

Decentralization and Economic Growth per capita in Europe

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Preface

The main issue addressed in this paper is the impact of regional decentralization on economic growth. The relationship between regional decentralization and economic growth is complex. First, regional decentralization must be correctly defined and measured. Second, it is difficult to isolate the effects of decentralization on economic growth, because economic growth has an infinite amount of determinants, for example, education, investments, technological progress, natural resources etc. Although the relationship between regional decentralization and economic growth is difficult to determine, it is useful to estimate this relationship in order to obtain a better picture of the optimal institutional structure of a country, especially regarding national and regional competencies of public authorities.

The sections 1, 2 and 3 have been written together. Section 4 is the individual contribution of Pieter Crucq and section 5 that of Hendrik-Jan Hemminga.

Finally, we thank the FNP for the challenging and exciting assignment. We are grateful to Mr Paul Elhorst, Mrs Elise Kamphuis, and Mr E.H. van Leeuwen for their support and enthusiasm.

Summary and conclusions

Summary

In this paper the relationship between decentralization and economic growth is investigated. The focus is on decentralization from the national government to the highest substate level in a country, which we define as regional decentralization.

Section 2 discusses the different dimensions of decentralization. Political decentralization refers to the degree to which central governments allow non-central government entities to implement certain political functions. Fiscal decentralization in a regional context has to do with the total amount of regional cash flows, which are regional expenditures and regional revenues, with respect to national fiscal activity. Administrative decentralization refers to the extent of autonomy of non-central government entities relative to central control. Administrative decentralization distinguishes deconcentration, delegation and devolution, where deconcentration is the weakest form of administrative decentralization and devolution is the strongest form. An overlap between political, fiscal and administrative decentralization exists. Section 2 also discusses the advantages and disadvantages of regional decentralization.

Section 3 starts with an overview of centralization and regionalism, two opposite trends that have taken place in Europe over the past decades. The decentralization history of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Ireland, the Netherlands, Portugal, Spain, Sweden and the United Kingdom is described. Countries are classified in groups using two characteristics. First countries are classified according to their institutional structure, which can be federal, unitary decentralized or unitary centralized. Second, countries are classified according to the different forms of regional administrative decentralization, which are devolution, delegation or deconcentration.

Section 4 starts with an overview of the existing literature concerning decentralization and growth. Most studies used national data to investigate the impact of decentralization. None of the empirical studies find a negative statistically significant relationship between decentralization and growth, while some find a positive statistically significant relationship. Next the section uses the Solow-Swan neoclassical growth model (Solow, 1956; Swan, 1956) to test the relationship between growth and decentralization. Regional data are used of the fourteen European countries mentioned above that cover the period 1978 – 2002. We estimate a regression equation using ordinary least squares (OLS), in which we regress some decentralization variables and a set of control variables on real economic growth per capita. The conclusions are threefold. First, regions in federal states grow faster than regions in

unitary decentralized states and the difference is statistically significant. Regions in centralized states have a higher growth rate than regions in federal and unitary decentralized states, but this result is not statistically significant. Second, autonomous regions have a growth rate that is 0.5 percent higher than in other regions, but the difference is not statistically significant. Third, a relatively high share of regional taxes compared to the regional budget has a negative and statistically significant impact on growth.

Chapter 5 contains a qualitative analysis of important factors for the functioning of (fiscal) decentralization. It is examined whether these factors have contributed to the results of section 4. It is shown that regional financial responsibility is very important. Regional governments should be responsible for a significant part of their own resources, regarding both expenditures and income. A second conclusion is that central governments should be very careful with assistance to regions because it can lead to inefficient spending policies by regional governments.

Conclusions

Some findings of this study indicate that decentralization of authority to the regional level might have positive effects on economic growth. First, in the literature overview no empirical studies showed up that find a negative statistically significant relationship between decentralization and growth, while some studies find a positive statistically significant relationship.

Second, the results of the model used in this study provide indications that validate a positive relation between decentralization and economic growth:

- regions in federal states grow faster than regions in unitary decentralized states and the difference is statistically significant.
- the growth rate of autonomous regions is a half percent higher than in other regions given the specification of the model. Regarding a total average growth rate of 1.7 percent for all regions over the entire period, this effect is quite large. A possible explanation is that the administration of autonomous regions is relatively more efficient and accountable. Although the results show that autonomous regions have a higher growth rate, the evidence is not strong enough, because the result is not statistically significant.

However, the following results of the used model did not validate the positive relationship:

- regions in centralized states have a higher growth rate than regions in federal and unitary decentralized states, but this result is not statistically significant.

- the higher the share of regional taxes in the regional revenues, the lower the growth rate. A possible interpretation is that it is more efficient to collect taxes at the country level due to scale economies.

The somewhat ambiguous results can be explained by the trade-off between the advantages and disadvantages of decentralization. The negative effects of decentralization consist of: extra costs of decentralizing authority, frustration of income redistribution policy, neglecting spillover effects and the smaller economies of scale in the provision of public goods and in the collection of taxes (see section 2.2.2).

The positive effect of decentralization are the efficient provision of public good due to better tailoring outputs to specific preferences of citizens, stimulating regional development and fostering intergovernmental competition (see section 2.2.1).

Although it is not possible to draw any robust conclusion from the analysis that decentralization leads to higher growth rates, some findings indicate that decentralization might have positive effects. More research concerning the relationship between decentralization and economic growth is needed.

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1 Introduction

Decentralization of authority to the regional level has been given considerable more attention in the European Union (EU) the last few decades. In many countries it has been recognized as an alternative to the predominantly hierarchical relationships that existed within countries with respect to governance structures. Advocates believe there is much to be gained from decentralizing authority and responsibilities to lower levels of government. In that way decision-making and information is 'closer to the action' which leads to efficiency and allocation benefits. In the opposite camp, it is argued that decentralizing authority may lead to negative efficiency effects because the overall situation in a country gets less attention and lower government officials can abuse their power position. Fact remains that many countries already use this strategy and even more countries are in the process of implementing or increasing this form of governance. Also the EU as a whole believes in the importance of the concept of decentralization. The adoption of the subsidiarity principle in 1992 demonstrates that general consensus exists about the idea that decisions should be taken at the lowest possible level of government. Therefore, it is interesting to have a closer look at the subject and specifically at the effects of decentralization and the theoretical models that underlie this phenomenon.

The objective of this paper is to provide a better understanding of the relationship between decentralization of authority and its effects on the economy of a region. The main question is whether decentralization of authority has a positive effect on a region's economy. Countries obviously use this strategy if they think the region's economy will benefit.

The term decentralization is a broad, multidimensional concept. In general, decentralization is the transfer of power, resources or autonomy from a higher, central level of governance to a lower one. The terms higher and lower refer to the size of the territorial area, as well as the surface area and the size of institutions. Decentralization often refers to the transfer of authority and responsibility for public functions from the central government to subordinate government organizations and/or private organizations. In this paper we focus on decentralization from the national government level to the regional level within the state. However, the definition of a region is not unambiguous. With the regional level we mean the highest substate level in a country.

This paper is organized as follows. Chapter 2 and 3 analyse the problem. Chapter 2 defines decentralization and discusses the advantages and disadvantages of decentralization. Chapter 3 describes the history and development of decentralization in fourteen European countries. Chapter 4 contains an empirical analysis in which the problem statement is tested. Chapter 5

investigates the factors that may have an influence on the effectiveness of decentralization. In chapter 6, we recapitulate our major findings.

2 Decentralization

This chapter deals with the concept of decentralization. Section 2.1 distinguishes four different types of decentralization. Section 2.2 discusses the theoretical advantages and disadvantages of decentralizing authority.

2.1 Definition of decentralization

The World Bank (2001) distinguishes four different types of decentralization, namely political, fiscal, administrative, and market decentralization. All four types exist in different forms and combinations across countries, within countries, and within sectors. Market decentralization does not imply a transfer of power or responsibilities to lower levels of government but to private companies. Therefore it is not relevant for our research and left aside in this paper. Political, administrative and fiscal decentralization have in common that decision making or executive power is transferred to lower levels of government. The degree of these three forms of decentralization together gives an indication of the degree of regional autonomy. This section discusses the terms in detail. One thing to keep in mind is that it is not always easy to draw clear lines between the terms political, administrative and fiscal decentralization, because to some extent the terms overlap each other. The distinction between these three forms is used in the discussion about advantages and disadvantages in section 2.2. Further, the distinction is relevant to measure and estimate different aspects of regional autonomy in chapter 4.

Political decentralization

Political decentralization refers to the degree to which central governments allow non-central government entities to implement certain political functions. It represents a shift in power and responsibilities as these functions used to be the central governments' responsibility. Political decentralization aims to give citizens or their elected representatives more power in public decision-making. It also supports democratization by giving citizens, or their representatives, more influence in the formulation and implementation of policies. It is often associated with pluralistic politics and a representative regional or local government. Pluralism acknowledges the diversity in interests and tastes that exist in society. Adherents of the theory of pluralistic politics claim that subordinate governments are better able to serve the different interests of individuals compared to central governments. A representative regional government implies that the citizens of a country have sovereignty through their representatives in the regional government. Advocates of political decentralization assume that political decentralization to regional governments improves the decision making process because regional governments have more and better access to information that is relevant to the diverse interests in society

than the access national political authorities have. The concept also implies that the selection of representatives from regional or local electoral jurisdictions allows citizens to know their political representatives better and allows elected officials to improve their knowledge of the needs and desires of their constituents. Political decentralization often requires constitutional or statutory reforms, the development of pluralistic political parties, the strengthening of legislature, creation of local or regional political units, and the encouragement of effective public interest groups. Because the description of political decentralization covers a wide range, other forms of decentralization often entail a degree of political decentralization as well.

Fiscal decentralization

Fiscal decentralization refers to fiscal policies, which is the whole of expenditures and revenues of public authorities, that central governments transfer to non-central government entities. Financial responsibility is a core component of decentralization. Fiscal decentralization is also a form of more responsibility in decision-making and policy design and therefore could also be seen as a sub-form of political decentralization. Fiscal decentralization covers two interrelated issues (Davey, 2003). The first is the division of spending responsibilities and revenue sources between national, regional and local levels of government. The second is the amount of discretion of regional and local governments to determine their expenditures and revenues. To carry out decentralized functions effectively, regional governments must have an adequate level of revenues –either raised locally or transferred from central government– as well as the policymaking authority concerning expenditures. Fiscal decentralization can take many forms, including

- a) self-financing or cost recovery through user charges, examples include tuition fees for education, toll charges for roads, and recreational fees for park use;
- b) generating regional revenues through taxes, for example, income tax;
- c) intergovernmental transfers that shift general revenues from taxes collected by the central government to regional governments for general or specific uses, also known as (matching) grants.

Administrative decentralization

Administrative decentralization refers to the extent of autonomy of non-central government entities relative to central control. Administrative decentralization seeks to redistribute authority, responsibility and financial resources for providing public services among different levels of government. It is the transfer of responsibility for the planning, financing and management of certain public functions. This responsibility is transferred from the central government and its agencies to other units of government agencies, subordinate units or levels of government, semi-autonomous public authorities or corporations, or area-wide,

regional or functional authorities. Considerable overlap between administrative and political decentralization can be noticed here. Political decentralization implicitly assumes an extensive form of administrative decentralization. However, it is not necessary that weak forms of administrative decentralization imply political decentralization. The three major forms of administrative decentralization are (1) deconcentration, (2) delegation, and (3) devolution.

(1) Deconcentration involves the transfer of tasks to sub-national units, but no transfer of decision-making authority. There is no significant redistribution of authority. Deconcentration is the weakest form of decentralization and is used most frequently in unitary states. Unitary states are states that are governed constitutionally as one unit with a constitutionally created legislature. Deconcentration redistributes financial and management responsibilities among different levels of the central government. It can merely shift responsibilities from central government officials in the capital city to those working in regions, provinces or districts, or it can create a strong regional administration under the supervision of central government ministries.

(2) Delegation is the transfer of decision-making authority from national to sub-national levels. Delegated authority must be exercised within a policy framework established at the national level. Ultimate responsibility remains at the national level. Delegation is a more extensive form of decentralization than deconcentration. Through delegation central governments transfer responsibility for decision-making and administration of public functions to semi-autonomous organizations not wholly controlled by the central government, but ultimately accountable to it. These semi-autonomous organizations can also take other forms than a governmental governance body like a regional parliament. Examples are housing authorities, transportation authorities, special service districts, semi-autonomous school districts, regional development corporations, or special project implementation units. Usually these organizations have some discretion in decision-making.

(3) Devolution is the transfer of authority to an autonomous unit that can then act independently. When governments devolve functions, they transfer authority for decision-making, finance, and management to quasi-autonomous units of regional government with corporate status. With devolution, responsibilities for services are transferred to governmental institutions in regions. These entities can have members elected by their region's citizens. Furthermore, often they can raise their own revenues and have independent authority to make investment decisions. In a devolved system, regional governments have clear and legally recognized geographical boundaries over which they exercise authority and within which they perform public functions. It is this type of administrative decentralization that underlies most political decentralization.

2.2 Advantages and disadvantages of decentralization

There are several advantages and disadvantages of decentralization that have an influence of whether to use this policy. In this section the advantages and disadvantages of decentralizing authority are discussed. An indication is given which form of decentralization is associated with each advantage and disadvantage.

2.2.1 Advantages of decentralization

The following advantages have been taken from a widely used textbook on public finance written by Rosen (2002) and from an article on decentralization written by Kalin (2003).

- 1) It leads to a more efficient and accountable administration.
- 2) It leads to better regional development.
- 3) It fosters intergovernment competition.
- 4) It leads to more regional differences which increases welfare.
- 5) It stimulates innovation in public policy design.

1) The first advantage is that decentralization leads to a more efficient and accountable administration. This advantage is mostly associated with political and administrative decentralization. The demand for more efficient governments has risen over the last few decades because it was thought that central governments were not performing efficiently. Successes of drafted policies and their implementation were not apparent and the call for more decentralization to regional governments rose. Regional governments are for a few reasons more efficient and accountable. First, regional governments are more capable of tailoring policies to the needs and capabilities of their region. They possess more knowledge about their region and thus have an advantage compared to central governments which are situated further from the action. Second, regional governments have a closer relationship with the citizens and organizations in their region which increases the accountability of the governing body. It is easier to hold persons responsible for their actions when power is decentralized. Another advantage of increased accountability is the prevention of corruption. Although this is mostly associated with developing countries, it is present in developed countries as well, albeit in less severe forms. The accountability of officials and their closeness to regional citizens is a powerful deterrent for them to abuse their position. Third, this higher degree of accountability combined with the increased availability of information makes a more efficient use of resources possible. This means that more can be achieved with limited or less resources.

2) The second argument in favor of decentralization is that it leads to better regional development. This argument is mostly associated with political and fiscal decentralization. One of the main reasons for governments to use decentralization as a policy tool is to

improve regional development. A few explanations underline this logic. First, it is likely that decentralization removes obstacles for entrepreneurs and networks in a region. Uniformity of legal guidelines and institutional settings with central state rule can retard the development in a region. With decentralized authority, decision-making can become faster and more clear while laws can be adjusted to specific conditions in a region. Second, implementation of policies means that regional resources are more easily mobilized and used. Regional citizens and organizations belong to these resources. They will be more prone to contribute to and participate in regional initiatives when they feel connected and responsible for the policies and plans for regional development. The financial and psychological self-interest of actors in projects and initiatives will increase their sustainability.

3) Decentralization fosters intergovernment competition. This argument is mostly associated with political decentralization. In private firms, managers who produce inefficiently will eventually be driven out of business. This is an incentive for them to constantly try to minimize costs and improve the efficiency of the allocation of resources. This direct incentive however, is missing in government bodies. Decentralization can act as a mechanism to produce these incentives. Tiebout's model (1956) is the basis for this mechanism where people 'vote with their feet'. In this model it is suggested that whenever citizens are able to recognize mismanagement by governmental managers they may move to another community in which managers produce more efficiently and are more responsive to their citizens. Thus, with decentralization of authority, a form of intergovernmental competition is created.

