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Strukturberichterstattung
Nr. 50/1

Martin Eichler
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The Financial Sector and the Economy: A Pillar or a Burden?

Study on behalf of the State Secretariat of Economic Affairs SECO

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List of acronyms

BFS	Bundesamt für Statistik (Federal Statistical Office of Switzerland)
FD	Financial development
GVA	Gross value-added
GDP	Gross domestic product
IPS	Im-Pesaran-Shin-test
LLC	Levin-/Lin-/Chu-test
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares method
R&D	Research and development
SECO	State Secretariat for Economic Affairs of Switzerland
TFP	Total factor productivity
NOGA	Nomenclature Générale des Activités économiques
SNB	Swiss National Bank

Country codes:

AT Austria	IR Ireland	ES Spain
BE Belgium	IT Italy	SE Sweden
DK Denmark	JP Japan	CH Switzerland
FI Finland	LU Luxembourg	UK United Kingdom
FK France	NL Netherlands	US United States
DE Germany	NO Norway	
ED Greece	PT Portugal	

1 Introduction

"In Switzerland the financial sector generates a considerable share of the gross domestic product. The core function is offering or mediating investment opportunities that permanently tie freely-circulating liquid capital to real-capital investments. Growth theory states that effective financial intermediation creates growth stimuli that even exceed those of the intermediaries' gains from interests and commissions."

These are the first sentences from the SECO's tender offer with regard to the Strukturberichterstattung in 2012. This study intends to analyse and to scrutinize this theoretical statement empirically.

1.1 Motivation and approach

The financial sector as part of the economy

Since the eighties, developments in industry-relevant technologies and regulations have considerably extended the financial sector's economic potential. In between, this led to very dynamic growth in the financial industry and has accelerated the structural change towards a services-based economy. Many politicians and economists considered the financial sector as a flagship industry that can help to compensate the observed decline in manufacturing value-added in Western economies.

The developments in recent years, however, have tarnished the reputation of the financial sector as a flagship industry. After the Subprime crisis in the USA and the later crisis in the Euro area, the public is increasingly critical towards the financial markets. This change of perspective is reflected in a partly radical rethinking in politics: In the USA and United Kingdom, for example, current heads of government postulated a political agenda of reindustrialisation. Further, Cyprus can be cited as an example where a re-dimensioning of the financial sector was explicitly called for in the course of the bailout. At the same time, the pressure on the financial industry has increased due to intensified national and international regulatory restraints.

This political change of direction raises the question of how much the financial industry contributes to the overall economic development. Despite the importance of this question, considerable ambiguity characterizes the discussion among researchers as well as in the public. Nowadays, the positive impact of the financial industry for the evolution of modern economic structures is hardly disputed in the academic discussion. However, there is much arguing going on if economic development driven by the financial industry is desirable at all times and if an expansion of the financial sector above a certain level may harm the overall economy.

The financial sector and economic growth

This study scrutinizes the relationship between the financial sector, its services, and economic growth. The existence of this relationship is undoubted in research today. But the exact mechanisms are versatile and complex. The financial industry helps to mitigate a variety of market frictions as it transforms volumes and terms that differ between economic players demanding and those offering capital. Furthermore, it diversifies and curbs risks. Also, the ex-ante selection of appropriate investments as well as the monitoring and control of the projects are further key competences and economic functions.

In fact, a well-functioning financial sector can be compared to that of the heart in the human body: Just like the heart takes care of the constant circulation of blood, the financial system

eases the flow of capital in modern economies.[1] The financial sector constitutes a decisive part of the economic infrastructure of a country. In developed countries, economic activity without any financial sector is literally unthinkable.

However, the financial sector and the way it influences the economy also has become subject of critical views. A growing body of research has highlighted potential risks emanating from it, especially as the financial sector "grows big". Systemic risks through excessive provision of credit to firms might deepen business cycles and, hence, increase the volatility of economic growth. Similarly, business disincentives for "too big to fail" financial players potentially increase macroeconomic uncertainty. When a country is flooded by massive capital inflow to its financial sector, symptoms of the famous Dutch disease may occur. Furthermore, the financial sector might absorb (too) much skilled labour to the disadvantage of other human-capital intensive sectors and, possibly, to the disadvantage of the economy as a whole.

Disentangling the multifaceted relationship of finance and growth is the aim of our analysis. Specifically, we ask how the financial sector, its services, and economic growth relate in the specific context of the highly developed economies of OECD countries.

The approach

For this purpose, the analysis proceeds as follows.

In Chapter 2, the existing research context is treated in detail. The theoretical perspective departs from neoclassical growth theory as we analyse the effect of a determinant of growth – the financial sector and its services. In order to define their effect on growth more in detail, the fundamental functions of the financial sector as well as the major points of critique are outlined in depth. The chapter concludes with a comprehensive review of the milestone empirical literature on the topic.

Chapter 3 focuses on the Swiss financial sector in order to give an idea of the relevance of the analysis and results for the country and its economy. It discusses structure and development of the financial sector in both the national context of different industries as well as the international context of the sample.

Chapter 4 introduces the specific research setup for the present analysis. Key points are:

- Our technical specification of the model allows for non-linear relationships of aggregate economic growth and the financial sector (as a determinant of growth).
- We scrutinize several possible ways how the financial sector and economic growth might relate with regard to the multiplicity of functions and roles the financial sector takes on in highly developed economies.
- At the data front, we intend to contribute an array of insights to the current state of research. Firstly, we use more detailed data than earlier analyses on the topic, namely, data at the regional and sectoral level. Secondly, while the majority of analyses is based on data including developing countries, the present analysis is one of few concentrating on OECD countries.

In Chapter 5, the results are presented in a standardized way, stating the transmission channel, hypothesis and estimation result for each specific combination of data and theoretical consideration. Chapter 6 summarizes and concludes on the major results of the paper.

The main body of the paper is followed by a comprehensive appendix including the entire body of estimation results.

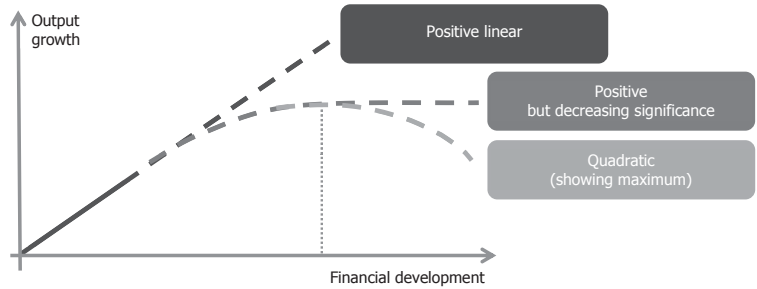
[1] The origin of this popular quote is unclear (among others: E. Daladier, French prime minister, 1934)

1.2 Framework and definitions

The principal relationship as discussed in research

Figure 1-1 provides orientation with regard to the fundamental empirical findings on the nexus between financial development (FD) and growth. In the figure, three lines are drawn. Each describes a specific type of relationship between output growth (y-axis) and financial development (x-axis). The darkest line claims a strictly positive linear relationship: Any size of the financial sector is beneficial to growth corresponding to this perspective. Findings of this type are more likely found in research prior to the millennium whose proponents are King and Levine (1993) among others.

Fig. 1-1 Problem definition



Source: BAKBASEL

However, the lighter lines represent the results of younger studies in the past decade, represented by Easterly, Islam and Stiglitz (2000), Arcand, Berkes and Panizza (2011) as well as Cecchetti and Kharroubi (2012). They extended the econometric models based on more critical theoretical ground – their point: financial development might be exaggerated and at some degree either decrease in significance or even show a maximum beyond which additional financial development is truly harmful to output growth.

The present study by BAKBASEL pursues its approach following the latter strand of literature and intends to find more detailed results with regard to the question if financial development is rather a burden or a pillar for the aggregate economy.

Where to find the impact on the economy

Evaluating the impact of a specific industry as part of the aggregate economy usually means to quantify it by its share in the overall employment and in the aggregate gross value-added (GVA). Following this approach, the generally considerable share in the GVA, the above-average wage level and the (at least temporarily) high contribution to aggregate growth are evidence of the importance of the financial industry. Such an analysis, however, only captures a small share of the financial sector's true contribution.

The theoretical idea becomes clear when the financial sector is compared to the energy sector. In both sectors, the economic contribution is generated in the moment of utilization of the infrastructure they provide rather than in the moment of production. In case of the energy sector (its share in the Swiss GDP amounts to just around two per cent) this means: The energy sec-

tor takes care of the country-wide supply with electricity. Economic activity without this indispensable input factor is unimaginable.

Hence, the focus lies on the supply side: The better the quality, the better the price-performance ratio of its products, and the more reliable its continued provision, the greater the competitiveness and the production potential of the economy as a whole. Such effects are called positive externalities.

The economic impact of the financial sector can be compared to that of the energy sector: Indeed, the financial sector has a much higher value-added and employment share than the energy sector. But, just as the energy sector, the financial sector also contributes considerably through the supply side. With regard to the transformation function, risk diversification function, and its function to collect information and monitor investments, the financial sector is a lubricant for economic activity. Furthermore, the financial sector also works to the benefit of private households as it provides basic services such as asset management and financial consulting services. For every economy, a well-functioning financial sector belongs to the basic infrastructure just as a well-functioning energy sector.

Nevertheless, the total effect of the financial sector can also include negative externalities for the economy, as extensively discussed in Chapter 2.

Definition of the financial sector and its services

Hence, the financial sector and its services can be defined in a two-fold way. On the one hand, the financial sector can be analysed from the point of view of the actual firms within the sector itself. In this perspective, the financial sector is constituted by the sum of companies like classical (savings) banks and investment banks, insurers and re-insurers, as well as market platforms, such as stock exchange facilities, and other related services. The properties that all these financial firms have in common is that they act as employers and generate gross value-added – which in Switzerland amounts to a considerable share.

On the other hand, the financial sector can be analysed for the availability of the services it provides, which generate positive externalities (or catalytic effects) over the rest of the economy. The different functions of the financial sector express themselves in various ways: It is crucial for firms' success to have sufficient access to credit. Furthermore, the financial sector also generates equity for firms. Likewise, the availability of insurance products is a key factor for business planning and success. These are only examples of the many channels through which the financial sector services influence and animate economic activity.

In our study, the primary focus lies on the second part of the definition: the availability of the finan-cial sector services. One reason is that the contribution of positive externalities might be far more important than that of financial companies. But ultimately, the effect of externalities is less clear and harder to observe than the former share of the total effect, requiring advanced methods for their evaluation.

2 The research context

The study "The Financial Sector and the Economy: a Pillar or a Burden?" focuses on the relationship of aggregate economic growth and the financial sector as one of its determinants. In the following, a short summary treats the relevant aspects of growth theory[2] and shows how the financial sector influences growth in all relevant facets.

2.1 The neoclassical growth model

In the past 50 years, economics has extended and developed its understanding of growth.

Early (exogenous) growth theory

The aim of the early neoclassical growth models was to decompose the influence of the basic factors of production on economic growth, namely capital and labour. Early empirical research, however, indicated that capital and labour alone could not explain growth completely (Solow 1956 & 1957). Some growth occurred from other sources than just the quantity of the basic production factors.

Further developments attempted to explain this large residual share of growth in form of something other than the quantity of the main production factors. Total factor productivity (TFP) was introduced in order to capture factors on growth that primarily influence the productivity of the production factors (Solow 1956 & 1957). The introduction of new technologies was considered the main source of increasing productivity. However, this simple concept of TFP could not explain differing long-term growth paths in different countries. Particularly, the factors explaining total factor productivity or the introduction of new technologies, respectively, were exogenous to these models.

Endogenous growth theory

A milestone in neoclassical growth theory was brought about by endogenous growth models (Romer 1986 & 1990). It was the attempt to explain the TFP growth through additional endogenous variables that capture the differences in the technological stage of development across countries. Hence, the growth rate of TFP became itself a function of other endogenous variables in the model. At about the same time, the understanding of TFP was extended towards know-how, the quality of human capital as well as of physical capital, and of institutions (Mankiw, Romer and Weil 1990).

Operationalization of endogenous growth models: Reduced form approach

The neoclassical growth model is generally hard to operationalize for empirical research. Besides methodological problems[3], the main reason is that physical capital is barely quantifiable and that existing data is hardly comparable at the interregional, not to mention at the international level. The reduced form of growth models was an answer to demur in this context. The necessary assumption was that the quantities of capital and of labour can themselves be explained by additional residual variables, partly also by the same endogenous factors as TFP. Hence, capital and labour were no longer necessary explicit variables in growth models.

[2] The neoclassical growth theory is extensively discussed in the literature (Solow 1956 & 1957; Arrow 1962; Mankiw, Romer, Weil 1990; Romer 1986 & 1990; Grossman und Helpman 1991; Aghion und Howitt 1992; Barro 1998; Cortright 2001); In BAKBASEL (2011) a very similar approach is taken and the evolution of the neoclassical growth theory with specific relevance to the approach used is outlined in depth.

[3] In the long run, the production output, the quantity of labour, and the quantitiy of capital are determined simultaneously. Estimating the production function can consequently lead to a systematic simultaneity bias.

2.2 The financial sector and economic growth models

Neither the basic theory nor the reduced form specification of endogenous growth models include the financial sector. It remains to analyse how the financial sector can be integrated into growth models. The financial sector might influence the availability of capital in the classical production function. Even more, the services provided by the financial sector might influence Total Factor Productivity in various ways. Below, we present the most important channels of such an influence of financial services provided in an economy and the availability of capital, the quality of capital provided and other influences on TFP. Traditionally, the functions of the financial sector lead to a positive effect on TFP, as discussed in Chapter 2.2.1. More recent popular concerns expressed with regard to the financial sector might lead to negative effects on economic growth. These concerns will be taken into account in Chapter 2.2.2.

2.2.1 Functions of the financial sector

Traditionally, capital markets are assumed to be frictionless. Including the financial sector into the growth models is pointless under this assumption as there is no demand for the services of credit institutes, insurers, or other related companies. While the assumption is useful for constructing lean theoretical frameworks, it is naturally a simplification. In fact, as two of many Kunt and Levine (2008) claim that there is a variety of frictions on capital markets that "motivate the emergence of financial contracts, markets, and intermediaries" (Kunt and Levine 2008). In order to try and make sense out of the complexity of capital markets, a brief summary of market frictions and basic functions of the financial sector is provided in the following.

In economic theory, fundamental functions are ascribed to the financial sector.[4] The most popular ones are (e.g.: Rehkugel and Schindel 1994; Kunt and Levine 2008; Levine 1997):

1) Transformation of terms and volumes
2) Diversification of risk
3) Collection of information, monitoring of investments and exertion of corporate governance

1) Transformation of terms and volumes

Firstly, the masses of administrated savings within a financial institution enable the banks to add up many small amounts of assets into the large amounts necessary for large-scale investments (volume transformation function). For large-scale investment projects a great number of creditors and shareholders is necessary in order to realize such endeavours. In the absence of financial sector services, such projects would have to shoulder additional costs connected to the transaction costs arising through the collection of capital (Rehkugel and Schindel 1994).

Secondly, creditors and shareholders tend to prefer liquid assets allowing for short-term conversion into "cash". However, (especially high return) investments tend to require long-term capital commitment. The financial sector and its institutions harmonize these differing interests by making liquid funds, such as demand deposits, bonds and equity, available for long-term investments (term transformation function) (Rehkugel and Schindel 1994).

[4] Indeed, many of these functions are not exclusively discussed with respect to the functions of the financial sector but are part of the discussion of the functions of money within an economy.

2) Diversification of risk

The average saver is risk averse, but faces the fact that high-return investments are, on average, riskier than those with low returns. As financial intermediaries grant credits to a multiplicity of firms and manage a large number of investments, single defaults do not bring about a major risk for the financial institution and, in turn, to its clients' savings. Hence, this risk diversification allows profiting from high-return-high-risk investments despite the savers' risk aversion (Kunt and Levine 2008, Levine 1997).

3) Collection of information and monitoring of investments

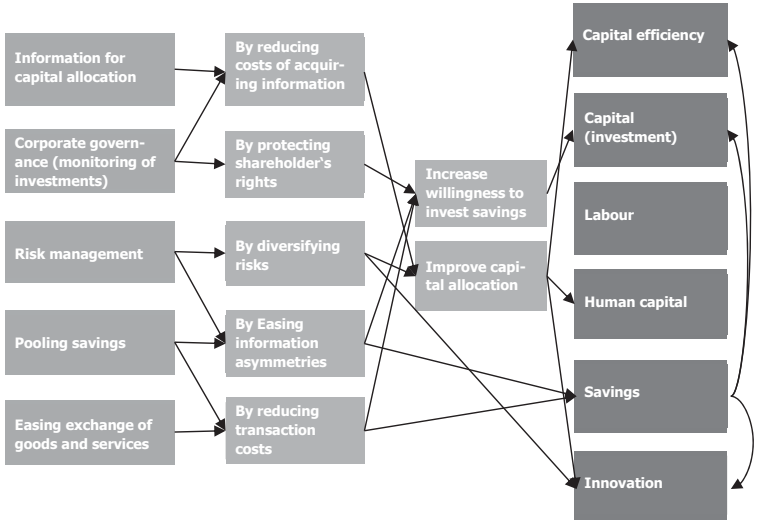
For the individual average saver, it would be an enormous if not impossible effort to collect the necessary information of firms, its leaders, and the relevant market in order to achieve an optimal allocation for his or her savings to specific investments. Due to the specialisation allowed by the economies of scales, financial institutions have the crucial expertise to decide whom to grant loans or where to allocate funds as equity. That way they close the information gap between firms offering investment opportunities and savers (Kunt and Levine 2008, Levine 1997).

Similarly, individual (small) creditors and shareholders face enormous informational disadvantages when they want to monitor investments and exert corporate control, among other reasons, because they lack expertise and because firm managers control much of the information flow themselves. A rich body of theoretical papers shows that corporate governance tends to be exerted (more) effectively by financial institutions (cp. Laeven, Levine 2008; Bencivenga, Smith 1993; Sussman 1993).

Further discussions of basic functions and transmission channels to aggregate growth

Levine (1997) as well as Kunt and Levine (2008) discuss the concrete links between a set of functions and important growth determinants in depth and add further detailed arguments to our discussion. In Figure 2-1, we have visualized their discussion. The functions are listed in the light boxes, the growth determinants in the dark boxes.

Fig. 2-1 Transmissions channels between the financial sector and growth (determinants)



Source: Kunt and Levine (2008), Levine (1997), BAKBASEL

Another point to be considered is that different economic activities do have differing financing needs. For instance, both firms and investors face risks when allocating capital to R&D projects with uncertain success. However, financial institutions can manage risks effectively in form of diversified portfolios. That way, investments in R&D become more attractive for risk-averse investors (King and Levine 1993). This idea will be picked up in the empirical Chapter 5 and tested econometrically.

Technology spillovers represent a crucial way in which the financial sector indirectly benefits the activity of other industries within the economy. For instance, the information-technology sector profits from the fact that collecting information requires complex data analysis and organisation of enormous amounts of data generated on global financial markets. In turn, the available know-how on such data analysis and organisation spreads throughout the entire economy. Furthermore, banks and insurances have in-house economic research departments that provide detailed analyses to managers but also fundamental analyses, such as economic forecasts, for the public. Again, crucial information is generated for the benefit of the whole economy.

2.2.2 Too much of a good thing?

The popular discussion developed some scepticism about the effects of a (large) financial sector. Particularly with recent crises triggered by events in the financial sector – the bursting of the Dot-Com-Bubble, the economic downturn of 2008/2009, and the on-going crisis in the Euro area – this discussion gained steam again. Scholars have increasingly assimilated this discussion

and pointed at risks that financial activities might bring about. Most of the criticism is less based on a complete theoretical model of the financial sector but rather on empirical observations.

The most popular points of criticism are the following:

1) Systemic risks and volatility
2) "Too big to fail"-disincentive
3) Brain drain
4) Dutch disease

1) Systemic risks and volatility

Volatility in economic growth (1), expressed by distinct business cycles, is connected to considerable social and economic costs. Easterly, Islam and Stiglitz (2000) propose that a (too) strong financial development potentially reinforces growth volatility. In fact, in a relatively early stage a "more" of financial development mitigates volatility. However, the authors show that when "Private Credit (by deposit money banks) relative to the Gross Domestic Product (GDP)" exceeds a certain threshold, additional financial development aggravates business cycles: "Countries in which firms have sufficiently high debt equity ratios and in which financial institutions are highly leveraged may themselves 'invite' shocks" (Easterly, Islam and Stiglitz 2000). The rationale is that, in the event of an exogenous shock, banks of these countries are especially put under pressure to cut the volume of credits granted to firms. Consequently, economic downturns are more severe than in less indebted economies. The authors locate the critical level at about 100 per cent of Private Credit to GDP (Easterly, Islam, and Stiglitz 2000).

2) "Too big to fail"-disincentive

Especially the latest crisis provides the ground for the second point of critique. As a consequence of the Subprime- and the on-going Euro area crisis, governments granted bail-outs and guarantees for liabilities to large (systemic) financial institutions in order to avoid a potential break down of the financial systems. This, however, is irreconcilable with market economy principles: Unsuccessful or failed firms ought to vanish from the markets.

If financial institutions integrate expectations for bail-outs into their business strategy, they may increase their risks beyond the degree of a company acting on a competitive market and pass on the costs related to these additional risks to society. That way, they systematically create the basis for the next crisis (e.g. Ennis and Malek 2005). This "Too big to fail"-disincentive creates itself a systemic risk and is closely related to the above discussed problem of growth volatility.

3) Brain drain

The financial sector and the real economy[5] compete for scarce resources. That counts especially on the market for skilled labour: "we are throwing more and more of our resources, including the cream of our youth, into financial activities remote from the production of goods and services […]." (Tobin 1984). Hence, these people may be missing in academic research or other parts of the economy. The argument is underlined by the fact that innovation oftentimes depends on the ideas of a very small group of people. Cecchetti and Kharroubi (2012) examine how the financial sector and its growth relate to productivity growth of the aggregate economy. From their results they figure that the attractiveness of the financial sector might in fact keep relevant resources away from the real economy.

4) Dutch disease

In economic theory the Dutch Disease describes the relation between the incremental exploitation of natural resources and the decline in manufacturing value-added in the same economy.

[5] The real economy is defined as the entirety of economic sectors but the financial sector.

The intensifying export of natural resources causes a revaluation of the local currency what in turn translates into a reduction in competitiveness of the remaining (manufacturing) companies (e.g. Cordon and Neary 1982, Zürcher 2012).[6]

The initial stimulus for the "disease" can also have other origins than massive natural resource exportation (Cordon and Neary 1982). Since the on-going crisis in the Euro area, for instance, financial markets of small successful countries (with independent currencies and low public debt levels) were flooded by foreign capital in search for a "safe haven" – as it has occurred in Switzerland (Zürcher 2012). This development can result in a relevant constraint for the business of (potentially competitive) export-oriented sectors and, if persistent, trigger a far-reaching restructuring of the aggregate economy. Such restructuring can go along with the irrevocable loss of critical know-how and actually hamper the competitiveness of the economy as a whole.

2.2.3 Financial sector and growth

These four points of criticism, (1) Systemic risks and volatility, (2) the "Too big to fail"-disincentive, (3) the Brain drain, and (4) the Dutch disease, tend to have one aspect in common: all findings document that the negative impact of the financial sector tends to become more relevant if the financial sector (or crucial parts of it) grows big. This common key result that there might be "too much of a good thing" has been the major point of orientation in research on the financial sector in past years.

A well-functioning financial sector, however, is to minimise market frictions and ease constraints faced by firms and households in order to foster economic activity. The functions (1) of transformation of terms and volumes, (2) of diversification of risk, (3) of ex-ante collection of information, and of monitoring of investments are vital for the aggregate economy. In developed countries, economic activity without a financial sector that fulfils these fundamental functions is literally unthinkable. But there might be diminishing effects of ever more transformation, diversification and information collection. Therefore, once the financial sector is well developed, additional financial services might provide smaller benefits than at an earlier stage of development.

Both the functions as well as risks emanating from a "too big" financial sector can be integrated in the neoclassical growth model. One way to see this is that the financial sector influences the available quantities of the basic production factors, namely capital. E.g., banks that adequately fulfil the financial-sector functions convince savers to deposit their savings in their bank accounts. In turn, these savings increase the capital available for firms' investments. In fact, countries with ineffective banking systems might suffer from savers keeping money "under the mattress". Moreover, financial-sector services help to increase the total factor productivity (TFP) in an economy. E.g., if banks successfully allocate capital to (the most) profitable investment opportunities this translates into a higher productivity of the economy as a whole.

Also, concerning the points of critique the total factor productivity is on focus. If "(too) big" banks increase their investment risks (that it expects to be covered by public bail-outs) beyond competitive-market levels, potential subsequent macroeconomic crises can go along with permanent large-scale depreciations depressing the aggregate productivity. Similarly, brain drain and the Dutch disease can be viewed as to dampen the total factor productivity. Overall, there is substantial support to consider the financial sector as a powerful determinant of growth in the neoclassical framework.

[6] The publication "The Economist" first used the term "Dutch Disease" 1977 (Nov. 26) in the context of an article on the detrimental effect of natural gas exports on the manufacturing sector in the Netherlands at that time.

2.3 Empirical research on the financial sector and growth

While notable theoretical considerations on the relationship of growth and the financial sector go back as far as the works of Schumpeter, the notable empirical work on the topic was initiated at the beginning of the nineties. Since then it has experienced profound progress concerning the econometric methods, the data availability and the specification of models. The remarkable moment in the revision of the literature is that, approximately at the turn of the millennia, the research results have become more critical compared to those in the nineties.

2.3.1 The nineties' literature

The early empirical research can be grossly identified with the work initiated by Levine and fellow researchers in the nineties. Two among the most influential publications in the field are those by King and Levine (1993), by Beck, Levine and Loayza (2000), as well as De Gregorio and Guidotti (1995).

Within the literature of the nineties, there has been a consensus among scholars over the positive relationship between a large, well-developed financial sector and economic growth. Looking back, in this strand of research most studies see a positive-linear relationship of financial development and growth. Hence, their results were optimistic: The bigger the financial sector is, the more the economy benefits as a whole.

King and Levine (1993) study the finance-growth relationship and two of its main transmission channels, namely the importance of financial services for the rate of physical capital accumulation and improvements in the physical capital efficiency. For their cross-country analysis they use a large sample of 119 countries for the period from 1960 to 1989. From their estimation results, they conclude that there exists a positive linear relationship between finance and growth.

The paper of Beck, Levine and Loayza (2000) can be considered as an extension of Kings and Levines (1993) work. The main advancement in the analysis is the use of improved financial sector indicators (in concrete, financial development indicators; see discussion in Chapter 4.1.1) and of panel techniques in addition to cross-sectional estimations. The entirety of employed financial sector indicators (Private Credit, Bank Credit, Liquid Liabilities, Market Turnover) is positively correlated with both GDP growth and productivity growth. Only the indicators Investment (savings) and Capital per capita (growth) prove to be less correlated with the dependent variables.

King and Levine (1993) as well as Beck, Levine and Loayza (2000), and further scholars, however, were criticized for several aspects. Firstly, they tended to employ rather simple methods and partly did not use data sets with temporal variation. In general, their results remained fairly homogenous, in part due to their homogenous methods.

Secondly, King and Levine (1993) are hardly concerned with the possible drawbacks affecting their work and their results. For example, De Gregorio and Guidotti (1995) point out the possibility of an endogeneity problem affecting their main variable (Private Credit to GDP), advising to "interpret the regression results as indicative of broad correlation". Also Rajan and Zingales (1998) argue that "in the absence of a well-accepted theory of growth, the list of potential omitted variables that financial sector development might be a proxy for is large" (Rajan and Zingales 1998).

Thirdly, the authors were criticized for neglecting the possibility of a non-linear relationship of financial sector activity and economic growth. Most of the literature relies predominantly (or completely) on cross-country variation and examines developing and developed countries together. De Gregorio and Guidotti (1995) were among the first to diverge, by having performed also an analysis on a split dataset for low, medium, and high income countries. Starting there, they were able to point out that financial development (as measured by their indicators) might cease to be significant at the high-end of the sample – i.e. the OECD countries. This would obviously have important policy implications, as it would mean that material produced by King and Levine (1993) and Beck, Levine and Loayza (2000) over several decades may not be as relevant as originally thought for policy advice in developed countries.

