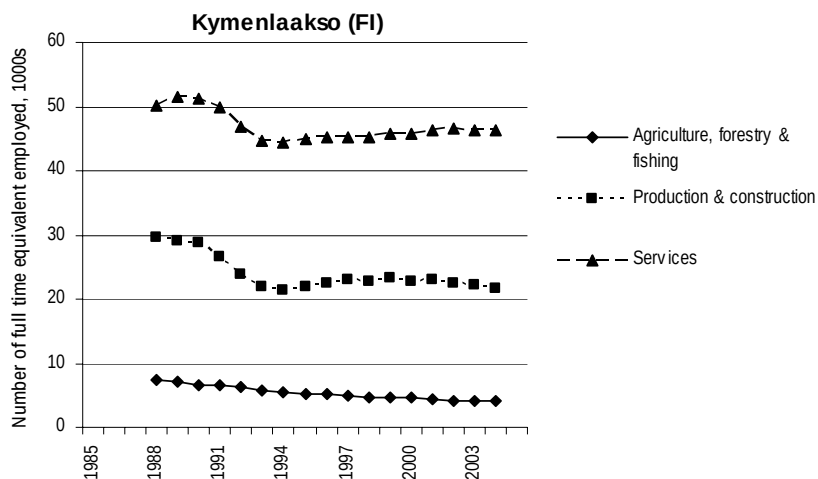
5	4	2	Värmlands län
5	5	1	Pohjois-Savo
5	5	1	Kainuu
5	5	3	Nordland
5	6	2	Satakunta
5	6	1	Etelä-Karjala
5	6	1	Etelä-Savo
5	6	1	Pohjois-Karjala
5	6	2	Dalarna
5	6	2	Gävleborg
5	6	2	Västernorrland
6	1	1	Nordjylland