4) The fourth advantage relates regional diversity to an increase in welfare as a function of the consumption of public goods. This advantage is mostly associated with political and fiscal decentralization. It is also strongly related to the previous argument and Tiebout's model. Here, however, the increase in welfare instead of government efficiency is considered. People differ in their preferred supply of public goods. With centralization of decisions over public policy, these policies are the same for all regions and their options to differentiate are limited. Given decentralization, regions can diversify more in their supply of public goods. In this way, people can move to the regions which provide them with their most optimal mix of public services (Darby et al. , 2003). Some prefer a high level of public goods and do not mind paying high taxes while others find it utility-increasing to pay low taxes and enjoy a lower level of public goods. Due to different preferences, decentralization which leads to more heterogeneity of regions may increase welfare.

5) The fifth argument states that decentralization stimulates innovation. This argument is mostly associated with political and to a lesser extent with administrative decentralization. With decentralized decision-making, leeway is given to regional governments to design and implement policies. This can result in experimentation and new approaches to public policy

design which were not considered or allowed with a centralized regime. Some experiments will inevitably fail, but valuable long-lasting improvements for public policy design may also be discovered. This could not only benefit the region itself but other regions as well, providing that cross-regional sharing of ideas is stimulated.

2.2.2 Disadvantages of decentralization

Rosen's textbook (2002) discusses the following disadvantages of decentralization:

- 1) Costs and benefits of spillover effects are not taken into account.
- 2) Less will be benefited from scale economies in the provision of public goods.
- 3) Taxes levied by decentralized regions can be inefficient from a national point of view.
- 4) Tax collection lacks scale economies.
- 5) Income policy is frustrated (Redistribution between high and low incomes is difficult).

1) The first disadvantage of decentralization is that spillover effects are not taken into account. This disadvantage is especially important with political decentralization. Activities undertaken in one region can affect the activities and well-being in other regions. These spillover effects can work in both ways, positive as well as negative. Positive spillover effects create advantages for other regions. For example, when a region has a very good educational system, eventually some of the well-educated citizens will move to other regions. These regions will then also benefit from the better educational system in other regions. Negative spillover effects mostly have to do with pollution created in one region which spreads to other regions. The provision of public goods that produce positive spillovers will be too low. This is because the benefit that the public good produces for *other* regions is not taken into account by the region which produces the public good. Production which creates negative spillovers on the other hand will be too high, because regional governments will fail to internalize the costs imposed on other regions. The result is an inefficient allocation of resources because regions only care about their own benefits and costs and do not consider the effects of their policies on other regions.

2) The second argument is the absence of scale economies when goods are produced at lower levels of government. This argument is mostly associated with political decentralization. Scale economies arise when the costs per user decline when the number of users increases. When every region is authorized to provide certain public goods themselves, scale economies that can arise when provided by the central government, will not be realized. An example is the provision of library services. Although this example is more appropriate for smaller areas, such as municipalities, it will nonetheless clarify what is meant by scale economies in the provision of public goods. If each jurisdiction provides its citizens with a library, each jurisdiction must have a library building, hire people, and maintain a book collection. With

central control, multiple municipalities can have one library for all its citizens, instead of each municipality separately. Although costs may increase somewhat (more travel costs for some citizens, the need for a larger library, more staff and a larger book collection), the savings from only having to operate one location definitely outweigh those extra costs.

3) Taxes levied by decentralized regions can be inefficient from a national point of view. This disadvantage is present with fiscal decentralization. First, taxes should distort decisions of people as little as possible. Second, from tax theory it has been derived that efficient taxation requires that tax rates on goods should be inversely proportional to demand elasticities, also known as the inverse elasticity rule. The demand elasticity of a good reflects the change in demand of that good when its price changes. For example, if the price of apples increases with 10% and the quantity demanded falls by 20% as a result, the elasticity of demand is 2 (percentage change in quantity demanded divided by percentage change in price). If the demand for a product is inelastic the quantity demanded will hardly react to price changes. An inelastic public good is education. Whenever the regional government decides to increase spending on education and raises higher taxes to obtain the necessary funds, it will hardly lead to a reduction in the demand for education. The reasons for this low inelasticity of demand is due to the importance of education and the fact that there are hardly any substitutes for education.

More elastic public goods include public recreational facilities, such as parks. An increase in, for example, entry fees could have a significant negative impact on park-visitors. Concluding, inelastically demanded goods should be taxed at relatively high rates because this will distort consumers' decisions as little as possible. Thus, insofar as taxes distort prices, they will distort demand and supply less for goods that have an inelastic demand or supply. When regions are able to set different tax rates (for example: capital tax) they have an incentive to set their own tax rates lower than the ones in other regions to attract investment. This however, may lead to responses from other regions, which will also lower their tax rates. In the end, this kind of tax competition can lead to inefficiently low tax rates on some goods which violates the inverse elasticity rule.

4) Scale economies exist in tax collection. Fiscal decentralization may have the effect that these scale economies cannot be realized anymore. When every region is responsible for its own tax collection and administration, much more resources are needed compared to a centralized system. With a centralized system, the government only needs one taxing authority and can benefit from economies of scale. A simple example would be that one tax authority would only need one computer to keep records while with decentralization every region needs one.

5) Equity issues arise when one of the objectives of governments is to redistribute income to the poor. Governments often use (income) taxes as a tool to redistribute income. A

progressive system taxes the higher incomes relatively more while revenues are redistributed to favor the poor. With fiscal decentralization, regions can set their taxes and level of expenditures independently from each other. Situations can arise where some regions have a pattern that favors low-income citizens. This could lead to an immigration of poor people from other regions, as a result of which costs increase. At the same time, high-income individuals will leave the region if more beneficial tax structures for high incomes exist elsewhere, as a result of which revenues decrease. In sum, the redistributive policy will collapse. This leads to the conclusion that redistributive policies are difficult to carry out at the regional level. This is a more general example that shows that, even when it is beneficial, decentralization has its limits and some things have to be handled at the state level rather than at the regional level.

3 European history and development of decentralization

In this chapter the history of Europe with respect to decentralization is discussed. Section 3.1 is a brief overview of centralization and regionalism, two opposite trends that have taken place in Europe over the past decades. Section 3.2 contains the country analysis. Fourteen European countries are classified on two principles. Table 1 summarizes some detailed information about decentralization policies, which will be used to classify these countries. First, countries can be classified by the constitutional basis of their regional government levels. Second, they can be classified according to the different forms of regional decentralization. In section 3.2.1 the federal states Belgium, Austria and Germany are discussed. Section 3.2.2 describes the decentralized unitary states Sweden, Denmark, France, Italy, the Netherlands, Spain and the United Kingdom. Finally, section 3.2.3 provides an overview of the centralized unitary states, Finland, Greece, Ireland and Portugal. Most information of the individual country analysis is obtained from the website of the Committee of the Regions (CoR)¹. The CoR is the political assembly that provides local and regional authorities with a voice at the heart of the EU.

3.1 Centralization and regionalization in Europe

In 1957, six European countries decided to create the European Economic Community (EEC). Participant countries decided to abrogate tariffs within the EEC and implemented a common tariff policy for third countries. After the Second World War, this can be seen as a first step of centralizing competencies from the national level to the European, supranational level. From this moment on, participant countries could not independently determine tariffs. In the following decades a process of European integration took place with several events that decreased national power and increased the power of Europe. In 1967, three main institutions of the EEC were created, the European Commission, the Council of Ministers, and the European Parliament. In 1979, the European countries made a set of monetary agreements, the EMS. From this moment, monetary policy became more centralized because exchange rates between member states could not float freely anymore. The Single European Act (1986) and the Maastricht Treaty (1993) integrated markets by reducing and eliminating non-tariff barriers. In 1997, the Stability and Growth Pact was adopted in order to enforce and maintain fiscal discipline. Although the Stability and Growth Pact is not a perfect instrument (Buti, 2003), it restricts national fiscal policy.

¹ Also Norton (1994) and Prakke and Kortmann (2004) are extensively used to get insight in the relationships between national and subnational authorities.

In 1999, twelve countries made the final step to irrevocably fix exchange rates. In 2002 the Euro replaced the national currencies. European monetary integration had been achieved. In other words, all events mentioned above have shifted competencies from the national to the European level. The history of the European integration process shows a decline in political, fiscal and monetary competencies of individual countries.

The opposite movement in Europe is regionalization. Regionalization is defined as the division of an area, in this case a state, into regions and the transfer of administrative and political responsibilities to those regions (Schrijver, 2006). Regionalization is associated with decentralization and regional autonomy. As we will see in section 3.2, regionalization took place especially in the United Kingdom, Spain, Italy, France and Belgium.

As a result of the European integration and regionalization process in the 1980s, there was a growing need for participation of regions to be involved in European issues. In 1992, with the Treaty of Maastricht the subsidiarity principle was introduced. The subsidiarity principle is intended to ensure that decisions are taken as closely to citizens as possible. Actions at the community level are constantly examined to see if they are justified with respect to the possibilities available within EU-states. The principle of proportionality means that the EU should not take any action that goes beyond the objectives of the treaties. The introduction of the subsidiarity principle contributed to the creation of the CoR in 1994. The tasks of the CoR can be summarized by a quote of Former Chancellor of Germany Gerhard Schröder: *'The objective of the work of the CoR is to make Europe closer to its citizens and to bring the subsidiarity principle to life.'*

The Committee plays a central role in the decentralization process in the EU. The CoR makes political requests for the subsidiarity and proportionality principles to be better applied in the decision-making process. Basically, one could say that the CoR protects the interests of autonomous regions and promotes decentralization. This is because the CoR makes sure that the EU only interferes in cases where it is efficient to interfere. The CoR solely has a consultative function to inform the European Commission and the European Parliament. Its power therefore must not be overestimated (Millan, 1997). Nevertheless, the CoR is an official institution for sub-national authorities to contribute and clarify their points of view.

3.2 Country analysis

The objective of the country analysis is to determine and to compare their degree of decentralization. The development of decentralization of individual countries is compared and classified according to two main characteristics. Table 2 provides a survey of the countries and their characteristics: institutional structure and type of decentralization –from strong to weak.

Table 2: Classification of countries

Type of decentralization →	(1) Devolution	(2) Delegation	(3) Deconcentration
Institutional structure ↓			
Federal state	Austria Belgium Germany		
Unitary decentralized state	Italy U.K. Spain	Denmark France Netherlands Sweden	
Unitary centralized state			Greece Ireland Portugal Finland

First, we distinguish countries according to their institutional structure². Countries are classified as federal, decentralized unitary or centralized unitary states. Federal states have regions which hold powers and responsibilities that have a constitutional foundation. In all these federations, regions have their own governing body with legislative power over certain areas and cooperate with the central government in devising policies. A unitary state is constitutionally governed as one single unit. In decentralized unitary states, powers are transferred to lower levels of government but sovereignty rests solely with the central government. The state retains the power to withdraw or change the power position held by decentralized units at all times. In centralized unitary states, decentralization is basically non-existent, only in a few areas regions can have responsibilities regarding implementation or supervision of laws. Some states that have predominantly centralized the political and administrative structure, with the exception of one region, are treated as centralized, because the decentralization of non-legislative responsibilities is not a dominant strategy. These regions are an exception to the rule.

Second, countries are distinguished with respect to the form and degree of decentralization. If countries have pursued policies of decentralization in the last couple of decades, then these measures can be characterized as deconcentration, delegation or devolution. Theoretical differences between these three forms of decentralization have been explained in section 2.1.

² For a more detailed discussion about the institutional structure of the country sample we recommend Loughlin (2000).

The fourteen individual countries are grouped in three categories, (1) devolution, (2) delegation or (3) deconcentration. The classification in these three groups refers to the current situation in a country. This classification is more ambiguous than the distinction in institutional structure between countries. The institutional structure is easy to identify because of the objective characteristics. The basis form and the degree of decentralization is a more subjective interpretation of less easily identifiable characteristics. The political organization of countries differs and subsequently the division of responsibilities between the state and the region in each single policy area. Some rough distinctions can nonetheless be made based on a number of criteria. Countries are classified according to the following criteria. If (some) regions within a country have a regional parliament, then a country is located in group (1). The existence of a regional parliament implies that a region has legislative competencies. Which competencies are controlled by the regions are anchored in the constitution³. Differences in the number of regional competencies in group (1) exist (see Table 3).

Spain and the UK have a higher level of regional autonomy relative to other countries when looking at the number of competencies. The level of regional autonomy in Austria is relatively low with respect to other countries in group (1). From the other three countries in group (1), German regions have more autonomy than Italian and Belgium regions. Also differences exist between primary and secondary legislative powers. When the regional government can make legislation without restrictions or guidelines, it is called primary legislation. Secondary legislation is legislation made by the regional government but is always subordinate to primary legislation from the central government. In most cases, this means that boundaries or regulations imposed by the central government stipulate how many leeway regional parliaments have in making legislation. A third important distinguishing feature between countries in group (1) is whether asymmetry is present in the regional structure of decentralization. Asymmetry in the context of decentralization means that some regions have more regional autonomy than other regions. Asymmetrical devolution has taken place in Italy and Spain, but differences between special and ordinary regions are decreasing over time (Molero, 1998; Caravita, 2004). The UK still experiences a high level of asymmetrical decentralization. Scotland, Wales and Northern Ireland have much more autonomy relative to the English regions.

Group (2) and group (3) differ in the number of regional, administrative and decision-making responsibilities. Countries in group (2) have decentralized decision making powers or at least administrative powers in various areas listed in Table 4. Group (3) countries only have responsibilities in the area of regional development as can be seen from Table 4.

³ This does not apply for the UK, because the UK does not have a constitution.

Table 3: Primary (x) and secondary (xx) legislative powers

	Austria	Belgium	Germany	Italy	Spain	UK:	- N.Ireland	- Scotland	- Wales
Agriculture	xx	xx	xx	x		x	x	xx	
Criminal law			xx		xx				
Culture			x		x		x	x	xx
Economic development			x			x	x	xx	
Economic law			xx						
Economic policy		xx	xx		xx				
Education			x	xx			x	x	xx
Employment policy		xx							
Energy		xx		xx					
Environment	x	x	xx		x		x	x	xx
External trade		xx		xx					
Health care					x		x	x	xx
Infrastructure		x		xx	xx		x	xx	
International relations		xx		xx					
Justice			xx				x	x	
Labour law			xx		xx				
Local authority	x		x	x			x		
Local banks				xx					
Public housing		x	xx		x		x	x	xx
Regional government					x			x	xx
Social services					x		x		xx
Social welfare			xx		xx				
Spatial planning	x	x		xx	x				xx
Tourism	x			xx	x			x	xx
Transport	xx	xx	xx	x	xx		x	xx	

Another important distinction is that countries in group (2) have regional councils who are elected directly by the population, while countries in group (3) have regional councils who are not directly elected. This distinction implies that regions of countries in group (2) have some decision competencies, otherwise regional direct elections would be useless. It also increases their accountability to the citizens. Further, regions in group (2) countries are allowed to levy taxes in contrast to regions in group (3) countries, although the possibilities of Dutch and French regions to collect taxes are rather limited.

Table 4: Differences delegated and deconcentrated countries

	Swe.	Den.	Fra.	Net.	Fin.	Gre.	Ire.	Por.
-Directly elected regional council:	yes	yes	yes	yes	no	no	no	no
-Regional responsibilities:								
1. Health care	x	x						
2. Social welfare	x	x		x				
3. Education		x	x					
4. Public order				x				
5. Environment	x	x	x	x				
6. Culture	x	x	x	x				
7. Infrastructure	x	x	x	x				
8. Public transport	x	x	x					
9. Spatial planning	x	x	x	x	x			
10. Regional development	x	x	x	x	x	x	x	x
-Regional taxes:	yes	yes	yes	yes	no	no	no	no

3.2.1 Federal states

In Europe, Belgium experienced the strongest change with respect to the institutional structure. Before 1970, Belgium was a unitary state. Since then, Belgium moved towards a federal state. The process towards a federal state with the accompanying transfer of authorities to the Belgian regions can be classified as devolution. This decentralization process started in 1970 when the constitution was changed to distinguish the regions Brussels, Walloon, and Flanders. In 1980, the Flemish and Walloon regions were granted autonomy. At this moment, linguistic communities and geographic regions determined the administrative subdivision. In 1981, both Walloon and Flanders acquired a regional government. Only in 1988, Brussels, last of the three regions, obtained a regional parliament and government as well. Afterwards, the powers of the regions expanded in areas such as education, environment, economy and scientific research. In 1993, the federalization process was completed. However, in Belgium, most responsibilities reside at the central government with some responsibilities shared with the regions. The region's only legislative power is their privilege to issue regional decrees on some matters that have the force of law. Both revenue and spending of public money is divided between the federal and regional

government. This decentralized system can be seen as symmetrically decentralized as all three regions share the same privileges.