2.3.2 Taking the critique into account

In the literature after the turn of the millennia, a new wave of research on the topic came up and represented a more critical position. The observation of the Dot-Com crisis, the subprime crises as well as the on-going crisis in the Euro area recently added steam to the discussion. In this younger literature, topics as inequality, volatility of economic growth, brain drain and other sorts of spill-over effects have started to gain importance and to re-evaluate the relationship between finance and growth. Hence, this literature challenged the most fundamental results, namely the uniquely positive relationship between financial development and growth. It argues that this relationship may in fact be non-linear and non-monotone. In this case, its policy implications would say there might in fact be "too much finance".

Studying the cause of economic break-downs, Easterly, Islam and Stiglitz (2000) are among the first looking in more detail at this potentially non-linear relationship between finance and growth. Using panel data regressions they prove the predominant importance of factors such as financial debt (Private Credit to GDP). Financial indicators, they argue, capture more of the crucial and complex dynamics involving firms and financial institutions, which have traditionally been omitted in business cycle and growth models. Unlike models studying the effects on growth itself, volatility could capture the more complex dynamics arising at higher levels of financial development: specifically, the increasing risk in the collapse of financing mechanisms to firms potentially caused by a higher exposure to exogenous shocks and higher levels of investor uncertainty.

They consider the effects of "bankruptcy risks" (measured by financial indicators) as preponderant over other rigidities since they are able to amplify shocks to the economy (bankruptcy chains of firms) and to the financial system (non-performing loans). In fact, getting access to funds is far more complex than suggested in neoclassical theory where everyone with good prospect is able to borrow according to his needs. Furthermore, although openness of capital markets may serve to absorb shocks, it may end up exacerbating the credit rationing within a country where uncertainty is too high and investors start pulling out. By this logic, shocks can be endogenised since their effect is highly dependent on the debt-equity ratios of countries. This ratio exposes certain countries to changes in perception and thus can cause downturns. Furthermore, Easterly, Islam and Stiglitz (2000) state that volatility of growth is itself a drag for long-term growth. Prior literature shows this negative relationship between growth volatility and long-term economic growth (e.g. Ramey and Ramey 1994). Therefore, a "too large" financial sector would not only increase the growth volatility, but reduce the long term growth perspectives as well.

Summing up, Easterly, Islam and Stiglitz (2000) are primarily concerned with determining which variables are determinant for increases in volatility and at which level negative effects dominate over the positive dynamics. A merit of theirs seems to be that Easterly, Islam and Stiglitz (2000) have anticipated by about a decade the more recent trends in the literature. Despite differing

approaches, their paper has been among the first to mention the 100 per cent of Private Credit to GDP threshold as a turning point for the traditionally positive relationship between financial development and economic growth. Thereby, they identify a turning point beyond which "more" financial sector (or a specific activity of the financial intermediaries, respectively) would reduce long-term growth perspectives.

Twelve years later, among others, Cecchetti and Kharroubi (2012) confirm this result through a more standard approach. Specifically, the main feature of their analysis is the inclusion of a quadratic term in the regression, allowing for non-linearity in the outcome. Their line of reasoning is not so much concerned with the complexity of firm-finance dynamics but rather with the view that the financial sector "competes" for resources with other sectors of the economy. Therefore, an excessively high growth rate in the financial sector directly affects the output capacities of the rest of the economy.

This approach allows analysing methodically the impact of the separate financial sector variables on the different parts of the economy. Cecchetti and Kharroubi (2012) not only prove that their result is robust to the use of different financial development indicators and control variables (other than Private Credit to GDP), but also that the negative effects on growth have an immediate and calculable impact on output growth. In other words, Cecchetti and Kharroubi (2012) state that the direct impact of financial development on growth might become counterproductive for growth through a simple argument: sectors compete for the scarce resources, especially skilled labour.

Arcand, Berkes and Panizza (2011) show, too, that the benefits of a "developed" financial sector on growth may be upper-bounded. In accordance with previous findings like that of Easterly, Islam and Stiglitz (2000) they find that at levels of Credit to the Private Sector (extended by deposit banks and other financial institutions) above 110% of GDP it might be the case of there being "too much finance". The authors interpret the results of their reduced form model as possibly depicting the excessive volatility which occurs at higher levels of financial development, thus inhibiting the capacity to allocate resources efficiently.

Furthermore, all three papers yield similar results with regard to the level of debt considered as maximum point – even if the debt variable is defined differently in detail. This shows a certain degree of robustness in the results, not just regarding different theoretical frameworks, but also regarding different time periods and different samples used in the analyses.

2.3.3 Effects on small and large firms

Apart from purely macroeconomic studies (e.g. King, Levine 1993) there is also literature focusing on the heterogeneous effect of finance on small and large firms (Rajan and Zingales 1998; Cetorelli and Gambera 2001; Beck et al. 2008). They assume that the two firm classes have different degrees of dependency on finance. Their results confirm the hypothesis that financial development may lead to economic growth through easing borrowing constraints particularly on smaller, mostly less mature firms.

This strand thus added an interesting dimension to the literature providing in-depth analyses of the specific transmission channels from financial development to growth, by testing specific microeconomic hypotheses. Supposedly, this approach could not just exploit more variation in the data (along more dimensions) but also eliminate the methodological shortcomings of the cross-country literature. By testing specific theoretical hypotheses, the likelihood of observing the effects of omitted variables was reduced and causality could be inferred with more confidence once the transmission mechanism itself had been explained and tested.

2.3.4 Causality between aggregate growth and financial-sector development

Despite the early literature's optimism regarding the achievements in establishing a causal link between financial development and growth, the issue of causality remains fairly shaky. This can easily be understood from the fact that despite the tendency to refer to the general result of Levine's and his co-authors' many papers – that says that financial sector activity being generally desirable for growth – it says much less regarding how this can be achieved.

Levine has been criticised, especially by Rajan and Zingales (1998), for his potential "cum post hoc, ergo propter hoc" justification that he supposedly applied to his empirical results. Since the earliest developments in the literature though, the possibility for simultaneous causality between financial sector activity and growth has been postulated (e.g. Goldsmith 1969). Tests have been carried out in different ways in order to establish whether this was the case. Among the most popular are those by Levine et al (1993, and other works). As mentioned above, they dealt with causality through an approach that Rajan and Zingales (1998) later described as a "post hoc, ergo propter hoc" justification. In other words, it is the logical fallacy of inferring causality simply because of a temporal sequence in the events. Moreover, their technique is weakened by the fact that their work is based on panel data pooled over 5-year periods, with a total of only 3 observations per country. This limits the reliability of the results, increasing the probability of omitted variables.

The increase of data availability and improved econometric techniques allowed economists to study this relationship more in depth. Calderon and Liu (2001) offer an interesting example of how VAR techniques with Granger causality tests can be used for providing some sort of formal causality test. Hassan, Sanchez and Yu (2011) as well as Calderon and Liu (2002) apply causality tests to time-series techniques and find a two-way causality. Their results seem to be compatible with the interpretation that the financial sector initially "follows" growth, e.g. financial sector develops wherever future business opportunities can be foreseen. Only at a later stage, it "causes" growth by acting as the famous lubricant for economic frictions.

2.4 Chapter summary

Chapters 2.1, 2.2 and 2.3 show that a number of economic considerations imply that neglecting the financial sector as a determinant might result in an incomplete understanding of the sources of economic growth. In fact, it proves to have a significant effect on growth in a rich body of theoretical as well as empirical literature. The point is that if the financial sector influences efficiency of capital allocation and capital costs for households and firms, it is relevant for productivity of production factors, for total factor productivity, and, hence, for aggregate growth.

Nevertheless, the bipartite mélange of positive and negative impacts makes it impossible to simply analyse the single effects of the financial sector on growth: Do the positive or negative impacts dominate? Or more specifically, might a financial sector become oversized and its activities harm aggregate output growth? It is impossible to find an answer to these questions by means of an analysis of the single effects. For this reason, in-depth analyses depend on empirical techniques. Econometric methods are the tool that is able to disentangle the effects and approach the question if the financial sector is a pillar or burden. But even though the empirical literature already offers intensive insights, the final question about the overall growth contribution of the financial sector has not been answered.

3 Selected facts about the Swiss financial sector

An econometric analysis makes it hard to draw immediate conclusions for single countries in the sample. However, knowing fundamental characteristics of single countries helps to interpret the results and apply them to a specific country's context. In Chapter 3, the size, development, structure, and trade links are discussed with regard to the Swiss financial sector. Mostly, the values underlying the economic analysis of this chapter are average values across structural periods of five to ten years. This way, the focus lies on long-term economic tendencies rather than characteristics related to the business cycle.

Furthermore, the focus is put on the direct value-added contribution of the financial sector to aggregate growth: A growing financial sector ultimately translates into aggregate growth as the financial sector is one component of the aggregate. As outlined in Chapter 2.2.1, this direct effect covers by no means the total contribution to growth. The availability of financial services (transformation of terms and volumes, diversification of risk and the collection of information) accounts for a great (if not greater) part of the financial sector's contribution to growth. To find out more about the contribution of financial-services availability is the core goal of our empirical analysis of Chapter 5.

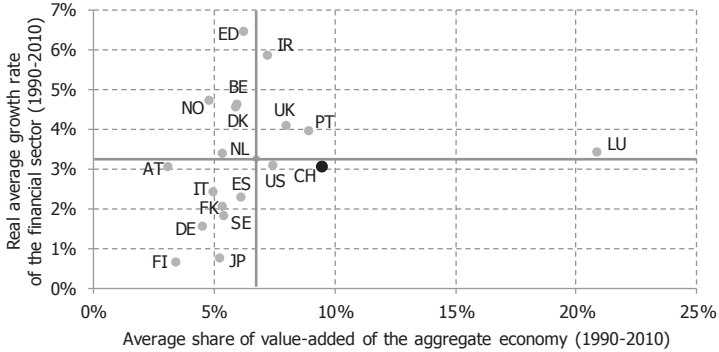
3.1 Size and development of the financial sector

In Figure 3-1, the financial sectors of the sample countries are compared with regard to value-added growth and value-added shares relative to the aggregate economy for the period of 1990 to 2010.

Size

The figure reflects the well-known inclination of some countries towards financial services: In the Anglo-Saxon economies (USA, UK), Ireland, Switzerland, and, above all, Luxembourg the financial sector contributes an above-average share to overall value-added. These countries are located right of the vertical grey line which represents the unweighted average of the sample. In contrast, the Scandinavian (Finland, Sweden, Norway and Denmark) as well as the larger European countries (Germany, France, Italy and Spain) tend to be less dependent on financial sector activity. Switzerland has a distinct position in the plot as it ranks second in the sample in terms of its value-added share.

Fig. 3-1 Financial sector real value-added growth and financial sector share of total value-added (1990-2010)



Notes: Average value-added share calculated at nominal prices; unweighted average indicated by grey lines; Growth rates are average annual growth rates 1990-2010; see "list of acronyms" for country acronyms

Source: BAKBASEL

Development

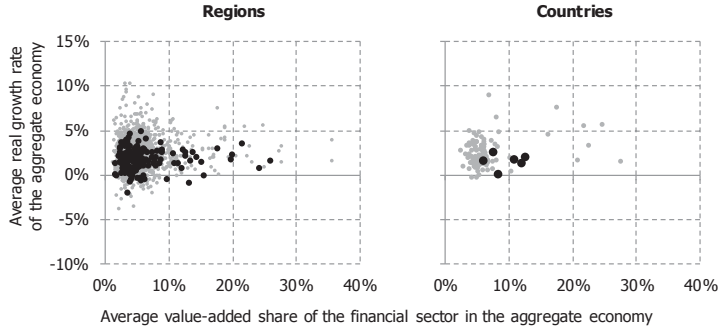
While the growth rate of the Swiss financial sector lies on the average, the large European countries tend to show comparatively low growth rates. The "growth leaders" are Greece (ED) and Ireland, a fact revealing their economic catching-up process during the nineties.[7] Japan experienced a period of quite sluggish financial sector growth in the past two decades, not surprising given the fact that the sluggish overall economic growth in Japan was due to – for long unsolved – problems in the financial sector.

3.2 Variation in regions and countries

The right-hand half of Figure 3-2 depicts the variation among countries in terms of average aggregate growth rates (vertical axis; 1980-2010). A quick comparison with Figure 3-1 reveals that the unweighted average growth rates of the financial sector across all sample countries is bigger than that of the aggregate economy. While the financial sector expanded by the pace of 3.3 per cent during the period from 1990 to 2010, the average aggregate growth rate equalled just 2.0 per cent.

[7] However, there is a lot of uncertainty about Greece given the developments of the past few years: On the one hand on the sutainability of the strong growth. On the other hand there are doubts concerning the reliability of the original data in the first place.

Fig. 3-2 Variation among regions and countries in aggregate value-added growth and in financial sector share of the aggregate value-added (1980-2009)



Notes: Average value-added share calculated at nominal prices; the five-year-averages are calculated for six periods with starting years in 1980, 1985, 1990, 1995, 2000, and 2005; high aggregate growth rates (between 8.5 and 10.5 %) are observed in the Eastern German regions after the reunification of the country (period 1990-94; "90"); Swiss regions and Swiss national data, respectively are black (for all six periods).

Source: BAKBASEL

Figure 3-2 also shows that the specialization on financial activities varies heavily between the regions. Also the fact that specialization varies remarkably between regions of the same country can be observed when focusing on the black dots representing Switzerland and its 26 regions (cantons) in the left-hand and right-hand diagram, respectively. Especially, the cantons of Zurich and Geneva are located far right on the scale and push the Swiss average value-added share upwards (2005-2009 Zurich: 26.0 %; Geneva: 20.1 %). The vast majority of the further regions groups around 4.5 per cent of nominal financial value-added. However, some more specialized regions (New York, Delaware, Connecticut, South Dakota (all US), Inner London and Luxembourg) deviate upwards with value-added shares of up to 36 per cent.

However, the figure does not give any clear picture with regard to financial value-added share and aggregate growth. Aggregate growth rates do neither clearly increase nor decrease dependent on the level of the average share in nominal value-added.

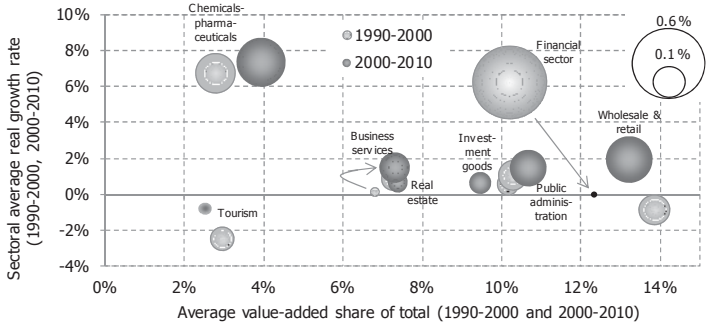
3.3 Growth contributions of key industries of Switzerland

Figure 3-3 puts the Swiss financial sector into the context of other key industries of the Swiss economy. The figure shows the sectoral average growth rates, the average value-added shares, and the growth contributions during the past two decades (1990-2000, 2000-2010).

The resulting growth contributions illustrate the peculiar economic development in Switzerland. Among the many sectoral bubbles, the ones depicting financial-sector development are the most eye-catching: The peculiarity is its varying contribution to aggregate growth. While it expanded rapidly from 1990 to 2000 and contributed 0.6 percentage points to the average aggregate growth each year (average aggregate growth 1990-2000: +0.9 %), its growth contribution

came down to 0.0 percentage points one decade later (average aggregate growth 2000-2010: +1.7 %). This drop is visualized by the implosion of the red-marked bubble of the financial sector.

Fig. 3-3 Growth contributions of key industries of Switzerland (1990-2000, 2000-2010)



Notes: Average value-added share calculated at nominal prices; Growth contributions in percentage points

Source: BAKBASEL

3.4 Sub-sectoral structure

As Chapter 2 shows, the financial sector fulfils a variety of functions within the economy, offers a variety of different financial services and, hence, a corresponding variety of specialized companies. Referring to common industry classifications, the financial sector is subdivided into three categories[8]:

1) Credit institutes
2) Insurances (without public insurances)
3) Activities related to credit institutes and insurances

These are private companies and public institutions such as (1) classical (savings) banks and investment banks, (2) insurers and re-insurers, as well as (3) market platforms, such as stock exchange facilities, and (free-lance) investment or insurance consultants. Concerning the public institutions, especially central banks are influential players (belonging to category 1). Figure 3-4 compares the relative value-added weight of the three sub-sectors within the national financial sectors.

The weights of the sub-sectors seem to differ substantially across countries. On the one hand, these differences might be due to local demand characteristics of firms (and households). On the other hand, the differences might have arisen (and be increasing) through enhanced global

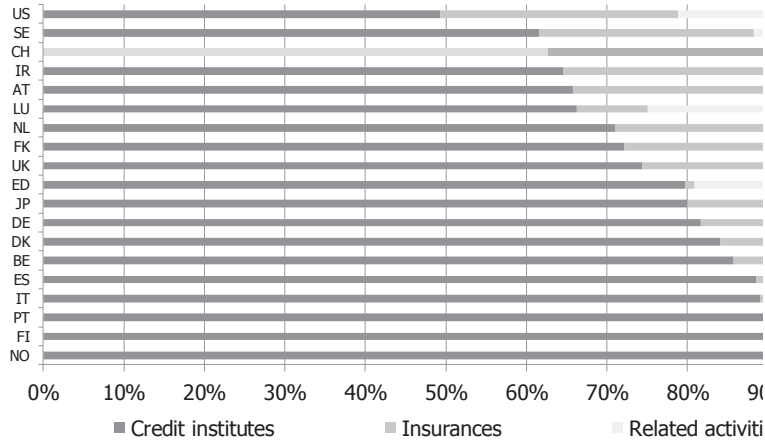
[8] See the official Nomenclature Générale des Activités économiques 2002 (NOGA) of the Swiss Federal Statistical Office (BfS) for a detailed definition of the financial sector (the financial sector in NOGA 2002: 65-67).

inter-linkages of financial locations. This would result in incrementing degrees of work division between financial locations.

Concerning the value-added of banks the US presents by far the lowest share. However, in other countries like Norway, Finland and Portugal 90 per cent or more of the financial activity is generated by banking services. Switzerland, in fact, has little banking specialization in this international comparison despite the presence of two globally active banks (UBS and Credit Suisse).

Similar degrees of variation are observed with regard to the insurance sector. Especially, Norway, Greece and Italy present relatively small shares. In contrast, a remarkable feature of the Swiss financial sector is that the insurance sector (represented by meaningful international players like Swiss Re and Zurich Financial Services) contributes a relatively large amount to the total sectoral value-added. Further countries with large shares in insurance value-added are the US, Sweden, Ireland, and Austria.

Fig. 3-4 Sub-sectoral structure in terms of value-added (2010)



Note: As industry definitions might differ in detail between the 19 national statistical offices, conclusions ought to be drawn with some degree of caution.

Source: BAKBASEL

With regard to the activities related to credit institutes and insurances, the US, Luxembourg and Greece stick out. The presence of globally important market platforms, such as stock exchange facilities at several locations on US territory, is a plausible explanation for the relative importance of this sub-sector. However, some countries (Norway, Finland, Denmark, Spain, Portugal and UK) have little specialization in this category.

3.5 International links of the Swiss financial sector

Centres of the Swiss financial industry

Switzerland and specifically its major financial centre, the metropolitan area of Zurich, are known as globally well inter-linked locations of key financial services. Through the insurers Zurich Financial Services and Swiss Re as well as the two banks Credit Suisse and UBS the Swiss city hosts four major players that appear on international rankings among the biggest ones with regard to volumes of sales (Financial Times 2012). Both banks are on the list of system relevant institutes of the financial stability board (FSB). It is most likely that the two Swiss insurers will figure on the equivalent list for insurers, which is currently in preparation.

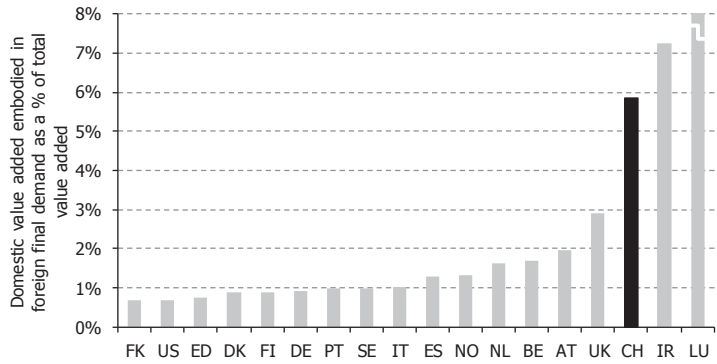
According to the Global Financial Centres Index 2013, Geneva ranks second in Switzerland after Zurich and amongst the top ten worldwide (Z/Yen 2013). Its main focus lies on private banking and its strong connections to the commodity trade. In a global context less outstanding, but nevertheless important for Switzerland, are the slightly more regional centres of financial services in Lugano and Basel.

Trade in financial services

The reputation of the Swiss financial sector as an export-oriented industry is underlined by Figure 3-5. It depicts the value-added generated by financial intermediation services due to foreign demand (in relation to the total value-added of the national economy in 2009). Switzerland ranks third in this classification. The financial sectors of countries with rather small populations such as the Benelux, Austria, Ireland, or Switzerland tend to reveal considerably higher dependency on financial intermediation exportation than larger countries, especially like France and the US. Again, the Scandinavian countries tend to be less dependent on the export of financial intermediation.[9]

[9] The following figures partly depend on data of the past decade only (2000-2010). This fact is due to the considerably improved data availability in that decade as compared to prior ones.

Fig. 3-5 Domestic value-added by financial intermediation embodied in foreign final demand as a percentage of total value-added (2009)



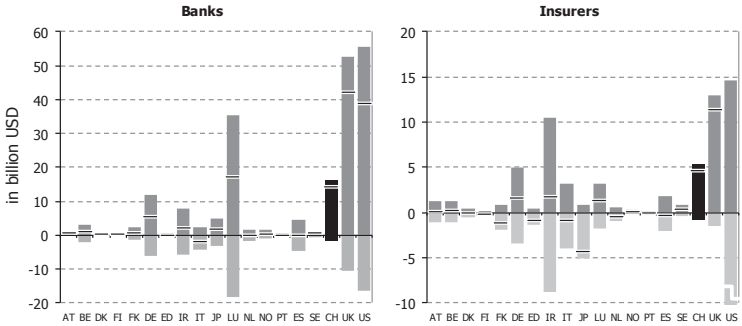
Note: Luxembourg (LU) presents an extreme value of 28.2 per cent and is cut off for the sake of better data presentation.

Source: OECD

Considering Figure 3-6, the overall conclusion about Switzerland from above is supported. However, depicting absolute values (in billion US-Dollars), large countries like Germany, Italy, Japan and Spain are more accentuated than in the diagram above.

The Swiss banks (left-hand diagram) generate a surplus of 14.2 billion USD, also due to the fact that Swiss imports of financial services amount to close to zero. Only Luxembourg as well as the UK and US exceed this surplus. In insurance trade (right-hand diagram), the pattern is similar. Switzerland hardly imports any services but is considerably involved in international trade through exports. The surplus amounts to 4.6 billion USD. Only the UK reaches a larger surplus, while the US presents a trade deficit of 40.6 billion USD. Ireland proves to be highly inter-linked in the business but generates an only moderate surplus relative to total import-export volume. Japan suffered a remarkable deficit.

Fig. 3-6 Exports, imports and trade balances by the banking and insurance industries of the sample countries (2009)

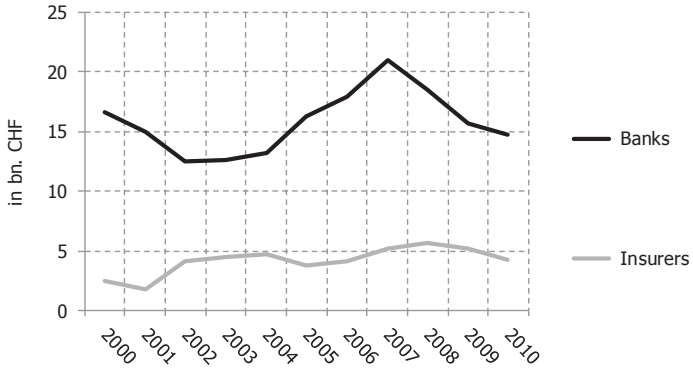


Notes: export: above zero line / imports: below zero line/ trade balance: black lines; The trade deficit in insurance services of the US amounts to 40.6 billion USD. The y-axis has been cut for better data presentation.

Source: OECD

Throughout the past decade, both Swiss banks and insurers have been reliable generators of surpluses. In the course of the Dot-com crisis and the crisis in the Euro area, the banks could (temporarily) not maintain the surplus level but managed to keep a positive balance. The peak of the past decade was reached in 2007, the last year before the subprime crisis struck the Swiss financial sector. Also, the insurances constantly maintained a surplus – at a lower level proportionate to the lower volume of sales in that sector. In 2001, the surplus was lowest due to a decline of exports. However, this decline was more than compensated one year later by a sharp increase and until 2008 the exports present an upward tendency.

Fig. 3-7 Swiss balance of payments by banking and insurance industry (2000-2010)



Source: SNB

3.6 Chapter summary

Chapter 3 shows that the Swiss financial sector takes a key role in the Swiss aggregate economy. The value-added share of the financial sector in the aggregate is large with an average of nine per cent over the two past decades – both in the national comparison with other sectors as well as in the international comparison with financial sectors of other countries. Only few prominent finance-inclined countries, such as the UK, Ireland or Luxembourg, have similar or higher degrees of financial sector impact.

The growth level during the nineties demonstrates that the financial sector can generate high positive growth contributions, using the words of our title: during the nineties the financial sector was a major pillar of growth. However, in the two-thousands it turned into a burden as it stagnated in a ten-year view.

Hence, Chapter 3 provides evidence that the financial sector considerably contributes to aggregate growth by its own weight (in value-added). In Chapter 2, the catalytic effects functions and major points of critique have been discussed. Both, the functions (availability of financial services) and the possible negative impacts of the financial sector on aggregate growth, refer to the catalytic effects of the financial sector as part of the "economic infrastructure" of a country on growth. Analysing these catalytic effects is the core goal of our econometric analysis in Chapter 5.

4 Research setup

Before turning to the econometric estimations, this chapter summarizes the general approach of the present study. Firstly, the measurement of financial sector development is discussed (henceforth, financial development). In this context, an excursus provides some additional insights on how financial development is considered and measured within the empirical literature, particularly how it evolved over time. This includes a brief international comparison between Switzerland and selected countries for those indicators finally employed in the empirical analysis. Secondly, the topic of nonlinearity of the relationship between economic growth and financial sector development will be on focus. Thirdly, it will be discussed what aspects of this nexus are specifically scrutinized in the analysis, the so called transmission channels. Fourthly, our key contributions to research are introduced and their additional utility is discussed. Finally, the methodology and the entirety of variables used are described in detail.

4.1 Measuring the financial sector

While the definition of economic growth is unambiguous, how can one measure the diverse activities of the financial sector using variables? As outlined in the section on the functions of the financial sector, the sector acts in a multi-faceted way. Financial sector actors manage risks, pool savings, collect information about debtors, exert corporate governance, and so on. The list of functions is long. It can impossibly be covered in one single indicator. Hence, it might be insufficient to just look at one variable to analyse the function of the various actors within the financial sectors as well as to cover all the different transmission channels in an appropriate and complete way. This concern has been of growing interest in the research of the past decades. An excursus introduces the problems faced and treated in research so far, before we discuss the approaches chosen for this study.

4.1.1 Excursus: Indicators of financial development in the literature

Real interest rates

One of the first indicators of financial intermediation was the real interest rate. This corresponds to a basic transmission channel, a channel suggested by the Golden Rule from basic neoclassical growth models. According to this rule, the optimal growth path is determined by the real interest rate. Properties of the financial markets itself did not enter the model except as in the form of the "perfect markets" assumption they would ideally bring about (Thiel 2001).

A landmark result in the study of financial intermediation and growth came to be known as the McKinnon-Shaw hypothesis (McKinnon 1973, Shaw 1973). The McKinnon-Shaw hypothesis explained the effect of interest rates on growth given that higher interest rates would attract higher levels of financial savings and thus investment. Under different forms, this has been a popular transmission mechanism until the early nineties.