6	1	2	Kronoberg
6	2	2	Pohjanmaa
6	2	1	Møre og Romsdal
6	3	2	Örebro
6	4	2	Kalmar
6	5	1	Etelä-Pohjanmaa
6	5	1	Keski-Pohjanmaa

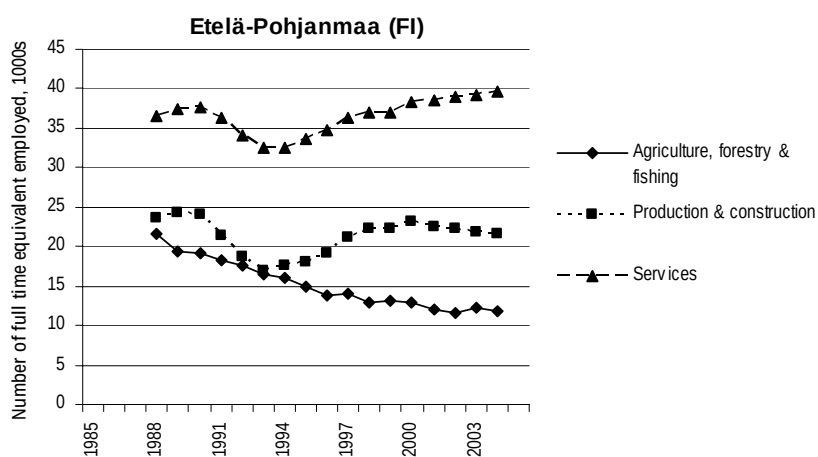
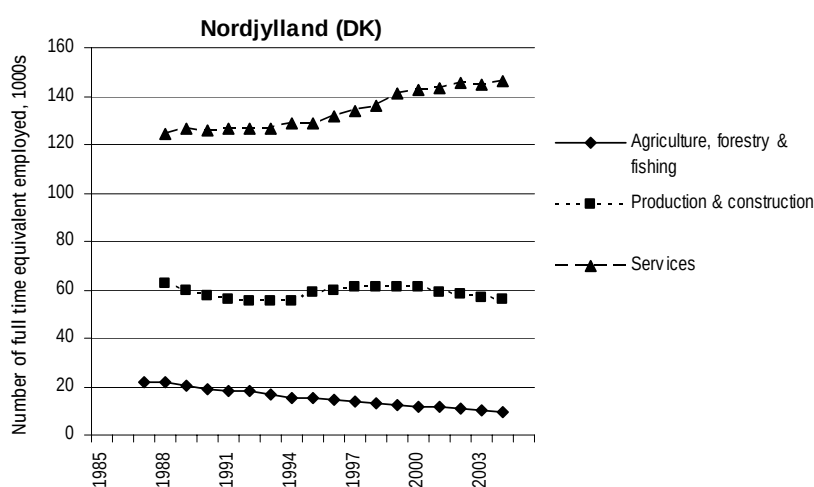
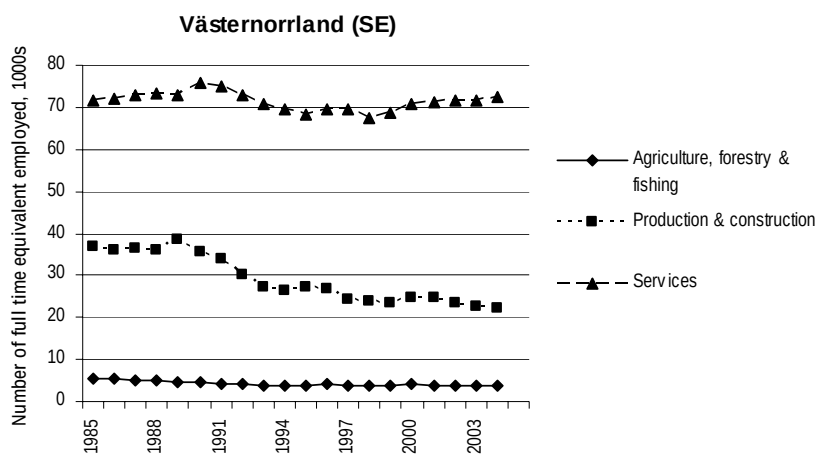