Germany has had a federal structure for a long time. Because the political structure already was considerably decentralized shortly after the end of the Second World War, changes towards more decentralization have been scarce over the last few decades. The federation of Germany was founded in 1949. Germany is divided in regional states, the Länder, which are recognized in the constitution and which all have their own elected legislature. The initial structure of regional governments as laid out in the basic law was highly decentralized. The Länder implement federal legislation, have legislative power in areas not addressed by federal legislation, and hold the power to block tax laws that have been proposed by the central government. Tax legislation remains mainly a national matter and tax administration a regional matter. The collection of taxes is decentralized and tax rates are uniform. The revenues from most taxes are shared between the different levels of government. A distinctive feature from German decentralization is the horizontal payments between rich and poor states. Regarding all this, Germany is a country which has symmetrically devolved powers to the regions. With only a few areas of legal competence, the current situation is one where a low level of devolution is in place in all regions. The last couple of decades, few decentralization measures have been taken, only some public sector reforms that concern the local level. Also the German unification of 1990 did not lead to great shifts of power between the federal government and the Länder. The power of regions in European affairs did increase as a result of the revision of the basic law in 1992.

Austria has experienced a process of slight decentralization. In 1974, federalism was expanded with an amendment to the federal constitution. Another amendment in 1983 further deteriorated the influence of the federal government. In 1988, the Austrian länder were given powers to conclude international treaties. In Austria, the overwhelming majority of legislative acts are carried out at the federal level. It is administratively subdivided into nine regions, the Länder. At the regional level, governments mostly have only the responsibility to implement federal laws. In only a few areas of (smaller) importance the regions have more powers. It seems that Austria could also be characterized as a decentralized unitary state due to the fact that the regional states have long been enshrined in the Constitution and they hold some exclusive powers. Austria therefore is an example of a federal state with a moderate level of devolution.

3.2.2 Unitary decentralized states

The regional level in Sweden consists of the counties. In Sweden, the number of counties decreased between 1962 and 1973. In 1975, Sweden adopted a new constitutional law. An important part of this constitutional law is that counties are entitled to levy taxation and that

decision-making powers are to be exercised by elected representatives in county councils. In the seventies, regional governments acquired more responsibilities in the fields of education, health and housing. In general, counties have seen an increase in the responsibility to implement state decisions and an increase in their financial autonomy. In 1999, Sweden established four pilot regions to experiment with a new division of local and regional responsibilities. New regions were created based on 'old' county councils or on federations of municipalities. This regionalization process was not a success, partly because the powers granted to the regions were too limited. Important to note is that in Sweden, the regions are legally on the same level as the local institutions. Regions do not have control over the local institutions. The decentralization of Sweden can be characterized as delegation of powers to the regional level, because the national authorities determine to a large extent the expenditures of regional authorities, but the counties must finance expenditures themselves through taxation.

In Denmark, the decentralization process can also be characterized as delegation. However, Denmark has two examples of devolution, the Faroe Islands and Greenland. The Faroe Islands became autonomous in 1948 and Greenland became autonomous in 1979. These regions will be ignored in the rest of the paper because of their specific properties. In Denmark, just as in Sweden and Finland, legislative power is centralized at the state level. The number of regional counties in Denmark was reduced from 25 to 14 in 1970. As a result of this decline, the size of a single county increased and it became more attractive to decentralize functions from the state to the regions and municipalities, because counties were large enough to bear the costs of administration. After the reform, counties indeed experienced an increase in their responsibilities until the mid-eighties. For example, education, spatial planning, transport, hospitals and health insurance were transferred partly to the counties. In Denmark the same applies as in Sweden, the counties are legally on the same level as the municipalities and do not have any power over them.

France, although still one of the more centralized countries in Europe, has experienced a delegation process in the last three decades. In 1982, besides the existing districts and departments, a third sub-national government tier, the regions, was created. A regional council, directly elected by population, was established. Competencies were transferred from state representatives of districts and departments to the directly elected bodies of the regions. The first election of regional councilors by universal suffrage took place in 1986. A few years later, regions were involved in the implementation of education and regional planning. The constitution was changed to anchor the competencies and limited financial autonomy of the regions in 2003.

Shortly after the end of the Second World War five ‘special statute’ regions were created in Italy. These regions were given competencies in the fields of administration and tax collection. In 1970, directly elected regional governments were also established in the fifteen ‘ordinary’ regions. From this moment, regions experienced an increase in the receipt of central government transfers. Regions now were also allowed to make new legislation within the boundaries set by the central authorities. In 1977, various responsibilities and limited legislative powers were transferred to the regions, for example, health care, agriculture, transport, environmental protection, and economic development. During the eighties and nineties more powers were delegated to the regions. In the year 2000, the Italian population for the first time elected regional presidents, which meant an increase in the statutory autonomy of the regions. Differences between ‘special statute’ and ‘ordinary’ regions have declined, but nowadays small differences still exist, for example, in the area of financial autonomy. The decentralization process was asymmetrical in the sixties and seventies and can be considered as devolution at a low level because legislative powers are restricted. Ordinary regions have some concurrent legislative powers and in some cases only executive powers. The term concurrent means that both levels can make legislature but state legislature takes precedence over regional legislature. The level of financial autonomy of ordinary regions is restricted due to strong dependence on state transfers. Special regions have some legislative, concurrent and executive powers. Those regions can adopt their own statute. The regions have exclusive legislative power with respect to any matters that are not prescribed in the state law.

The Netherlands did not have an extensive decentralization process. Only minor changes occurred. In 1983, the constitution was revised to recognize the position of the provincial Assemblies and the Queen’s commissioners. In 1994, some revisions were made with respect to the law on the provinces. In 2003, the law on dualism was introduced. This included the principle of incompatibility of membership of the provincial assembly and the executive council of the province. Decentralization in the Netherlands is considered as delegation. The provinces and municipalities may issue provincial and municipal regulations, as long as they are in compliance with national law. The consultative position that provinces have and their privilege to issue regulations makes the Netherlands a decentralized unitary state.

Until the end of the dictatorship of Franco, Spain had a very centralized political system. In 1978, a decentralization process started after the creation of the current constitution. The constitution established a complex framework that combines the concept of Spain as a single political nation with the existence of autonomy statutes granted to all seventeen regions. The degree of autonomy for a number of regions is fairly high, these are the ‘historical’ regions. In 1983, all seventeen autonomous communities had adopted a statute. Although differences exist in the level of autonomy between ‘historical’ and ‘ordinary’ regions, all communities

have experienced an increase in their level of autonomy. The group of the 'historical' communities consists of Catalonia, the Basque Country and Galicia. This group was joined later by Andalusia. The group of 'ordinary' regions consists of the rest of the autonomous communities (Aragon, Asturias, Balearic Islands, the Canary Islands, Cantabria, Castilla de La Mancha, Castilla-Leon, Extremadura, Madrid, Murcia, Navarra, La Rioja, and Valencia). The autonomous communities have wide legislative and executive autonomy, with their own parliaments and regional governments. The distribution of powers is different for every community, as laid out in the autonomy statutes. The 'ordinary' regions, which always had fewer powers, have slowly caught up with the 'historical' regions. In 1992, for example, the regional autonomy pact extended the power of the autonomous communities in areas of education and health, especially for the 'ordinary' autonomous communities. Decentralization in Spain can be characterized as asymmetrical devolution.

The United Kingdom is the best known example of recent regional decentralization. In the sixties and seventies decentralization for the regions Scotland and Wales was already discussed. But in 1979, by means of referendums regional (semi-autonomous) governments in Scotland and Wales were rejected. Subsequently in the eighties, during the period that Thatcher was Prime Minister, policies changed direction towards more centralization of authority. The Regional Economic Planning Councils, Regional Health Authorities and the Greater London Council were abolished. However, at the end of the eighties and the beginning of the nineties the regionalist opposition experienced a revival and decentralization was put on the agenda again. In 1994, throughout the whole United Kingdom, government offices for the regions were established. In addition, eight regional offices of the National Health Service were introduced. Then in 1997, after a referendum in both Scotland and Wales, a Scottish Parliament and a Welsh National Assembly were established. In 1998, in Northern Ireland a semi-autonomous Assembly was also established. In 2004, the creation of a regional parliament in North East England was rejected. Summarizing, especially the last two decades the United Kingdom pursued a policy of strong asymmetrical devolution. However, the Westminster Parliament retains absolute sovereignty. This places it above all the administrative institutions at both the central and local level. Legislative power lies solely with the Westminster Parliament, except for the legislative power allocated to the Scottish Parliament. In theory, the Westminster Parliament still holds absolute sovereignty over the Scottish Parliament but in practice it has promised to interfere as little as possible and always consult with them when issues arise. The Scottish Parliament has primary and secondary legislative power, in addition to the powers previously devolved to the Scottish Office, in the fields of health, education and training. The Scottish Parliament also has the power to influence the income tax rate, although the margin is quite small (3 pence maximum). The Welsh Assembly has no primary legislative powers, but is authorized to pass secondary legislation in those areas which usually were the responsibilities of the Secretary of State for

Wales. The Welsh Assembly has responsibilities for those public services and policies previously dealt with by the Secretary of State for Wales. Both Scotland and Wales deal with usual local government responsibilities like housing, economic development, transport, internal affairs, environment, agriculture, fisheries, forestry's, sports and the arts. The semi-autonomous North-Ireland Assembly can legislate on internal affairs, notably in the following areas: justice, heritage, education, housing, cultural affairs, health, and local administration.

3.2.3 Unitary centralized states

Finland has had a short history with respect to regional decentralization. The regional level in Finland consists of provinces and regional councils. In 1993, Finland was divided into 20 regions. Regional councils were established which are responsible for regional development. The regional councils are decision making bodies in the fields of regional planning and regional policy. In 1997, 6 provinces were established for the purposes of central government administration. Finland has one example of devolution, the Åland Islands which became autonomous in 1991. In all other aspects Finland is a centralized country and the decentralization of authority is limited to deconcentration.

In 1986, the administrative structure of Greece was revised and regions were created. These regions were established for the purpose of preparing, planning and coordinating regional development. In 1994, some administrative responsibilities were deconcentrated to the regions. But regions are still simple subdivisions of the state and do not go beyond the level of deconcentration. And although in 2001 the principle of decentralization was anchored in the constitution of Greece, the country is still centralized. Regional responsibilities are chiefly regional development and vertical co-ordination of economic policy. The region is the only level of decentralized State administration; it participates in national planning and draws up, plans and implements economic, social and cultural development policies.

Ireland barely has had a decentralization process. Ireland was and is a strong centralized state. Only in 1994 Ireland created regional bodies, but these regions did not get legislative powers. In 1999, Ireland was divided in two regions, the Southern and Eastern region and the Border, Midlands and Western region, for EU structural funds purposes only. No regional elections are being held in Ireland. The responsibilities of regional authorities only include coordination and communication.

In Portugal, shortly after the start of the third republic in 1974, a constitution was established. This meant the start of the liberal democracy. Two regions were given autonomous status, the Azores in 1987 and Madeira in 1991. These islands obtained a regional government with legislative powers. In 1979, five coordinating commissions of Portuguese regions were created to implement regional development measures, but these are appointed and supervised

by the central government. In 1998, the population rejected a referendum to create eight regional assemblies. The central government retains all legislative power and a high portion of the administrative powers, this is thus another example where decentralization has not gone further than some deconcentration policies.

4 Empirics

In this section we estimate the Solow-Swan neoclassical growth model (Solow, 1956; Swan, 1956). Most empirical studies use the Solo-Swan model to test the convergence hypothesis, for example, the influential studies of Barro and Sala-i-Martin (1992) and Mankiw et al. (1992). In addition to convergence we also investigate the hypothesis whether decentralization affects economic growth. The first major contribution of this section to the existing literature is that the effects of decentralization on growth are estimated using regional data of a large number of European countries over a long period of time, where previous studies used country data. Second, whereas most literature is limited to fiscal decentralization, this article, following Thornton (2006) and Yilmaz (2006) also includes legislative powers and the institutional structure of a country in the analysis.

Section 4.1 provides an overview of the existing empirical literature. Section 4.2 develops the Solow-Swan model extended with decentralization variables. The Solow-Swan neoclassical growth model is still of great theoretical and empirical interest. The model explains how an aggregate production function, constant savings, depreciation and population growth rates determine equilibrium in an economy, measured in terms of the steady state capital stock per capita. Due to the presence of exogenous technological growth economic growth per capita exists. Technological growth is assumed and so is not explained within the model dynamics. We express a relationship between economic growth per capita, decentralization and a set of relevant control variables. Therefore the Solow-Swan model is convenient to work with. Section 4.2.1 explains the basic Solow-Swan model. Section 4.2.2 extends the basic Solow-Swan model with several decentralization variables. Section 4.3 contains the descriptive statistics and discusses some other relevant information about the dataset. Section 4.4 gives and explains results. Finally, section 4.5 summarizes and concludes.

4.1 Overview existing literature

The empirical literature about the relationship between decentralization and growth can be divided into studies that did find a positive statistically significant relationship and studies that did not. First, the studies that did not find a positive significant impact of decentralization on growth are discussed. Rodriguez-Pose and Bwire (2003) investigate decentralization using regional data of three federal countries, Germany, India and the US, and three recently devolved countries, Italy, Spain and Mexico. The basic intuition behind their model is as follows. For each region within these countries, centralized and decentralized periods are identified during the period 1975-2000. Using linear regression models they then test whether regional growth rates in decentralized periods are higher than in centralized periods, provided

that the national growth rates are similar. Using this approach they do not find a positive relationship between decentralization and growth. Thornton (2006) emphasizes the difference between administrative and substantive decentralization. High subnational revenue and spending do not necessarily indicate high local autonomy. For this reason he measures subnational revenues and spending that are actually controlled by subnational authorities. Besides a fiscal decentralization variable, Thornton (2006) includes a political decentralization dummy variable that distinguishes federal states from unitary states. In his analysis there is no positive statistically significant impact of fiscal or political decentralization on growth. A weak point, however, is that the total number of observations in his model is only 19. Davoodi and Zou (1998) test an endogenous growth model and find a negative statistically insignificant relationship between fiscal decentralization and growth in developing countries, but none in developed countries. They also admit the limitations of their fiscal decentralization variable being used, which is subnational government expenditures/national government expenditures, as it does not necessarily reflect true expenditure decentralization. Woller and Philips (1998) concurred with Davoodi and Zou (1998) in finding no significant and robust relationship.

Other authors did find a positive statistically significant relationship between decentralization and growth. Iimi (2005) reported a positive and significant impact of expenditure decentralization on per capita GDP growth in a panel of 51 developed and developing countries covering 1997-2001. Thießen (2003) concludes that the relationship between decentralization and growth is positive only for low levels of decentralization. For high levels of decentralization the relationship becomes negative. Yilmaz (2000) used a panel of 46 developed and developing countries from 1971 until 1990. He distinguished federal countries and unitary countries. For unitary countries he found a positive and significant impact of fiscal decentralization on growth, while for federal countries the results were inconclusive. Castles (1999) investigated 21 OECD countries in a cross-section regression analysis. The dependent variable is average real growth of GDP over the period 1960-1992. He also constructed 5 decentralization variables of which 4 are positive and statistically significant. Criticism on this paper is that the number of observations is small and that real GDP growth is not corrected for population growth.

In the existing decentralization-growth literature it is common practice to investigate decentralization issues using national data. Regional data are either aggregated to obtain national data or due to lack of detailed information only national data are available. As a result, regional differences within countries are ignored, even though these differences exhibit essential information to explore the effects of regional decentralization. We believe that regional decentralization is better investigated using regional data, because the ultimate

goal is to detect regional differences and not country differences. Only a few empirical studies exist that investigate the relationship between decentralization and growth using regional data. One example is the study of Rodriguez-Pose and Bwire (2003) discussed above. Lin and Liu (2000) used data of Chinese regions to estimate the effects of fiscal decentralization on growth in China in the 1980s. They found a positive and statistically significant impact of fiscal decentralization on growth. In contrast, Zang and Zou (1998), who also used regional data to investigate the relationship fiscal decentralization growth in Chinese regions, found a negative relationship between fiscal decentralization and growth during 1980-1992.