The use of real interest rates as a measure of financial intermediation ended up providing conflicting (if not contradictory) evidence. De Gregorio and Guidotti (1995) refer to Calvo and Guidotti (1991) which have summarised over a decade of conflicting evidence on the interest-rate transmission-mechanism as an inverted U-curve: very low (or negative) levels of interest rates (and thus financial intermediation) would map the McKinnon-Shaw hypothesis. "On the other hand, very high real interest rates that do not reflect improved efficiency of investment, but

rather a lack of credibility of economic policy or various forms of country risk, are likely to result in a lower level of investment as well as a concentration in excessively risky projects. At intermediate levels real interest rates do not appear to be closely associated with growth, reflecting no clear-cut relationship between real interest rates and savings and investment." (De Gregorio and Guidotti 1995).

Monetary aggregates

In addition to the real interest rate, measuring the allocation function of financial markets, also monetary aggregates (M1, M2, M3 etc.) were used in order to measure the extent of financial activity within an economy. The rationale was to capture the 'transaction' function of the economy.

However, these variables were eventually dropped in the more recent literature as it became clear that they were not sufficient indicators. It turned out that the monetary aggregates were too vulnerable to heterogeneity in the structure of national financial sectors across different countries. For instance, a low monetized economy can occasionally create a highly developed financial system in order to compensate for the basic functions, e.g. store of value (De Gregorio and Guidotti 1995).

Diversification and function-specific indicators

In fact, one of the main achievements of the literature since the nineties was its attention towards the construction of appropriate indicators for financial development. Authors often decided to use an array of financial development indicators, hoping to produce a "richer picture of financial development than if we used only a single measure" (King, Levine 1993). This attention towards a better understanding what is meant by "financial development" implied the addition or even replacement of indicators such as the real interest rate (from the McKinnon-Shaw hypothesis) to the use of more pragmatic indicators which could capture more significant aspects or separate functions of the financial sector.

Capturing the basic functions of the financial sector in just one indicator of financial development is literally impossible. For instance, the function of ex-post monitoring and exertion of corporate governance is important if financial institutions act as shareholders of firms within the economy rather than classical grantors of credit. In this view, an indicator like Stock Turnover to Average Market Captalization might be an appropriate measure of an economy's inclination to equity based finance. It could act as a financial development indicator in this specific dimension. In another country, banking might be focused on the provision of external capital (credit). Stock Turnover would be ignorant of the fact that firms in this economy are accustomed to this kind of finance. Neither of the two views on financial development can be considered more accurate about the question what "good" financial development is: Both are relevant to firms and, hence, to economic growth, in their specific setting respectively.

An indication of these achievements is the construction and on-going improvement of the World Bank's Financial Development and Structure Dataset that was first published in 1999. It covers indicators on the efficiency, size, and stability of banks, non-bank financial institutions, and bond and equity markets over 1960–2007 as well as indicators of financial globalization. Beck, Demirgüç-Kunt, and Levine (2010) describe the indicators of the dataset in depth and discuss their specific utility for the measurement of financial development with regard to the financial system, the banking system, as well as capital markets and the insurance sector.

In the literature, especially the indicator Private Credit (to Non-Financial Firms) relative to GDP gradually replaced the use of the real interest rate in representing the financial sector's capacity to allocate capital efficiently. As mentioned above, De Gregorio and Guidotti (1995) have provided an important account of the reasons why this new indicator gradually replaced the use of real interest rates. Moreover, they justified the variable Private Credit as able to capture the

efficiency of investment (capital allocation) rather than its magnitude. Within the growth-model framework used by previous authors, De Gregorio and Guidotti (1995) identified an important transmission channel justifying economic theory on the role of the financial markets, rather than assuming it.

4.1.2 Indicators of financial development

The excursus shows that the quantification of financial development has led towards a diversification of indicators and a context-based selection of relevant transmission channels – such as those illustrated in Figure 4-1. In this tradition we employ four indicators of financial development in the analysis:

1) Non-Life Insurance Premium Volume relative to GDP
2) Share of Financial Employment
   (employment in the financial sector relative to the aggregate economy)
3) Total Stock Turnover relative to Average Market Capitalization
4) Private Credit (by deposit money banks) relative to GDP

The choice is oriented by an array of theoretical and technical considerations.

Multi-dimensionality of financial sector functions

The financial indicators cover different aspects of the financial sector and allow for a broad multi-dimensional analysis of the financial sector. As discussed above, the financial sector influences the economy in various ways: No single indicator represents "financial development" exhaustively.

Independence of indicators

When making the choice on indicators it is further important to make sure that the indicators do not measure the same thing in the end. For instance, using just different kinds of credit volumes might end up in measuring the same type of functions repeatedly. At least one should be aware of such correlations and take them into account when deriving overall results from a multitude of individual estimations and specifications. If closely correlated indicators for financial development are used, an (explicit or implicit) weighting of the results must be applied.

More technically formulated, the chosen indicators ought to be checked for mutual correlation. This says that it makes sense to choose indicators that follow independent transmission channels.

(Limited) data availability

Just as the financial sector attracted the attention of the public so it attracted that of scholars. Data availability has been improved enormously within the past 20 years – especially with the World Bank's Financial Development and Structure Dataset. However, still many sub-markets within the universe of financial activities stay hidden, for instance due to the intransparent way trading takes place. This holds true for all over-the-counter trading (OTC) where no central institution is involved in exchanges. The considerable share of such deals therefore constitutes an obstacle to research up to this date as OTC cannot be quantified accurately up to this date.

4.1.3 Financial development of the Swiss economy

Figure 4-1 compares the level of financial development of Switzerland to its neighbours France, Germany and Austria (blue), as well as the United States and the United Kingdom (grey). The rest of the countries used in the estimation sample are not included into the graphs for illustrative reasons.

It becomes clear that Switzerland presents an overall high degree of financial development across this set of indicators. The level of financial development is similar to the Anglo-Saxon countries. The only exception to this general conclusion is the Stock Turnover, according to which the three neighbours all tend to reveal lower degrees of financial development than Switzerland. A further finding of Figure 4-1 is that financial development in Switzerland has peaked around the second half of the nineties (period "95") and stayed on a high level since then, except Stock Turnover that remarkably reduced in the latest (Subprime-/Euro-crises-) period.

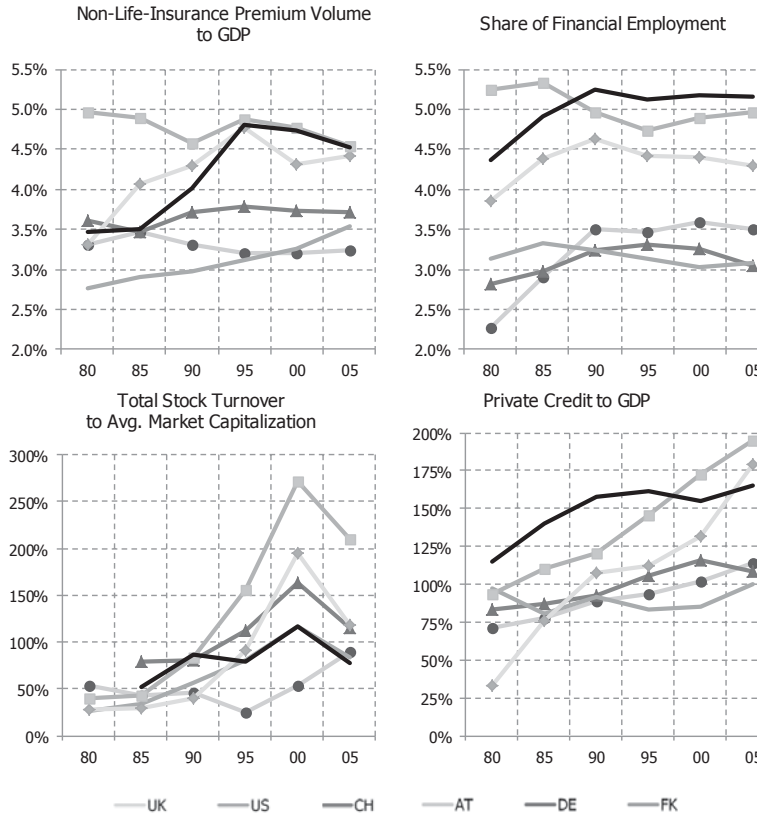
The importance of the insurance business in the Swiss financial sector (mentioned above) is underlined in Figure 4-1 (upper left side). High growth rates in the nineties caused Switzerland to end up with a top-value with regard to the indicator Non-Life-Insurance Premium Volume (as a share of GDP). In the rest of the sample only Luxembourg reaches a significantly higher value.

The share of employees in the financial sector (upper right side) is highest in Switzerland as compared to the values of the other countries. The share of employment in the financial sector grew in the eighties and (early) nineties and is the indicator where Switzerland takes the most distinguished position. Since the early nineties, Switzerland maintains a Share of Financial Employment of roughly 5.2 per cent.

The relative level of Private Credit (lower right side) has historically been high and above those of the less finance-specialized neighbouring economies. The United States and the United Kingdom "overtook" Switzerland in this view on financial development in the past decade.

Finally, Switzerland ranks lower in Stock Turnover (lower left side), illustrating that Zurich is just a second-row location for stock trading compared to New York, London or Frankfort.

Fig. 4-1 Financial development indicators for selected countries over time (1980-2009; 5-year averages)



Notes: each 5-year average is indicated by its first year (e.g.: 80 indicates the period 1980-1984); in the upper-row figures, the y-axes are cut for better oversight; in case of the lower-left figure (Stock Turnover) the 80-values of Germany and Switzerland are missings.

Source: World Bank, BAKBASEL

4.2 The transmission channels under scrutiny

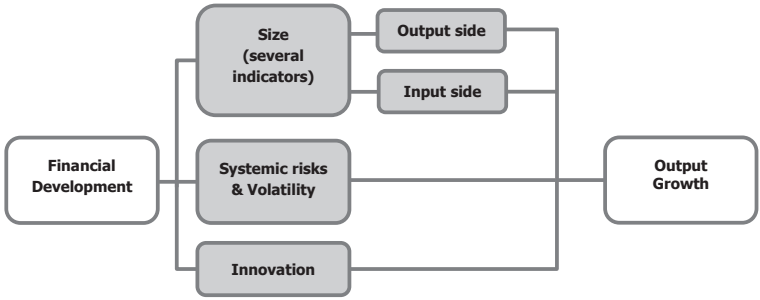
A transmission channel describes a specific relationship between a type of financial development and its end-effect on output growth. Within the empirical analysis, transmission channels represent specific relationships between a selection of financial development indicator and output growth. Where possible, we test this relationship directly, or alternatively through the medi-

ation of a determinant of output growth (such as volatility or innovation). With the help of economic theory we formulate a hypothesis for each transmission channel, specifying the dynamics and linkages – between finance and the real economy – which we are trying to observe in the data.

Financial development is studied from different angles through a selection of different indicators. Furthermore, in addition to output growth we study the effect on the determinants of output such as volatility, innovation etc. This allows us to verify different hypotheses and to account for the heterogeneous effects of financial development on the real economy.

For each transmission channel under scrutiny, our analysis picks up the critique on the early literature and includes a quadratic term of the respective financial development variable into its reduced form specification of the growth model.

Fig. 4-2 Schematic organisation of the empirical analysis



Source: BAKBASEL

Size of the financial sector

In the general case of evaluating financial sector size, a great number of specifications is tested. The growth variable is estimated at the regional and national level as well as at the sectoral and aggregate level. The size of the financial sector is captured by the FD indicators:

1) Non-Life Insurance Premium Volume relative to GDP
2) Share of Financial Employment
   (employment in the financial sector relative to the aggregate economy)
3) Total Stock Turnover relative to Average Market Capitalization
4) Private Credit (by deposit money banks) relative to GDP

where the latter ("employees") is the only FD indicator at the regional level.

Systemic risks and volatility

The aim of growth models has traditionally been the trend of economic growth, rather than its fluctuations, which belong to a different set of theories, specifically business cycle models. The hiatus between these two frameworks for economic growth imply some complications if we are to study another crucial aspect of finance currently under the spotlight, namely its volatility.

The dependent variable used in this context, hence, is not aggregate growth but its standard deviation across the period of 10 years.

Innovation

An important channel to consider is whether financial development can foster the application of new business, entrepreneurial and technological ideas within the real sectors of the economy. The intuition is that most activities – apart from notable exceptions – require both physical and human capital. Innovation is particularly desirable as it implies the development of new opportunities which are not only exploitable themselves but which also bear positive spill-over effects regulated through the use of patents.

Financial services may be important factors for innovation. Innovation involves risks for investors as it often requires costly investments to be made with uncertainty over the economic success. Financial institutions contribute to curbing risks by offering diversified portfolios of R&D projects so that investing in R&D becomes attractive for risk-averse investors.

As innovation is not directly measurable, indicators have to be employed. Generally, both input (e.g.: number of researchers, R&D expenses) and output related indicators (e.g.: scientific publications, number of patents) are available. For our analysis, one of the most common (output) indicators is used, namely patents, proxying the innovation activity of the economy.

4.3 Isolating the catalytic impact on growth

As discussed in Chapter 3, effects of the financial sector on growth can be distinguished for direct and catalytic effects. Chapter 3 contains mainly information about the direct effects as we analyse size, development and structure of the financial sector in terms of value-added. The functions and critique outlined in Chapter 2.2 make clear how the financial sector serves as a catalyser of economic activity in all parts of the aggregate economy generating catalytic contributions to growth.

Undertaking a thought experiment imagining a local financial sector that exclusively serves remote clients in other regions points out the difference between direct and catalytic effects. This financial sector would not fulfil any function of those outlined in Chapter 2.2, as the sector would be unavailable for local firms (and households). However, it might be big in terms of its direct effect as it employs a large share of the total local workforce and generates a large share of the local aggregate value-added. In this case, the total effect of the financial sector on aggregate growth would be equivalent to the direct effect on growth.

Our sample indeed comprises export-oriented regional financial sectors and therefore some adjustments for the econometric analysis are required. In our econometric model in which GDP serves as the dependent variable and a size-measure (such as the Share of Financial Employment) is used as the independent variable of interest, an estimation would result in measuring both effects at a time. However, in our analysis the catalytic contribution is of main interest.

Therefore, we try to isolate the catalytic effect by the following step. In addition, a supplementary estimation is added: aggregate GDP as the dependent variable is replaced by the variable real-economy value-added (the share of aggregate value-added that is generated by all sectors but the financial sector). That way, the direct effect is eliminated from the regression result of the supplementary estimation.

The two regression results can be compared. If the supplements' financial-sector-size coefficients are adequately similar, this indicates that the coefficients are not exclusively driven by the direct effect.

4.4 Key contributions to research

The literature has provided many qualitative accounts of possible linkages between finance and growth, although quantitative analysis has usually remained at aggregate level. We look at several transmission channels at disaggregated level. Using data at regional and sector level we improve our ability to identify the different effects of financial development on critical areas of the economy. This allows us to test very specific hypotheses on transmission channels which are otherwise unobservable at aggregate level. Furthermore, the increased number of observations and increased data variation are helpful for the identification of effects. Moreover, the analysis is restricted to the OECD context.

4.4.1 Concentration on OECD economies

The proposed non-linear relationship between financial development and economic growth is typically expected to be relevant particularly for economies with an already high level of financial development. These are more likely observed in OECD member states than in other countries, namely developing countries. Therefore, we will focus on OECD countries in our sample.

A drawback of concentrating on OECD countries is the limited number of observations in the cross-section of countries. Actually, researchers could often hardly do empirical estimations without using additional countries (e.g. developing countries) in their sample as the data set would have shrunk too much. But this could easily hide the effects which are at the centre of interest here. We accept the drawbacks of restricting our analysis to OECD countries to the benefit of concentrating on the relevant part of the relationship between financial development and growth. To overcome the sample limitations we use on the one hand panel information. On the other hand, and more importantly, we use regional data to increase the number of observations in the sample (see below).

4.4.2 Multiple specifications and indicators

As discussed, there is a multitude of different transmission channels. There is a wide variation of possible indicators to operationalize the financial development of an economy as well. Even for the output variables, economic growth, several different measures can be used.

Although the available data as well as the theoretical framework does not allow modelling and estimating all transmission channels collectively in one system of equations, the use of the various indicators and different measurements allows at least some assessment as to the relative importance of the different transmission channels.

Furthermore, as the literature has pointed out, even if no assessment with respect to the individual transmission channels is possible, the use of various different specifications can increase the reliability of the results. Therefore, we will use as many different variables and specifications as possible (taking data availability and quality, the theoretical foundation of a specification and the plausibility of the hypotheses, and technical considerations into account).

4.4.3 Data at the sector level

While most studies focus on economic growth of the aggregate economy, industry specific data might allow interesting additional insights. Of course, from a political point of view total economic growth is the most important output variable for the question raised here.

But an industry specific approach might allow a deeper understanding of the mechanisms at work and an identification of important transmission channels. Different industries need the services of the financial sector to differing extends. They might even need the services differently. Firstly, their demand for capital varies widely. Secondly, the way of financing can be quite different: Some well-established firms might be able to finance themselves from retained earnings, while others depend on credit. Particularly for larger firms, the stock market might be more relevant than the lending function of banks. Thirdly, firms of different sectors have unlike characteristics and might differ in the ability to access services from out-of-region or international financial institutions. Finally, the risk contained in investment in different firms and industries can vary, which in turn means that the industries profit to a differing extent from the advantages of monitoring as well as from the risk diversification that an extended financial sector can provide.

By testing hypotheses on sectors with peculiar capital-intensities, for example, we are able to gain valuable information on specific dynamics. Which sector profits and which suffers from financial development? The results ought to differ among sectors with regard to their specific capital needs in terms of credit or equity capital, export inclination and the capital intensity of their specific production process.

4.4.4 Data at the regional level

A major advantage of the present study is the availability of regional data. For the analysis, the data of 19 OECD countries and 281 regions of these countries for the period of 1980 to 2010 are employed. The use of regional data has a number of advantages against the use of country data, some of them are technical but others are not:

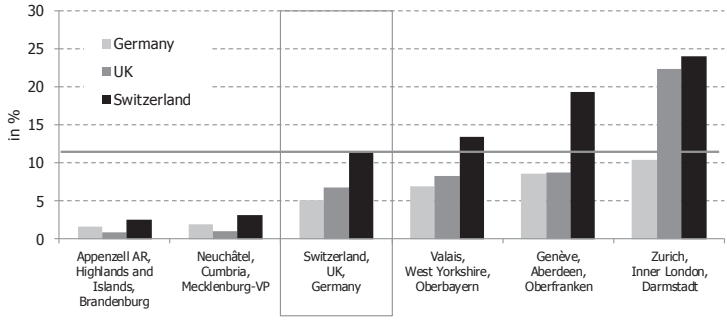
- Firstly, countries in a sample of OECD countries differ substantially in their size. It is not clear if a financial service provided in New York City benefits the Alaskan economy more than a service provided in Luxembourg benefits the Belgian economy. National boarders might play a role, but so might geographical distance. Regions, particularly if they are close to constitute functional economic spaces[10], are less heterogeneous within their territory than countries. Between the financial sector and economic development, we expect the relationship on the regional level to be closer than on national level. Of course, tests for the size of the national financial sector ought to be included in order to capture possible effects associated to national borders.
- Secondly, the structure with respect to financial sector concentration as well as the economic development varies substantially more between regions than those between countries. Figure 4-3 gives an idea of the regional and national variation of specialization in financial services in terms of value-added shares in selected regions of Switzerland, the UK and Germany. The columns represent the data of the two least specialized regions of each country, the three most specialized, as well as the country averages (framed).

  Turning to the averages of the three countries, there is considerable variation: The specialization of Switzerland is about twice that of Germany and the UK. However, the regions within the countries vary even more. Unsurprisingly, the Swiss cantons of Zurich and Geneva are highly specialized as financial centres (24 % and 19 % financial value-added). On the lower extreme, the cantons of Neuchâtel and Appenzell-Ausserrhoden show values of between just two and three per cent. Hence, the specialization in financial services varies by a factor of about 10 (comparing Zurich to Appenzell-

[10] For the EU-countries, NUTS-2-regions are used.

Ausserrhoden). Comparable regional divergences between financial centres and periphery can be observed in the UK and Germany, too. This additional variation helps to identify the effects, particularly in a non-linear setting.

Fig. 4-3 Share of value-added in selected regions of Switzerland, the U.K. and Germany (2010)



Source: BAKBASEL

- Thirdly, the use of regions provides a much larger sample which helps again the identification of the relevant effects. Ceteris paribus, this reduces both the possible small sample bias as well as the confidence intervals.
- Fourthly, the ability to test for the presence of spill-over effects is an advantage. By restricting our dataset to specific regions, we can analyse how different regions respond to certain types of financial development. Isolating local effects allows to test specific hypotheses and to deepen our analysis of the finance-growth relationship.

The utility of regional data is hampered by the fact that not the entire set of useful variables is available at the regional level. Particularly, we are able to use only one of the indicators for financial development at the regional level, namelythe Employment Ratio (financial sector to aggregate economy).

4.5 Methodology and data

4.5.1 Data

The following provides a general presentation of the data and the type of variables we will employ in the empirical analysis. An in-depth discussion of each indicator can be found in Appendix A.

4.5.1.1 Dependent variables

In different specifications we use various indicators related to economic growth. The following table provides an overview of the dependent variables used.

Tab. 4-1 Economic growth components

Growth (components)	Source	Level
Output Growth	BAKBASEL	National / Regional; Sectors
Net Output Growth in Real Economy (financial sector output excluded)	BAKBASEL	National / Regional
Volatility Of Output Growth	BAKBASEL	National / Regional; Sectors
Patents Growth	BAKBASEL	National / Regional; Sectors

Source: BAKBASEL

All growth rates are expressed in annual percentage changes. To avoid the influence of the economic cycle on the results we use 5 year average growth figures. In the case of volatility we actually use a ten years period for one observation to achieve sufficiently reliable figures.

4.5.1.2 Key explanatory variables

As extensively argued during the literature review sections, the research on the nexus between finance and growth has gradually expanded and refined the selection of financial development indicators employed. The idea behind this is that there is no single measure of financial development. We therefore employ a selection of financial development indicators which will allow us to capture the main features of the financial sector identified above.

Tab. 4-2 Financial development indicators

Financial development indicators	Definition	Source	Level
Private Credit by GDP	Private Credit (by deposit money banks and other financial institutions) to GDP	World Bank (Financial Structure Dataset)	National
Net Private Credit (to Firms) to GDP (excludes household debt)	Net Private Credit (to Firms) to GDP (excludes household debt)	World Bank (Financial Structure Dataset) & Bank for International Settlements	National
Stock Market Turnover Ratio:	Stock Market Turnover Ratio:	World Bank (Financial Structure Dataset)	National
Non-Life Insurance Premium Volume to GDP:	Non-Life Insurance Premium Volume to GDP	World Bank (Financial Structure Dataset)	National
Employment Ratio (financial sector to aggregate economy)	Employment Ratio (financial sector to aggregate economy)	BAKBASEL	National / **Regional**

Source: BAKBASEL

One of the major setbacks in the choice of financial development indicators is the lack of data regarding international integration of financial markets. This clearly alters the "real" level of financial services within a country; furthermore, it generates dynamics of cross-country dependencies. Our model deals with this problem only in part, by studying the effects of local financial intermediation at regional levels. Nevertheless, for all other indicators (at national level) the lack of information on international integration of financial markets remains a problematic bottleneck to the progress of the literature.

4.5.1.3 Control variables

The choice of the control variables is determined by our main dependent variable, or output growth. As is customary in linear regression models, control variables attempt to capture the variation in the dependent variable which is not already explained by the main independent variable, in this case the financial development indicators we employ.

Specifically, our control variables reflect the main location factors (taxation and R&D expenditure) which we believe can determine the economic activity of firms at national as well as regional levels. In fact, the availability of data at regional level – for these variables – was a determining factor, as it allows us a better comparison of results between the two levels of disaggregation. Volatility is also commonly understood as being a determinant of output growth, capturing (past) shocks on the economy which may have a determinant effect on future investment decisions. Despite not having data for this control variable at regional level, it is reasonable to employ it within our regressions.

Lastly, including a convergence term allows us to control for the different levels of Output Growth across countries. Higher levels of Output are naturally associated with lower growth

rates, and we therefore include the dependent variable in levels (lagged, pro-capita) among the regressors in order to capture this effect.

Given the structure of our analysis, we keep the selection of control variables unaltered across all different specifications. This allows us to improve the comparability of results across different transmission channels and/or financial development indicators employed. This approach is reasonable, since the broad nature of the variables ensure their relevance throughout all variations in the analysis.

It ought to be pointed out that, depending on the specification, not all control variables are always significant at once. No clear pattern emerges in trying to explain the reasons for this, and uncertainties in the data may also be held responsible. Nevertheless, testing the robustness of our main regressions (eliminating non-significant control variables) shows very similar results, thus alleviating concerns over this issue.

Tab. 4-3 Control variables

Variable	Source	Level
Volatility of CPI	World Bank	National
Taxation to Companies	BAKBASEL	National / Regional
R&D Expenditure	BAKBASEL	National / Regional
Convergence term (from dependent variable)	BAKBASEL	National / Regional

Source: BAKBASEL

4.5.2 Econometric Model

To test the relationship in each transmission channel we employ panel regressions such as the following:

$$\Delta y_{k,t,t+5} = \alpha + \beta_k + \gamma_0(FD_{k,t}) + \gamma_1(FD_{k,t})^2 + \log(y_{k,t}/pop_{\cdot k,t}) + \gamma_2(X_{k,t,t+5}) + \varepsilon_{k,t}$$

This form includes the dependent variable in (annualised) growth rates, and the financial development indicator entering twice (once linearly, once quadratic) reflecting our quadratic functional form. The lag structure in our specification allows to partly mitigate the simultaneity bias problem, although not completely. In other words, future expectations of Output growth will certainly have an influence on the level of financial development that is undertaken in the previous period, and we do not control for these future expectations. A more detailed discussion follows at the end of the current section.

This form applies to most regressions in our analysis; the following table explains the choice of variable, as for the regressions of GDP growth on Private Credit/GDP ratio.

Tab. 4-4 Econometric model

Element	Notation	Variables	Form
Dependent	$\Delta\, y_{k,t,t+5}$	Various	Growth rates
FD indicator	$FD_{k,t}$	Various	Levels
Control variables	$\log(y_{k,t}/pop_{\cdot k,t})$	(Dep. variable)	Levels per capita (lagged)
	$X_{k,t,t+5}$	Volatility of Output Growth	St. Dev. (lagged)
		Company Taxation Index	Levels (period average)
		R&D Expenditure	Growth rates (lagged)

Source: BAKBASEL

We employ a convergence term in our analysis, denoted above as $\log(y_{k,t}/pop_{k,t})$. In most of our analyses[11] it consists of the dependent variable expressed in level terms. Where the coefficient of this term shows to be significantly negative, it allows us to adjust for the fact that high growth rates are usually more likely in low-income countries, and vice versa. This adjustment ought to be kept in mind when interpreting our results, which are in terms of output growth rates.

Different combinations of dependent variables and financial development indicators (from the tables above) are employed in order to study different transmission channels. The control variables, as already mentioned, are standard for all regressions, except the convergence term, which reflects the dependent variable being employed.

The specifications of relationship following the structure outlined above are all estimated by the method of Ordinary Least Squares (OLS). Technical specificities are commented in the subsequent paragraphs.

4.5.2.1 Choice of random and fixed effects estimator

A basic, yet important, extension to our OLS estimation technique is to allow for individual effects by choosing either the fixed or random effects model.

Both cases allow for individual effects to be accounted for, thus considerably improving identification. The random model is generally preferred to the fixed one, as it is based on the assumption that the individual effect is uncorrelated with the exogenous variables. Unlike the fixed effects model, the intercept is not employed directly, but rather as part of the disturbance term.

The choice of Fixed/Random effects is determined through the use of the Hausman-test. This is repeated for each regression, letting the test establish which model is more efficient, case by case.

Overall, Random effects have shown to be more suitable in the majority of our regressions. For further detail regarding techniques employed in specific regressions can be found in the result tables (Appendix B).