Appendix C: Case study sector employment

Number of employed in full time equivalents for the selected case study regions



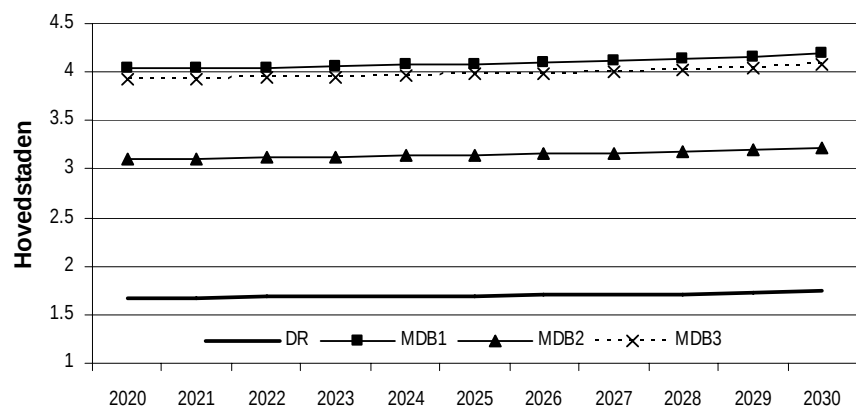
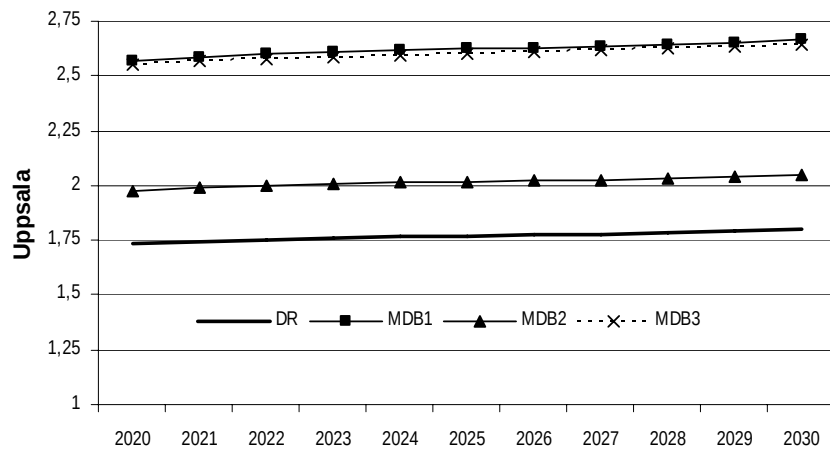
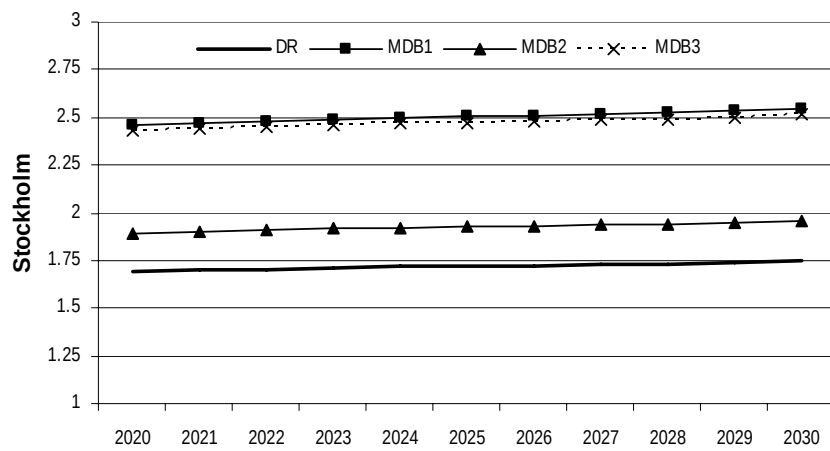