4.2 The model

4.2.1 The Solow-Swan model

The neoclassical growth model was developed independently by Solow (1956) and Swan (1956). The labour-augmenting technological Cobb-Douglas production function is

$$Q_t = K_t^\alpha [A_t L_t]^{1-\alpha} \quad , \quad 0 < \alpha < 1 \quad (1)$$

where Q is output, K is capital, L is labour, t is the time index and A is effective labour and represents disembodied technological progress. This means that isoquants of the production function shift inwards as time progresses for $A > 1$.

Labour and capital are the only factors of production. The Cobb-Douglas production function is at the heart of the model and is subject to constant returns to scale⁴.

Labour and technological progress are assumed to grow at a constant exponential rate

$$\frac{\dot{A}_t}{A_t} = g \quad , \quad A_t = A_0 e^{gt} \quad (2)$$

$$\frac{\dot{L}_t}{L_t} = n \quad , \quad L_t = L_0 e^{nt} \quad (3)$$

where g is the growth rate of technological progress and n is the growth rate of the labour force. Output is assumed to equal investment and consumption in this single sector closed economy

⁴ When $Y=F(K,L)$, constant returns to scale implies $\lambda Y=F(\lambda K, \lambda L)$ for $\lambda > 0$.

$$Y_t = Q_t = C_t + I_t \quad (4)$$

where Y is national income, C is consumption and I is investment. A constant fraction of national income is saved

$$S_t = sY_t \quad , \quad 0 < s < 1 \quad (5)$$

where S is aggregate savings and s is the marginal propensity to save. In a closed economy savings equals investment, so

$$I_t = S_t \quad (6)$$

Aggregate investment is the sum of replacement investment and the net addition to the capital stock

$$I_t = \delta K_t + \dot{K}_t \quad (7)$$

where δK is replacement investment and \dot{K} is net addition to the capital stock⁵. From equations (4), (5), (6) and (7) it follows that the aggregate capital accumulation identity can be written as

$$\dot{K}_t = I_t - \delta K_t = Y_t - C_t - \delta K_t = sY_t - \delta K_t \quad (8)$$

We define $k=K/AL$, which is capital per effective unit of labour and $q=Q/AL$ is defined as output per effective unit of labour. Equation (8) can be translated from the aggregate level to the 'per effective unit of labour' level.

Using $\frac{\dot{K}}{AL} = \dot{k} + (n + g)k$ and equation (8), the capital accumulation identity per effective unit of labour in equation (9) is obtained

$$\dot{k}_t = sy_t - (n + g + \delta)k_t = sk_t^\alpha - (n + g + \alpha)k_t \quad (9)$$

In the steady state \dot{k} is zero and equation (9) can be solved for the steady state level of k^*

⁵ \dot{K} is the time derivative of K. \dot{K} shows how K changes over time.

$$k^* = \left(\frac{s}{n + g + \delta} \right)^{\frac{1}{1-\alpha}} \quad (10)$$

Next, equation (1) is divided by L to express output per worker, while equation (10) is multiplied by A to obtain the steady state level of capital per worker. On substituting equation (10) into equation (1), output or income per worker in the steady state is obtained

$$q_t = A_t \left(\frac{s}{n + g + \delta} \right)^{\frac{\alpha}{1-\alpha}} \quad (11)$$

Taking logarithms of both sides of equation (11), we have

$$\ln q_t = \ln A_0 + gt + \frac{\alpha}{1-\alpha} \ln \left(\frac{s}{n + g + \delta} \right) \quad (12)$$

Using a Taylor expansion (see Mankiw et al. ,1992) the basic regression equation is obtained

$$\ln(q_t / q_{t-1}) = \beta_0 + \beta_1 \ln(q_{t-1}) + \beta_2 \ln \left(\frac{s}{n + g + \delta} \right) + \varepsilon \quad (13)$$

The left hand side of equation (13) approaches real output growth per capita. β_0 is a constant. β_1 is the coefficient for the lagged variable output per capita in period t-1. β_2 is the coefficient of the variable that incorporates the effects of savings, population growth, the growth rate of technological progress and depreciation. Basically, ε represents a normally distributed and independent error term.

4.2.2 The extended Solow-Swan model with decentralization variables

The basic Solow-Swan model is now extended to include decentralization variables, which have been discussed in chapter 2 and 3. The extended model is

$$\begin{aligned} \ln(q_t / q_{t-1}) = & \beta_0 + \beta_1 \ln(q_{t-1}) + \beta_2 \ln \left(\frac{s}{n + g + \delta} \right) + \beta_3(\text{unitary_decentralised}) \\ & + \beta_4(\text{unitary_centralised}) + \beta_5(\text{regional_decentralization}) + \\ & \beta_6(\text{regional_share}) + \beta_7(\text{budget_control}) + \varepsilon \end{aligned} \quad (14)$$

The first extension relates to the institutional structure of the countries. According to Yilmaz (1999), it is not allowed to pool data of federal and unitary states, because it leads to a misspecification of the model. The governance systems and therefore the nature of decentralization differ fundamentally between federal and unitary states. In federal states, the division of power between the central government and its component units of the federation is constitutionally designed and guaranteed, whereas in unitary states the relationship between the central government and the regional level is not well defined. Thornton (2006) also distinguishes federal states from unitary states using a dummy variable. In section 3.2 we saw that there exist fundamental differences between unitary centralized and unitary decentralized states. In unitary decentralized states, regional councils are directly elected by the population, regions have more extensive responsibilities (Table 4) and regions are allowed to levy taxes. Therefore, in correspondence to the classification in Table 2, we add two dummy variables to distinguish between federal states, decentralized unitary states and unitary centralized states. The unitary decentralization state dummy variable ('unitary_decentralised') takes the value '1' if a country in year t is classified as a unitary decentralization state, and '0' otherwise. Similarly, the value of the unitary centralized state dummy variable ('unitary_centralised') is '1' if a country in period t is classified as centralized, and '0' otherwise. Consequently, β_3 and β_4 measure respectively the marginal effect on growth of unitary decentralized and unitary centralized states in comparison to federal states. Since a country must be either federal, unitary decentralized or unitary centralized, the constant term reflects the impact of federal states. Whether a country was federal, unitary decentralized or unitary centralized is summarized in Table 5.

Table 5: Classification of countries with respect to institutional structure

Federal states	Unitary decentralized states	Unitary centralized states
- Germany - Austria - Belgium (since 1993)	- Belgium (until 1992) - France (since 1982) - Denmark - Italy - Netherlands - Sweden - Spain - United Kingdom (since 1997)	- France (until 1981) - Finland - Greece - Ireland - Portugal - United Kingdom (until 1996)

The second extension of the model concerns the addition of a regional decentralization variable. This is a crucial variable, because it is the only variable that does not only vary between countries, but also between regions within countries. The regional decentralization variable ('regional_decentralization') is a dummy variable that takes the value '1' if a region in period t is classified as autonomous, and '0' otherwise. If regional autonomy has a positive impact on growth per capita, the coefficient β_5 should be positive. Table 6 lists the regions for which the regional decentralization dummy variable takes the value of '1', where the

number within brackets represents the year at which the region became autonomous. The reasoning behind this dummy variable is the following. Scotland, Wales and Northern Ireland have their own parliament with legislative powers. The Italian ‘special statute’ regions, Sicily, Sardinia, Valle d’Aosta, Trentino-Alto-Adige and Friuly-Venezia-Giulia, have more financial autonomy and more legislative powers than ‘ordinary statute’ regions. The Italian regions were already autonomous since 1978. The ‘historical’ regions, Catalonia, the Basque country, Galicia, Andalusia, Navarre and Valencia, in Spain have considerable more competencies in the areas of social security, education, taxes and law than ordinary Spanish regions. Corsica in France receives substantially more transfers from the central government than other regions. Corsica has a special legal status and additional competencies in the areas of education and culture. The Aland Islands in Finland have more legislative powers than other Finnish regions and also have a special legal status⁶.

Table 6: Autonomous regions

United Kingdom: - Scotland (1997) - Wales (1997) - Northern Ireland (1998)	Spain: - Catalonia (1979) - Basque country (1979) - Galicia (1981) - Andalusia (1981) - Navarre (1982) - Valencia (1982)
Italy: - Sicily - Sardinia - Valle d’Aosta - Trentino-Alto Adige - Friuly-Venezia-Giulia (all 1978)	France: - Corsica (1982)
	Finland: - Aland islands (1991)

With the third and last two extensions we follow Schneider (2003) to measure the impact of fiscal decentralization and of administrative decentralization. Regional expenditures and regional revenues form the two main components of fiscal activity and summarize the total amount of money that a region puts in or takes out of its economy. Because the ratio regional expenditures and national expenditures is highly correlated with the ratio regional revenues and national revenues, it does not really matter which of these two variables is used to measure fiscal decentralization. We have chosen the ratio of regional expenditures and national expenditures to measure fiscal decentralization (‘regional_share’), also because revenues will be used to construct the administrative decentralization variable. The ratio of regional taxes and the regional budget (‘budget_control’) measures more precisely the actual control of regional authorities over their own budgets. Thornton (2006) argues that when ignoring budget controls, the degree of substantive decentralization is overestimated. The

⁶ The same references are used as in chapters 2 and 3 of the problem analysis. Especially the website of the CoR and the countries constitutions are extensively used.

higher regional taxes as a fraction of the regional budget, the more autonomous a region may be said to be. The variable is a proxy for administrative decentralization. The complement of regional taxes is central state transfers. Regional taxes and central state transfers form the two main components of the regional budget. The higher central state transfers, the more passive and dependent a region is in acquiring financial funds.

4.3 Descriptive statistics

The total number of observations is 4800. After adjustments the number of observations is 4008, because of some missing data in the variables 'regional_share' and 'budget_control'. The period is 1978 until 2002 and the total number of regions is 192. The countries in the sample are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Ireland, the Netherlands, Portugal, Spain, Sweden and the United Kingdom. The data are from Government Finance Statistics (GFI)⁷ and Cambridge econometrics.

Figure 1 shows that regional growth rates differ within countries. Each boxplot in Figure 1 represents a country. The region with the highest average growth rate determines the top of the boxplot. Similarly, the region with the lowest average growth rate in a country determines the bottom of the boxplot. The fact that differences in regional growth rates exist is an important argument to investigate regional decentralization using regional instead of national data. As can be distracted from Figure 1, the average growth rate per capita is approximately 2 percent per year. Remarkable is that the regions in the centralised unitary states Ireland, Portugal and Finland perform above average. The coefficient of the variable 'unitary_centralised' is therefore expected to be positive. Further, Swedish regions perform below average. The Dutch regions Groningen and Flevoland have negative average growth rates. The ten fastest and slowest growing regions in the period 1978 – 2002 are recorded in Table 7⁸.

⁷ GFI editions 2004, 2002, 2000, 1998, 1995, 1987 and 1984

⁸ A complete overview of the 192 regional average growth rates per capita is given in Appendix A.

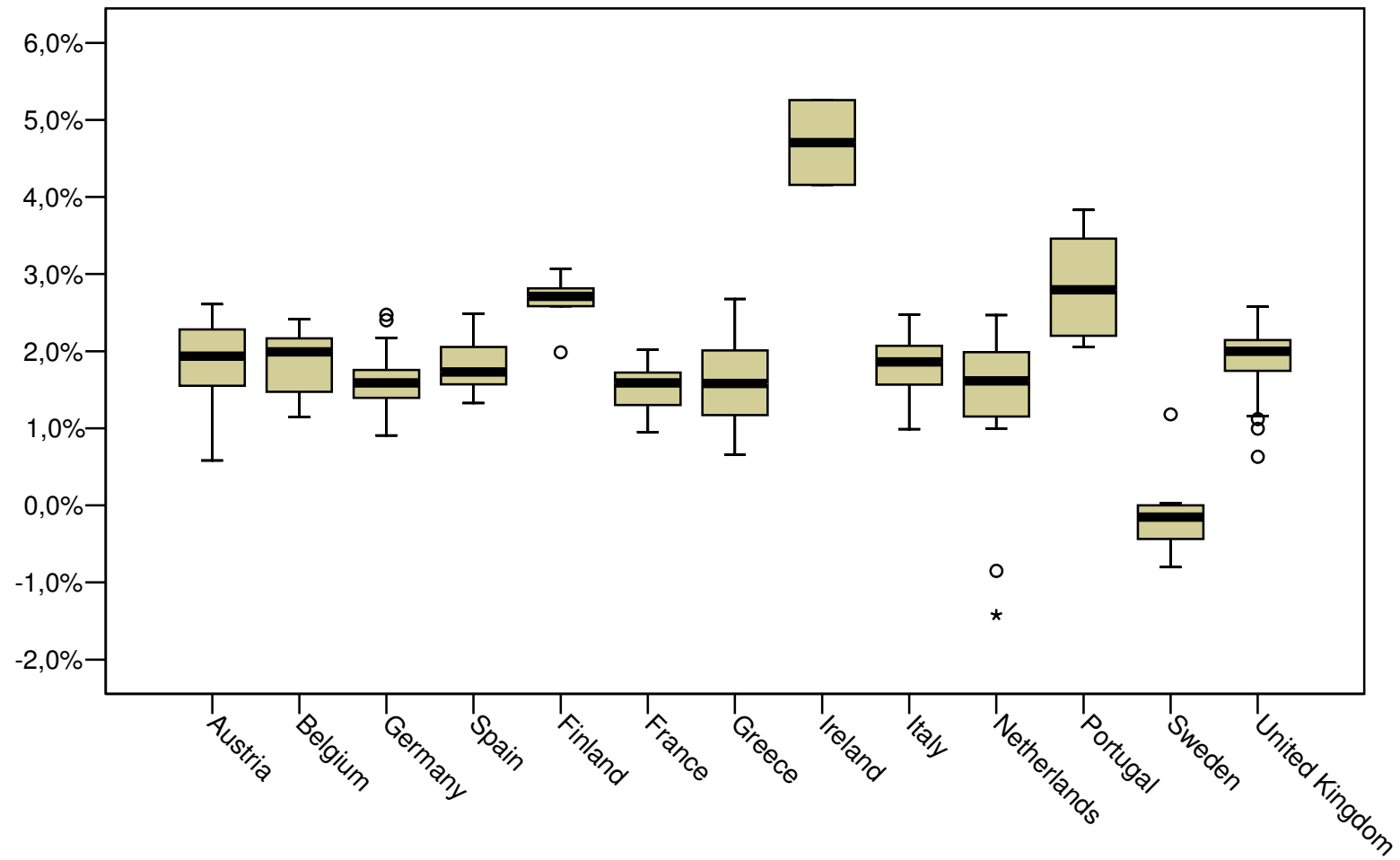


Figure 1: Regional average growth differences per capita within countries (1978 – 2002)

Table 7: Fastest and slowest growing regions in the period 1978-2002

Fastest growing regions	Country	%	Slowest growing regions	Country	%
South east	Ireland	5.3	Flevoland	Netherlands	-1.4
North west	Ireland	4.2	Groningen	Netherlands	-0.9
Algarve	Portugal	3.8	Ovre Norrland	Sweden	-0.8
North	Portugal	3.5	Mellersta Norrland	Sweden	-0.6
Ita-Suomi	Finland	3.1	Norra Mellansverige	Sweden	-0.3
Alentejo	Portugal	2.8	Ostra Mellansverige	Sweden	-0.3
Vali-Suomi	Finland	2.8	Sydsverige	Sweden	0.0
Uusimaa	Finland	2.8	Smaland med oarna	Sweden	0.0
Aland	Finland	2.7	Vastsverige	Sweden	0.0
Kriti	Greece	2.7	Wien	Austria	0.6

Note that regional growth rates have been calculated on per capita basis. Economic progress or productivity increase in a region are better measured on per capita basis, because otherwise an increase in the aggregate regional growth rate could be simply the population growth. Growth rates corrected for population growth better reflect prosperity changes within regions than aggregate regional growth rates.