[11] The only exception is in the case of Volatility, where this term cannot be employed.

4.5.2.2 Stationarity

A common assumption in many econometric methods involving time series is that the data are stationary. In other words, they require that the mean, variance and autocorrelation structure do not change over time.

Where this is not the case, transforming the variables (differencing, growth rates) can solve the problem, by re-establishing stationarity in the data. Alternatively, where cointegration exists, this can be used to study long term relationships.

Unfortunately, both of these standard solutions are not an option for our study. Given our research objective (studying the existence of a MAX point in the finance-growth relationships) differencing the data would yield a different interpretation of the results. Second, since our dependent variables of interest are growth rates, also the second option (relying on cointegration) is not available.

Nevertheless, we check for stationarity in our series in order to assess the properties of our data. Given the panel-structure of our dataset, we carry out panel-based Unit Root tests, which have been shown to have higher power than tests based on individual time series.

Tab. 4-5 Unit root tests

Variables	Panel Unit Root Test with constant and trend		Panel Unit Root Test with constant		Panel Unit Root Test
	Im Pesaran Shin	Levin Lin	Im Pesaran Shin	Levin Lin	Levin Lin
Output Growth	***	***	***	***	-
Net Output Growth in Real Economy (excludes financial sector output)	***	***	***	***	-
Volatility Of Output Growth	***	***	***	***	
Patents Growth	***	***	***	***	
Private Credit to GDP	-	***	-	-	-
Net Private Credit (to Firms) to GDP (excludes household debt)	-	-	-	-	-
Stock Turnover to MC	***	-	-	***	-
Non-Life Insurance to GDP	-	-	-	***	-
Share of Financial Employment	-	***	-	***	-
CPI Volatility	***	***	***	***	***
Company Taxation	*	***	-	***	***
R&D Expenditure growth	-	***	**	***	***

Source: BAKBASEL

Two Panel Unit Root tests have been applied in this study, namely the Levin/Lin/Chu-test (LLC) and the Im/Pesaran/Shin-test (IPS). The IPS allows for cross-sectional correlation, as might therefore be preferable in our case. Nevertheless, we show both tests, for all combinations of constant and trend.

The result of our tests is very robust concerning our dependent and control variables, which are employed in growth rates or measures of volatility.

We do not have strong evidence against unit roots in our financial development indicators. Nevertheless, the risk of the relationships in our results to be 'spurious' is low, given that our dependent variables are used in growth rates. Furthermore, most of these indicators are common to many other studies in the literature.

4.5.2.3 Correlations between financial development indicators

Our study relies on different indicators of financial development in order to study different types of interactions between the financial sector and the real economy. A necessary condition is therefore that each indicator is capturing different types of variations, portraying distinctly different characteristics of the financial sector. As an approximate test for the suitability of our choice of indicators, we therefore check the correlations between our four indicators, portrayed in the following table.

Tab. 4-6 Financial development indicators - correlations

Indicators in levels	Private Credit/ GDP	Net Priv. Cred. To Firms	Stock Turnover/ MC	Non-Life Ins. / GDP	Share of Fin. Employ.
Private Credit to GDP		0.884	0.447	0.469	0.425
Net Private Credit (to Firms) to GDP			0.282	0.194	0.154
Stock Turnover to MC				0.263	0.110
Non-Life Insurance to GDP					0.720
Share of Financial Employment					

Source: BAKBASEL

From the table above, we can conclude that overall our indicators are not strongly correlated, with only a few minor exceptions.

The two measures of private credit to GDP (total and net w.r.t household debt) are obviously strongly correlated, as can be expected. Nevertheless, this does not cause problems to our analysis, as the latter is a refinement of the former and is to be employed in the testing of similar hypotheses.

The second exception remains the strong correlation between Non-Life Insurance to GDP and the Share of Financial Employment indicators. This result is somewhat surprising and ought to be dealt with care during the analysis.

Overall, the analysis of the cross-correlations for our indicators of financial development reveals a positive result. Although indicators obtained from the World Bank database are relatively correlated with one another (~0.45), we bring a new indicator to the analysis which shows to be far less correlated: The Share of Financial Employment therefore has a different informational content than the other indicators (apart from Non-Life Insurance to GDP). Therefore, at least

from a formal point of view, they can be potentially very useful in order to capture new transmission channels in the relationship between financial development and economic growth.

4.5.2.4 Causality and hypothesis-led analysis

Although the formal definition of causality abstracts from the real relationship between the economic variables, it is certainly useful to assess certain prerequisites of the data. Specifically, Granger tests are used to establish whether our financial development indicators are able to explain any of the future variation in our dependent variable[s]. Here we only show this test for output growth, and only at national level. At regional and sector level we do not assess causality formally (i.e. Granger), because departing from the relationship at the national level we focus on studying the according hypotheses in more depth on the regional and sector level. The aim is to obtain greater evidence towards assessing the specific hypotheses.

Tab. 4-7 Granger Causalities – Lag specifications

Financial indicators → Output Growth	1	2	3	4	5
Private Credit to GDP	***	***	***	***	***
	*	***	***	***	***
Net Private Credit (to Firms) to GDP	**	***	***	**	**
	***	***	***	***	***
Stock Turnover to MC	***	***	***	***	**
	***	***	***	***	***
Non-Life Insurance to GDP	-	-	-	-	-
	*	-	-	-	-
Share Of Financial Employment	**	**	***	***	***
	-	-	**	**	*

All variables used in the test are at annual frequency
Source: BAKBASEL

From the chart above, we see that adding further links generally improves the ability of our financial development indicators to explain output growth. This result confirms the suitability of using 5-year periods in our analysis. Moreover, this time period is preferred (to shorter frequencies) as it allows avoiding capturing the effects deriving purely from business cycle disequilibria.

Nevertheless, causality is used only in this preliminary phase, as an assessment of the explanatory potential of our data. This said, simultaneity bias remains unresolved and our results will not attempt to explain causation in a strict sense, but rather to represent the existing relationships. This allows us to simplify our methodology by not having to deal with controlling for the role of Output growth **expectations** on financial development. In turn, a simpler methodology allows us a greater deal of comparability over national, regional and industry specific levels.

In our regression analysis we conduct a hypothesis-led analysis, whereby we use our regression outputs to validate precise hypotheses constructed from economic theory and reasoning. Furthermore, the strength of our approach is to deepen our studies at the regional and sector levels, where our hypotheses are calibrated to regional and sectorial specificities. Our approach is stronger than the "cum post hoc, ergo propter hoc" commonly employed at aggregate level, as it does not only occur over time but also confronting our results with assumptions regarding the relationships occurring at regional level, and across different sectors of the economy.

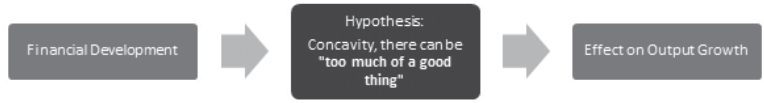
5 Results

5.1 Hypotheses summary

As outlined in the section on our research objectives, the overall hypothesis of our research is that the relationship between financial development and output growth of an economy is in general positive, but the function is non-linear. More specifically, we expect the relation to be positive when the financial sector is rather small (the output grows (faster) when the financial services provided in an economy shift from less developed to developed). But with a further increase of the financial sector the negative effects get more importance and the positive effect on growth diminishes. From a certain point of development of the financial sector within an economy the effect actually gets negative.

When we use different functional forms in the empirical model specification, we would expect a positive coefficient for the linear specification. For a quadratic specification we would expect a maximum (with the maximum point within the observed sample).

Fig. 5-1 General hypotheses

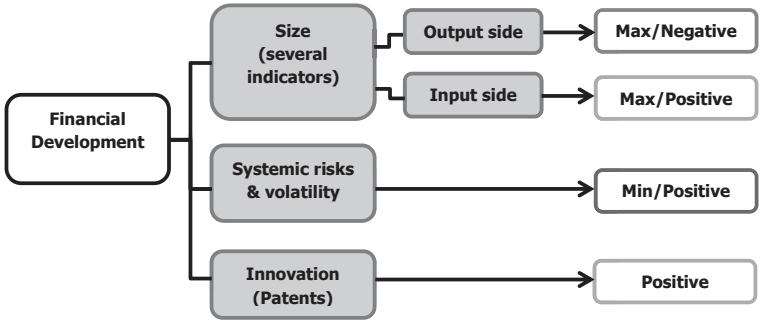


Source: BAKBASEL

This overall hypothesis sums up the overall purpose of our study and the general type of results we are looking for. Nevertheless, as discussed above, there is not one unique relationship between the financial sector and economic growth. Instead, there is a multitude of different possible connections and dependencies, some of them only relevant for certain parts of the financial sector respectively specific functions within the financial sector. Therefore, given the plurality of possible definitions of financial development as well as the multitude of theoretical linkages, our study does not aim to provide one unique answer. Instead, it could be helpful to test different specifications. Differing results might provide hints regarding the relevance of the different theoretically defined linkages between financials development and economic growth, verifying individual transmission channels driving the overall relationship.

Therefore, we break the question down to sub-hypotheses. We formulate different sub-hypotheses for the effect on output growth for different specifications of the relationship between financial development and growth. Fig. 5-2 presents the major types of financial development. Breaking the finance-growth relationship into several testable sub-hypotheses allows for heterogeneous results, which is precisely what we are expecting from the different types of financial development. In the following, each of these specifications will be discussed in turn, including a short theoretical foundation for each of the transmission channels and the corresponding hypotheses, along with evidence from our regression results.

Fig. 5-2 Hypotheses by research fields



Source: BAKBASEL

5.2 Size of the financial sector

5.2.1 Specification

Transmission Channels

The focus within this first set of results is on the amount of financial services available in an economy as a measure of the total size[12] of the financial sector (also called financial depth in the following). **Financial depth allegedly minimizes market frictions** by easing (credit) constraints facing firms and households. It should therefore benefit output growth by helping the start-up of new businesses, as well as the growth of existing ones.

However, this line of reasoning may apply better to developing countries where financial services are still relatively scarce. In highly developed countries, in which we are particularly interested, it could well be argued that credit to firms is majorly determined by the business perspectives of the firms in accordance with the general economic outlook, rather than by any constraints internal to the financial sector itself. Therefore, within our sample of highly developed countries there might be no such positive relationship between financial depth and output growth, at least not for those economies with the highest level of financial depth.

Correspondingly, the total effect on economic growth of the financial depth we analyse here is not relying on one particular transaction channel but on the combination of the various channels. Information on the overall correlation of the financial development with economic growth is the main aim of this part of the results. Still, different transaction channels might be of special interest or importance in specific specifications. "Financial depth" or "size of the financial sector" is not a measurable variable itself. It has to be operationalized. Various indicators are available for this task, and each of these individual indicators is related more strongly to certain transaction channels than to others.

Traditionally, the size of certain types of the financial markets has been employed in the literature as a measure of financial depth of an economy. The first measure we use in the empirical analysis is the ratio of **Private Credit to GDP**. It is the most commonly used indicator in the literature and touches the core function of the financial sector in the economy: the transmission of savings into investments. If the financial sector performs this task more efficiently, there should be more funds available at lower costs. This should increase savings, as the returns to savings are higher, as well as investments, as the necessary funds are cheaper. Ultimately, a higher level of investments should increase economic growth.

Private credit is one important source for financing investments. Nevertheless, the capital structure of firms (especially of larger ones) is usually mixed, and another important source of external financing occurs through equity. The ratio of **Stock Turnover to Market Capitalisation** is an indicator that measures the liquidity of the stock market. According to Levine and Zervos (1998) greater liquidity implies the ability to re-optimize investment decisions more easily, thus allowing a more efficient allocation of capital away from low-return investments, towards long-run high-return investments. By doing so, capital is freed-up for more investments which accelerate productivity growth and total output growth.

While the first two measures introduced were derived from the output side of the financial sector, we will use an indicator related to the input side as well: The number of people employed in the financial sector expressed as a share of total employment in the economy (henceforth, **Share of Financial Employment**). Here, slightly different transmission channels move to the

[12] As in the literature, we intend financial depth as a concept of size relative to the aggregate economy, allowing better comparability across countries.

forefront. Particularly, from the possible negative linkages, the **crowding out** mechanisms on the labour market come into focus, as high financial sector wages may be able to attract workers with transferrable skills away from other productive sectors.

All of the three transmission channels outlined above describe catalytic effects which are likely to be observed between the financial sector and the real economy, through the services offered by the former. Nevertheless, as outlined in Chapter 4.3, direct effects are likely to occur as well. By direct effects, we mean the Output of the financial sector itself, and the demand effect it generates for goods and services provided by other industries. Although these are difficult to distinguish in absolute detail, we do separate the relationship on aggregate Output Growth to that on Output Growth in the Real Economy (excl. the financial sector). This further analysis helps us to discriminate on the nature of the transmission channel occurring in any relationship we are to observe.

As observed in Chapter 4, these three indicators are correlated, yet not completely overlapping; thus, the informational content between them can in no case be considered as redundant.

Hypothesis

Traditionally, the literature has shown the size of the financial sector to have a positive influence on output growth. It is well established that this relationship holds for low developed and emerging markets. Within our focus, the highly developed economies, the relationship is less clear. Still, we would expect a positive relationship in our sample of OECD countries for a linear specification, although we are more inclined to expect a weak relationship between financial sector size and output growth. It might even be insignificant or possibly a negative one. This is particularly true for the input side indicator Share of Financial Employment, as this indicator is more strongly related to one of the negative transmission channels, the crowding out of highly qualified employees.

Through the quadratic specifications, we expect to identify a relationship with a maximum point (MAX), using all three indicators. We thus expect the negative effects, particularly the crowding out mechanism, to dominate the positive transmissions (improved capital allocation) at the more extreme levels of financial sector size. The maximum point would be expected either within the variation of financial depth covered in the sample or at higher levels of financial depth than actually observed. While the first result would imply the existence of a critical level of financial depth beyond which the effect on economic growth turns negative, the latter result would imply diminishing returns yet without an actually negative effect dominating the positive one.

Isolating the catalytic effects on the real economy – from the Output Growth in the financial industry itself – we expect to observe similar results. This is to say, we do not expect the relationship to be driven solely by the Output Growth contribution of the financial sector itself.

Technical specification

The estimations follow the principal approach as descripted in Chapter 4 on the research setup. Here, we only mention the most important specification properties and issues which are specific to the specification applied in this part.

For Private Credit to GDP and Stock Turnover to Market Capitalisation, data is only available at the national level. For this reason, we are not able to study their effects at a regional level, as we are unaware of how these financial services are allocated throughout different regions.

For the share of the financial sector measured by its employees, the data is available on national as well as on regional level. Therefore, we can use this indicator in more variations of the estimation than the first two.

5.2.2 Results for growth of aggregate economy

Baseline specification

The following table summarizes the results for the basic estimations on the national level. The dependent variable – output growth – is given in the horizontal headline of the table. Each line of the table represents the results of a specific specification. It contains information on the coefficient of the explanatory variable of particular interest in the specification. The variable is provided in the headline of the row. As the actual values are hard to interpret, the table focuses on the direction of the relationship and the statistical significance of the results. Furthermore, the results for a linear as well as a quadratic specification of each of the explanatory variables are provided in the table (in separate lines). The complete estimation results for all estimations, including control variables and statistical tests, can be found in the appendix.

Tab. 5-1 Estimation results: Growth and financial depth, aggregate economy, national level – baseline estimations

		Output Growth	Output Growth real economy
Private Credit to GDP	(Quadratic)	-	-
	(Linear)	Neg**	Neg*
Stock Turnover to MC	(Quadratic)	-	-
	(Linear)	Neg**	Neg**
Share Fin. Employment	(Quadratic)	-	-
	(Linear)	-	Pos***

Dependent variable: see column header
Sample: 19 countries
(Significance at the 1/5/10% level is indicated by ***/**/*, or by "-" were not significant)
Source: BAKBASEL

For the results of the most basic specification provided in the table above, we have to state that most of the specifications do not return a significant coefficient for the explanatory variable of interest. In two cases we can actually identify a **negative effect** of financial sector size on output growth on the national level. This is the case if we choose a linear relationship only for the two indicators of financial depth (output side), within a confidence level of 5 per cent. This result is consistent with previous studies (e.g. Cecchetti and Kharroubi, 2012), given that our sample lies on **the higher end of the spectrum of financial development.** A weakly significant correlation or even a negative effect clearly casts doubts regarding the linearity assumption and the positive correlation traditionally reported by the literature.

It is noteworthy that in the quadratic specifications not only the coefficient for the quadratic term itself is insignificant, but that for Private Credit to GDP also the coefficient of the linear term shows no significant influence once the quadratic term is included. This is different for the Stock Turnover to Market Capitalisation, where the linear part of the quadratic term keeps a negative coefficient (at the 5 per cent significance level). In the case of the Share of Employment we actually have a positive coefficient of the linear part of the quadratic function, although only significant at the 10 per cent level. We would interpret these changes in the results

as a hint that a nonlinear specification would be appropriate, as adding a quadratic term influences the results for the linear part as well.

Similar results can be observed (for the first two indicators) in the analysis on the relationship with Output Growth in the real economy (excluding financial sector output). This strengthens the evidence in favour of the catalytic effects presented in our hypotheses, rather than having observed merely a direct effect driven by growth contribution in the financial industry. Nevertheless, just like in the previous case, the results ought to be interpreted with caution.

Comparing the twelve specifications with respect to the control variables – which are similar in all estimations – we observe a stable, but not exciting picture. Most of the control variables are insignificant, although they show the expected signs[13]. With respect to the explanatory power, only the specifications using the Share of Employment can explain a substantial part of the variation of output growth. Using the other indicators for the financial sector explains less of the growth variation between countries.

Robustness

To confirm these results, we performed a number of additional estimations as robustness checks. First, we change the time periods used in the panel. One version eliminates the financial sector crisis of 2007/2008 (as well as the following economic crisis 2008/2009). It could be argued that this is an extraordinary period and might hide the real relationship between the financial sector and growth. Although it has to be noted that financial crises are a rather usual phenomenon in long-term economic development, and systematically ignoring all periods of financial turmoil would lead to wrong conclusions.

We also test a specification ignoring the eighties. In this case the rational is that the function of the financial sector might have changed with the advance of new products and the globalisation.

A third set of robustness tests eliminates individual countries from the sample, although the possibilities to do so are very limited with the limited set of OECD countries when analysing the national level. The example given in the table excludes Luxembourg as a financial centre with very special functions as well as Sweden due to some uncertainty about the data.

[13] For clarifications over this issue please consult section 4.5.2.4, Causality and hypothesis-led analysis.

Tab. 5-2 Estimation results: Growth and financial depth, aggregate economy, national level – robustness checks

No crisis (1980 - 2005)		Output Growth
Private Credit to GDP	(Quadratic)	-
	(Linear)	-
Stock Turnover to MC	(Quadratic)	-
	(Linear)	-
Share Fin. Employment	(Quadratic)	-
	(Linear)	-

No eighties (1990 - 2010)		Output Growth
Private Credit to GDP	(Quadratic)	-
	(Linear)	Neg**
Stock Turnover to MC	(Quadratic)	-
	(Linear)	Neg**
Share Fin. Employment	(Quadratic)	**Max ** 0.094**
	(Linear)	Pos***

Without Luxembourg and Sweden		Output Growth
Private Credit to GDP	(Quadratic)	-
	(Linear)	Neg*
Stock Turnover to MC	(Quadratic)	-
	(Linear)	-
Share Fin. Employment	(Quadratic)	-
	(Linear)	Pos*

Values represent the location of the Turning Point in terms of the corresponding indicator:
Indicator range (Share of Financial Employment): 0.004 – 0.129
Dependent variable: see column header
Sample: 19 countries
(Significance at the 1/5/10% level is indicated by ***/**/*, or by "-" were not significant)
Source: BAKBASEL

In most cases, again the quadratic specifications yield non-significant results whilst the linear one shows a **negative relationship**, although generally with a weak significance level. Somewhat different are the results using the Share of Financial Employment as indicator: They show significance in the linear specification for a positive coefficient, and even a MAX in one of the specifications. This indicator is different from the previous two, and this result will be interpreted in more depth in the next section.

It ought to be noted, however, that even the linear specification ceases to be significant when the recent **crisis years (2005 - 2010)** are eliminated from the sample. Nevertheless, following the reasoning offered below in the section on Systemic Risks and Volatility, downturns may have to be considered as being tightly related to the level of financial development, rather than as a purely exceptional event.

Another extension (robustness check) worth pointing out is illustrated in the table below; here, the indicator for **Private Credit to GDP** was adjusted by eliminating household debt. This new indicator for credit **excludes mortgage loans and consumer debt**, thus providing a more accurate assessment of financial services being provided to firms. In this case, neither the quadratic nor the linear specifications have shown any significant results.

Tab. 5-3 Estimation results: Growth and financial depth, aggregate economy, national level – credit to firms only

		Output Growth
Net Private Credit (to Firms) to GDP	(Quadratic)	-
	(Linear)	-

Dependent variable: see column header
Sample: 19 countries
(Significance at the 1/5/10% level is indicated by ***/**/*, or by "-" if not significant)
Source: BAKBASEL

Conclusion

This first set of results provides an overview of the results at national level for the different indicators of financial development related to the size of the financial sector. In this sense, it aims to replicate the results of a variety of studies in the literature, which had carried out a similar analysis at national level. Both linear and quadratic specifications have already been used, but with conflicting results. The main distinguishing feature of our results is that by focusing on OECD countries, we attempt to verify whether the conclusions reached in the literature still hold at the higher-end of the financial development spectrum.

All in all, these results at national level for the aggregated economy do not yield a significant result. Neither can we confirm the positive relationship postulated by much of the literature, nor can we establish firm evidence for another functional relationship – be it linear, negative or quadratic. There is some evidence that the negative transmission channels can override the positive ones, but the results are far from stable. Many of the relevant coefficients cannot be distinguished from zero and in a few cases we even identify a positive correlation.

Although this result seems not very clear at first sight, a relatively clear conclusion can be drawn: When considering highly developed economies, it is not possible to identify a clear positive linkage between financial development and economic growth as had been asserted in much of the literature. This is notwithstanding the fact that for developing economies and emerging markets increasing the availability of financial services could be critical for growth. But once a certain level is reached, there is no clear evidence in support of the traditional hypothesis of financial development easing constraints to capital allocation. On the contrary, they suggest that for highly developed OECD countries the relationship may be negative with respect to deeper financial sectors.

Furthermore, through the weakness of our results, it seems clear that we are not able to draw strong conclusions on the relationship between financial development and output growth within highly developed economies when we limit our analyses on the national level and the aggregate economy. After all, a sample of 19 countries might be too small to yield stable results. However, adding more countries is no solution, as discussed above. Therefore, we will turn in the direction to achieve more detailed results.

5.2.3 Results for specific industries

Different industries do need the services of the financial sector to different extents, and might even need different kinds of services differently. First of all their demand for capital varies widely. But even with similar needs of capital, their ways of financing can be quite different: Some well-established firms might be able to finance themselves from retained earnings, while others depend on credits. Particularly for larger firms, the stock market might be relevant. Furthermore, the risk included into investment in different firms and industries can vary. Therefore, for example, the advantage with respect to monitoring as well as risk diversification, which an extended financial sector can provide, will lead to differing amounts of reduced costs for credit. For all these reasons we do believe that industries will benefit differently from the financial sector. Pretty much the same is true for many of the negative transmission channels.

Therefore, we would expect to identify different magnitudes of effects for differing industries, although the general direction of the effect for each transition channel should be similar. Combining the different transmission channels, it might even be possible to find opposite effects, although we would not expect this. Particularly, we expect larger effects for industries with higher capital intensity and/or a riskier business model, which is particularly true for newly developing industries and for high technology (innovation intensive) industries.

Tab. 5-4 Estimation results: Growth and financial depth, industries, national level – baseline estimations

Output Growth		Second. Sector	Manufact.	Pharma / Chemical	Capital goods	Mech. Eng.	Precision Instr.	Con-struct.
Private Credit to GDP	(Quadratic)	-	-	-	-	-	-	-
	(Linear)	Neg.*	-	-	-	-	-	Neg. ***
Stock Turnover to MC	(Quadratic)	-	-	-	-	-	-	-
	(Linear)	-	Neg.***	Neg.***	-	-	-	-
Share Fin. Employment	(Quadratic)	-	-	-	-	-	-	-
	(Linear)	Neg.**	-	Pos.***	Neg.**	Neg. ***	-	-

Output Growth		Trade	Tertiary Sector	Business Services	IT Services	R&D	Services to Firms
Private Credit to GDP	(Quadratic)	-	-	-	-	-	-
	(Linear)	-	Neg.**	-	-	-	Neg.***
Stock Turnover to MC	(Quadratic)	-	**Min. *** 111.56	**Min. ** 113.67	**-**	**Min. ** 83.64	**Min. *** 108.06
	(Linear)	Neg.**	-	Neg.***	-	-	Neg.*
Share Fin. Employment	(Quadratic)	-	-	-	-	-	-
	(Linear)	-	-	Pos.***	-	-	Pos.***

Values represent the location of the Turning Point in terms of the corresponding indicator:
Indicator range (Stock Turnover to MC): 0.194 – 210
Dependent variable: Output Growth in industries, see header
Sample: 19 countries
(Significance at the 1/5/10% level is indicated by ***/**/*, or by "-" were not significant)
Source: BAKBASEL

As was the case for the aggregate economy, it is difficult to identify stable results and find clear-cut results for individual industries when using national data (and 19 OECD countries). The results at industry level fail to identify a strong relationship between financial development indicators and output growth.

Once again, the regressions using **Private Credit to GDP ratio** as explanatory variables fail to identify a significant relationship between financing to firms and economic growth in almost all cases. This includes the robustness checks by using Credits to Firms instead of total credits (see table below). Regardless of the sectors' heterogeneous reliance on external financing, no sector's economic growth appears to be significantly influenced by the variation in the amount of credit being issued by banks and other financial institutions. Similarly to the previous results for the national aggregate level, some sectors appear to show a negative relationship when we focus on the linear specification, among them the Construction Industry and the Services to Firms, which include Real Estate Services. These two are not particularly capital intensive in their production itself, but depend heavily on capital accessibility in an indirect way.

As robustness check, eliminating the years of the recent financial crisis from the sample does not significantly change the results (see appendix).

Tab. 5-5 Estimation results: Growth and financial depth, industries, national level – credit to firms only

Output Growth		Second. Sector	Manu-fact.	Pharma/ Chemical	Capital goods	Mech. Eng.	Precision Instr.	Con-struct.
Net Private Credit (to Firms) to GDP	(Quadr.)	-	-	-	-	-	-	-
	(Linear)	Neg.***	-	-	-	-	-	Neg.**

Output Growth		Trade	Tertiary Sector	Business services	IT services	R&D	Services to Firms	
Net Private Credit (to Firms) to GDP	(Quadr.)	-	-	**Max. ** 47.04	-	-	-	
	(Linear)	-	Neg.*	Neg.*	-	-	-	

Values represent the location of the Turning Point in terms of the corresponding indicator:
Indicator range (Net Private Credit to GDP (to Firms)): 14.7 – 146
Dependent variable: Output Growth in industries, see header
Sample: 19 countries
(Significance at the 1/5/10% level is indicated by ***/**/*, or by "-" were not significant)
Source: BAKBASEL

The results of the estimations using **Stock Turnover to MC** do not appear to be very convincing. The quadratic form yields very limited results, with MIN points within the range of the indicator's sample, suggesting that the greatest contribution to output growth is achievable at both extremes of the indicator's range. The linear specification yields some negative results.

The results using the **Share of Financial Employment** as indicator of financial sector size are only significant with the linear specification. Furthermore, the sign of the coefficients alternate, so that they do not provide a clear pattern. The robustness regressions (without the crisis) are not consistent as well, discrediting any possible interpretation at this level of analysis further.

Conclusion

As for the aggregate economy it is not possible to draw clear-cut conclusions from the industry specific estimations on the national level. But again we find confirmation for the hypotheses that there is NOT a clear positive correlation between the size of the financial sector end economic growth, neither for the aggregate economy nor for individual industries.