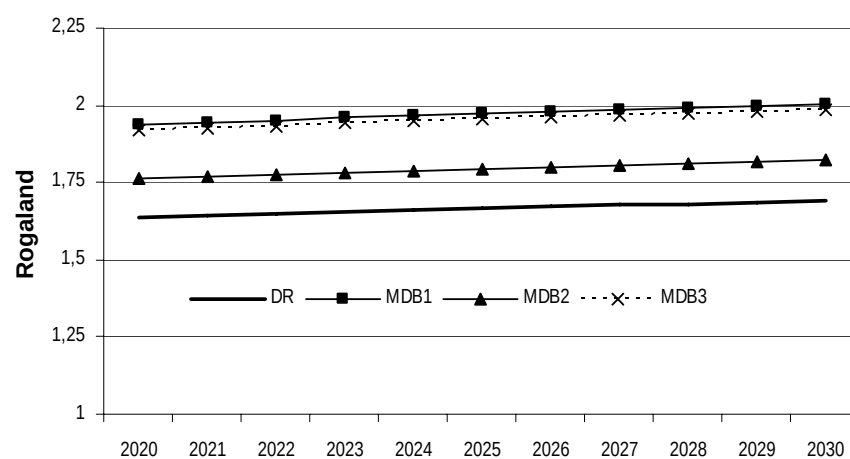
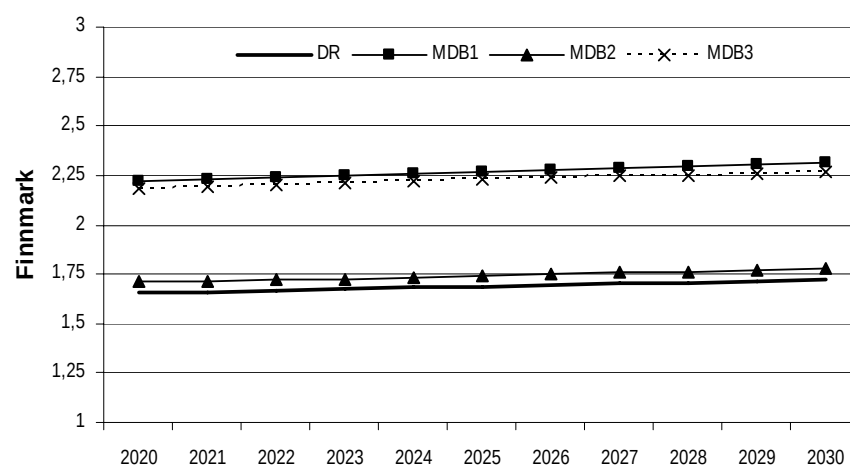
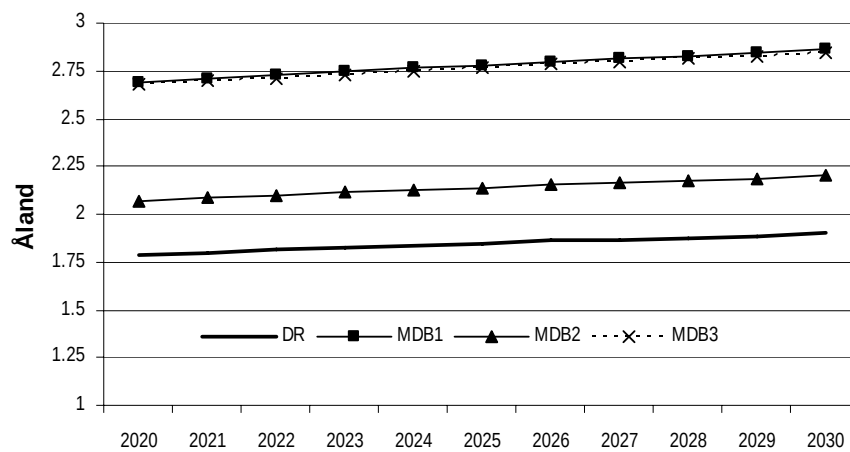


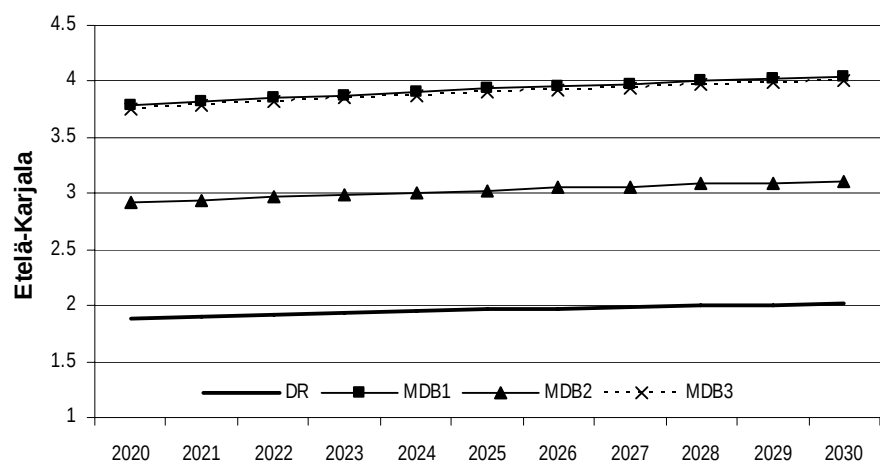
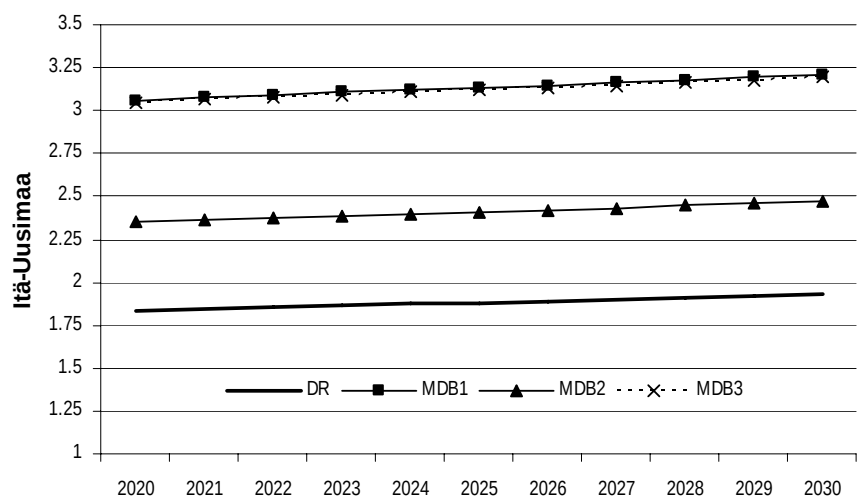
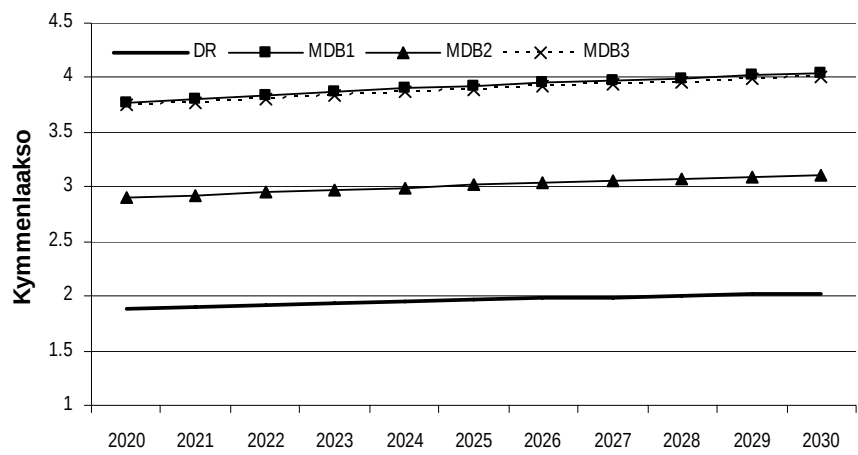