It must be emphasized that the variable ‘regional_share’ and the variable ‘budget_control’ are constructed as the sum of regional and local data. The available data from Government Finance Statistics do not in all cases distinguish between regional and local data. Regional expenditures and regional revenues are aggregated subnational variables and so do not make a distinction between regional and local levels. Another complication is that no regional data exist for Scotland, Wales and Northern Ireland. Therefore the variable ‘regional_share’ and the variable ‘budget_control’ only contain local data for the United Kingdom.⁹

A correlation matrix of all variables to be used in the regression analysis is given in Table 8. Interesting is the negative correlation of growth with both ‘regional_share’ and ‘budget_control’. This may indicate a negative relationship between growth and each of these explanatory variables. The correlation between growth and ‘regional_decentralization’ is almost zero. Table 8 shows that multicollinearity due to highly correlated explanatory variables does not exist. A commonly used rule of thumb is that model specification problems arise when the correlation between two explanatory variables exceeds 0.8 (Carter Hill et al. , 2001).

⁹ The data of the variable regional expenditures and national expenditures and the variable regional taxes and regional revenues are constructed on the basis of different criteria since 1999 as a result of a change in measurement by the GFS. However, excluding the years 1999 until 2002 does not lead to different results.

Table 8: Correlation matrix variables

	growth	lngdp	s/(n+g+δ)	uni_de	uni_ce	reg_de	reg_sh	bud_co
Growth	1							
Lngdp	-0.13	1						
s/(n+g+δ)	0.06	0.05	1					
uni_de	-0.07	-0.01	0.07	1				
uni_ce	0.09	-0.47	-0.06	-0.57	1			
reg_de	0.00	-0.12	0.03	0.25	-0.13	1		
reg_sh	-0.05	0.38	-0.02	-0.32	-0.13	-0.05	1	
bud_co	-0.05	0.35	0.05	-0.16	-0.30	-0.04	0.42	1

4.4 Results

Table 9 reports the coefficient estimates of equation (14) using ordinary least squares (OLS). Prior to interpreting the results, it is important to mention two issues that have an impact on the results. First, the total number of regions is 192. Without correction the more regions a country has, the more impact that country would have on the results. For this reason each country has been weighted equally. In other words if a country has n regions, each region within that country is weighted by $1/n$. Second, the regression equation is estimated using White heteroskedasticity standard errors. The hypothesis that the variance of the errors of all observations is constant can be rejected according to White's heteroskedasticity test. In this test the squared residuals are regressed on the relevant products of explanatory variables.

According to the convergence hypothesis, which states that richer economies tend to grow slower than poor economies, the coefficient β_1 of the lagged dependent variable ' q_{t-1} ' should be negative. Table 9 shows that this coefficient is indeed negative but it is not statistically significant¹⁰. The coefficient of the variable ' $\ln(\frac{s}{n+g+\delta})$ ' is estimated positively and statistically significant. Savings, and thereby investments, have a positive impact on growth which is intuitive and in line with theory.

Regions in unitary decentralized states (Table 5) have a lower growth rate than regions in federal states. Recall that the impact of federal states is captured by the constant. The estimated coefficient of the variable 'unitary_decentralised', β_3 , is -0.83 and statistically significant. This means that regions in unitary decentralized states have a per capita growth rate which is 0.83 percent lower than the growth rate of regions in federal states. In contrast to β_3 , β_4 is estimated positively with a value of 0.63. The interpretation is that regions in centralized states have a higher per capita growth rate of 0.63 percent with respect to regions in federal states. However, the coefficient is not statistically significant.

¹⁰ If equation (14) is estimated without the correction for heteroskedasticity, then β_1 is estimated highly statistically significant, which is in correspondance to the convergence hypothesis.

Table 9: Dependent variable: real growth per capita (Standard errors within brackets)

Variable	coefficient	estimate
Constant	B ₀	11.48 ** (5.58)
ln q _{t-1}	B ₁	-0.97 (0.60)
ln (s/(n+g+δ))	B ₂	0.94 *** (0.29)
unitary_decentralised (unitary decentralised states variable)	B ₃	-0.83 *** (0.23)
unitary_centralised (unitary centralised states variable)	B ₄	0.63 (0.41)
regional_decentralization (regional decentralization variable)	B ₅	0.50 (0.47)
regional_share (regional expenditures / national expenditures)	B ₆	0.26 (0.94)
budget_control (regional taxes / regional budget)	B ₇	-1.85 * (1.05)
R ²		0.13
N		4008

*** statistic significance $\alpha = 0.01$

** statistic significance $\alpha = 0.05$ (default)

* statistic significance $\alpha = 0.10$

If a region has regional autonomy according to the classification in Table 6, the positive marginal effect on growth per capita, measured by ‘regional_decentralization’, is 0.5 percent. However, this coefficient is not statistically significant. In other words, the average growth rate in the period 1978-2002 of autonomous regions is 0.5 percent higher than in other regions, holding other things constant. Regarding a total average growth rate of 1.7 percent for all regions over the entire period, this effect is quite large. However, the statistical evidence is not strong enough to conclude that the difference is significant.

The effect of the variable ‘regional_share’ on growth is estimated positively, but highly insignificant. Remarkable is the strong negative estimate of β_7 , which is weakly significant ($\alpha = 0.1$). This result suggests a negative relationship between ‘budget_control’ and growth. A possible interpretation is that it is more efficient to collect taxes at the country level due to scale economies. When regions levy their own taxes each region has to bear administration costs separately to collect taxes, while in case of a national tax system all regions together only need one administration to collect taxes. Finally, R² is 0.13. All explanatory variables together explain 13 percent of the total fluctuations in economic growth. The explanatory power of the model is rather small due to the usage of annual data.

5 Factors influencing efficiency of decentralization

5.1 Introduction

The results of the previous chapter showed a positive but not a significant effect of decentralization of authority on economic growth. As this quantitative empirical analysis has not provided a complete explanation of the obtained results and might have missed facets of a multi-faceted phenomenon, additional research is necessary. In this chapter, we introduce a theory specifically focused on fiscal decentralization to further examine which underlying factors influence decentralization of authority and whether these factors might explain the non-significant relationship between decentralization and economic growth.

We will use the main theory of fiscal decentralization, the ‘Decentralization Theorem’ (Oates, 1972), as our starting point. This theory states that as long as the costs of providing public goods by the central government or by the regional government are approximately equal and consumption of the public good is confined to a certain jurisdiction, the regional government can provide those public goods more efficiently. The reasoning is that regional governments are better capable of knowing the preferences of their citizens and tailor their fiscal policies accordingly. The ‘Decentralization Theorem’ focuses on the fiscal aspects of decentralization. This specific focus is why it has not been discussed in chapter 2. It does, however, serve the purpose of this chapter perfectly for the following reasons. First, fiscal decentralization is widely applied and it is easier to identify than other forms of decentralization. Second, the availability of extensive research about aspects of fiscal decentralization makes it easier to find useful information. Third, the different forms of decentralization are not mutually exclusive and therefore aspects of other forms of decentralization are included in this theory. When fiscal responsibilities are decentralized, regional governments always acquire some political and administrative responsibilities as well.

Before continuing, there is one problem to untangle before applying the theory. In the empirical analysis of chapter 4, the effect of decentralization of authority on economic growth was measured. In the theory of fiscal decentralization we use, the focus is on improved economic efficiency through a better allocation of resources. The effect of fiscal decentralization on economic growth is not a major concern in this theory. The reason is straightforward: theoretically it is complicated to link fiscal decentralization to economic growth. So far, no validated theory has explained how fiscal decentralization affects economic growth. If we want to apply the theory of fiscal decentralization for an explanation

of the results of chapter 4, we first have to explicate what is known about the relationship between the efficiency of a regional government and economic growth in a region.

5.2 Effectiveness and economic growth

It has been argued that sub-national governments have an advantage in making public goods provision more efficient. This is based on the above mentioned theoretical contention that sub-national governments are better able to tailor public goods production to the specifics of smaller jurisdictions. In turn, this 'static' advantage can lead to a 'dynamic' advantage where sub-national government expenditures are growth enhancing. More is known about other linkages between efficiency and economic growth. It is agreed upon that under certain conditions sub-national governments can be more efficient. First, the welfare of consumers can increase with the same amount of funds when these funds are spent by sub-national governments instead of the central government. This increase in efficiency and welfare will be termed *consumer or allocative efficiency*. Second, decentralized public goods provision can lead to increased *producer efficiency*, which means that at the sub-national level, the provision of public goods can be done at lower costs. The next question is how *consumer and producer efficiency* impact economic growth. We presume that at least in some cases decentralization leads to greater *consumer and / or producer efficiency*. *Producer efficiency* can increase economic growth because the lower costs of production will result in increased quantity and / or quality of output with the same level of expenditures. And although the level of expenditures does not change, the increased quantity and / or quality of output eventually leads to increased income and measured growth. The relationship between consumer efficiency and economic growth is more complex. If citizens' preferences are better suited by sub-national governments, this increases their welfare. This increase in welfare may have positive effects on work effort, savings, and private investment and these effects will have a positive influence on economic growth. Better matching public goods production to citizens' preferences can have more positive outcomes as well. It could improve education and the quality of the labor force. These improvements will result in greater economic growth in the future. On the other hand, this still does not give conclusive reasons to expect that the maximization of voters' welfare through an improved allocation of resources by decentralization of authority also contributes to economic growth.

In a different way fiscal decentralization can also have an impact on economic growth. Fiscal decentralization gives sub-national officials the possibility to influence economic development policies. If these regional development policies are decentralized, the possibility to diversify presumably leads to competition between regions. Regions have several instruments at their disposal to make a region appealing to businesses, such as tax privileges or subsidies. This interjurisdictional competition works in the same way as competition

among businesses does. Regional governments are forced to ‘produce’ high quality services at minimum costs which leads to higher *producer efficiency*. Central governments experience less competition which may mean that costs of centrally provided public services are higher than they could be. On the other hand, there is a risk that because of competition between regions, investment in certain public goods is inefficiently low which has a negative effect on growth. Empirical studies on the effects of decentralization on economic growth are scarce. Decentralization is a complicated phenomenon with multiple dimensions and economic growth is influenced by many factors. The studies that have been done have found mixed results. Two studies (Lin and Liu, 2000; Akai and Sakata, 2002)) found a positive effect on economic growth. However, the first study was conducted for India, a country which has a totally different political, economic and social climate and therefore this study might not be representative. One study (Davoodi, Xie, and Zou, 1995) found a negative effect for the USA, while another study (Davoodi and Zou, 1998) found a negative effect for developing countries and no effect for developed countries. Thus, the evidence that improved efficiency through fiscal decentralization can increase economic growth is mainly theoretical. Without strong empirical evidence, we rely on the notion that improved efficiency at least does not have a negative impact and offers the potential of economic growth.

5.3 The effectiveness of decentralization and its determinants

The main goal of decentralizing (fiscal) authority is improved efficiency through a better allocation of resources. There are however factors that have a profound influence on whether this improved efficiency is achieved or not. These factors can have a positive or a negative influence on the effectiveness of decentralized governments. The figure below depicts the factors and their relationships with the effectiveness of decentralization:

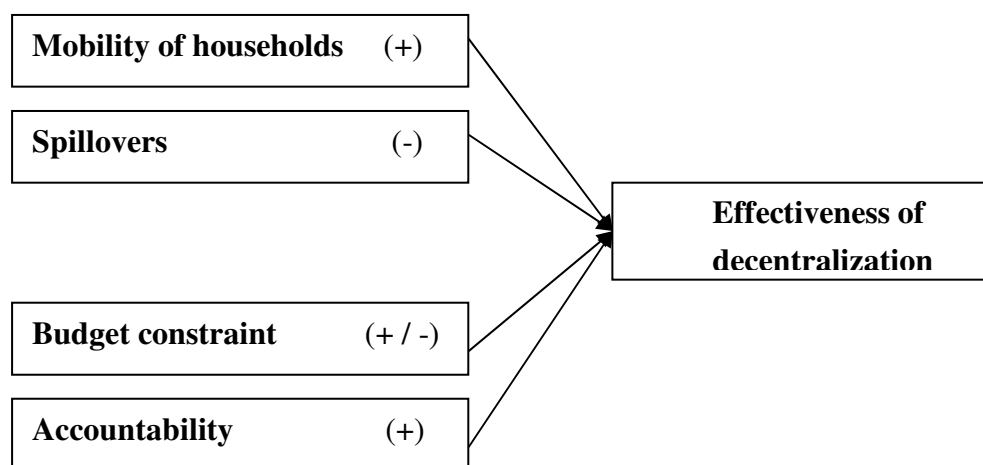


Figure 2: *Factors and their influence on the effectiveness of decentralization*

A positive sign (+) indicates a positive relationship between the factor and the effectiveness of decentralization while a negative sign (-) implicates a negative relationship. The more mobile households are, i.e. the more households change residency per year, the more effective decentralization will be (Epple and Nechyba, 2004). Spillovers, which indicate to what degree public goods production in one region affects other regions, have a negative impact on the effectiveness (Epple and Nechyba, 2004). The budget constraint indicates how much leeway a regional government has in acquiring funds autonomously. A hard budget constraint means that a regional government has limited possibilities to acquire funds independent of the central government and financial assistance from the central government is restricted. A soft budget constraint is the exact opposite and has a negative impact (Epple and Nechyba, 2004). The last factor, accountability, reflects whether regional governments can be held accountable for fiscal policies and when regional governments are accountable, it has a positive impact on the effectiveness of decentralization (Oates, 2006).

The next step is to discuss these factors in more detail, followed by an examination of the status of these factors for European countries. Combined with the relationships conveyed in figure 2, this analysis can provide a better understanding of how these factors have influenced the effectiveness of regional governments in practice.

5.3.1 Household mobility

The mobility of households can be disciplining factor for regional governments. The theory states that whenever households are not satisfied with the performance of a regional government, they can move to other regions. Tiebout (1956) named this: 'voting with your feet' (see also paragraph 2.2.1, argument 3). In economic terms: the higher the mobility of households, the more effective fiscal decentralization will be. We examine household mobility in our country sample according to three investigative questions:

- What are the figures for total household mobility within the countries?
- Do (large) differences exist between mobility within and between regions?
- How important are public goods for the decision of households to move to an other residency?

These questions together can give an indication whether household mobility has facilitated or hampered the efficient functioning of decentralized regional governments.

The first step is to examine total household mobility in the countries from our country sample. And although we are mostly interested in interregional mobility, we think the numbers for total household mobility are important too. These numbers give an indication of

the overall tendency of people to move in a country. Table 10 below reports average household mobility per year per country over a period of ten years.

Table 10: Changing residency in Europe (1990-2000)

<u>Country</u>	<u>Mobility within countries</u>
Portugal	3.51
Greece	2.83
Finland	10.31
Ireland	2.28
Denmark	10.08
France	8.13
Netherlands	5.40
Sweden	5.88
Austria	2.75
UK	8.48
Italy	3.18
Germany	6.69
Spain	4.33
Belgium	5.83
Total	5.69

Source: v. *Ommeren* (2006)

The countries in table 10 are grouped according to the categorization on page 22, ascending in degree of decentralization. The average mobility of the six decentralized countries, the last group, is slightly below the average of 5.69%, namely 5.21%. This can imply two things. If competition between the regions within those countries is efficient, household mobility may be lower because public goods provision in the regions is (more) optimal and people move less. However, if competition is not efficient, the relatively low numbers imply that household mobility hampers the efficient functioning of decentralization and therefore may be responsible for the non-significant results of chapter 4. It must be noted that the difference between the two averages is small and therefore might lack explanatory value. For the less decentralized countries, the average numbers for household mobility are respectively 4.73% and 7.37%. In these countries, regional competition, because of a low degree of decentralization, is less present. Therefore we can conclude that (more) decentralization will be less succesful in countries from the first group, i.e. those which hardly have any

decentralization and more successful for the second group, i.e. where decentralization is more present.

Since the focus in this paper is on regional decentralization, interregional mobility is of the most interest. Therefore, the next step is to make a distinction between short-distance mobility and long-distance mobility. Table 11 depicts short-distance mobility within a city or town and long-distance mobility across regions. The numbers are based on a 2005 survey. In this survey, people were asked how often and where they had moved since leaving their parental home. These numbers thus represent past mobility.