It is not really surprising that with only 19 cross-section observations (OECD countries) it is difficult to identify effects clearly in such a complex context as economic growth, although we use the panel structure of the data to increase the sample size. Adding more countries into the sample is prohibited by the research question, which explicitly requires a focus on highly developed economies. Therefore, we turn in another direction to increase sample size and indicator variability, which might help to identify the effects more clearly and achieve more robust results. The next section will focus on the effects on the regional level of regions belonging to the 19 OECD countries.

5.3 Size of the regional financial sector

5.3.1 Specification

In this section we want to turn to the regional level. Unlike the two indicators of financial depth, the indicator measuring the *number of people employed in the financial sector expressed as a share of total employment in the economy* (henceforth, **Share of Financial Employment**) is available at the regional level. This enables us to study the relationship between financial development and output growth in far greater detail, although this comes at a cost: we do not have more than one indicator to measure financial depth any more. Specifically, the Share of Financial Employment to aggregate employment at regional level reflects the concentration of financial intermediaries within local economies.

The possibility to carry out the analysis using a financial development indicator at regional level offers a fundamental advantage: it allows distinguishing between different functional relationships across regions, according to the different specialisations of the local financial sectors. In fact, financial centres that act as major exporters of financial services are only present in a handful of regions, whilst the financial industry within the remaining regions usually performs a functionally different role. This, in the absence of detailed data on the international integration of financial services, allows us to introduce a new perspective to the research.

Transmission

Ultimately, in this section we measure the size of the financial market through the **input side**, using the Share of Financial Employment. A relatively larger financial intermediation sector should be better at **collecting business information and allocating capital more efficiently**.

Similarly with the aggregate level (above), the **positive** transmission channels described by the literature holds the network of financial intermediaries ultimately responsible for collecting information and providing financial services to its end-users (households and firms). This enables a more efficient allocation of capital to profitable business opportunities, thus fostering output growth. This does not necessarily imply allocating larger volumes of capital, but rather being able to identify the more profitable investment opportunities within the region and to allocate resources accordingly.

In addition to the catalytic effect, the financial sector has itself a direct impact on output growth within the regions. As in the previous chapter (at national level), a second set of regressions is performed, excluding the growth contribution of the financial industry itself from the aggregate regional Output Growth. This way, we are able to distinguish the impact of catalytic effects from direct effects on the local regional economies.

Nevertheless, efficient local financial intermediation inevitably comes at a cost. Given the relatively high wages offered by this industry, the financial sector competes with other productive sectors for highly qualified labour, especially for those with transferrable technical skills. Thus, we might be able to observe a **crowding-out (brain-drain)** effect over other sectors of the economy. This hypothesis relies upon the assumption that the supply of a certain type of highly qualified labour is scarce, and that migration across countries or regions is relatively limited and does not influence the overall phenomenon.

Hypothesis

At lower levels of financial development (defined here as the Share of Financial Employment), we expect an increase in the size of local financial intermediation to have a **positive effect through improved capital allocation**. However, at higher levels we expect the positive transmission channel to have a decreasing impact. Similarly to the aggregate level, the extent to which capital allocation can be improved eventually becomes insignificant (concavity of the function).

On the other hand, at higher levels we expect the negative transmission channel to dominate, causing the overall relationship to peak. Therefore, we expect **crowding-out dynamics** in the labour market to determine a MAX point within the range of our observations, implying a negative relationship beyond this point.

At regional, **industry-specific level** we expect the same transmission channels to be in action. This further extent of disaggregation helps us to narrow the focus of our analysis, in order to improve identification. With respect to the positive transmission channel, we expect to identify a positive relationship in sectors which are traditionally reliant on debt as a source of funding. This might be the case in large parts of the tertiary sector (services sector), where firms are relatively smaller than, for example, in the Pharma / Chemical industry.

Similarly, we expect to observe crowding out mechanisms (negative linear, or MAX point for the quadratic specification) within industries which traditionally require a labour force with skills that are required in the financial sector as well. Again, this could include workers from the tertiary sector, as well as more technical engineers or mathematicians from the Mechanical Engineering or the Pharma / Chemical sectors.

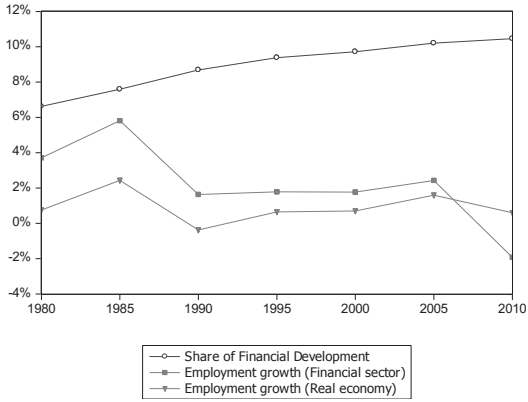
Technical specification

Unlike the other two indicators used to measure financial depth, the Share of Financial Employment is available at regional level. The first set of regressions at regional aggregate level examines the effect over the full sample of regions.

The second set of regressions – for specific sectors – employs a reduced dataset of 80 regions in which the corresponding sector is of particularly high importance. In regions where a particular industry is extremely small, any slight change in size (in levels) could lead to extremely large changes in terms of growth rates. Effectively, the industry-specific effect is studied on a different set of regions in which the industry is highly present, thus eliminating possible noise in the (growth rates) data and identifying the relationship in regions where the specific industry has a greater economic significance

Employing data at regional level allows us to address additionally a fundamental problem within the literature, which was pointed out by Guiso, Sapienza and Zingales (2004): the question they pose is "Does domestic financial development still matter for growth when international capital mobility is high?" The level of integration of international [financial] markets has risen drastically over the last decades, yet a general lack of detailed data regarding capital mobility makes this a very difficult phenomenon to quantify, and thus to control for. The analysis at regional level thus allows us to partially mitigate this problem by excluding regions which are traditionally focused on the export of financial services. This allows us to obtain an indicator which is able to focus on the financial intermediation role at local level, excluding the effect of the major financial hubs.

Fig. 5-3 Share of Financial Employment for the Zurich Canton



Growth rates are annualised with respect to the previous 5-year period.
Source: BAKBASEL

As can be seen in the graph above, this indicator is also less vulnerable to particular shocks over time. Labour markets do not adjust to expectations as rapidly as the volumes of the financial services (i.e. Private Credit); also, as a share (of two highly correlated measures of employment), it is not vulnerable to widespread economic downturn. Therefore, this indicator is more robust than the previous ones to the issue of simultaneity bias caused by future expectations over output growth. As discussed in the previous section, expectations over future output growth may lead to corresponding adjustment in the level of financial services provided, leading to reverse causality (partly) determining the relationship observed. On the other hand, the share of employment resources allocated to the financial industry remains fairly constant, providing a structurally more significant indicator of a region's level of financial development. Furthermore, as this is a ratio (and not an indicator in levels) between different industries within an economy, the impact of productivity changes caused by technological innovations is reduced as this indicator captures the relative allocation of labour resources across different industries.

As we can see in the correlations table in the previous chapter, the Share of Financial Employment indicator is not strongly correlated with the previous two indicators of financial depth, suggesting that the informational content is not purely an overlap.

5.3.2 Results for growth of the regional economy

Baseline

The results at the regional level, using the indicator of Share of Financial Employment, are considerably stronger than those at national level. Here, we obtain significant results for both the quadratic and the linear specifications. They are fairly stable as well (for a variety of changes in the specification and estimation setup as well, see robustness below).

Tab. 5-6 Estimation results: Growth and regional Share of Financial Employment, aggregate economy, regional level – baseline estimations

		Output Growth	Output Growth In Real Econ.
		Max.	**Max.**
Share Fin. Employment	(Quadratic)	**	***
		0.084	0.076
	(Linear)	Pos.***	Pos.***

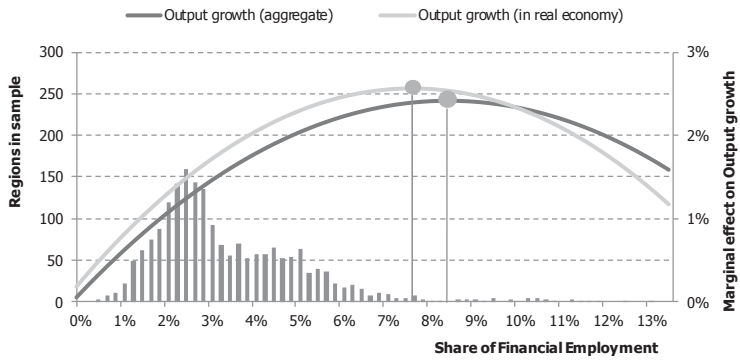
Values represent the location of the Turning Point in terms of the corresponding indicator:
Indicator range (Share of Financial Employment): 0.004 – 0.129
Dependent variable: see header
Sample: 281 regions
(Significance at the 1/5/10% level is indicated by ***/**/*, or by "-" were not significant)
Source: BAKBASEL

The results provide some evidence in support of our hypothesis. The quadratic specifications both show highly significant coefficients plotting a MAX point in the relationship between the Share of Financial Employment and Output Growth, regardless of whether this excludes Output of the financial sector itself. The linear specifications are also highly significant with positive coefficients, as expected.

Both specifications thus provide evidence for the existence of a positive transmission channel. Local financial intermediation is beneficial to output growth at regional aggregate level, allowing a more efficient allocation of financial services and collection of information regarding business opportunities.

Assessing the presence of a negative transmission channel – from the MAX in the quadratic specification – is slightly more complex. Prima facie, this result allows us to conclude that having a large Share of Employment absorbed by the Financial Sector may exhibit decreasing marginal benefits. However, whether the negative transmission channel is strong enough to cause negative marginal benefits on Output Growth depends on where the MAX point lies within the sample. In order to assess this we turn to the graph below.

Fig. 5-4 Regression coefficients plot – Share of Financial Employment – aggregate economy, regional level



Histogram displays the distribution of multiple 5-year period observations for each region in the sample (left axis) over the financial development indicator (horizontal axis).
Curves plot the regression coefficients of the financial development indicator (horizontal axis) with respect to output growth (right axis), adjusted for mean coefficients of control variables.
Source: BAKBASEL

This graph plots the marginal effect of the Share of Financial Employment on Output Growth (lines, right axis) against a histogram of the distribution of regional observations (right axis) over the range of the indicator itself (horizontal axis). This illustrates the estimation results and helps us to better understand the meaning of the MAX point in the quadratic specification, with respect to the sample.

As we can observe from the graph, the MAX point for the regression on aggregate Output Growth lies at the edge of the sample, in an area reached only by a few regions highly specialized in financial activities: Delaware, Zürich, Luxembourg and Geneva are examples.

Although the MAX point lies within the range of the sample, quite few of the regions are actually located in the negative-sloping part of the graph. Therefore, some care is necessary when interpreting these results. On the one hand, we do not have sufficient evidence to infer the existence of crowding-out mechanisms in the labour market as having a dominating effect in terms of aggregate output growth, although we cannot exclude it either. What appears clearer, on the other hand, is that the overall benefits deriving from higher concentrations of financial activities seem to have a marginally decreasing benefit on regional Output Growth. This is coherent with our initial hypothesis. The catalytic effect of improved capital allocation on the economy is a concept of efficiency: It can only produce benefits up to a certain point, beyond which the work of financial intermediaries becomes unproductive or less productive (with respect to aggregate Output Growth).

The second curve (Output Growth in the Real Economy) shows the regression results for our financial development indicator on output in the real economy only (subtracting the output of the financial sector from the total before calculating growth). This allows us to better isolate the catalytic effect on the real economy, by eliminating the share of growth generated by the finan-

cial industries.[14] The conclusion here is similar, although we can see that the line is shifted slightly to the left (probably due to a missing growth contribution of a (large) financial sector). But in general, the conclusions are the same.

It is reassuring that the results are not merely driven by the direct growth contribution of the financial sector to the total economy. We take that as a hint that the endogeneity problem inherent in explaining growth with a variable which is by definition related to a part of growth seems not to determine the results. Curbing risks of endogeneity by limiting Output Growth to that occurring in the real economy (excl. the financial sector) does not substantially affect the results, nor does it lead to different conclusions.

Robustness

The results we observe at regional aggregate level are also robust for a variety of alternative specifications, samples and estimation procedures. The table below summarizes these results.

Overall, we can observe that the results are not strongly affected by variations in the time period or the sample. Eliminating the recent crisis years from the sample (1980-2005) actually shifts the MAX points even more to the left, suggesting even stronger marginally decreasing effects of financial development on growth, whilst eliminating the eighties from the sample does not show very different results to those from the baseline specification.

When we exclude the component of output generated by the financial sector (dep. variable: output growth in the real economy) we obtain very similar results as in our baseline regression. This result shows that our results are stronger over the catalytic effects on the real economy (rather than aggregate), over which they confirm declining marginal effects, with a peak around 0.083 of our indicator.

As a further check, we eliminate the regions of finance-intensive countries altogether (Luxembourg, Switzerland and UK). This way, we eliminate the influence of countries which are major 'exporters' of financial services, in order to alleviate the problem of highly integrated international financial markets. By excluding these countries from our analysis we are able to focus on regions in which the financial sector mainly performs a role of intermediation directly with local firms and households. The result for this variant confirms the results obtained in our baseline specifications. This strengthens the validity of the relationship we observe between the labour inputs of the financial sector and regional Output Growth, independently from the international integration of financial services provided by the major financial hubs.

Ultimately, we divide the sample into three subsamples of regions: high, medium and low finance-intensive regions. In each case we observe a MAX point, implying a positive relationship with diminishing returns. Observing the MAX points in the high finance-intensive regions alone, we can see that the relationship for the real economy peaks at a higher value of the indicator, suggesting the strength of direct effects (demand effects) within these regions. On the other hand, medium and low finance intensive regions have lower MAX values for the relationship, yet confirm the existence of a positive relationship with diminishing returns, consistently with the previous variations.

Nevertheless, the differing positions of the MAX points across the different samples may be an indication of the fact that the quadratic functional form may not provide enough flexibility towards the identification of the true relationship. Although our research presents an attempt to distinguish different transmission channels employing financial development indicators at different levels of aggregation, further research may be required in order to improve the extent to

[14] Note that from an „neutral" position the most important question is whether financial growth and development raises Output Growth of the aggregate economy. Nevertheless, separating direct effects from catalytic effects not only helps to mitigate some technical problems in the analysis (i.e. endogeneity) but is also a relevant question itself, as it helps to shine light on the interplay of the different mechanisms.

which the different functions of the financial industry may be isolated and analysed. To this end, improvements over the availability of detailed financial time-series data will certainly allow to improve the strength of the results.

Tab. 5-7 Estimation results: Growth and regional Share of Financial Employment, aggregate economy, regional level – Robustness checks

		Output Growth	Output Growth In Real Econ.
No crisis (1980 - 2005)	(Quadr.)	**Max.****	**Max.*****
		0.07	0.06
	(Linear)	Pos.***	Pos.***
No eighties (1990 - 2010)	(Quadr.)	**Max.****	**Max.*****
		0.08	0.07
	(Linear)	Pos.***	Pos.***
Without finance-intensive countries (LU, CH, UK)	(Quadr.)	**Max.****	**Max.*****
		0.09	0.08
	(Linear)	Pos.***	Pos.***
High finance-intensive subsample (~80 regions)	(Quadr.)	**Max.***	**Max.****
		0.098	0.083
	(Linear)	Pos.***	Pos.***
Middle finance-intensive subsample (~80 regions)	(Quadr.)	**Max.*****	**Max.*****
		0.048	0.049
	(Linear)	Pos.***	Pos.***
Low finance-intensive subsample (~80 regions)	(Quadr.)	**Max.****	**Max.***
		0.053	0.056
	(Linear)	Pos.**	Pos.**

Values represent the location of the Turning Point in terms of the corresponding indicator:
Indicator range (Share of Financial Employment): 0.004 – 0.129
Dependent variable: see header
Sample: 281 regions
(Significance at the 1/5/10% level is indicated by ***/**/*, or by "-" were not significant)
Source: BAKBASEL

5.3.3 Results for growth in specific industries at regional level

Baseline

Similar results can be observed by regressing the Share of Financial Employment in each region on the regional Output Growth in individual industries. The sample of regions is restricted to those with the highest relative intensity of the single sectors within the regional economies. This corresponds to approximately one third of the total regions in the sample. This reduced sample allows eliminating the abrupt movements in output growth that may occur within small sectors, thus improving identification as well as focusing on the industries of a particular importance to the regional economy.

There is an alternative interpretation for the industry specific estimations. Above, it has been argued that using the growth of the real economy only (excluding the financial sector) might

help to solve endogeneity problems and focuses the analysis on the catalytic effects of specific interest. Actually, using the growth of individual industries as left hand variable can be seen as an extended version of the latter approach, breaking down the effect on the growth of real economy into its component industries.

Tab. 5-8 Estimation results: Growth and regional Share of Financial Employment, industry specific, regional level (80 specialized regions) – baseline regressions

Output Growth	Second. Sector	Manu-fact.	Pharma / Chemical	Capital Goods	Mech. Eng.	Precision Instr.	Con-struct.
			Max.		**Min.**		
Share Fin.	**-**	**-**	***	**-**	*	**-**	**-**
Employment			0.044		0.031		
	-	-	-	-	-	Pos***	Pos***

Output Growth	Trade	Tertiary sector	Business services	IT Ser-vices	R&D	Services to firms	
	Max.	**Max.**	**Max.**	**Max.**			
Share Fin.	**	**	***	***	**-**		
Employment	0.058	0.143	0.145	0.136			
	Pos***	Pos***	Pos***	Pos***	Pos***	Pos***	

Values represent the location of the Turning Point in terms of the corresponding indicator:
Indicator range (Share of Financial Employment): 0.004 – 0.129
Dependent variable: Output Growth in industries, see header
Sample: industry-specific sub-samples of 80 regions.
(Significance at the 1/5/10% level is indicated by ***/**/*, or by "-" were not significant)
Source: BAKBASEL

From the table of results above, we can see a similar pattern as in the regional aggregate results. The quadratic specification generally yields MAX points, whereas the linear one is positive (where significant). Consistently with our hypotheses, we observe strongly significant MAX points within the Tertiary sector and specifically in the Business Services industry, generally composed of a greater number of smaller firms, thus more reliant on debt.[15] Somewhat surprising, we observe a MIN point in the Mechanical Engineering industry, although just significant on the weak 10 per cent level. This result does not support the hypotheses of a labour market crowding-out phenomenon in an industry where we would have expected it.[16]

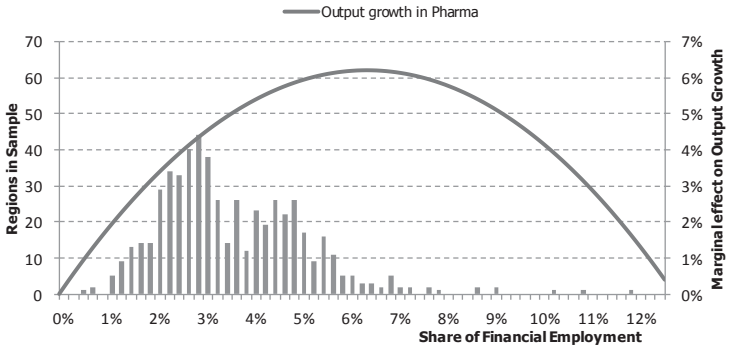
The **Pharmaceutical** industry is unlikely to benefit from greater availability of financial services, as its capital structure does not traditionally rely on external financing. Nevertheless, it is a capital-intensive sector and can therefore benefit from larger and more efficient stock markets, given that these perform an information collection and thus capital allocation function. A

[15] It should be noted that particularly the Business Services industry deliver quite a large amount of input services into the financial sector. It is possible that part of the observed relationship is not a catalytic effect but due to the (growing) demand of the financial services for input services. The estimation does not allow distinguishing these two effects. But it should be notated that while it is possible that a larger financial sector generates a growing demand, there is no convincing theory to believe why such a relation should be non-linear and even negative at some point. Therefore, we would allocate at least a substantial part of the relationship found on catalytic effects instead of demand side effects.

[16] Mechanical Engineering is heavily relying on innovation and in turn on highly qualified employees, which often do have skills interesting for the financial sector as well. Therefore, it is one of the industries where we would have expected to observe a stronger effect if the crowding out is dominant in the overall effect.

solid network of financial intermediation can foster this process of acquisition of business information. On the negative transmission side, its reaction shows weak evidence of the possibility of crowding-out in the labour market, although only in the form of a marginally decreasing effect. This also receives some support from the fact that the linear regression fails to identify a significant relationship.

Fig. 5-5 Regression coefficients plot – Share of Financial Employment – Pharma/chemical industry, regional level

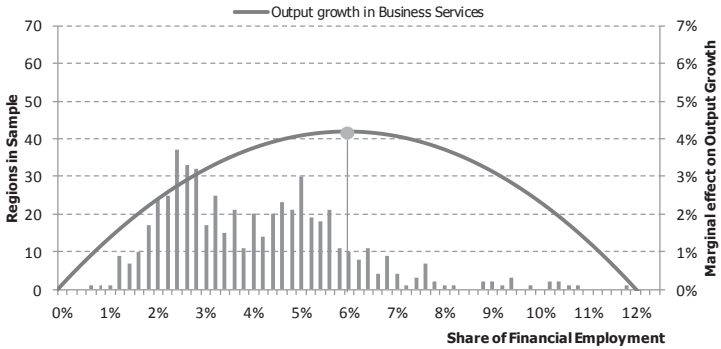


Histogram displays the distribution of multiple 5-year period observations for each region in the sample (left axis) over the financial development indicator (horizontal axis).
Curves plot the regression coefficients of the financial development indicator (horizontal axis) with respect to output growth (right axis), adjusted for mean coefficients of control variables.
Source: BAKBASEL

The **Business Service** industry is certainly more reliant on external financing, which justifies the positive relationship. Of course, part of this positive effect may derive from the demand side, because a larger financial sector needs more Business Services as inputs, although that does not necessarily lead to more growth of the Business Services. A hint in this direction is the fact that the 80 regions with the highest share of Business Services also show an above average share of Financial Services[17]. But the demand side effects cannot explain a non-linear relationship, letting alone a negative one. Therefore, other mechanisms must be at work as well.

[17] Among the top 20 Regions in terms of finance-intensiveness, 16 are well above national average in terms of Business Services industry concentration with respect to the national average.

Fig. 5-6 Regression coefficients plot – Share of Financial Employment – Business Services industry, regional level



Histogram displays the distribution of multiple 5-year period observations for each region in the sample (left axis) over the financial development indicator (horizontal axis).
Curves plot the regression coefficients of the financial development indicator (horizontal axis) with respect to output growth (right axis), adjusted for mean coefficients of control variables.
Source: BAKBASEL

Robustness

The following robustness checks have been performed – just like in our baseline regressions – over a reduced sample of 80 regions in which each industry is the largest, in relation to the size of the regional economies. Results at regional industry level are less robust than the results for the aggregate economy, with only a few exceptions.

The effect on the Business Services industry is the main result arising from these robustness checks, as the MAX remains highly significant throughout the different specifications, with MAX points between 0.06 and 0.07. Also the IT and the Trade show to be robust to variations in the time period (excluding the crisis, excluding the eighties), with even lower MAX points on the indicator range around 0.05.

On the other hand, some results discussed above fail to show robustness to variations. The Pharma / Chemical sector, for example is vulnerable to changes in the time period of the sample. We do find a significant result in the regressions using country dummies, yet the MAX point is relatively high.

Tab. 5-9 Estimation results: Growth and regional Share of Financial Employment, industry specific, regional level (80 specialized regions)– robustness regressions

No Crisis

Output Growth	Second. Sector	Manu-fact.	Pharma / Chemical	Capital goods	Mech. Eng.	Precision Instr.	Con-struct.
Share Fin. Employ-ment	-	-	-	-	-	-	**Max.** ** 0.0559
Output Growth	Trade	Tertiary Sector	Business services	IT ser-vices	R&D	Services to firms	
Share Fin. Employ-ment	**Max.** *** 0.0573	-	**Max.** *** 0.0622	**Max.** ** 0.0518	-	-	

No eighties

Output Growth	Second. Sector	Manu-fact.	Pharma / Chemical	Capital goods	Mech. Eng.	Precision Instr.	Con-struct.
Share Fin. Employ-ment							
Output Growth	Trade	Tertiary Sector	Business services	IT ser-vices	R&D	Services to firms	
Share Fin. Employ-ment	**Max.** *** 0.0648	**Max.** ** 0.0721	**Max.** *** 0.0655	**Max.** *** 0.0581	-	**Max.** * 0.0573	

Country Dummies

Output Growth	Second. Sector	Manu-fact.	Pharma / Chemical	Capital goods	Mech. Eng.	Precision Instr.	Con-struct.
Share Fin. Employ-ment			**Max.** *** 0.0810				
Output Growth	Trade	Tertiary Sector	Business services	IT ser-vices	R&D	Services to firms	
Share Fin. Employ-ment			**Max.** *** 0.0712	**Max.** ** 0.0607			

Values represent the location of the Turning Point in terms of the corresponding indicator:
Indicator range (Share of Financial Employment): 0.004 – 0.129
Dependent variable: Output Growth in industries, see header
Sample: industry-specific sub-samples of 80 regions.
(Significance at the 1/5/10% level is indicated by ***/**/*, or by "-" were not significant)
Source: BAKBASEL

Tab. 5-10 Estimation results: Growth and regional Share of Financial Employment, industry specific, regional level (full sample 281 regions)– robustness regressions

No Crisis

Output Growth	Second. Sector	Manu-fact.	Pharma / Chemical	Capital Goods	Mech. Eng.	Precision Instr.	Con-struct.
Share Fin. Employ-ment			**Min. * 0.0506**				
Output Growth	Trade	Tertiary Sector	Business services	IT ser-vices	R&D	Services to Firms	
Share Fin. Employ-ment	**Max. ** 0.0675**	**Max. *** 0.0697**	**Max. *** 0.0681**		**Max. *** 0.0722**	**Max. *** 0.0707**	

No eighties

Output Growth	Second. Sector	Manu-fact.	Pharma / Chemical	Capital Goods	Mech. Eng.	Precision Instr.	Con-struct.
Share Fin. Employ-ment							
Output Growth	Trade	Tertiary Sector	Business services	IT ser-vices	R&D	Services to Firms	
Share Fin. Employ-ment	**Max. *** 0.0752**	**Max. *** 0.0761**	**Max. *** 0.0674**	**Max. ** 0.0710**	**Max. *** 0.0784**	**Max. *** 0.0718**	

Country Dum-mies

Output Growth	Second. Sector	Manu-fact.	Pharma / Chemical	Capital Goods	Mech. Eng.	Precision Instr.	Con-struct.
Share Fin. Employ-ment							
Output Growth	Trade	Tertiary Sector	Business services	IT ser-vices	R&D	Services to Firms	
Share Fin. Employ-ment				**Max. ** **	**Max. * **		

Values represent the location of the Turning Point in terms of the corresponding indicator:
Indicator range (Share of Financial Employment): 0.004 – 0.129
Dependent variable: Output Growth in industries, see header
Sample: 281 regions
(Significance at the 1/5/10% level is indicated by ***/**/*, or by "-" were not significant)
Source: BAKBASEL

Conclusion

Analysing the effect of financial development on economic growth using the Share of Financial Employment as a measure of the relative size of the sector shows fairly stable regression results at the regional aggregate level. Exploiting the increase of variation in the data, we are able to characterise this relationship over a large sample of regions. Through the combined interpretation of the linear and quadratic specifications we can infer a clear **overall positive transmission channel for the full sample of regions.** Nevertheless, the results from the quadratic specification suggest that this relationship may be characterised by declining marginal benefits.

The financial development indicator employed in this section has a fundamental difference to the common indicators employed in the literature (foremost, Private Credit to GDP): it does not measure the volume of services provided by the financial sector, but measures the allocation of labour to the financial market, relative to the aggregate economy. This allows some technical advantages; most importantly, it reduces the risk of endogeneity and reverse causality caused by future expectations on output growth. Furthermore, it allows us to study financial development at regional level and to distinguish between the activity of financial hubs from the importance of local financial intermediation. It is mainly within this latter context that this indicator attempts to assess the financial sector's ability to improve capital allocation through an improved collection of information, which is ultimately expected to have positive catalytic effects on output growth in the real economy.