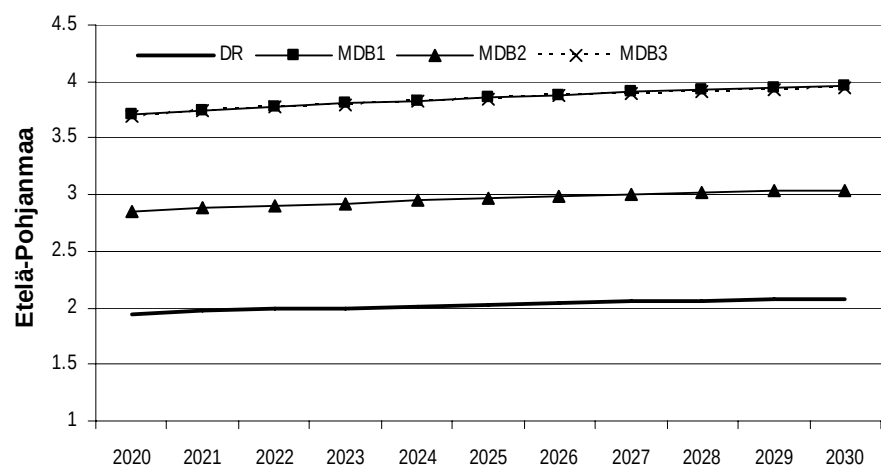
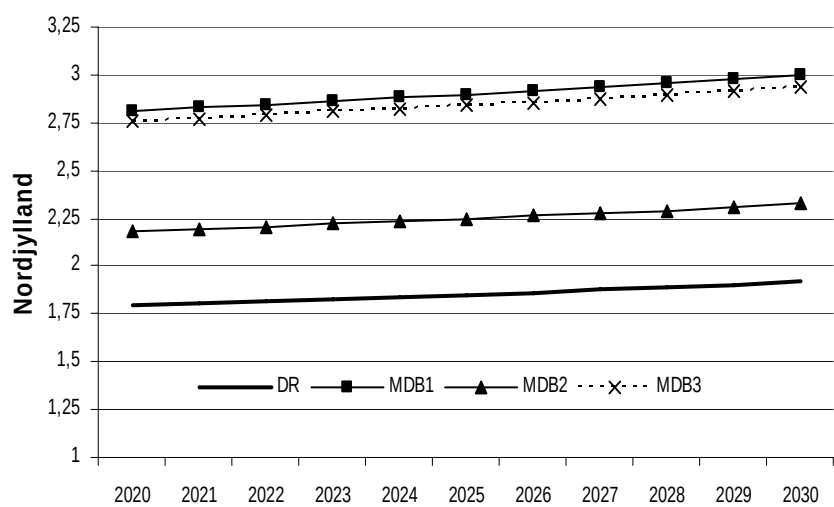
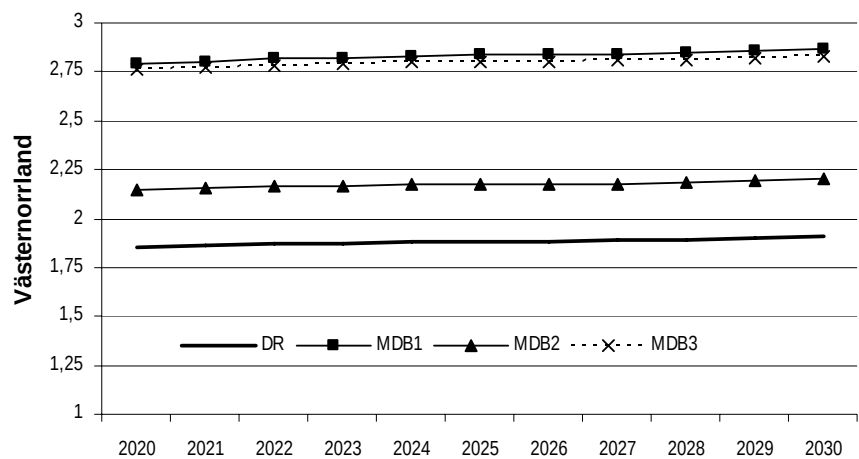
Source: Eurostat

Appendix D: Regional Simulations









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