Table 11: Past mobility, by destination and by country (%)

	Within city/town	Across regions
Portugal	44	9
Greece	36	17
Finland	68	36
Ireland	47	20
Denmark	65	38
France	61	30
Netherlands	59	23
Sweden	70	44
Spain	49	11
Germany	62	19
Belgium	62	14
United Kingdom	55	25
Italy	46	8
Austria	56	10
Average	55.7	21.7

Source: *Copper et al.* (2006).

In Portugal, for example, of all the people in the survey, 44% has ever moved within the city / town of residence *since* leaving their parental home, and 9% across regions. From now on, we will refer to mobility within regions as intraregional mobility and to mobility across regions as interregional mobility. It can be seen that without exception, intraregional mobility has been significantly higher than interregional mobility. With respect to interregional numbers, the groups differ as well. The least decentralized group has numbers below average,

except for Finland which implies that decentralization can be effective in that country. The second group all have numbers above average, making all of them likely candidates for more decentralization. The interregional numbers of the most decentralized countries, except for the United Kingdom, are all far below average. The same reasoning with the numbers of table 10 applies here. If regional competition is already efficient, it explains the lower numbers and if competition is not efficient, it explains the non-significant results of chapter 4. We can also compare European figures with the past interregional mobility of the US. This number is 32%, a significant difference compared to 21.7% in the European countries, especially considering the larger size of regions in the US.

However, only considering actual mobility does leave out an interesting part of household mobility: To what degree does public goods provision affect the decision of households to relocate? This last step does not imply questioning the positive relationship between household mobility and the effectiveness of decentralization but the strength of this relationship in practice. In order to investigate this, we need information about the motives of households to relocate, and preferably, also a distinction in motives for short-distance and long-distance mobility. Aggregate data for the European countries could not be found. Therefore we first use data for one specific country, the Netherlands (Source: WBO 2002, processed by Ruimtelijk Plan Bureau). For Dutch households, the Ruimtelijk Planbureau (The Netherlands Institute for Spatial Research) categorizes housing motives as follows:

- a) Motives related to the private residence and / or the direct environment,
- b) Work- or education-related motives,
- c) Changes in the lifecycle of households, for example marriage.

These three motives have been linked in Figure 3 on the next page to the distance of relocation. Short-distance moves covers households which relocated within 20 km of their previous residence, medium distance moves between 20-40 km, and long distance moves beyond 40 km.

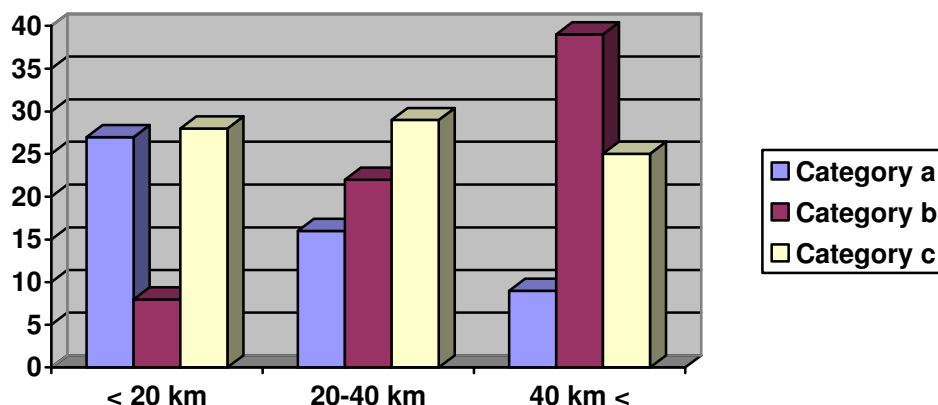


Figure 3: *Motivations to move according to distance of relocation*

Interregional mobility is included in the last column; although mobility above 40 km might still be within Dutch regions, there was no significant difference found in motives to move when distance increased beyond 40 km and therefore these results also represent motives for interregional mobility. Two conclusions can be derived from figure 3. First, the percentage of households that move as a result of motivations from category c) is more or less unrelated to distance. Second, as distance increases, category b), work- or education-related motives, becomes relatively more important while category a) becomes relatively less important. The same kind of results have also been found in a 2005 survey carried out by the European Foundation for the Improvement of Living and Working Conditions. Housing- and family-related motives dominating short-distance moves (within town/city/region) and job-related motives dominating long-distance moves (outside region/within EU¹¹).

Now we have to determine where public goods production is represented in these three motivation categories. As a direct influence, public goods production has the most influence in the first category, those representing motives related to the residence and the environment. Especially concerning the environment of citizens' residences, regional governments have direct responsibilities, such as infrastructure and playgrounds. However, regional governments can also influence, albeit more indirectly, the second category, work- or education related motives. Creating a favorable business environment which increases employment opportunities and investment in education are examples. Therefore, because the second category is the most important concerning interregional mobility, regional governments can benefit the most by improving work- or education-related conditions.

¹¹ Only 4% has ever moved between countries, compared to 18% between regions, so this does not affect results significantly

Finally we can put the pieces together to be able to draw conclusions whether household mobility has influenced the results from chapter 4 and how.

The first investigative question revealed that household mobility is rather low which may explain why the result of the empirical analysis of chapter 4 that decentralization does not lead to improved economic growth, is not significant. Average household mobility per year in the European countries over a ten-year period was 5.45%. In the US, which has a very decentralized structure, average household mobility per year is much higher. In the year 1999, for example, this mobility was 16% (U.S. Census Bureau, 2000). The next investigative question illustrated that interregional mobility is significantly lower than intraregional mobility. This implies that household mobility has less effect for decentralization to regions. Interregional mobility in the US again is much higher compared to European countries. There are several reasons for this difference. A uniform difference between Europe and the US often cited is the rigid labor market in most European countries compared to that of the United States. As work-related motives are one of the most important reasons for interregional mobility, a rigid labor market hampers interregional mobility. An example of a country-specific characteristic that decreases mobility is the transfer tax in the Netherlands. This transfer tax must be paid when acquisitioning real estate. According to Van Ommeren (2006), abolishing this tax would increase household mobility with 1%. Although nominally, this does not seem a large increase, compared to historical numbers it is quite significant. As can be seen from Table 10, over the period 1990-2000, average household mobility per year in the Netherlands was only 5.4%. A structural increase of 1 percentage point from 5.4% to 6.4% would be a relative increase of 18.5%. More general, it has been argued that government intervention in the housing market is the cause for lower mobility rates in some developed countries (v. Ommeren, 2006). The last investigative question showed that the strength of the relationship between household mobility and the effectiveness of decentralization is inversely related the distance over which households move. Public goods provision is almost never the sole motive to move and in most cases not the decisive one. This is important because it differentiates the importance of household mobility to different administrative levels. In other words, the factor household mobility is more important for decentralization to administrative levels below regional governments. In sum, it may be concluded that household mobility does not have the positive effect depicted in Figure 2. Household mobility numbers are low and households are not mobile because of public goods provision.

5.3.2 Spillovers

Spillovers refer to the effect public goods provision in one region has on other regions. For a more detailed discussion about spillovers, see paragraph 2.2.2. Spillovers are important for answering the question whether and what type of public goods to decentralize. The more

spillovers exist with decentralized public goods, the more coordination by the central government is necessary to correct the behavior of regional governments. This correction is necessary because regional governments do not take account of the effects of public goods production in other regions, which can lead to inefficiently high or low production. There is thus a trade-off between the benefits of decentralized production and the costs of correcting inefficiencies related to public goods with spillover effects when they are decentralized. Larger effects therefore increase the probability that centralized provision is better than decentralized provision. To explore the degree to which regions within the countries from our research experience spillover effects, we will use indirect factors that influence the amount of spillovers, since it is difficult to determine and quantify spillovers directly.

An indirect factor that affects the degree of spillover effects is the size of a country and its regional jurisdictions. Some studies (Oates, 1972; Panizza, 1999) have found a correlation between the size of a country and the degree of (fiscal) decentralization. So why is decentralization more present in larger countries? There are two main reasons. First, the larger the country, the more difficult and costly it is to manage public goods provision from one (central) level. Second, larger countries mostly have larger regions as well. And the larger regions in a country are, the less spillovers are present, which implies that less coordination is necessary to internalize these spillovers. In effect, these two reasons favor larger countries for decentralization. However, one thing should be kept in mind. Although there might be an optimal regional size where decentralization is favored as opposed to centralization, there is not yet formal evidence for such an optimal size. The evidence only indicates that larger countries are more decentralized which logically corresponds with the reasons given above, managing public goods provision from one central level is difficult and less coordination for spillovers is necessary.

The next issue focuses on the rather rigid distinction between centralization and decentralization. It is not a choice between extreme ends. The administrative structure can be adjusted by governments in an attempt to capture the benefits from decentralization while accounting for the spillover effects. In the Netherlands, for example, regional politicians and economists have recommended more cooperation in certain areas between regions in the Randstad, economically a vital area. The central advice in two reports of 2006 was the creation of one umbrella organization for a few regions. It was argued that this would improve coordination on large interregional projects and thereby efficiency and competitiveness of the whole area. This improved coordination would have to be accomplished in two ways. First, by centralizing several tasks from municipal and regional governments to this umbrella organization. Second, by decentralizing authority for the creation of policies and the making of decisions from the central government to the umbrella organization. This umbrella organization would govern a 'new', larger administrative region.

Spillover effects are not an issue anymore within this ‘new’ administrative region while the central government can retain control in other policy areas.

We will consider a public good with many spillovers, namely higher education, to explain how spillovers influence decentralization possibilities. Higher education (read: universities) attracts many students and employees from outside the region. Additionally, a university attracts considerable business investments. To some extent other regions will also benefit from investment in education. For example, students who have completed their study often leave the region of their university to live and work somewhere else. Consequently, the total benefits of a university are spread over a much larger area than the region’s jurisdiction alone. This can be seen as a free-rider problem. Regions which do not have higher education still enjoy benefits from other regions’ investment in higher education. Due to these spillover effects, it may be inefficient to decentralize higher education to the regional level. When higher education is decentralized, regions do not take into account the (positive) spillovers to other regions and total investment in higher education would be too low. In the previous paragraphs it has been explained that the size of a country is related to the question whether to decentralize a public good with spillover effects. The larger a country and its regions are, the better it will be able to decentralize higher education because of the lower degree of spillovers. When authority is decentralized, it is plausible that all regions want their own university to make the region more attractive for students, firms and investors. This becomes a problem in small countries where the spillovers are large. This reasoning does not only apply to higher education, but also to other public goods that create large spillover effects.

This qualitative analysis shows that the size of countries and its regions is one of the determinants explaining whether decentralization of authority is effective. The larger they are, the more effective decentralization can be. If we focus on interregional spillovers in relatively small countries, like the Netherlands or Belgium, regional decentralization will be less attractive. Another issue shortly dealt with is the administrative structure between regions. If regions coordinate interregional projects, this effectively eliminates the problem of spillover effects between these regions. This regional coordination is a general solution for public goods whose effects are transgressing. The provision of those public goods then in effect is decentralized to a cluster of regions. Although this practice seems to be an efficient solution to deal with spillover effects, we have not found many concrete examples of such interregional coordination. Proposals of this kind in the Netherlands were rejected as well. Political processes may be responsible for this, where the central government does not want to lose control over projects. Another reason might be that coordination between regional governments is more costly and time-consuming compared to provision by the central government which may nullify the benefits from less spillover effects.

5.3.3 Budget constraint and accountability

These two factors are examined using cases where regions have experienced financial difficulties. Cases are used for two reasons. First, palpable characteristics of these two factors are difficult to find and can be complicated to interpret. For example, laws and regulations from the central government to regulate borrowing and lending by lower governments can be extensive and complex. The exact implications are easier to understand when cases are used. The second and most important reason to use cases is that the implications in case regional governments violate laws and regulations are difficult to predict. Practical examples where these violations actually occur are therefore an important source of information. A disadvantage of cases is their lack of representativeness. Because cases are snapshots of a situation their explanatory value for the longitudinal empirical analysis of chapter 4 may be limited. On the other hand, the value of these case analyses is that they provide detailed information about specific practices. This information is useful because it helps to better understand what does and what does not work. The structure of the analysis is as follows. First, the two factors will be explained in more detail. Next, two country are discussed with a specific focus on the two factors mentioned above.

Budget constraint

The budget of a regional government consists of the funds they have at their disposal. In order to let regional governments behave financially efficient, they should bear the burden if financial trouble is caused by their own fiscal policies. The budget constraint refers to the possibilities regional governments have to increase their budget autonomously. We discuss two important aspects of a budget constraint. The first aspect is the possibility for regional governments to borrow money in the private financial market to expand their budget. The second aspect is the extent to which a central government can (legitimately) persist with a no-bailout policy. A bailout occurs when a central government financially assists regional governments that experience a financial crisis. Both aspects determine the budget constraint a regional government faces. A distinction can be made between a soft and a hard budget constraint. A soft budget constraint implies that the central government assists regional governments when they face financial difficulties. By contrast, when a hard budget constraint exists, regional governments do not get financial assistance from the central government in hard times. Neither of these budget constraints exists in its purest form in practice because it would cause untenable situations. When regional governments always can count on the central government to bail them out, i.e. a pure soft budget constraint, there is not any pressure for a regional government to strive for fiscal discipline. On the other end, hard budget constraints, i.e. central governments never provide financial assistance, ignore the possibility that factors outside the control of regional governments are the cause of financial difficulties. Subsequently, it can be difficult to communicate to the public why regions are

not being assisted and the bankruptcy of one region could have negative effects for other (adjacent) regions. Despite these problems, it is agreed among scholars that hard budget constraints are necessary to get decentralized governments to operate financially efficient. There should be found a balance between the decentralization of fiscal authority and the guarantee that regional governments themselves bear the consequences of defective fiscal policy.

But how exactly do both borrowing possibilities and a no bailout policy determine which budget constraint exists in practice? If regional governments have the possibility to borrow money in the private financial market, they have an additional instrument to finance expenditures. If a deficit arises, regional governments are able to finance this deficit by borrowing in the private market. And if regional governments do not take adequate measures to counteract the deficit, the financial position worsens rapidly. In a perfect system, private financial markets would not lend any funds to regional governments when the governments' financial position is very dire. However, because it is difficult for a central government to deny financial assistance, banks might assume that the central government stands surely for debts as a result of which they will lend money regardless of the financial position of regional governments. Therefore, there is an interaction between the possibility for regional governments to borrow and the possibility that a central government will provide financial assistance. If a no-bailout policy exists, and providing the central government lives up to this policy, the private financial market would be reticent with granting loans because the guarantee that the central government stands surely for regional governments' debts is taken away. This would have the effect of decreasing the borrowing possibilities of regional governments. Regional governments would take this into account and would be less likely to plunge into financial difficulties due to own defective fiscal policy. It must be stressed that the possibility to borrow by regional governments should never be abolished completely. As a financing instrument, it is very useful for other purposes, such as large capital expenditures where tax burdens have to be spread over time. Also, a no-bailout policy should only be adhered to when regional governments themselves are the cause for financial trouble. External causes, such as a general economic crisis or a natural disaster, should not be included. Another argument to maintain limited borrowing possibilities and a no-bailout policy is that the Stability and Growth Pact, adopted in 1997, requires fiscal discipline by all the members of the EU. And since financing deficits of regional governments may worsen the total financing deficit of a country, preventing these (regional) deficits from occurring becomes even more important. In effect, the possibility that regional deficits arise when decentralizing authority can also be regarded as another spillover effect. The conclusion must be that borrowing possibilities should be restricted and the central government should have a no-bailout policy to let regional governments operate efficiently. Which brings us to the following question, how can a central government achieve this? The first step is to formalize

both the borrowing restrictions of regional governments and the commitment to a no-bailout policy. Recording these policies and their conditions in the constitution and in legislation is vital. A second, more difficult step is to actually stick to these policies should fiscal trouble arise. Both steps are necessary in order to make regional governments behave fiscally efficient. Before applying this theory on practical examples, the factor accountability is clarified.