It is within this framework that our results confirm a positive relationship between a more developed financial sector and a higher rate of regional output growth. Through a series of robustness tests, we can exclude this result to be driven by specific events, as similar conclusions are obtained when excluding the recent crisis or the first decade (eighties) from the sample. Furthermore, by excluding key financial exporting financial centres from the sample, we are able to confirm the pertinence of our conclusion with respect to the role of financial intermediation. This result is also confirmed by sub-samples of low, medium and high financially developed regions; in all cases, a positive relationship is identified. Especially in the case of high finance-intensive regions, the difference of the MAX points between the regression on Output Growth and on Output Growth in the Real Economy suggests a stronger presence of demand effects on other industries within the regions.

The results at industry level, despite seemingly compatible with the overall relationships at aggregate level, are somewhat less clear. What does arise consistently, however, is the identification of a positive relationship (linear) and an upper-bound (Quadr.) mainly in the services industries, whilst much less so in the production ones. Concerning the latter, further research may benefit from a more detailed approach considering the microeconomic structure of financing to firms. Nonetheless, the evidence for Business Services industry seems to show that a positive (marginally decreasing) relationship can be reported. The composition of firms in this industry (usually a greater number of smaller firms) may indicate a relatively higher reliance on external financing, and thus a positive catalytic effect of local financial intermediaries. Nonetheless, here we cannot assume this relationship not to be driven also (if not mainly) by a direct demand effect generated by a larger local financial industry onto firms in the Business Services sector.

A step forward towards a better identification of possible "peaks" in this relationship would be to deepen the understanding of the negative transmission channels. In our hypothesis, we had discussed the possibility of crowding-out mechanisms in the labour market, across industries with a highly-substitutable labour force, as a possible cause the peaking relationship from our quadratic specification. However, the analysis at industry level fails to identify this in any of the key industries (Pharma / Chemical, Mechanical Engineering, etc.). We therefore have to be

cautious about the results from the quadratic specifications and interpret the declining marginal effects as intrinsic to the capital allocation process; at extreme levels, financial innovation in local financial intermediation industry ceases to produce a tangible contribution to regional Output Growth.

Overall, the message we derive from these results is the existence of a positive relationship, yet with a gradual **decline in the marginal benefits** of improved financial intermediation. There is room for improvement in the capital allocation process on behalf of the local financial intermediaries. Locating the true MAX point in this relationship is somewhat more unstable, although it may bear relevance also for regions within the sample which do not traditionally specialise on the Financial industry: for instance, Basel-Stadt and Ticino are not far from the turning point (w.r.t our indicator) in our baseline specification.

5.4 Innovation

The focus of the analysis so far has been on total size of the financial sector and its effects on economic growth. Instead, within the following two sections the approach is focused on using left hand variables with a more specific relevance towards the transmission channels between the financial sector and economic development. Nonetheless, the previous setup of our reduced form approach will be maintained. Again, the causal chains of the transmission channels will not be modelled completely but the results rely on the correlations between the variables to verify the hypotheses or not.

5.4.1 Specification

Transmission channels

Innovation is a key issue for (future) economic growth. Already the most basic endogenous growth models rely on innovation and technical progress that foster economic growth. Therefore, if a large financial sector is able to support the process of innovation by providing the necessary financial means, this could increase the growth potential of an economy altogether.

Engaging in innovation implies a financial commitment, often binding substantial financial amounts over an extended period in time. Moreover, engaging in innovation is risky. Innovation requires large amounts of real and/or human capital to be invested on account of uncertain returns.

Given this, financing innovation seems a perfect example of activity which could profit from a large and efficient financial sector: The core functions of the sector, pooling and transmission, risk diversification and (risk) management are key.

Of course, financing innovation is a specific function within the portfolio of tasks of the financial intermediaries. It is far from clear that a "large" financial sector should be consequently better at providing large amounts of financing for investments. Therefore, we focus on the following two issues: Are the availability of specific financial services crucial for innovation – alternatively, innovation could be financed from within a company of by direct private engagement – and is a larger financial sector "better" able to provide the specific services critical for innovation.

The use of various variables to measure financial development might help to increase the understanding of the underlying processes. Innovation often involves an initial investment which may or may not require external financing. The traditional form of external financing is depth. Particularly smaller firms may be unable to undertake investments in innovation activities on the basis of their resources alone. In order to test whether external financing actually plays a significant role within the process of innovation, we employ **Private Credit to GDP** ratio as a measure of resources circulating in the economy.

Although innovation in small and medium sized firms is important, there is a bias in innovation activities towards larger firms. This is particularly true for the innovation activities formally measured by available indicators such as patents or Research and Development (R&D) expenditures. Large companies are not particularly dependent on debt as a source of financing. **Stock markets** can therefore provide the financing and risk management tools enabling firms to face the costs and risks associated with innovation.

Furthermore, **Insurance** is allegedly held to be beneficial to innovation in two ways. Firstly, it may reduce the risks on the entrepreneur's side, allowing more businesses to arise and flourish. Secondly, by securitizing risks into the capital markets, [re]insurance firms supply assets, which

due to their nature of bearing non-systemic risks may be used to decrease overall risks in portfolios.

Hypothesis

In accordance to the reasoning above, we test for a positive effect of financial development on the rate of innovation (measured with patent registration) using the three indicators of financial development mentioned above. Specifically, we test whether some preconceptions regarding the alleged benefits of finance on innovation may be observed empirically.

In the quadratic specification, we may observe a concave relationship with a MAX point. In this case, the positive transmission channel would be determined by the reduction of risks to innovative firms. The negative transmission channel, on the other hand, may be determined by brain-drain mechanisms on highly skilled workers, as already illustrated in the first section. In the linear specification, we expect an overall positive relationship for all indicators.

Nevertheless, this might be a difficult relationship to identify, as many firms at the forefront of innovation have capital structures which do not rely on external financing, such as the pharmaceutical sector.

Technical specification

All three measurement variables, Private Credit to GDP, Stock Turnover Ratio and Non-Life Insurance Premium to GDP are only available at the national level. Patents are used as an indicator for innovations activity. As it is difficult to allocate patents to industries, we focus on the national aggregate level.

5.4.2 Results for Patents Growth in the aggregate economy

Baseline

The results show no evidence in support of the role of finance in fuelling innovation. As mentioned in our hypothesis, this relationship may be overly complex to be identified at the aggregate level. On the one hand, concerning innovation occurring within large companies, financial development in terms of Stock Turnover to MC ratio may well have reached a level of efficiency which has ceased to play a role on the feasibility of generating innovation. On the other hand it is doubtful that a generally large financial sector is a guarantee that the very specific financial services needed to finance innovation, like seed money, private equity funds, risk capital or similar tools are in sufficient supply as well.

Tab. 5-11 Estimation results: Innovation (Patents Growth), aggregate economy, national level – baseline estimations

Output Growth		Patents Growth
Private Credit to GDP	(Quadr.)	-
	(Linear)	-
Stock Turnover to GDP	(Quadr.)	-
	(Linear)	-
Non-Life Insurance to GDP	(Quadr.)	-
	(Linear)	Neg.**

Dependent variable: see column header
Sample: 19 countries
(Significance at the 1/5/10% level is indicated by ***/**/*, or by "-" were not significant)
Source: BAKBASEL

Robustness

Nevertheless, to check the lack of results using the Private Credit to GDP ratio, we check whether part of the reason behind the lack of identification derives from the composition of the indicator itself. In other words, to verify this result, we repeat the regression discounting household debt from total Private Credit to GDP ratio.

Tab. 5-12 Estimation results: Innovation (Patents Growth), aggregate economy, national level – robustness estimations

		Patents Growth
Net Private Credit to GDP (to Firms)	(Quadr.)	-
	(Linear)	-

Dependent variable: see column header
Sample: 19 countries
(Significance at the 1/5/10% level is indicated by ***/**/*, or by "-" were not significant)
Source: BAKBASEL

This indicator should be a better approximation of the actual financing that is available to firms. Still, it includes debt used for financing the whole spectrum of economic activities. These regressions show highly significant coefficients for all control variables, yet the indicator of the financial development is insignificant in all specifications. We must conclude that no relationship could be identified between financial development and innovation (Patents Growth).

Conclusion

We find no evidence of portfolio risk diversification by a large financial sector as benefitting innovation. The verifiability of this transmission channel – using our methodology – is potentially hindered also by the lack of detailed data at disaggregated level. Furthermore, this phenomenon is certainly a complex one from several points of view: firstly, the production of patents (especially within large firms) seldom relies on external funding, and second, the time structure between the financing of R&D and the registration of patents ought to be accounted for in more

detail. Nevertheless, this analysis allows us to exclude the possibility of claims regarding the existence of a strong relationship between financial development and innovation.

5.5 Systemic risks & volatility

5.5.1 Specification

Transmission Channels

The work of Easterly, Islam and Stiglitz (2000) offers an interesting approach to the study of the effect of financial institutions on output growth. The novelty of their approach lies in introducing financial institutions' behaviour in economic theory, surpassing the standard economic theory, whereby "cash flow (or liquidity) constraints simply do not exist".

The idea is that highly leveraged financial institutions may be responsible for "inviting" shocks through high levels of credit (financial depth), effectively endogenizing shocks. If financial institutions are more exposed to risk, there is a greater chance for sudden credit crunches to be triggered by sudden negative economic outlooks. In turn, sudden liquidity constraints harm the real economy, ultimately leading to potential widespread crises.

As in Easterly, Islam and Stiglitz (2000), this rise in volatility is an "anomaly" which may occur at high levels of financial deepness. Conversely, it is reasonable to assume that at lower levels of financial deepness, financial instruments perform the usual job of risk diversification, thus decreasing the level of volatility in the economy.

Hypothesis

From the dynamics outlined above, we expect higher levels of Credit Ratio and Stock Turnover to reduce output volatility at lower levels of financial deepness. Beyond this point, we expect an excess level of financial deepness to be associated with higher levels of output growth volatility, thereby yielding a MIN point in the quadratic specification.

In the linear specification, we expect a positive relation between financial deepness indicators and output growth volatility. This is because the countries in our sample are at a relatively high level of financial development, therefore leading us to expect the upward-sloping relationship (increasing volatility) to dominate.

Technical specification

A difference with this set of regression is that we constructed our data over longer time period averages (10 years) in order to derive reliable series for output growth volatility.

Also, unlike the approach used in the section studying financial sector size, we attempt to identify the effects of these indicators also at regional and sector level despite the fact that financial depth indicators are only available at national level. In other words, we test the relationship between financial depth at national level – due to the fact that the relevant variables are only available on the national level – onto output growth volatilities at regional level, which provides more variability and a larger sample. The reason is that the transmission dynamics of sudden credit constraints are far quicker and more pervasive than the channels described in the previous chapters. This allows us to observe the reactions of each sector without necessarily assuming that these credit shocks affect the sectors directly, but also indirectly through a generalised increase in volatility on the intermediate and demand side.

5.5.2 Results for Output Growth Volatility in the aggregate economy

In the results at national aggregate level, we are unable to reproduce the results of Easterly, Islam and Stiglitz (2000) who have identified a MIN point around 100% value of the Private Credit to GDP indicator. Conversely, the only significant result we obtain is in the linear specification, which shows a negative relationship: The higher the level of financial depth, the lower the Output Growth Volatility in the economy.

Once again, this may be to the fact that we attempt to identify this relationship only within highly financially developed OECD countries, excluding less developed financial industries elsewhere.

Tab. 5-13 Estimation results: Output Growth Volatility, aggregate economy, national level – baseline estimations

		Output Growth Volatility
Private Credit to GDP	(Quadr.)	-
	(Linear)	Neg.*
Stock Turnover to MC	(Quadr.)	-
	(Linear)	-

Dependent variable: see column header
Sample: 19 Countries
(Significance at the 1/5/10% level is indicated by ***/**/*, or by "-" were not significant)
Source: BAKBASEL

5.5.3 Results for Output Growth Volatility in the regional aggregate economy

Baseline

The results at regional level for Stock Turnover to MC ratio (linear and quadratic) are controversial, as they can lead to opposite conclusions. On the one hand, the quadratic specification portrays a MAX point well within the sample, which contradicts our hypothesis by suggesting that extreme levels of finance are optimal. On the other hand, the linear specification supports our hypothesis of increasing volatility at high levels of financial development.

Private Credit to GDP ratio fails to provide any support towards our hypothesis, actually contradicting it in the linear specification. In fact, the significance levels of the control variables in the regressions with this indicator are less convincing than in the case of those using Stock Turnover to MC ratio.

Tab. 5-14 Estimation results: Output Growth Volatility, aggregate economy, regional level – baseline estimations

		Output Growth Volatility
Private Credit to GDP	(Quadr.)	-
	(Linear)	Neg.***
Stock Turnover to MC	(Quadr.)	**Max.*** 103.5
	(Linear)	Pos.***

Values represent the location of the Turning Point in terms of the corresponding indicator:
Indicator range (Stock Turnover to MC): 0.194 – 210
Dependent variable: see column header
Sample: 281 regions
(Significance at the 1/5/10% level is indicated by ***/**/*, or by "-" were not significant)
Source: BAKBASEL

Employing an alternative indicator, namely Net Private Credit to GDP (to Firms, excluding Household Debt) yields a result which is more in line with our hypothesis. The advantage of this indicator is that it focuses more specifically on the amount of Private Credit actually destined to firms. The interpretation of this result may suggest that beyond the MIN point, financial depth ceases to have a beneficial effect on Output Growth Volatility, and eventually causes it to rise again.

Tab. 5-15 Estimation results: Output Growth Volatility, aggregate economy, regional level – alternative estimations

Credit To Firms		Output Growth Volatility
Net Private Credit (to Firms) to GDP	(Quadr.)	**Min.*** 50.6
	(Linear)	-

Values represent the location of the Turning Point in terms of the corresponding indicator:
Indicator range (Net Private Credit to GDP (to Firms)): 14.7 – 146
Dependent variable: see column header
Sample: 281 regions
(Significance at the 1/5/10% level is indicated by ***/**/*, or by "-" were not significant)
Source: BAKBASEL

This result can be interpreted as supporting the findings of Easterly, Islam and Stiglitz (2000), capturing the risk of bankruptcy chains within the economy when firm indebtedness rises disproportionately. One may argue that in highly financially developed countries alone, the alternative indicator of financial deepness (Net Private Credit to GDP to firms, rather than to the total which includes Household Debt) is better at identifying the "U" shaped relationship between financial development and Output Growth Volatility. Nevertheless, we do not have enough evidence in support of this possible interpretation.

Conclusion

Overall, the picture that emerges from the evidence at national and regional level is not very robust. Using the common measure of financial deepness, namely Private Credit to GDP, we

observe a negative relationship which would suggest a beneficial effect of financial development on the overall stability of the economy.

Nevertheless, when this indicator is modified in order to isolate the amount of credit flowing to firms (excl. Household Debt) the linear relationship is no longer significant, whilst the quadratic specification comes in support of the results of Easterly, Islam and Stiglitz (2000).

Although the evidence collected is not sufficient to formulate any strong conclusion, it does suggest that it may be interesting to carry out further research concerning the different effects on Volatility caused by different types of Private Credit (to firms or to households) across different groups of countries.

6 Conclusion and summary

The harmonic interaction between the financial sector and the rest of the economy is of fundamental importance. The financial sector is far from being cut-off from the rest of the economy, but provides crucial services which allow it to be considered as a *network sector*. In other words, when assessing the importance of the financial sector for an economy, it is not only the contribution to employment and value-added which is relevant, but also the catalytic effects it generates on other industries. Financial services, if provided properly, allow other parts of the economy to function more efficiently and effectively.

This is especially true for Switzerland. In comparison to other European countries, Switzerland – and especially its most prominent financial centre, Zurich – is financially highly developed and specialized. As a result, Switzerland can reap the rewards of a large and specialized financial sector. In turn, Switzerland is exposed to the sector's potential risks to an especially large extent as well. Indeed, the past years revealed that activities of the financial markets can lead to macroeconomic risks.

Therefore, it is important to understand how the financial sector is related to Swiss key industries and to the economy as a whole. Although the different kinds of effects as well as the individual transmission channels leading to the catalytic (or network) effects are discussed, the overall focus is on the complete interaction between the financial sector, particularly its size, and economic growth.

In this context, the present study contributes to the current state of research in several ways. Firstly, the study concentrates on highly developed economies. Although the literature has largely focused on collecting evidence of a positive influence of financial development on growth potential over broad samples of countries, much less is known for highly developed economies specifically; therefore, the empirical work of the present study focuses on isolating this relationship for OECD countries. Secondly, the use of more detailed data at regional and sectoral level allows additional insights. Furthermore, the variety of different transmission channels is taken into account -in the econometric part of the study via the application of various specifications, particularly by using several indicators measuring the activities of the financial service sector. This helps to reflect the multi-faceted interaction between the financial sector and output growth.

In a comprehensive view of all transmission channels analysed, the econometric results show a considerable degree of uncertainty. Although this seems to be unsatisfying at first, a relatively clear – and important – conclusion can be drawn: When considering highly developed economies, it is not possible to identify a clear positive linkage between financial development and economic growth, as scholars have asserted in much of the literature. Our result clearly omits the case of developing countries, in which the benefits of a deeper financial system can be more easily linked to increasing benefits (and growth) for the real economy. But once a certain level of financial development is reached, there is no clear evidence in support of the traditional hypothesis of financial development's role in easing constraints to capital allocation. For mature economies, the relationship seems to be less straightforward.

Turning to our individual results, the initial focus lies on the connection between the size of the financial sector and economic growth as determined by the estimation at regional level. The estimations performed using regional data have a number of advantages over those at national level. Some of these are technical in nature, particularly the increased sample size and the additional variations in the data. But there are also theoretical reasons: regions represent economically integrated locations much more than countries do. It is conceivable that the financial sec-

tor within a functionally integrated region is more closely related to the activity of firms (and households) within the region than that might be the case at national level, particularly in larger countries. Although this may not be true for all regions, as a handful of financial centres act as exporters of financial services both at national and international level. Nevertheless, this scenario is plausible for the majority of regions, and working at regional rather than national level allows us to attempt to overcome the lack of detailed data on international financial integration, by employing subsamples of regions in order to test different hypotheses. Unfortunately, these advantages come at a cost: at regional level we can no longer employ a selection of indicators and our only measure of financial development is represented by the share of employment in financial services relative to total employment.

We identify a significant and fairly robust non-linear relationship between the share of financial sector employment and economic growth. Actually, for most of the regions a positive connection between the share of financial sector and output growth is identified, although with diminishing returns. Furthermore, we observe a turning point beyond which additional allocation of labour in the financial industry is linked to a downturn in future output growth. At around 8 per cent of the share of employment in the financial industry, this turning point is located within the range of our regional sample, although only few regions exceed this level. This is confirmed by the results when restricting the functional form to a linear one: we do find a significant and stable positive slope. For the majority of regions, the empirical relationship is positive.

These results are rather stable to a variety of modifications to the specification and the sample. For example, we eliminate the growth contribution of the financial sector from aggregate output growth (our main dependent variable). This is of particular interest, as including the growth of the financial sector itself in the output variable might be a potential cause of endogeneity or reversed causality. The substantial stability of the results to this modification is a hint that the results are not (at least not completely) driven by these potential problems. This modification also allows us to separate the financial sector's direct contribution to aggregate growth from its catalytic effects on the real economy, thereby deepening our understanding of this relationship.

Through the combined interpretation of the linear and quadratic specifications (as well as various robustness checks) we can clearly identify an overall positive transmission channel using the full sample of regions! Here, a more developed network of financial intermediaries has a positive effect on aggregate output growth, including effects through catalytic effects on the real sector.

Apart from this baseline result, it turned out to be difficult to achieve reliable and stable empirical results. Despite the greater availability of financial development indicators at national level, here we obtain mostly inconsistent and unstable results. Despite exploiting the panel structure of the data, there are limits to what can be achieved with a sample of just 19 countries. Focusing specifically on individual transmission channels - in particular on the volatility of economic growth and on innovation activities – does not lead to the identification of any clear-cut empirical relationships. For estimations on innovation, we conclude that a large financial sector is not necessarily related to a large supply of the specific financing tools required for the specific segment of investments in innovation and new technologies.

Trying to motivate this result at industry level leads again to less robust conclusions. There is some indication that industries with typically smaller firms – as the service sector – are more reliant on services provided by a regional financial sector. However, also here we observe a decreasing pattern. On the other hand, a similar relationship is harder to identify for companies from the production sector. Probably these rely on different ways of financing and/or not necessarily on the domestic (regional or national) financial sector. We also find some hints on the catalytic effect through the demand for services of the financial sector itself: there is a strong

and consistent positive effect of a large financial sector on growth in business services, an industry typically supplying services to the financial industry itself.

How should these results be interpreted? The empirical results are less conclusive than expected, possibly suffering from limitations in the data and necessary assumptions (particularly on the functional form). Still, some results seem clear: Firstly, even for highly developed economies in general, a positive relationship between the level of financial development and economic growth exists. Secondly, there are clear signs that the advantages of additional financial services diminish with an increasing size of the sector. It stays open to further research to define whether the relationship indeed reaches a maximum point beyond which additional financial services are actually a drag on growth and where exactly this point is located. In addition, further research is required with respect to different types of financial activities, as these may help to shine light on the connection between financial sector development and growth in greater detail.

A general consideration still implies that the further development of the financial sector ought to be critically accompanied and that opportunities and risks ought to be balanced carefully. With regard to our results and those of further studies, the Zurich area's high degree of specialisation ought to result in a critical scrutiny of the financial sector's impact on regional growth. With a share of financial employment (to aggregate) of 10.5 per cent (2010) the sector may have reached a size where the overall economic growth is rather hampered than supported. For example, brain-drain dynamics at the expense of export-oriented sectors cannot be ruled out. Also, the strength of the Swiss franc, for instance, acts as a drag on the export industry which can at least partly be attributed to the role of the Swiss franc as a "safe haven" currency. However, the specifics of the particular case must not be completely ignored – the determined average effect may not apply in every context. The Swiss financial industry in particular displays specific characteristics – among others, a strong focus on private banking coupled with a minor importance of investment banking.

In any case, for a financially highly developed country like Switzerland, the constant critical support of the numerous financial actors and the constant adoption of regulation to the quickly changing conditions will pay off. It will ensure that the financial sector continues to work at the service of society.

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8 Appendix A: Data

8.1 Sample

8.1.1 National

At the national level, we included the following (19) countries:

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States.

8.1.2 Regional

For each of the countries listed above, at regional level, our sample includes the following (281) regions. NUTS II level is used for all countries except for Swiss Cantons (NUTS III).

Note: Luxembourg and Japan are not available at regional level.

AT	Burgenland
AT	Kärnten
AT	Niederösterreich
AT	Oberösterreich
AT	Salzburg
AT	Steiermark
AT	Tirol
AT	Vorarlberg
AT	Wien
BE	Bruxelles / Brussels
BE	Prov. Anvers
BE	Prov. Brabant Flamand
BE	Prov. Brabant Wallon
BE	Prov. Flandre Occidentale
BE	Prov. Flandre Orientale
BE	Prov. Hainaut
BE	Prov. Liège
BE	Prov. Limbourg
BE	Prov. Luxembourg
BE	Prov. Namur
CH	Aargau
CH	Appenzell Ausserrhoden
CH	Appenzell Innerrhoden
CH	Basel-Landschaft
CH	Basel-Stadt
CH	Bern
CH	Fribourg
CH	Genève
CH	Glarus
CH	Graubünden
CH	Jura
CH	Luzern
CH	Neuchâtel
CH	Nidwalden

CH	Obwalden
CH	Schaffhausen
CH	Schwyz
CH	Solothurn
CH	St. Gallen
CH	Thurgau
CH	Ticino
CH	Uri
CH	Valais
CH	Vaud
CH	Zug
CH	Zürich
DE	Direktionsbezirk Chemnnitz
DE	Direktionsbezirk Dresden
DE	Direktionsbezirk Leipzig
DE	Regierungsbezirk Arnsberg
DE	Regierungsbezirk Berlin
DE	Regierungsbezirk Bremen
DE	Regierungsbezirk Darmstadt
DE	Regierungsbezirk Detmold
DE	Regierungsbezirk Düsseldorf
DE	Regierungsbezirk Freiburg
DE	Regierungsbezirk Gießen
DE	Regierungsbezirk Hamburg
DE	Regierungsbezirk Karlsruhe
DE	Regierungsbezirk Kassel
DE	Regierungsbezirk Köln
DE	Regierungsbezirk Mecklenburg-Vorpommern
DE	Regierungsbezirk Mittelfranken
DE	Regierungsbezirk Münster
DE	Regierungsbezirk Niederbayern
DE	Regierungsbezirk Oberbayern
DE	Regierungsbezirk Oberfranken
DE	Regierungsbezirk Oberpfalz
DE	Regierungsbezirk Saarland
DE	Regierungsbezirk Schleswig-Holstein
DE	Regierungsbezirk Schwaben
DE	Regierungsbezirk Stuttgart
DE	Regierungsbezirk Thüringen
DE	Regierungsbezirk Tübingen
DE	Regierungsbezirk Unterfranken
DE	Sachsen-Anhalt
DK	Hovedstaden
DK	Midtjylland
DK	Nordjylland
DK	Sjælland
DK	Syddanmark
ED	Attiki
ED	Kentriki Ellada
ED	Nisia Aigaiou, Kriti
ED	Voreia Ellada
ES	Andalucía
ES	Aragón
ES	Canarias
ES	Cantabria
ES	Castilla y León
ES	Castilla-La Mancha
ES	Cataluña

ES	Ciudad Autónoma de Ceuta
ES	Ciudad Autónoma de Melilla
ES	Comunidad de Madrid
ES	Comunidad Foral de Navarra
ES	Comunidad Valenciana
ES	Extremadura
ES	Galicia
ES	Illes Balears
ES	La Rioja
ES	País Vasco
ES	Principado de Asturias
ES	Región de Murcia
FI	Åland
FI	Etelä-Suomi
FI	Itä-Suomi
FI	Länsi-Suomi
FI	Pohjois-Suomi
FK	Alsace
FK	Aquitaine
FK	Auvergne
FK	Basse-Normandie
FK	Bourgogne
FK	Bretagne
FK	Centre
FK	Champagne-Ardenne
FK	Corse
FK	Franche-Comté
FK	Haute-Normandie
FK	Ile de France
FK	Languedoc-Roussillon
FK	Limousin
FK	Lorraine
FK	Midi-Pyrénées
FK	Nord-Pas-de-Calais
FK	PACA (Provence-Alpes-Côte d'Azur)
FK	Pays de la Loire
FK	Picardie
FK	Poitou-Charentes
FK	Rhône-Alpes
IR	Border, Midland and Western Ireland
IR	Southern and Eastern Ireland
IT	Abruzzo
IT	Basilicata
IT	Bolzano
IT	Calabria
IT	Campania
IT	Emilia-Romagna
IT	Friuli-Venezia Giulia
IT	Lazio
IT	Liguria
IT	Lombardia
IT	Marche
IT	Molise
IT	Piemonte
IT	Puglia
IT	Sardegna
IT	Sicilia
IT	Toscana

IT	Trento
IT	Umbria
IT	Valle d'Aosta
IT	Veneto
JP	NIPPON
LU	LUXEMBOURG
NL	Drenthe
NL	Flevoland
NL	Friesland
NL	Gelderland
NL	Groningen
NL	Limburg
NL	Noord-Brabant
NL	Noord-Holland
NL	Overijssel
NL	Utrecht
NL	Zeeland
NL	Zuid-Holland
NO	Agder og Rogaland
NO	Hedmark og Oppland
NO	Nord-Norge
NO	Oslo og Akershus
NO	Sør-Østlandet
NO	Trøndelag
NO	Vestlandet
PT	Alentejo
PT	Algarve
PT	Lisboa
PT	Portugal Centro
PT	Portugal Norte
SE	Mellersta Norrland
SE	Norra Mellansverige
SE	Östra Mellansverige
SE	Övre Norrland
SE	Småland med öarna
SE	Stockholm
SE	Sydsverige
SE	Västsverige
UK	Aberdeen Region
UK	Bedfordshire and Hertfordshire
UK	Berk, Buckingham and Oxford
UK	Cheshire
UK	Cornwall and Isles of Scilly
UK	Cumbria
UK	Derbyshire and Nottinghamshire
UK	Devon
UK	Dorset and Somerset
UK	East Anglia
UK	East Riding and North Lincolnshire
UK	East Wales
UK	Eastern Scotland
UK	Essex
UK	Gloucestershire, Wiltshire and North Somerset
UK	Greater Manchester
UK	Hampshire and Isle of Wight
UK	Herefordshire, Worcestershire and Warwickshire
UK	Highlands and Islands
UK	Inner London

UK	Kent
UK	Lancashire
UK	Leicestershire, Rutland and Northamptonshire
UK	Lincolnshire
UK	Merseyside
UK	North Yorkshire
UK	Northern Ireland
UK	Northumberland and Tyne and Wear
UK	Outer London
UK	Shropshire and Staffordshire
UK	South Western Scotland
UK	South Yorkshire
UK	Surrey, East and West Sussex
UK	Tees Valley and Durham
UK	West Midlands
UK	West Wales and the Valleys
UK	West Yorkshire
US	Alabama
US	Alaska
US	Arizona
US	Arkansas
US	California
US	Colorado
US	Connecticut
US	Delaware
US	Florida
US	Georgia
US	Hawaii
US	Idaho
US	Illinois
US	Indiana
US	Iowa
US	Kansas
US	Kentucky
US	Los Angeles
US	Louisiana
US	Maine
US	Maryland
US	Massachusetts
US	Michigan
US	Minnesota
US	Mississippi
US	Missouri
US	Montana
US	Nebraska
US	Nevada
US	New Hampshire
US	New Jersey
US	New Mexico
US	New York
US	North Carolina
US	North Dakota
US	Ohio
US	Oklahoma
US	Oregon
US	Pennsylvania
US	Rest of California
US	Rhode Island

US	San Diego
US	San Francisco Bay Area
US	South Carolina
US	South Dakota
US	Southern California
US	Tennessee
US	Texas
US	Utah
US	Vermont
US	Virginia
US	Washington
US	Washington, District of Columbia
US	West Virginia
US	Wisconsin
US	Wyoming

9 Appendix B: Regression Results

In this section, the estimation results are presented in detail. In sub-chapter titles, a reference a given which table of the chapter 5 (results chapter) is referred to.