Accountability

The last factor, accountability, is also being discussed using case analyses. Accountability refers to the way regional administrations are perceived and interpreted by the constituency. Government accountability means that officials can be held accountable for the actions they take and the policies they implement. Accountability is achieved through a variety of mechanisms – political, legal, and administrative. Political accountability is mainly achieved through free and fair elections, and legal accountability through different legislative acts and rules. It is safe to assume that both political and legal accountability are sufficiently present in the developed countries from our country sample. The focus in this part of the research is on administrative accountability. Administrative accountability is achieved by giving regional governments actual responsibility in the collection and allocation of resources. If regional governments are responsible for determining and collecting taxes, *real* administrative responsibility is only achieved if they actually get the funds at their disposal. *Fake* responsibility in this context means that they would have to transfer the collected funds to the central government which then redistributes these resources on their terms. For accountability to be achieved, there also has to be *real* administrative responsibility in the expenditures of regional governments. *Real* responsibility here implicates that regional governments have sufficient leeway in determining the allocation of their resources, in effect how they spend their money. *Fake* responsibility exists when regional governments have some authority but the central government to a large extent still determines the structure of the expenditures, for example by using many specific grants. Accountability increases efficiency because regional officials can expect to be ‘punished’ by their constituency for possible defective fiscal policy, for example through elections or by moving to other regions. Regional government officials will therefore try to do what is best for their region and fiscal defective fiscal policies will occur less. With *fake* responsibility, regional governments can point to the central government as the cause of financial difficulties.

Summarizing, the two aspects of accountability that we want to highlight in the cases are the *real* responsibility in collecting funds, i.e. whether they have a portion of the funds at their disposal directly, and the *real* responsibility in the allocation of funds, i.e. whether they have leeway in how to spend resources.

Two cases have been chosen where decentralized regional governments from our country sample found themselves in severe financial trouble. These cases will clarify possible causes for financial distress and how these problems were dealt with. Although we admit that the representativeness of these cases can be questioned, we believe that this does not prevent the usefulness of this analysis.

Case 1: Germany

Germany consists of 16 regions, called the Länder. Although their constitutional legislative power is lower than can be expected from regions in a federalized country, they have a significant influence on decisions regarding government policies. The 16 Länder possess this influence because they are directly represented in the parliament. The parliament consists of two chambers, the Bundestag and the Bundesrat. The regional governments of the Länder are represented in the Bundesrat. Legislative authority of the Bundesrat is subordinate to the Bundestag. However, all legislative initiatives from the federal government have to be presented to and approved by the Bundesrat before they can be passed to the Bundestag. Furthermore, all legislation from the Bundestag in which the Länder have concurrent powers must be approved by the Bundesrat. This interdependence between the two chambers of the parliament demands a high deal of intergovernmental cooperation. Expenditures by the regions are partly controlled by the central government. A large part of the funds at the regions' disposal consists of grants, which are mostly non-specific. These grants are linked to concurrent legislation which implies some leeway for the regional governments in the decision how to allocate the funds. Summarizing, the 16 regional governments have a low degree of power to actually legislate and a high degree of power in the allocation of their funds. Legislation applying to tax bases and tax rates are predominantly under control of the federal government. The Länder have almost no control over the revenues they receive, it is a fairly predictable process where the Länder have hardly any influence. However, most important tax revenues are being shared between the central and regional government. Therefore, tax collection, carried out by the regional governments, does present opportunities for the regions to influence part of their revenues.

Germany has been selected for the case analysis because in the early 1990s the central government had to support regions which experienced financial difficulties. Two regions, Bremen and Saarland, had to be bailed out. The origin of the financial trouble can be traced back to the oil crisis in 1973-1974. Both regions lost a significant amount of jobs which could not be regained after the recession was over. This was due to the small and non-diversified economies existing in the two regions. The high unemployment rates persisted in the 1980s which eventually led to the financial trouble. The erosion of their economic bases began to have important effects on the budget of the two regions. On the revenue side, the result was a sharp decline in the revenues from taxes. However, this decline in tax revenues did not result

in a decrease in revenues since this was compensated by the German equalization system. This system guarantees per capita tax revenues among regions close to the national average. Horizontal transfers between states and additional grants from the central government are the instruments to assure this. On the expenditure side, two developments sharply increased total expenditures. First, the high unemployment rates meant a large increase in welfare payments. Second, in an effort to support industries in their jurisdictions, the regional governments paid large investment subsidies to the declining industries. However, these subsidies did not manage to keep the failing industries viable. These trends of decreasing revenues and increased expenditures led to large deficits on both regions' balances. In 1988 eventually, the two Länder turned to the German Constitutional Court to demand more transfers from the central government in order to cope with these deficits. In 1992, the court decided that the two Länder were indeed eligible for more transfer payments. This decision was grounded on a section in the German constitution which guarantees equal living conditions throughout the federal territory.

How can we interpret these developments? First regarding the budget constraint. We have seen that the possibilities to borrow for a regional government and a no-bailout policy by the central government are the factors of concern. The first question to be answered is whether the two Länder were actually eligible for financial assistance. The answer is positive. Because the factors that caused the financial decline were outside the control of the regional governments, financial assistance was permissible. So, even without the ruling based on the 'guarantee of equal living conditions', the regional governments should have been assisted. However, the regional governments themselves were partly responsible for the severity of the financial difficulties. Adjustment is necessary when situations change. The regional governments should have restrained from the large investments in the failing industries and should have tried to make more viable investments. In this case, both the regional government and the central government are to blame. The 'right' course would have been where the central government provided short-term financial assistance while regional governments committed themselves to structural viable investments.

The second question to be answered is whether borrowing possibilities for the regional governments were restricted. The answer here is negative. German Länder have a relatively high degree of autonomy to borrow from private institutions. The central government has no legitimate control over the regional governments' borrowing decisions. The question whether the government can adhere to a no bail-out policy is more theoretical than practical since the circumstances in this case justified a bail-out by the central government. But even if the regional governments would have been the main cause for the financial trouble, the adherence to a no-bailout policy would have been undermined. The already mentioned constitutional guarantee of equal living conditions is the main cause. In fact, after the ruling

by the court in 1992, the rating agency in Germany has extended an AAA-rating to all German regions based on three reasons. The strong interdependence of the central and regional governments, the German constitution which requires bailouts by the central government, and the fiscal equalization system which partly prevents regions from falling into financial difficulties. This, in turn, increases borrowing possibilities even more. The next question is whether the other factor, accountability, is achieved in Germany. For this factor, it was argued that the regional governments should have part of the collected funds at their disposal and they should have some leeway in determining the allocation of the funds. This question cannot be unambiguously answered. The collection of revenues is the responsibility of regional governments but only part of those funds is at their disposal. Most of it flows to the central government which, in turn, distributes funds based on the needs of a regional government, initiated by the equalization system. On the expenditure side, regional governments have some leeway for the allocation of funds, enabled by the low amount of specific grants. On the other hand, there is hardly any area where the Länder have exclusive authority. It seems that there are aspects that increase accountability and those that undermine it. The German system of assigning responsibilities for revenues and expenditures does not consist of clear divisions between regional and central governments' tasks. This, in turn, does not improve accountability to the public because responsibilities are almost always shared between the two government levels. On the other hand, the degree of leeway for regional governments in policy decision increases accountability. This leads to the conclusion that accountability of regional governments is to some extent present, but far from optimal.

Case 2: Italy

The administrative structure consists of four levels: central, regional, provincial, and municipal. The division of responsibilities is overlapping; there is a wide range of public services where responsibilities are shared between all these different levels. As also can be read on page 30 of chapter 2, Italy has so-called 'ordinary' and 'special' regions. 'Special' regions historically have had more responsibility than the 'ordinary' regions but differences have become smaller over time. We are focusing on the 1990s in which problems arose concerning the financial situation of the ordinary regions. Ordinary regions have legislative authority, albeit mostly concurrent legislation. In 1992, ordinary regions spent 71 percent of their total resources on health services, 6 percent on transportation, 10 percent on economic services, and 4.5 percent on general services. Of their revenues, almost 3 percent came from own taxes, and 96 percent were central government grants and transfers. Of these grants, 4 percent were unconditional grants. The conditional grants were very detailed in type and purpose, leaving little room for regional governments to manage funds by their own. Problems concerning large public health expenditures persisted throughout the 1980s and worsened in the early 1990s which eventually had large financial consequences. This impact was especially severe because health expenditures comprised the overwhelming part of

regional expenditures. The foremost cause of these steadily increasing expenditures was the lack of incentives on the regional level to use the funds efficiently. This lack of incentives existed because the central government did not leave any decisions at the control of regional politicians and managers. Strict guidelines were in place for the regions. This effectively eliminated incentives to produce efficiently and did not leave room to tailor public health according to regional citizens' preferences. Another problem of this settlement was that the central government's only goal was to assure the same level of spending across regions, while not having anything in place to control and assure the quality of the offered services. As a result, the quality of the services varied considerably among regions. As a response to the bad financial situation, regional governments started to borrow money to cover the increased expenditures, eventually leading to deficits. Generally, every other year, the central government stepped in to take care of the deficits. To prevent this situation from occurring again, in 1993 the central government gave regions more resources and more responsibilities in health care expenditures and incurred deficits. In 1995, a more general measure was taken to give regional governments more responsibility in areas besides health care. A large part of the grants, both conditional and unconditional, were abolished. To counteract the loss of funds for regions, their tax base was extended and more autonomy in setting tax rates was granted.

The situation in Italy can be interpreted as follows. Just like the case in Germany, we first have to figure out whether the bail-out by the central government was justified. At first sight, the answer seems to be clearly negative. If we follow the 'rule' that when regional government themselves are to blame for deficits, this is a case where this occurs. On the other hand, although regional governments increased their deficits by systematically exceeding their budget, we must stress that the central government is also to blame. The central government created a situation where the autonomy in health care expenditures was virtually non-existent because of the strict guidelines present. As such, we can conclude that the regional governments are responsible, partly because of central government's policies. Regarding the borrowing possibilities, the answer is twofold. Although the central government prohibited borrowing by regional governments, when expenditures could not be met, these governments had no problem in borrowing funds from local banks. These banks did not refrain from lending money to regional governments because they rightfully assumed that the central government would help out governments when deficits became intolerable. This immediately answers the question whether the central government was able to maintain a no-bailout policy. Although the central government was partly responsible for the existing problems, further difficulties could have been avoided if the central government had not intervened to take care of the deficits. Regional governments and banks would have to adjust immediately. Regional governments by matching revenues for health services with expenditures and banks by restricting loans to regional governments. The accountability of

the regional government was also severely undermined. As has been noted, the autonomy for income and expenditures was trifling. Basically, for their expenditures, regional governments had to follow the rules imposed by the central government, meaning they were not at all accountable to the regions' citizens. On the revenue side, the low degree of autonomy regional governments had in varying tax rates was not visible to the taxpayers since these rates were mostly surcharges on centrally determined tax rates.

These cases in Germany and Italy are no anomalies; there are many more examples in Europe where regional governments have found themselves in financial trouble.

5.4 Conclusions and recommendations

Decentralization of authority to regions is widely implemented in European countries. In practice, however, it has not produced visible economic results. Possible factors have been identified in this chapter. It is shown that external factors such as household mobility and spillover effects may be responsible for the non-significant results of chapter 4. However, these factors can be influenced to make decentralization of authority more effective. For example, the tax system of a country can be adjusted so that moving becomes cheaper and regional governments can co-operate to mitigate spillover effects. The other two factors, the budget constraint and accountability of a regional government, show that financial crises can be avoided if the right measures are in place. Decentralization of authority should give regional governments more responsibility to induce these governments to provide public goods efficiently. In both cases, this responsibility was absent and eventually led to severe negative financial consequences. These cases also show that certain problems are reinforced by others. If central governments cannot guarantee that they will refrain from bailing out a regional government, this automatically provides regions a possibility to borrow more money. This is exactly what should be restricted to prevent deficits from occurring.

From these findings we have constructed a few guidelines which should be followed if governments want decentralization to work efficiently:

a. **Regional governments must have actual responsibility.**

If authority is decentralized, regional governments should have independent revenue sources and independent authority for expenditure decisions. Only then, regional governments are able to diversify their public goods production and become accountable for their actions. If regional governments' actions are still precisely defined by the central government, the central government is accountable for public goods production which inhibits the efficient

functioning of regional governments. Subsequently, an accountable regional government automatically has less access to resources from the private financial market.

b. Central governments should carefully assess the risks of spillover effects when decentralizing public goods production.

Because spillover effects can have negative effects on the public goods production, i.e. production can be either inefficiently high or low, governments should consider carefully which option, centralized or decentralized provision, is more beneficial. Another solution is to manipulate jurisdictional borders. This can be achieved by making regional governments cooperate on production of public goods with many spillovers or creating an administrative body which covers multiple regions to take care of that production.

c. The central government needs to have a script to evaluate regional deficits.

First, this script should contain circumstances in which regional governments are eligible for financial assistance. This helps to separate legitimate from illegitimate cases. Roughly, financial difficulties caused by defective fiscal policies from regional governments are illegitimate cases whereas those caused by ‘outside’ factors, such as an overall economic recession, are legitimate. Second, directives must be included in case the central government is proving assistance. These directives should stipulate how regions can recover from the existing situation.

d. There has to be found a well-considered balance between grants and taxes.

Regional governments should not solely rely on grants or taxes as the main source of income. A mix of both is necessary to make a regional government behave efficiently. This guideline serves as an instrument to alleviate the problems associated with guidelines 1 and 2. Grants help to internalize spillover effects while taxes increase accountability and leave room for diversification. Regional governments should not solely rely on grants or taxes as income.

e. Decentralized regional governments should be monitored periodically.

A central government should not only take action when financial difficulties occur, prevention is an even important task. Monitoring the performance of regional governments on a periodical basis helps to achieve this.

5.5 Status of factors in the Netherlands

This section contains a short analysis for the four factors in the Netherlands. The mobility of households in the Netherlands as presented in paragraph 5.3.1 does not differ significantly from the European average. Therefore, we cannot conclude that this factor favors (more) decentralization or whether it does not. However, we also concluded that the European

average is quite low compared to the US, where decentralization is more extensive and successful. This implies that at least, household mobility in the Netherlands does not favor (more) decentralization. The second factor does not seem to favor decentralization either. The Netherlands is a relatively small country and (decentralized) regional public production may therefore create many spillover effects. However, a proposal in the Netherlands for cooperation between regions was discussed which could decrease the negative effects of spillovers. This proposal shows there are other options besides completely centralized or decentralized public goods production. The benefits and costs of either centralized production, decentralized production or other options should be considered carefully as each has its own advantages and disadvantages. For the next factor, the budget constraint, we first examine how the borrowing possibilities of a regional government are affected. Borrowing by regional governments in the Netherlands is governed by a specific law adopted in the year 2000, called FIDO (Financing Decentral Governments). This law contains specifications with the objective to limit risks in borrowing and lending funds. Both borrowing and investment by regional governments is restricted, for example, by imposing limits on taking (more) costly short-term loans and prohibiting investment in (volatile) foreign currency. This law seems to meet the criterion to restrict and formalize borrowing possibilities by regional governments. Additionally, the occurrence of financial difficulties is limited by restraining investment possibilities for regional governments. However, the cases from Germany and Italy have shown that the adherence to these formal restrictions as well as whether the central government can persist with a no-bailout policy can only be observed in practical examples. Therefore, it is difficult to assess whether this law in the Netherlands is actually able to serve its purpose when needed most, in the case of financial defective policy by regional governments. As a positive note, the step to regulate financing possibilities is important for the efficient functioning of a decentralized government which at least is present. For the last factor, accountability, it is hardly possible to make an assessment since it is directly linked to the amount of responsibilities regional governments have and Dutch regions have relatively little responsibilities.

We immediately see why it is difficult to predict the probability of success for (more) decentralization in the Netherlands. The factor household mobility does not give a conclusive indication. The factor spillovers will have a negative effect but this could be mitigated by interregional cooperation on public goods with spillovers. However, two problems exist. First, if cooperation between regions becomes a difficult and slow process, it could actually be less efficient compared to centralized provision or decentralized provision without cooperation. Second, even if interregional cooperation proves to be more efficient, other issues may prevent decentralization of large projects, for example, if a central government does not want to lose control over such projects. The problems in assessing the last two factors apply to all relatively centralized countries. Because these factors are inherent to

decentralized countries they are less relevant if decentralization is hardly present. Therefore, we used practices from other countries to provide an overview of policies that have negatively influenced the outcome of decentralization of authority to regions.