9.1 Size of the Financial Sector

9.1.1 National Aggregate level

9.1.1.1 Baseline regressions – (Table 5-1)

Tab. 9-1 National aggregate – Baseline regressions

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.018022	0.044659	0.403533	0.6877
Private Credit / GDP	5.17E-05	0.000172	0.300267	0.7648
Private Credit / GDP^2	-7.76E-07	9.65E-07	-0.804011	0.4239
LOG(GVA (Aggr.) pro capita)	0.0002	0.010903	0.01834	0.9854
CPI Volatility	0.001088	0.001392	0.781641	0.4368
Company Taxation (rate in %)	-0.002052	0.018533	-0.110725	0.9121
R&D expenditure (Aggr.) growth	0.038651	0.046822	0.825496	0.4116

Effects Specification	S.D.	Rho
Cross-section random	0.00379	0.0714
Idiosyncratic random	0.013671	0.9286

Weighted Statistics			
R-squared	0.133288	Mean dependent var	0.019867
Adjusted R-squared	0.065752	S.D. dependent var	0.016511
F-statistic	1.973579	Durbin-Watson stat	1.639681
Prob(F-statistic)	0.079676		

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.044925	0.031659	1.41904	0.1601
Stock Turnover to MC	-0.000303	0.000142	-2.129838	0.0365
Stock Turnover to MC ^2	1.15E-06	7.39E-07	1.55848	0.1234
LOG(GVA (Aggr.) pro capita)	-0.004387	0.007436	-0.589988	0.557
CPI Volatility	0.000356	0.001415	0.251349	0.8022
Company Taxation (rate in %)	-0.000777	0.017269	-0.044987	0.9642
R&D expenditure (Aggr.) growth	0.015176	0.038486	0.394325	0.6945

Effects Specification		S.D.	Rho
Cross-section random		0.002887	0.0548
Idiosyncratic random		0.011991	0.9452

Weighted Statistics			
R-squared	0.183502	Mean dependent var	0.020238
Adjusted R-squared	0.117299	S.D. dependent var	0.016844
F-statistic	2.771827	Durbin-Watson stat	1.798179
Prob(F-statistic)	0.017383		

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations:
84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.090738	0.036597	2.479376	0.0153
Share of Financial Employment	0.968679	0.488086	1.984649	0.0507
Share of Financial Employment [squared]	-3.433847	3.261565	-1.052822	0.2957
LOG(GVA (Aggr.) pro capita)	-0.032678	0.012264	-2.664466	0.0094
CPI Volatility	-3.53E-05	0.001456	-0.024233	0.9807
Company Taxation (rate in %)	0.007087	0.019109	0.370854	0.7118
R&D Expenditure (Aggr.) growth	0.032588	0.042689	0.763396	0.4476

Effects Specification		S.D.	Rho
Cross-section random		0.001862	0.0191
Idiosyncratic random		0.013358	0.9809

Weighted Statistics			
R-squared	0.296555	Mean dependent var	0.022237
Adjusted R-squared	0.241741	S.D. dependent var	0.016978
F-statistic	5.410215	Durbin-Watson stat	1.798142
Prob(F-statistic)	0.000104		

Source: BAKBASEL

Tab. 9-2 National aggregate – Baseline regressions – Linear specification

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations:
84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.031055	0.041243	0.752975	0.4537
Private Credit / GDP	-0.000111	5.47E-05	-2.023346	0.0465
LOG(GVA (Aggr.) pro capita)	-0.001312	0.011189	-0.117246	0.907
CPI Volatility	0.000975	0.001376	0.708507	0.4807
Company Taxation (rate in %)	-0.001587	0.018545	-0.085587	0.932
R&D Expenditure (Aggr.) growth	0.030409	0.045697	0.665455	0.5077

Effects Specification		S.D.	Rho

Cross-section random	0.00434	0.0926
Idiosyncratic random	0.013588	0.9074

Weighted Statistics			
R-squared	0.13341	Mean dependent var	0.019044
Adjusted R-squared	0.07786	S.D. dependent var	0.016361
F-statistic	2.401599	Durbin-Watson stat	1.622485
Prob(F-statistic)	0.044355		

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations:
81
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.040212	0.037201	1.080952	0.2832
Stock Turnover to MC	-0.000108	4.52E-05	-2.388092	0.0195
LOG(GVA (Aggr.) pro capita)	-0.00539	0.009602	-0.561341	0.5762
CPI Volatility	0.000357	0.00143	0.249908	0.8033
Company Taxation (rate in %)	0.00542	0.017381	0.311814	0.756
R&D Expenditure (Aggr.) growth	0.027353	0.038533	0.709859	0.48

Effects Specification	S.D.	Rho
Cross-section random	0.003716	0.089
Idiosyncratic random	0.011888	0.911

Weighted Statistics			
R-squared	0.16465	Mean dependent var	0.01892
Adjusted R-squared	0.10896	S.D. dependent var	0.016629
F-statistic	2.956538	Durbin-Watson stat	1.743669
Prob(F-statistic)	0.017232		

Dependent Variable: GVA (Aggr.) growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations:
84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.235034	0.048339	4.862178	0
Share of Financial Employment	0.293851	0.478145	0.614565	0.5411
LOG(GVA (Aggr.) pro capita)	-0.067832	0.012237	-5.543269	0
CPI Volatility	-0.000905	0.001545	-0.585492	0.5604
Company Taxation (rate in %)	-0.017591	0.033015	-0.532825	0.5961
R&D Expenditure (Aggr.) growth	-0.031183	0.046257	-0.67413	0.5028

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.530688	Mean dependent var	0.023255
Adjusted R-squared	0.361427	S.D. dependent var	0.017194
F-statistic	3.135336	Durbin-Watson stat	2.310687
Prob(F-statistic)	0.000225		

Source: BAKBASEL

9.1.1.2 Robustness regressions – (Table 5-2)

Tab. 9-3 National aggregate – Robustness (without crisis)

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 18
Total panel (unbalanced) observations: 66
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.018159	3.99E-02	-0.455139	0.6507
Private Credit / GDP	1.71E-04	2.08E-04	0.818544	0.4163
Private Credit / GDP^2	-1.62E-06	1.28E-06	-1.269314	0.2093
LOG(GVA (Aggr.) pro capita)	0.014914	0.010395	1.434687	0.1567
CPI Volatility	0.002534	0.001173	2.159556	0.0349
Company Taxation (rate in %)	-0.037037	0.021638	-1.711678	0.0922
R&D expenditure (Aggr.) growth	-0.004446	0.044005	-0.101043	0.9199

Effects Specification	S.D.	Rho
Cross-section random	0.005334	0.1525
Idiosyncratic random	0.012573	0.8475

Weighted Statistics			
R-squared	0.139221	Mean dependent var	0.021247
Adjusted R-squared	0.051685	S.D. dependent var	0.013912
F-statistic	1.590433	Durbin-Watson stat	1.959827
Prob(F-statistic)	0.165966		

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 18
Total panel (unbalanced) observations: 63
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.72E-02	4.40E-02	1.301268	0.1985
Stock Turnover to MC	-9.34E-05	1.56E-04	-0.600705	0.5505
Stock Turnover to MC ^2	5.41E-07	7.23E-07	0.748326	0.4574
LOG(GVA (Aggr.) pro capita)	-0.007179	0.012987	-0.552803	0.5826
CPI Volatility	0.002295	0.00093	2.466677	0.0167
Company Taxation (rate in %)	-0.035055	0.028026	-1.250795	0.2162
R&D expenditure (Aggr.) growth	-0.039064	0.035753	-1.092603	0.2792

Effects Specification	S.D.	Rho
Cross-section random	0.007235	0.3723
Idiosyncratic random	0.009395	0.6277

Weighted Statistics			
R-squared	0.130356	Mean dependent var	0.015395
Adjusted R-squared	0.03718	S.D. dependent var	0.013028
F-statistic	1.399025	Durbin-Watson stat	1.878538
Prob(F-statistic)	0.231264		

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 18
Total panel (unbalanced) observations: 66
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.058101	0.03548	1.6376	0.1068
Share of Financial Employment	0.815156	0.768886	1.060178	0.2934
Share of Financial Employment [squared]	-3.491653	5.570212	-0.626844	0.5332
LOG(GVA (Aggr.) pro capita)	-0.017045	0.010343	-1.648087	0.1047
CPI Volatility	0.001314	0.001197	1.098293	0.2765
Company Taxation (rate in %)	-0.021033	0.022	-0.956046	0.343
R&D Expenditure (Aggr.) growth	-0.012403	0.051637	-0.2402	0.811

Effects Specification	S.D.	Rho
Cross-section random	0.006816	0.2495
Idiosyncratic random	0.011822	0.7505

Weighted Statistics			
R-squared	0.170802	Mean dependent var	0.018323
Adjusted R-squared	0.086476	S.D. dependent var	0.013248
F-statistic	2.025508	Durbin-Watson stat	2.132637
Prob(F-statistic)	0.076364		

Source: BAKBASEL

Tab. 9-4 National aggregate – Robustness (without crisis) – Linear specification

Dependent Variable: GVA (Aggr.) growth
Method: Panel Least Squares
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 18
Total panel (unbalanced) observations:
66

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.076965	0.095714	0.804118	0.4258
Private Credit / GDP	-0.000182	0.000126	-1.447801	0.1549
LOG(GVA (Aggr.) pro capita)	-0.008944	0.029749	-0.300656	0.7651
CPI Volatility	0.001544	0.000859	1.798403	0.0791
Company Taxation (rate in %)	-0.023354	0.03088	-0.756298	0.4536
R&D Expenditure (Aggr.) growth	-0.062669	0.062172	-1.007995	0.3191

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.579736	Mean dependent var	0.027622
Adjusted R-squared	0.364718	S.D. dependent var	0.015605
F-statistic	2.696215	Durbin-Watson stat	2.698683
Prob(F-statistic)	0.002659		

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 18
Total panel (unbalanced) observations:
63
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.053321	0.05062	1.053354	0.2966
Stock Turnover to MC	-1.50E-06	4.35E-05	-0.034428	0.9727
LOG(GVA (Aggr.) pro capita)	-0.007139	0.014328	-0.498269	0.6202
CPI Volatility	0.00233	0.000955	2.440539	0.0178
Company Taxation (rate in %)	-0.032563	0.028066	-1.160213	0.2508
R&D Expenditure (Aggr.) growth	-0.032923	0.037221	-0.884523	0.3801

Effects Specification	S.D.	Rho
Cross-section random	0.007335	0.3801
Idiosyncratic random	0.009367	0.6199

Weighted Statistics			
R-squared	0.125709	Mean dependent var	0.015222
Adjusted R-squared	0.049017	S.D. dependent var	0.012989
F-statistic	1.63914	Durbin-Watson stat	1.810928
Prob(F-statistic)	0.164424		

Dependent Variable: GVA (Aggr.) growth
Method: Panel Least Squares
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 18
Total panel (unbalanced) observations:
66

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.10814	0.075354	1.4351	0.1585
Share of Financial Employment	0.060868	0.605254	0.100566	0.9204
LOG(GVA (Aggr.) pro capita)	-0.024309	0.019037	-1.2769	0.2085
CPI Volatility	0.001171	0.001171	1.000224	0.3228
Company Taxation (rate in %)	-0.023202	0.035563	-0.652433	0.5176
R&D Expenditure (Aggr.) growth	-0.060373	0.056879	-1.061416	0.2944

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.556895	Mean dependent var	0.027622
Adjusted R-squared	0.33019	S.D. dependent var	0.015605
Log likelihood	208.2868	Hannan-Quinn criter.	-5.313231
F-statistic	2.456477	Durbin-Watson stat	2.781667
Prob(F-statistic)	0.005779		

Source: BAKBASEL

Tab. 9-5 National Aggregate – Robustness (without 80's)

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 18
Total panel (unbalanced) observations: 70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.014291	0.039296	0.363689	0.7173
Private Credit / GDP	-0.00012	0.000161	-0.74469	0.4592
Private Credit / GDP^2	-2.71E-09	8.23E-07	-0.003291	0.9974
LOG(GVA (Aggr.) pro capita)	0.005585	0.009746	0.573058	0.5686
CPI Volatility	0.000371	0.0015	0.24723	0.8055
Company Taxation (rate in %)	-0.015547	0.024143	-0.643968	0.5219
R&D expenditure (Aggr.) growth	0.045798	0.056675	0.808086	0.4221

Effects Specification	S.D.	Rho
Cross-section random	0.001738	0.0158
Idiosyncratic random	0.013726	0.9842

Weighted Statistics			
R-squared	0.10342	Mean dependent var	0.020666
Adjusted R-squared	0.018032	S.D. dependent var	0.017032
F-statistic	1.211173	Durbin-Watson stat	1.614845
Prob(F-statistic)	0.31245		

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 18
Total panel (unbalanced) observations: 69
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.036105	0.032915	1.096911	0.2769
Stock Turnover to MC	-0.00027	0.000116	-2.327764	0.0232
Stock Turnover to MC ^2	1.01E-06	6.42E-07	1.567522	0.1221
LOG(GVA (Aggr.) pro capita)	-0.001281	0.007076	-0.181053	0.8569
CPI Volatility	-0.000141	0.001619	-0.086786	0.9311
Company Taxation (rate in %)	-0.008548	0.020682	-0.413322	0.6808
R&D expenditure (Aggr.) growth	0.028138	0.043987	0.639682	0.5247

Effects Specification	S.D.	Rho
Cross-section random	0.00165	0.0176
Idiosyncratic random	0.01232	0.9824

Weighted Statistics			
R-squared	0.145583	Mean dependent var	0.020304
Adjusted R-squared	0.062898	S.D. dependent var	0.016972
F-statistic	1.760688	Durbin-Watson stat	1.784751
Prob(F-statistic)	0.12206		

Dependent Variable: GVA (Aggr.) growth
Method: Panel Least Squares
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 18
Total panel (unbalanced) observations:
70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.272878	0.062807	4.344712	0.0001
Share of Financial Employment	2.462366	1.052626	2.33926	0.0237
Share of Financial Employment [squared]	-13.06952	5.140805	-2.54231	0.0144
LOG(GVA (Aggr.) pro capita)	-0.08848	0.016837	-5.255171	0
CPI Volatility	-0.00168	0.001808	-0.929122	0.3577
Company Taxation (rate in %)	-0.109909	0.069849	-1.573521	0.1225
R&D Expenditure (Aggr.) growth	-0.055414	0.04423	-1.252845	0.2166

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.592889	Mean dependent var	0.021313
Adjusted R-squared	0.389333	S.D. dependent var	0.017176
Log likelihood	217.1302	Hannan-Quinn criter.	-5.21179
F-statistic	2.912662	Durbin-Watson stat	2.231006
Prob(F-statistic)	0.001002		

Source: BAKBASEL

Tab. 9-6 National Aggregate – Robustness (without 80's) – Linear specification

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 18
Total panel (unbalanced) observations:
70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.013543	0.037185	0.364189	0.7169
Private Credit / GDP	-0.00012	5.84E-05	-2.050029	0.0445
LOG(GVA (Aggr.) pro capita)	0.005793	0.009668	0.5992	0.5512
CPI Volatility	0.000369	0.001512	0.243803	0.8082
Company Taxation (rate in %)	-0.015678	0.024379	-0.643079	0.5225
R&D Expenditure (Aggr.) growth	0.046646	0.053408	0.873393	0.3857

Effects Specification	S.D.	Rho
Cross-section random	0.001498	0.0118
Idiosyncratic random	0.013721	0.9882

Weighted Statistics			
R-squared	0.103211	Mean dependent var	0.020826
Adjusted R-squared	0.033149	S.D. dependent var	0.017067
F-statistic	1.473139	Durbin-Watson stat	1.612574
Prob(F-statistic)	0.210989		

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 18
Total panel (unbalanced) observations:
69
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.02194	0.032753	0.669869	0.5054
Stock Turnover to MC	-0.000101	4.20E-05	-2.409853	0.0189
LOG(GVA (Aggr.) pro capita)	0.000679	0.007899	0.085983	0.9318
CPI Volatility	-9.10E-05	0.001599	-0.056887	0.9548
Company Taxation (rate in %)	-0.001966	0.019293	-0.101912	0.9191
R&D Expenditure (Aggr.) growth	0.048708	0.045164	1.078468	0.2849

Effects Specification	S.D.	Rho
Cross-section random	0.001383	0.0126
Idiosyncratic random	0.01225	0.9874

Weighted Statistics			
R-squared	0.128973	Mean dependent var	0.020498
Adjusted R-squared	0.059844	S.D. dependent var	0.017006
F-statistic	1.865687	Durbin-Watson stat	1.754504
Prob(F-statistic)	0.113034		

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 18
Total panel (unbalanced) observations:
70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.102309	0.047348	2.160774	0.0345
Share of Financial Employment	0.509886	0.13381	3.810514	0.0003
LOG(GVA (Aggr.) pro capita)	-0.031556	0.01401	-2.25248	0.0277
CPI Volatility	-0.000519	0.001611	-0.322307	0.7483
Company Taxation (rate in %)	-0.001344	0.026175	-0.05133	0.9592
R&D Expenditure (Aggr.) growth	0.0233	0.042106	0.553376	0.5819

Effects Specification	S.D.	Rho
Cross-section random	0.001369	0.01
Idiosyncratic random	0.013593	0.99

Weighted Statistics			
R-squared	0.227509	Mean dependent var	0.020896
Adjusted R-squared	0.167158	S.D. dependent var	0.017083
F-statistic	3.769772	Durbin-Watson stat	1.704939
Prob(F-statistic)	0.004701		

Source: BAKBASEL

Tab. 9-7 National aggregate – Robustness (no Luxembourg and Sweden)

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample: 1980 2010 IF CNCODE<>"SE" AND CNCODE<>"LU"
Periods included: 5
Cross-sections included: 16
Total panel (unbalanced) observations: 74
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.070891	0.034146	2.076121	0.0417
Private Credit / GDP	-9.01E-05	0.000124	-0.725352	0.4708
Private Credit / GDP^2	-2.86E-09	6.32E-07	-0.004524	0.9964
LOG(GVA (Aggr.) pro capita)	-0.012597	0.008802	-1.431178	0.157
CPI Volatility	0.000407	0.001397	0.291077	0.7719
Company Taxation (rate in %)	-0.011394	0.022268	-0.511666	0.6106
R&D expenditure (Aggr.) growth	-0.001934	0.046382	-0.041696	0.9669

Effects Specification	S.D.	Rho
Cross-section random	0.003901	0.0911
Idiosyncratic random	0.012322	0.9089

Weighted Statistics			
R-squared	0.170465	Mean dependent var	0.018407
Adjusted R-squared	0.096178	S.D. dependent var	0.014169
F-statistic	2.294684	Durbin-Watson stat	1.924911
Prob(F-statistic)	0.044883		

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample: 1980 2010 IF CNCODE<>"SE" AND CNCODE<>"LU"
Periods included: 5
Cross-sections included: 16
Total panel (unbalanced) observations: 71
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.08874	0.047031	1.886829	0.0637
Stock Turnover to MC	-0.000115	0.000159	-0.722012	0.4729
Stock Turnover to MC ^2	3.56E-07	7.97E-07	0.446742	0.6566
LOG(GVA (Aggr.) pro capita)	-0.019658	0.013189	-1.490464	0.141
CPI Volatility	7.67E-05	0.001526	0.050286	0.9601
Company Taxation (rate in %)	-0.003614	0.022675	-0.159374	0.8739
R&D expenditure (Aggr.) growth	-0.007114	0.038104	-0.186705	0.8525

Effects Specification	S.D.	Rho
Cross-section random	0.004139	0.134
Idiosyncratic random	0.01052	0.866

Weighted Statistics			
R-squared	0.167382	Mean dependent var	0.01673
Adjusted R-squared	0.089324	S.D. dependent var	0.014228
F-statistic	2.144332	Durbin-Watson stat	1.843145
Prob(F-statistic)	0.060194		

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample: 1980 2010 IF CNCODE<>"SE" AND CNCODE<>"LU"
Periods included: 5
Cross-sections included: 16
Total panel (unbalanced) observations: 74
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.055264	0.047212	1.170562	0.2459
Share of Financial Employment	2.741807	1.507624	1.818627	0.0734
Share of Financial Employment [squared]	-30.96476	19.91145	-1.555123	0.1246
LOG(GVA (Aggr.) pro capita)	-0.028037	0.014068	-1.992989	0.0503
CPI Volatility	-0.000125	0.001658	-0.07535	0.9402
Company Taxation (rate in %)	-0.007786	0.019332	-0.40274	0.6884
R&D Expenditure (Aggr.) growth	0.020396	0.039579	0.515337	0.608

Effects Specification	S.D.	Rho
Cross-section random	0.003563	0.0856
Idiosyncratic random	0.011645	0.9144

Weighted Statistics			
R-squared	0.247682	Mean dependent var	0.018608
Adjusted R-squared	0.18031	S.D. dependent var	0.014199
F-statistic	3.676345	Durbin-Watson stat	2.031565
Prob(F-statistic)	0.003238		

Source: BAKBASEL

Tab. 9-8 National aggregate – Robustness (no Luxembourg and Sweden) – Linear specification

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample: 1980 2010 IF CNCODE<>"LU" AND CNCODE<>"SE"
Periods included: 5
Cross-sections included: 16
Total panel (unbalanced) observations: 74
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.074294	0.035824	2.073846	0.0419
Private Credit / GDP	-9.69E-05	5.73E-05	-1.68961	0.0957
LOG(GVA (Aggr.) pro capita)	-0.013448	0.008931	-1.505819	0.1367
CPI Volatility	0.000389	0.001419	0.273874	0.785
Company Taxation (rate in %)	-0.011002	0.022114	-0.497519	0.6204
R&D Expenditure (Aggr.) growth	-0.004962	0.044638	-0.111169	0.9118

Effects Specification	S.D.	Rho
Cross-section random	0.004512	0.1191
Idiosyncratic random	0.012269	0.8809

Weighted Statistics			
R-squared	0.178071	Mean dependent var	0.01745
Adjusted R-squared	0.117635	S.D. dependent var	0.014034
F-statistic	2.946448	Durbin-Watson stat	1.95574
Prob(F-statistic)	0.018199		

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample: 1980 2010 IF CNCODE<>"LU" AND CNCODE<>"SE"
Periods included: 5
Cross-sections included: 16
Total panel (unbalanced) observations: 71
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.092179	0.047768	1.929719	0.058
Stock Turnover to MC	-4.95E-05	3.50E-05	-1.414653	0.1619
LOG(GVA (Aggr.) pro capita)	-0.021589	0.012588	-1.715033	0.0911
CPI Volatility	4.67E-05	0.001525	0.030614	0.9757
Company Taxation (rate in %)	-0.001843	0.023276	-0.079159	0.9371
R&D Expenditure (Aggr.) growth	-0.005013	0.041336	-0.121285	0.9038

Effects Specification	S.D.	Rho
Cross-section random	0.004295	0.1453
Idiosyncratic random	0.010417	0.8547

Weighted Statistics			
R-squared	0.168326	Mean dependent var	0.016402
Adjusted R-squared	0.104351	S.D. dependent var	0.014192
F-statistic	2.631119	Durbin-Watson stat	1.819811
Prob(F-statistic)	0.031515		

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample: 1980 2010 IF CNCODE<>"LU" AND CNCODE<>"SE"
Periods included: 5
Cross-sections included: 16
Total panel (unbalanced) observations: 74
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.106628	0.040797	2.61364	0.011
Share of Financial Employment	0.581313	0.309741	1.87677	0.0648
LOG(GVA (Aggr.) pro capita)	-0.033439	0.013331	-2.508252	0.0145
CPI Volatility	-0.00031	0.001693	-0.182907	0.8554
Company Taxation (rate in %)	-0.00092	0.020028	-0.045915	0.9635
R&D Expenditure (Aggr.) growth	0.007876	0.040284	0.195505	0.8456

Effects Specification	S.D.	Rho
Cross-section random	0.00392	0.0944
Idiosyncratic random	0.012144	0.9056

Weighted Statistics			
R-squared	0.222789	Mean dependent var	0.018291
Adjusted R-squared	0.165641	S.D. dependent var	0.014153
F-statistic	3.898472	Durbin-Watson stat	2.046271
Prob(F-statistic)	0.003634		

Source: BAKBASEL

Tab. 9-9 National aggregate – Robustness (output growth in non-financial sectors)

Dependent Variable: GVA [aggr.- finance] growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.04848	0.043919	1.10385	0.2731
Private Credit / GDP	0.000105	0.000198	0.532061	0.5962
Private Credit / GDP^2	-9.47E-07	1.06E-06	-0.894216	0.374
LOG(GVA [aggr.- finance] pro capita)	-0.011327	0.011278	-1.004321	0.3184
CPI Volatility	0.000372	0.001215	0.305958	0.7605
Company Taxation (rate in %)	0.007929	0.018633	0.425561	0.6716
R&D expenditure (Aggr.) growth	0.039378	0.051525	0.764246	0.4471

Effects Specification	S.D.	Rho
Cross-section random	0.004748	0.1004
Idiosyncratic random	0.014209	0.8996

Weighted Statistics			
R-squared	0.159414	Mean dependent var	0.017979
Adjusted R-squared	0.093914	S.D. dependent var	0.017003
F-statistic	2.433799	Durbin-Watson stat	1.764064
Prob(F-statistic)	0.033038		

Dependent Variable: GVA [aggr.- finance] growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.081265	0.041039	1.98019	0.0514
Stock Turnover to MC	-0.000263	0.000165	-1.594543	0.1151
Stock Turnover to MC ^2	9.08E-07	8.28E-07	1.096435	0.2764
LOG(GVA [aggr.- finance] pro capita)	-0.016655	0.01103	-1.510004	0.1353
CPI Volatility	-0.000439	0.001367	-0.320958	0.7491
Company Taxation (rate in %)	0.00599	0.020058	0.298636	0.7661
R&D expenditure (Aggr.) growth	0.011817	0.041297	0.286154	0.7756

Effects Specification	S.D.	Rho
Cross-section random	0.004434	0.1149
Idiosyncratic random	0.012305	0.8851

Weighted Statistics			
R-squared	0.208901	Mean dependent var	0.017316
Adjusted R-squared	0.144758	S.D. dependent var	0.017209
F-statistic	3.256795	Durbin-Watson stat	1.742888
Prob(F-statistic)	0.006763		