6. Conclusions

The objective of this paper was to provide a better understanding of the relationship between decentralization and economic growth. Decentralization of authority is a complex phenomenon. It has proven difficult to determine the degree of decentralization, isolating its influence on economic growth and how other factors affected the outcome. In spite of these obstacles, we think we have been able to throw more light on this relationship. The quantitative analysis of the effect of decentralization on economic growth revealed a positive effect, even though it was not significant. The qualitative analysis showed that certain factors, such as household mobility and spillover effects, may be held responsible for this non-significant effect. The other investigated factors did not contribute to an explanation of this relationship, but rather revealed important guidelines to be followed in order to make decentralization work. Overall we can conclude that the positive effects decentralization of authority can have according to theory have not been strongly supported by our empirical research. More research is necessary to reveal the exact effects decentralization of authority has on economic growth.

Bibliography

- Akai, N. and M Sakata (2002), 'Fiscal Decentralization Contributes to Economic Growth: Evidence from State-level Cross-section Data for the United States', *Journal of Urban Economics*, Vol. 52 (1), pp. 93-108.
- Barro, R.J. and X. Sala-I-Martin (1992), 'Convergence', *Journal of Political Economy*, Vol. 100, pp. 223-251.
- Bordignon, M. (2000), 'Problems of Soft Budget Constraints in Intergovernmental Relationships: The Case of Italy', Inter-American Development Bank, research network working paper R-398.
- Burgmans, A. et al (2006), 'Randstad Holland in een Globaliserende Wereld', Océ Business Services, 's Hertogenbosch.
- Buti, M., S. Eijffinger and D. Franco (2003), 'Revisiting EMU's Stability Pact: A Pragmatic Way Forward', *Oxford Review of Economic Policy*, Vol. 19, number 1, pp. 100-111.
- Caravita, B. (2004), 'Italy: Toward a Federal State? Recent Constitutional Developments in Italy', University of Rome.
- Carter Hill, R., W. Griffiths and G. Judge (2001), 'Undergraduate Econometrics', p. 190, John Wiley and Sons, New York.
- Castles, F.G. (1999), 'Decentralization and the Post-War Political Economy', *European Journal of Political Research*, Vol. 36, pp. 27-53.
- Commissie Versterking Randstad (2007), 'Advies Commissie Versterking Randstad', Zoetermeer: FWA.
- Committee of Regions (1995-2005), Homepage (www.cor.europa.eu).
- Council of Europe (2002), 'Recovery of Local and Regional Authorities in Financial Difficulties', Strasbourg: Council of Europe Publishing.
- Darby, J., A. Muscatelli and G. Roy (2003), 'Fiscal Decentralisation in Europe: A Review of Recent Experience', University of Glasgow.
- Davey, K. (2003), 'Fiscal Decentralization', University of Birmingham. (<http://unpan1.un.org/intradoc/groups/public/documents/UNTC/UNPAN017650.pdf>)
- Davoodi, H., D. Xie and H. Zou (1995), 'Fiscal Decentralization and Economic Growth in the United States', *Journal of Urban Economics*, Vol. 45, 228-239 (1999).
- Davoodi, H. and H. Zou (1998), 'Fiscal Decentralization and Economic Growth: A Cross-Country Study', *Journal of Urban Economics*, Vol. 43, pp. 244-257.
- Epple, D. and T. Nechyba (2004), 'Fiscal Decentralization', in: V. Henderson and J.F. Thisse (eds.), *Handbook of Regional and Urban Economics*, Vol. 4, pp. 2423-2480.
- Feijten, P. and P. Visser (2005), 'Binnenlandse Migratie: Verhuismotieven en Verhuisafstand', *Bevolkingstrends, Statistisch Kwartaalblad over de Demografie van Nederland*, Vol. 53, 2nd quarter, pp. 75-81.
- Giordano, B. and E. Roller (2003), 'A Comparison of City Region Dynamics in the UK, Spain and Italy: More similarities than Differences?', *Regional Studies*, Vol. 37, pp. 911-927.
- Hagen, J. von et al (2000), 'Subnational Government Bailouts in OECD Countries: Four Case Studies', Inter-American Development Bank, research network working paper R-399.
- Henderson, V. and M. Arzaghi (2005), 'Why Countries Are Fiscally Decentralizing', *Journal of Public Economics*, Vol. 89, Issue 7, pp. 1157-1189.
- Hooghe, L. and G. Marks (2001), 'Multi-Level Governance and European Integration', Rowman and Littlefield Publishers, Oxford.
- Imi, A. (2005), 'Decentralization and Economic Growth Revisited: An Empirical Note', *Journal of Urban Economics*, Vol. 57, pp. 449-461.
- International Constitutional Law (2004), Homepage (www.oefre.unibe.ch/law/icl).
- Kalin, W. (2003), 'Decentralization – Why and How?', Department of International Public Law, University of Berne.
- Lin, J.Y. and Z. Liu (2000), 'Fiscal Decentralization and Economic Growth in China', *Economic Development and Cultural Change*, Vol. 49, pp. 1-21.

- Loughlin, J. (2000), 'Regional Autonomy and State Paradigm Shifts in Western Europe', in: *Regions and Regionalism in Europe*, Cheltenham: Edward Elgar Publishing, pp. 656-680.
- Mankiw, N.G., D. Romer and D. Weil (1992), 'A Contribution to the Empirics of Economic Growth', *Quarterly Journal of Economics*, Vol. 107, pp. 407-437.
- Martinez-Vasquez, J. and R.M. McNab (2001), 'Fiscal Decentralization and Economic Growth', Georgia State University, International Studies Program, working paper 01-01.
- Millan, B. (1997), 'The Committee of the Regions: In at the Birth', *Regional and Federal Studies*, Vol. 7, number 1, pp. 5-10.
- Molero, J. (1998), 'Analysis of the Decentralization of Public Spending in Spain', University of Navarra.
- Norton, A. (1994), *International Handbook of Local and Regional Government*, Aldershot: Edward Elgar Publishing.
- Pilkington, C. (2002), 'Devolution in Britain today', Manchester: Manchester University Press.
- Oates, W.E. (1972), 'Fiscal Federalism', New York: Harcourt Brace Jovanovich.
- Oates, W.E. (2006), 'On the Theory and Practice of Fiscal Decentralization', University of Kentucky, IFIR, working paper 2006-05.
- Oates, W.E. (2005), 'Toward a Second-Generation Theory of Fiscal Federalism', *International Tax and Public Finance*, vol. 12, August, pp. 349-373.
- Ommeren, J. van (2006), *Verhuismobiliteit: Een Literatuurstudie naar de Belemmeringen tot Verhuizen*, Vrije Universiteit van Amsterdam.
- Panizza, U. (1999), 'On the Determinants of Fiscal Centralization: Theory and evidence', *Journal of Public Economics*, vol. 74, October, pp. 97-139.
- Prakke, L. and C.A.J.M. Kortmann (2004), 'Het Staatsrecht van de Landen van de Europese Unie', Deventer: Kluwer.
- Rodden, J. (2000), 'Breaking the Golden Rule: Fiscal Behavior with Rational Bailout Expectations in the German States', Center for European Studies, Harvard University, Cambridge.
- Rodriguez-Pose, A. and A. Bwire (2003), 'The Economic (In)Efficiency of Devolution', Department of Geography and Environment, London School of Economics.
- Rosen, H.S. (2002), 'Public Finance', New York: McGraw-Hill.
- Schneider, A. (2003), 'Who Gets What from Whom. The Impact of Decentralization on Tax Capacity and Pro Poor Policy', IDS working paper 179.
- Schrijver, F. (2006), 'Regionalism After Regionalisation', Amsterdam: Amsterdam University Press.
- Solow, R.M. (1956), 'A Contribution of the Theory of Economic Growth', *Quarterly Journal of Economics*, Vol. 70, pp. 65-94.
- Swan, T.W. (1956), 'Economic Growth and Capital Accumulation', *Economic Record*, Vol. 32, pp. 334-361.
- Tiebout, C. (1956), 'A Pure Theory of Local Expenditures', *Journal of Political Economy*, Vol. 64, pp. 416-424.
- Thießen, U. (2003), 'Fiscal Decentralization and Economic Growth in High-Income OECD Countries', *Fiscal Studies*, Vol. 24, pp. 237-274.
- Thornton, J. (2006), 'Fiscal Decentralization and Economic Growth Reconsidered', *Journal of Urban Economics*, Vol. 61, pp. 64-70.
- U.S. Census Bureau (2000), 'People on the Move: Geographical Mobility 1999-2000', *Population Profile of the United States: 2000 (Internet Release)*, Chapter 3.
- Vandenbrande, T., L. Coppin, P. van der Hallen, P. Ester, D. Fourage, A. Fasang, S. Geerdes, and K. Schömann (2006), 'Mobility in Europe', European Foundation for the Improvement of Living and Working Conditions, Dublin.
- Woller, G.M. and K. Phillips (1998), 'Fiscal Decentralization and LDC Growth: An Empirical Investigation', *Journal of Development Studies*, Vol. 34, pp. 138-148.
- World Bank (2001), Homepage (www.worldbank.org).
- Yilmaz, S. (1999), 'The Impact of Fiscal Decentralization on Macroeconomic Performance', *National Tax Association, Proceedings*, pp. 251-260.
- Zhang, T. and H. Zou (1998), 'Fiscal Decentralization, Public Spending, and Economic Growth in China', *Journal of Public Economics*, Vol. 67, pp. 221-240.

Appendix A Average regional growth rates

Country	Region	Average growth rate per capita (1978 – 2002)
Austria	Burgenland	2.3 %
	Niederosterreich	1.6 %
	Wien	0.6 %
	Karnten	2.6 %
	Steiermark	2.3 %
	Oberosterreich	2.3 %
	Salzburg	1.9 %
	Tirol	1.3 %
	Vorarlberg	1.7 %
Belgium	Bruxelles-Brussel	1.6 %
	Antwerpen	2.0 %
	Limburg	2.2 %
	Oost-Vlaanderen	2.0 %
	Vlaams Brabant	2.4 %
	West-Vlaanderen	2.2 %
	Brabant Wallon	2.0 %
	Hainaut	1.2 %
	Liege	1.1 %
	Luxembourg	2.2 %
Namur	1.3 %	
Germany	Stuttgart	1.6 %
	Karlsruhe	1.6 %
	Freiburg	1.5 %
	Tubingen	1.5 %
	Oberbayern	2.4 %
	Niederbayern	2.1 %
	Oberpfalz	2.5 %
	Oberfranken	2.0 %
	Mittelfranken	1.8 %
	Unterfranken	1.9 %
	Schwaben	1.7 %
	Bremen	1.4 %
	Hamburg	1.6 %
	Darmstadt	2.2 %
	Giessen	1.6 %
	Kassel	1.8 %
	Braunschweig	1.6 %
	Hannover	1.6 %
	Luneburg	1.4 %
	Weser-Ems	1.4 %
Dusseldorf	1.1 %	
Koln	1.4 %	
Munster	0.9 %	
Detmold	1.6 %	

	Arnsberg	1.0 %
	Koblenz	1.2 %
	Trier	1.4 %
	Rheinhessen-Pfalz	1.0 %
	Saarland	1.5 %
	Schleswig-Holstein	1.3 %
Denmark	Denmark	1.6 %
Spain	Galicia	1.6 %
	Asturias	1.3 %
	Cantabria	1.6 %
	Pais Vasco	1.7 %
	Navarra	1.8 %
	Rioja	1.4 %
	Aragon	2.1 %
	Madrid	2.4 %
	Castilla-Leon	1.8 %
	Castilla-la Mancha	1.8 %
	Extremadura	2.5 %
	Cataluna	2.1 %
	Com. Valenciana	1.7 %
	Baleares	2.0 %
	Andalucia	1.6 %
	Murcia	1.5 %
Finland	Ita-Suomi	3.1 %
	Vali-Suomi	2.8 %
	Pohjois-Suomi	2.0 %
	Uusimaa	2.8 %
	Etela-Suomi	2.6 %
	Aland	2.7 %
France	Ile de France	1.8 %
	Champagne-Ard.	1.6 %
	Picardie	1.0 %
	Haute-Normandie	1.1 %
	Centre	1.5 %
	Basse-Normandie	1.8 %
	Bourgogne	1.6 %
	Nord-Pas de Calais	1.3 %
	Lorraine	1.0 %
	Alsace	1.4 %
	Franche-Comte	1.2 %
	Pays de la Loire	1.7 %
	Bretagne	1.8 %
	Poitou-Charentes	1.5 %
	Aquitaine	1.6 %
	Midi-Pyrenees	2.0 %
	Limousin	1.9 %
	Rhone-Alpes	1.6 %
	Auvergne	1.7 %

	Languedoc-Rouss.	1.6 %
	Prov-Alpes-Cote d'Azur	1.3 %
	Corse	1.7 %
Greece	Anatoliki Makedonia	1.8 %
	Kentriki Makedonia	1.4 %
	Dytiki Makedonia	1.1 %
	Thessalia	1.6 %
	Ipeiros	2.0 %
	Ionia Nisia	2.2 %
	Dytiki Ellada	1.2 %
	Stereia Ellada	0.8 %
	Peloponnisos	1.4 %
	Attiki	0.7 %
	Voreio Aigaio	2.0 %
	Notio Aigaio	2.5 %
	Kriti	2.7 %
Ireland	Border	4.2 %
	Southern and Eastern	5.3 %
Italy	Piemonte	2.1 %
	Valle d'Aosta	1.0 %
	Liguria	2.4 %
	Lombardia	2.0 %
	Trentino-Alto Adige	1.1 %
	Veneto	1.6 %
	Fr.-Venezia Giulia	1.7 %
	Emilia-Romagna	2.5 %
	Toscana	2.2 %
	Umbria	1.9 %
	Marche	2.0 %
	Lazio	1.5 %
	Abruzzo	1.5 %
	Molise	1.9 %
	Campania	1.9 %
	Puglia	1.7 %
	Basilicata	2.3 %
	Calabria	1.9 %
	Sicilia	1.5 %
	Sardegna	1.8 %
Netherlands	Groningen	-0.9 %
	Friesland	1.5 %
	Drenthe	1.0 %
	Overijssel	1.6 %
	Gelderland	1.9 %
	Flevoland	-1.4 %
	Utrecht	2.5 %
	Noord-Holland	1.8 %
	Zuid-Holland	1.6 %
	Zeeland	1.3 %

	Noord-Brabant	2.1 %
	Limburg	2.2 %
Portugal	Norte	3.5 %
	Centro	2.2 %
	Lisboa e V.do Tejo	2.1 %
	Alentejo	2.8 %
	Algarve	3.8 %
Sweden	Stockholm	1.2 %
	Ostra Mellansverige	-0.3 %
	Sydsverige	0.0 %
	Norra Mellansverige	-0.3 %
	Mellersta Norrland	-0.6 %
	Ovre Norrland	-0.8 %
	Smaland med oarna	0.0 %
	Vastsverige	0.0 %
United Kingdom	Tees Valley and Durham	1.2 %
	Northumb. et al.	1.3 %
	Cumbria	1.1 %
	Cheshire	2.1 %
	Greater Manchester	1.8 %
	Lancashire	1.7 %
	Merseyside	1.0 %
	East Riding	1.8 %
	North Yorkshire	2.1 %
	South Yorkshire	1.4 %
	West Yorkshire	2.1 %
	Derbyshire	1.9 %
	Leics.	2.1 %
	Lincolnshire	1.8 %
	Hereford et al.	2.0 %
	Shrops.	2.1 %
	West Midlands (county)	1.7 %
	East Anglia	2.0 %
	Bedfordshire	2.4 %
	Essex	2.3 %
	Inner London	2.0 %
	Outer London	2.1 %
	Berkshire et al.	2.3 %
	Surrey	2.6 %
	Hants.	2.4 %
	Kent	2.4 %
	Gloucester et al.	2.2 %
	Dorset	1.7 %
	Cornwall	2.0 %
	Devon	1.9 %
	West Wales	1.4 %
	East Wales	2.2 %
	North East Scot.	2.4 %
	Eastern Scotland	2.0 %

	South West Scot.	2.0 %
	Highlands and Islands	0.6 %
	Northern Ireland	2.1 %

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