Dependent Variable: GVA (Aggr.) [aggr.- finance] growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.094156	0.035953	2.618827	0.0106
Share of Financial Employment	0.902845	0.493904	1.827975	0.0714
Share of Financial Employment [squared]	-3.375779	3.497309	-0.96525	0.3374
LOG(GVA [aggr.- finance] pro capita)	-0.034859	0.011952	-2.916715	0.0046
CPI Volatility	-0.000289	0.001277	-0.226323	0.8216
Company Taxation (rate in %)	0.013601	0.018767	0.724693	0.4708
R&D Expenditure (Aggr.) growth	0.040449	0.047508	0.851407	0.3972

Effects Specification	S.D.	Rho
Cross-section random	0.00298	0.0441
Idiosyncratic random	0.013868	0.9559

Weighted Statistics			
R-squared	0.305278	Mean dependent var	0.020164
Adjusted R-squared	0.251144	S.D. dependent var	0.017444
F-statistic	5.639292	Durbin-Watson stat	1.899394
Prob(F-statistic)	0.000068		

Source: BAKBASEL

Tab. 9-10 National aggregate – Robustness (output growth in non-financial sectors) –Linear specification

Dependent Variable: GVA (Aggr.) [aggr.- finance] growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.066776	0.038925	1.715484	0.0902
Private Credit / GDP	-9.52E-05	5.45E-05	-1.745899	0.0848
LOG(GVA [aggr.- finance] pro capita)	-0.01388	0.011052	-1.255936	0.2129
CPI Volatility	0.000229	0.001177	0.194862	0.846
Company Taxation (rate in %)	0.008294	0.018718	0.443078	0.6589
R&D Expenditure (Aggr.) growth	0.02778	0.050543	0.549627	0.5841

Effects Specification	S.D.	Rho
Cross-section random	0.005626	0.1371
Idiosyncratic random	0.014115	0.8629

Weighted Statistics			
R-squared	0.165014	Mean dependent var	0.016784
Adjusted R-squared	0.111489	S.D. dependent var	0.016782
F-statistic	3.08295	Durbin-Watson stat	1.756204
Prob(F-statistic)	0.013638		

Dependent Variable: GVA (Aggr.) [aggr.- finance] growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.086147	0.047433	1.816177	0.0733
Stock Turnover to MC	-0.000104	4.65E-05	-2.240358	0.028
LOG(GVA [aggr.- finance] pro capita)	-0.020229	0.012992	-1.55704	0.1237
CPI Volatility	-0.000471	0.001357	-0.346732	0.7298
Company Taxation (rate in %)	0.010953	0.020784	0.52701	0.5997
R&D Expenditure (Aggr.) growth	0.017047	0.040702	0.418812	0.6766

Effects Specification	S.D.	Rho
Cross-section random	0.00538	0.1628
Idiosyncratic random	0.0122	0.8372

Weighted Statistics			
R-squared	0.208027	Mean dependent var	0.015907
Adjusted R-squared	0.155229	S.D. dependent var	0.01696
F-statistic	3.940048	Durbin-Watson stat	1.699101
Prob(F-statistic)	0.003164		

Dependent Variable: GVA (Aggr.) [aggr.- finance] growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.102607	0.038421	2.670631	0.0092
Share of Financial Employment	0.500299	0.095745	5.225304	0
LOG(GVA [aggr.- finance] pro capita)	-0.034622	0.012297	-2.815522	0.0062
CPI Volatility	-0.000235	0.001268	-0.185133	0.8536
Company Taxation (rate in %)	0.014448	0.020149	0.717054	0.4755
R&D Expenditure (Aggr.) growth	0.033135	0.045934	0.721346	0.4729

Effects Specification	S.D.	Rho
Cross-section random	0.00198	0.019
Idiosyncratic random	0.014226	0.981

Weighted Statistics			
R-squared	0.296732	Mean dependent var	0.021324
Adjusted R-squared	0.251651	S.D. dependent var	0.017697
F-statistic	6.582151	Durbin-Watson stat	1.866877
Prob(F-statistic)	0.000037		

Source: BAKBASEL

9.1.1.3 Robustness regressions – (Table 5-3)

Tab. 9-11 National aggregate – Robustness (Private credit – househod debt)

Dependent Variable: GVA (Aggr.) growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.248796	0.095128	2.615387	0.0119
Net Private Credit to GDP (to Firms)	0.000147	0.00042	0.349641	0.7282
Net Private Credit to GDP (to Firms)^2	-2.97E-06	3.26E-06	-0.910358	0.3673
LOG(GVA (Aggr.) pro capita)	-0.067922	0.029099	-2.334162	0.0239
CPI Volatility	1.00E-05	0.001331	0.007534	0.994
Company Taxation (rate in %)	-0.035647	0.025818	-1.380701	0.1739
R&D expenditure (Aggr.) growth	-0.06317	0.031467	-2.007467	0.0505

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.503032	Mean dependent var	0.020567
Adjusted R-squared	0.270409	S.D. dependent var	0.014157
Log likelihood	223.6812	Hannan-Quinn criter.	-5.44029
F-statistic	2.162436	Durbin-Watson stat	2.298408
Prob(F-statistic)	0.013373		

Source: BAKBASEL

Tab. 9-12 National aggregate – Robustness (Private credit – househod debt) – Linear specification

Dependent Variable: GVA (Aggr.) growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.27368	0.090532	3.023023	0.004
Net Private Credit to GDP (to Firms)	-0.00021	0.000135	-1.552192	0.1272
LOG(GVA (Aggr.) pro capita)	-0.071774	0.028292	-2.536931	0.0145
CPI Volatility	-0.000191	0.001331	-0.143532	0.8865
Company Taxation (rate in %)	-0.043703	0.024699	-1.769389	0.0832
R&D expenditure (Aggr.) growth	-0.065259	0.032919	-1.982404	0.0532

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.495033	Mean dependent var	0.020567
Adjusted R-squared	0.27411	S.D. dependent var	0.014157
F-statistic	2.240747	Durbin-Watson stat	2.286094
Prob(F-statistic)	0.010651		

Source: BAKBASEL

9.1.2 National Sector level

9.1.2.1 Baseline regressions – (Table 5-4)

Tab. 9-13 National sector level – Private Credit to GDP – Baseline regressions

Dependent Variable: GVA in Primary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.009953	0.019762	-0.503612	0.616
Private Credit / GDP	-0.000274	0.000259	-1.060018	0.2925
Private Credit / GDP^2	9.79E-07	1.19E-06	0.824786	0.412
LOG(GVA in Primary Sector pro capita)	-0.013243	0.008818	-1.501884	0.1372
CPI Volatility	0.000211	0.001871	0.112628	0.9106
Company Taxation (rate in %)	0.085523	0.029262	2.922698	0.0046
R&D expenditure (Aggr.) growth	-0.086769	0.064461	-1.346072	0.1822

Effects Specification	S.D.	Rho
Cross-section random	0.010988	0.1749
Idiosyncratic random	0.023869	0.8251

Weighted Statistics			
R-squared	0.137976	Mean dependent var	0.00652
Adjusted R-squared	0.070805	S.D. dependent var	0.02649
F-statistic	2.054111	Durbin-Watson stat	2.245779
Prob(F-statistic)	0.068438		

Dependent Variable: GVA in Secondary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.009524	0.028896	0.329579	0.7426
Private Credit / GDP	-3.34E-05	0.000293	-0.113846	0.9097
Private Credit / GDP^2	-6.86E-07	1.39E-06	-0.494072	0.6227
LOG(GVA in Secondary Sector pro capita)	0.002073	0.00961	0.21567	0.8298
CPI Volatility	0.00144	0.001524	0.944623	0.3478
Company Taxation (rate in %)	0.013008	0.040841	0.318489	0.751
R&D expenditure (Aggr.) growth	0.047718	0.076459	0.624104	0.5344

Effects Specification	S.D.	Rho
Cross-section random	0.005008	0.056
Idiosyncratic random	0.020562	0.944

Weighted Statistics			
R-squared	0.124943	Mean dependent var	0.015597
Adjusted R-squared	0.056756	S.D. dependent var	0.025479
F-statistic	1.832372	Durbin-Watson stat	1.690152
Prob(F-statistic)	0.103728		

Dependent Variable: GVA in Manufacturing growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.031449	0.030007	1.048052	0.2979
Private Credit / GDP	7.76E-06	0.000345	0.022474	0.9821
Private Credit / GDP^2	-6.49E-07	1.58E-06	-0.410214	0.6828
LOG(GVA in Manufacturing pro capita)	-0.008147	0.011631	-0.700466	0.4857
CPI Volatility	0.00026	0.001542	0.168594	0.8666
Company Taxation (rate in %)	0.000435	0.058053	0.007491	0.994
R&D expenditure (Aggr.) growth	0.023241	0.091805	0.253159	0.8008

Effects Specification	S.D.	Rho
Cross-section random	0.009962	0.1423
Idiosyncratic random	0.024459	0.8577

Weighted Statistics			
R-squared	0.055892	Mean dependent var	0.014229
Adjusted R-squared	-0.017674	S.D. dependent var	0.027743
F-statistic	0.759751	Durbin-Watson stat	1.5266
Prob(F-statistic)	0.603719		

Dependent Variable: GVA in Chemical / Pharmagrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.023992	0.054296	0.441873	0.6598
Private Credit / GDP	-5.92E-05	0.000573	-0.103339	0.918
Private Credit / GDP^2	4.81E-07	2.66E-06	0.180863	0.857
LOG(GVA in Chemical / Pharma pro capita)	-0.018783	0.017905	-1.049049	0.2974
CPI Volatility	-0.001183	0.001941	-0.609555	0.544
Company Taxation (rate in %)	0.023376	0.097505	0.239744	0.8112
R&D expenditure (Aggr.) growth	-0.051233	0.157523	-0.325241	0.7459

Effects Specification	S.D.	Rho
Cross-section random	0.022957	0.2681
Idiosyncratic random	0.037927	0.7319

Weighted Statistics			
R-squared	0.037367	Mean dependent var	0.023406
Adjusted R-squared	-0.037643	S.D. dependent var	0.039353
F-statistic	0.498157	Durbin-Watson stat	1.753567
Prob(F-statistic)	0.807883		

Dependent Variable: GVA in Capital goods industry growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.049525	0.049001	1.010702	0.3153
Private Credit / GDP	-0.000122	0.000601	-0.203559	0.8392
Private Credit / GDP^2	-5.02E-07	2.74E-06	-0.182986	0.8553
LOG(GVA in Capital goods industry pro capita)	-0.019758	0.011693	-1.68975	0.0951
CPI Volatility	0.000908	0.002449	0.370958	0.7117
Company Taxation (rate in %)	-0.012963	0.05277	-0.245652	0.8066
R&D expenditure (Aggr.) growth	-0.04536	0.099388	-0.456397	0.6494

Effects Specification	S.D.	Rho
Cross-section random	0.01339	0.1268
Idiosyncratic random	0.035137	0.8732

Weighted Statistics			
R-squared	0.117386	Mean dependent var	0.018102
Adjusted R-squared	0.048611	S.D. dependent var	0.040979
F-statistic	1.70681	Durbin-Watson stat	1.634309
Prob(F-statistic)	0.130681		

Dependent Variable: GVA in Mechanical engineering growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.004995	0.039195	-0.127434	0.8989
Private Credit / GDP	0.000412	0.000515	0.799928	0.4262
Private Credit / GDP^2	-2.96E-06	2.30E-06	-1.288697	0.2014
LOG(GVA in Mechanical engineering pro capita)	-0.006134	0.006338	-0.967836	0.3362
CPI Volatility	0.00327	0.001865	1.75387	0.0834
Company Taxation (rate in %)	-0.011952	0.037903	-0.315331	0.7534
R&D expenditure (Aggr.) growth	-0.044417	0.10546	-0.421176	0.6748

Effects Specification	S.D.	Rho
Cross-section random	0.008225	0.0841
Idiosyncratic random	0.02714	0.9159

Weighted Statistics			
R-squared	0.120962	Mean dependent var	0.013834
Adjusted R-squared	0.052466	S.D. dependent var	0.032466
F-statistic	1.765966	Durbin-Watson stat	1.689242
Prob(F-statistic)	0.11726		

Dependent Variable: GVA in Precision instrumentsgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.073716	0.071008	-1.038134	0.3025
Private Credit / GDP	0.001107	0.000734	1.509003	0.1354
Private Credit / GDP^2	-4.20E-06	3.34E-06	-1.258877	0.2119
LOG(GVA in Precision instrumentspro capita)	-0.010821	0.007292	-1.483949	0.1419
CPI Volatility	0.001102	0.002312	0.476573	0.635
Company Taxation (rate in %)	-0.009685	0.100176	-0.096678	0.9232
R&D expenditure (Aggr.) growth	0.368854	0.191999	1.921128	0.0584

Effects Specification	S.D.	Rho
Cross-section random	0.003431	0.0028
Idiosyncratic random	0.065096	0.9972

Weighted Statistics			
R-squared	0.146795	Mean dependent var	0.051692
Adjusted R-squared	0.080312	S.D. dependent var	0.076096
F-statistic	2.207991	Durbin-Watson stat	2.155641
Prob(F-statistic)	0.051048		

Dependent Variable: GVA in Construction growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.103782	0.034161	3.038036	0.0035
Private Credit / GDP	-5.35E-05	0.000772	-0.069297	0.945
Private Credit / GDP^2	-2.44E-06	4.09E-06	-0.596245	0.5533
LOG(GVA in Construction pro capita)	-0.160843	0.05366	-2.997473	0.004
CPI Volatility	-0.00229	0.00384	-0.596428	0.5531
Company Taxation (rate in %)	-0.06842	0.069579	-0.983332	0.3294
R&D expenditure (Aggr.) growth	0.006101	0.11323	0.053881	0.9572

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.591401	Mean dependent var	0.009417
Adjusted R-squared	0.434771	S.D. dependent var	0.043509
F-statistic	3.775787	Durbin-Watson stat	2.184705
Prob(F-statistic)	0.000019		

Dependent Variable: GVA in Trade and repair growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.015138	0.024026	0.630086	0.5305
Private Credit / GDP	0.000442	0.00033	1.338961	0.1845
Private Credit / GDP^2	-2.76E-06	1.49E-06	-1.845299	0.0688
LOG(GVA in Trade and repair pro capita)	-0.006893	0.008825	-0.781056	0.4372
CPI Volatility	0.001184	0.001318	0.898732	0.3716
Company Taxation (rate in %)	-0.020474	0.049069	-0.41725	0.6777
R&D expenditure (Aggr.) growth	0.012079	0.094299	0.128088	0.8984

Effects Specification	S.D.	Rho
Cross-section random	0.012338	0.183
Idiosyncratic random	0.026066	0.817

Weighted Statistics			
R-squared	0.075519	Mean dependent var	0.01638
Adjusted R-squared	0.003481	S.D. dependent var	0.027096
F-statistic	1.048324	Durbin-Watson stat	2.145914
Prob(F-statistic)	0.401064		

Dependent Variable: GVA in Tertiary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.017501	0.039505	0.443015	0.659
Private Credit / GDP	5.97E-05	0.000154	0.388914	0.6984
Private Credit / GDP^2	-8.46E-07	9.05E-07	-0.935148	0.3526
LOG(GVA in Tertiary Sector pro capita)	0.002079	0.010834	0.19187	0.8483
CPI Volatility	0.001049	0.001526	0.687364	0.4939
Company Taxation (rate in %)	-0.011079	0.014603	-0.75871	0.4503
R&D expenditure (Aggr.) growth	0.03801	0.038317	0.991988	0.3243

Effects Specification	S.D.	Rho
Cross-section random	0.005392	0.1344
Idiosyncratic random	0.013683	0.8656

Weighted Statistics			
R-squared	0.119821	Mean dependent var	0.018986
Adjusted R-squared	0.051235	S.D. dependent var	0.015551
F-statistic	1.747029	Durbin-Watson stat	1.668621
Prob(F-statistic)	0.121411		

Dependent Variable: GVA in Activities related to financegrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.174888	0.087557	1.997427	0.0493
Private Credit / GDP	-0.003255	0.001323	-2.460365	0.0161
Private Credit / GDP^2	1.52E-05	6.64E-06	2.283586	0.0252
LOG(GVA in Activities related to financepro capita)	0.000268	0.014858	0.018046	0.9856
CPI Volatility	0.002248	0.004918	0.457104	0.6489
Company Taxation (rate in %)	0.029245	0.070789	0.41313	0.6807
R&D expenditure (Aggr.) growth	0.064055	0.265623	0.241152	0.8101

Effects Specification	S.D.	Rho
Cross-section random	0.010577	0.0132
Idiosyncratic random	0.09152	0.9868

Weighted Statistics			
R-squared	0.082797	Mean dependent var	0.046088
Adjusted R-squared	0.011327	S.D. dependent var	0.104383
F-statistic	1.158481	Durbin-Watson stat	1.902001
Prob(F-statistic)	0.337336		

Dependent Variable: GVA in Business services, real estategrowth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.148086	0.034335	4.312928	0.0001
Private Credit / GDP	-0.000215	0.000357	-0.602321	0.5492
Private Credit / GDP^2	3.12E-07	1.75E-06	0.178202	0.8592
LOG(GVA in Business services, real estatepro capita)	-0.061278	0.010976	-5.582938	0
CPI Volatility	-0.002404	0.002474	-0.971584	0.3352
Company Taxation (rate in %)	-0.0804	0.043918	-1.830692	0.0721
R&D expenditure (Aggr.) growth	0.077989	0.0858	0.90897	0.367

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.539727	Mean dependent var	0.028177
Adjusted R-squared	0.363289	S.D. dependent var	0.024743
F-statistic	3.059018	Durbin-Watson stat	2.561976
Prob(F-statistic)	0.000273		

Dependent Variable: GVA in IT services growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.049959	0.133921	0.37305	0.7104
Private Credit / GDP	-0.000501	0.001588	-0.315596	0.7534
Private Credit / GDP^2	1.86E-06	6.38E-06	0.291809	0.7714
LOG(GVA in IT services pro capita)	-0.070224	0.018331	-3.830963	0.0003
CPI Volatility	-0.000236	0.006096	-0.03863	0.9693
Company Taxation (rate in %)	-0.142149	0.178077	-0.798247	0.4279
R&D expenditure (Aggr.) growth	-0.304174	0.259438	-1.172437	0.2457
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.499579	Mean dependent var		0.077707
Adjusted R-squared	0.307751	S.D. dependent var		0.088511
F-statistic	2.604303	Durbin-Watson stat		2.736607
Prob(F-statistic)	0.001589			

Dependent Variable: GVA in Research and development growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.138029	0.069401	-1.988847	0.0513
Private Credit / GDP	-0.000405	0.000812	-0.498638	0.6199
Private Credit / GDP^2	2.40E-06	3.67E-06	0.654311	0.5154
LOG(GVA in Research and development pro capita)	-0.065484	0.02515	-2.60377	0.0116
CPI Volatility	-0.002537	0.003335	-0.760715	0.4498
Company Taxation (rate in %)	-0.052641	0.174637	-0.30143	0.7641
R&D expenditure (Aggr.) growth	-0.007206	0.134406	-0.05361	0.9574
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.575792	Mean dependent var		0.034909
Adjusted R-squared	0.413179	S.D. dependent var		0.054882
F-statistic	3.540871	Durbin-Watson stat		2.14035
Prob(F-statistic)	0.000044			

Dependent Variable: GVA in Services to companies growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.06634	0.024105	2.752162	0.0074
Private Credit / GDP	-0.000352	0.000348	-1.010502	0.3154
Private Credit / GDP^2	-2.98E-07	1.53E-06	-0.195209	0.8457
LOG(GVA in Services to companies pro capita)	0.00989	0.008835	1.119404	0.2664
CPI Volatility	0.001035	0.002456	0.421297	0.6747
Company Taxation (rate in %)	-0.013492	0.035144	-0.383917	0.7021
R&D expenditure (Aggr.) growth	0.022637	0.075295	0.30064	0.7645

Effects Specification	S.D.	Rho
Cross-section random	0.012858	0.1871
Idiosyncratic random	0.0268	0.8129

Weighted Statistics			
R-squared	0.145884	Mean dependent var	0.023294
Adjusted R-squared	0.079329	S.D. dependent var	0.029858
F-statistic	2.191946	Durbin-Watson stat	1.955153
Prob(F-statistic)	0.05264		

Source: BAKBASEL

Tab. 9-14 National sector level – Private Credit to GDP – Baseline regressions – Linear specification

Dependent Variable: GVA in Primary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.019201	0.015536	-1.235846	0.2202
Private Credit / GDP	-7.23E-05	8.00E-05	-0.903809	0.3689
LOG(GVA in Primary Sector pro capita)	-0.012613	0.008776	-1.437241	0.1546
CPI Volatility	0.000284	0.001846	0.15412	0.8779
Company Taxation (rate in %)	0.086654	0.028875	3.001012	0.0036
R&D expenditure (Aggr.) growth	-0.081396	0.065827	-1.236517	0.22

Effects Specification	S.D.	Rho
Cross-section random	0.010318	0.1586
Idiosyncratic random	0.023769	0.8414

Weighted Statistics			
R-squared	0.135006	Mean dependent var	0.006699
Adjusted R-squared	0.079558	S.D. dependent var	0.026617
F-statistic	2.434805	Durbin-Watson stat	2.221758
Prob(F-statistic)	0.041895		

Dependent Variable: GVA in Secondary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.015018	0.025914	0.579542	0.5639
Private Credit / GDP	-0.000174	8.91E-05	-1.951811	0.0546
LOG(GVA in Secondary Sector pro capita)	0.002849	0.009492	0.300144	0.7649
CPI Volatility	0.001403	0.00149	0.941885	0.3492
Company Taxation (rate in %)	0.011828	0.040628	0.291139	0.7717
R&D expenditure (Aggr.) growth	0.045438	0.075433	0.602364	0.5487

Effects Specification	S.D.	Rho
Cross-section random	0.004809	0.052
Idiosyncratic random	0.02053	0.948

Weighted Statistics			
R-squared	0.12233	Mean dependent var	0.015733
Adjusted R-squared	0.066069	S.D. dependent var	0.025525
F-statistic	2.174337	Durbin-Watson stat	1.668779
Prob(F-statistic)	0.065406		

Dependent Variable: GVA in Manufacturing growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.035841	0.022887	1.565973	0.1214
Private Credit / GDP	-0.000124	0.000117	-1.052683	0.2957
LOG(GVA in Manufacturing pro capita)	-0.006531	0.011552	-0.565332	0.5735
CPI Volatility	0.000255	0.00148	0.172301	0.8636
Company Taxation (rate in %)	-0.002329	0.057912	-0.040222	0.968
R&D expenditure (Aggr.) growth	0.024327	0.091886	0.264757	0.7919

Effects Specification	S.D.	Rho
Cross-section random	0.009197	0.1244
Idiosyncratic random	0.024395	0.8756

Weighted Statistics			
R-squared	0.051742	Mean dependent var	0.014715
Adjusted R-squared	-0.009044	S.D. dependent var	0.027952
F-statistic	0.851222	Durbin-Watson stat	1.500087
Prob(F-statistic)	0.517804		

Dependent Variable: GVA in Chemical / Pharmagrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.020026	0.040709	0.491927	0.6242
Private Credit / GDP	3.67E-05	0.000144	0.254935	0.7994
LOG(GVA in Chemical / Pharmapro capita)	-0.017848	0.017685	-1.009188	0.316
CPI Volatility	-0.001117	0.001869	-0.597699	0.5518
Company Taxation (rate in %)	0.023444	0.096252	0.243566	0.8082
R&D expenditure (Aggr.) growth	-0.045673	0.163271	-0.279737	0.7804

Effects Specification	S.D.	Rho
Cross-section random	0.02176	0.2507
Idiosyncratic random	0.037618	0.7493

Weighted Statistics			
R-squared	0.034083	Mean dependent var	0.024083
Adjusted R-squared	-0.027835	S.D. dependent var	0.039552
F-statistic	0.550459	Durbin-Watson stat	1.74157
Prob(F-statistic)	0.73749		

Dependent Variable: GVA in Capital goods industry growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.053587	0.038417	1.394858	0.167
Private Credit / GDP	-0.000222	0.000218	-1.018108	0.3118
LOG(GVA in Capital goods industry pro capita)	-0.017727	0.011462	-1.546592	0.126
CPI Volatility	0.000983	0.002382	0.412561	0.6811
Company Taxation (rate in %)	-0.01776	0.053166	-0.334048	0.7392
R&D expenditure (Aggr.) growth	-0.038048	0.097459	-0.390401	0.6973

Effects Specification	S.D.	Rho
Cross-section random	0.011993	0.1048
Idiosyncratic random	0.035058	0.8952

Weighted Statistics			
R-squared	0.111671	Mean dependent var	0.01888
Adjusted R-squared	0.054726	S.D. dependent var	0.041308
F-statistic	1.961053	Durbin-Watson stat	1.611616
Prob(F-statistic)	0.09376		

Dependent Variable: GVA in Mechanical engineering growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.025614	0.026903	0.952061	0.344
Private Credit / GDP	-0.000194	0.00014	-1.385355	0.1699
LOG(GVA in Mechanical engineering pro capita)	-0.005557	0.006235	-0.89123	0.3755
CPI Volatility	0.003041	0.00162	1.877287	0.0642
Company Taxation (rate in %)	-0.016409	0.036285	-0.452211	0.6524
R&D expenditure (Aggr.) growth	-0.056787	0.10998	-0.516339	0.6071

Effects Specification	S.D.	Rho
Cross-section random	0.007585	0.0714
Idiosyncratic random	0.027363	0.9286

Weighted Statistics			
R-squared	0.101977	Mean dependent var	0.014202
Adjusted R-squared	0.044411	S.D. dependent var	0.032603
F-statistic	1.771485	Durbin-Watson stat	1.653512
Prob(F-statistic)	0.128494		

Dependent Variable: GVA in Precision instrumentsgrowth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.197533	0.055149	-3.581792	0.0007
Private Credit / GDP	0.000335	0.000236	1.422859	0.1599
LOG(GVA in Precision instrumentspro capita)	-0.092154	0.025319	-3.639723	0.0006
CPI Volatility	-0.002321	0.004029	-0.576195	0.5666
Company Taxation (rate in %)	-0.104896	0.14203	-0.738552	0.463
R&D expenditure (Aggr.) growth	-0.028618	0.206543	-0.138555	0.8903

Effects Specification
Cross-section fixed (dummy variables)

R-squared	0.470612	Mean dependent var	0.052031
Adjusted R-squared	0.279685	S.D. dependent var	0.076207
F-statistic	2.464879	Durbin-Watson stat	2.58242
Prob(F-statistic)	0.002945		

Dependent Variable: GVA in Construction growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.130278	0.043541	2.992078	0.004
Private Credit / GDP	-0.000575	0.000173	-3.325556	0.0015
LOG(GVA in Construction pro capita)	-0.155108	0.047397	-3.272512	0.0018
CPI Volatility	-0.002221	0.003729	-0.5956	0.5536
Company Taxation (rate in %)	-0.078394	0.075472	-1.038722	0.303
R&D expenditure (Aggr.) growth	-0.008192	0.099462	-0.082368	0.9346

Effects Specification
Cross-section fixed (dummy variables)

R-squared	0.587221	Mean dependent var	0.009417
Adjusted R-squared	0.43835	S.D. dependent var	0.043509
F-statistic	3.944496	Durbin-Watson stat	2.212177
Prob(F-statistic)	0.000012		

Dependent Variable: GVA in Trade and repair growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.045957	0.02266	2.028151	0.046
Private Credit / GDP	-0.000112	0.000112	-1.000031	0.3204
LOG(GVA in Trade and repair pro capita)	-0.010621	0.010684	-0.994073	0.3233
CPI Volatility	0.000833	0.001352	0.616239	0.5395
Company Taxation (rate in %)	-0.023358	0.050019	-0.466974	0.6418
R&D expenditure (Aggr.) growth	-0.008903	0.092062	-0.096703	0.9232

Effects Specification			S.D.	Rho
Cross-section random			0.012674	0.1937
Idiosyncratic random			0.025861	0.8063

Weighted Statistics			
R-squared	0.057711	Mean dependent var	0.016079
Adjusted R-squared	-0.002692	S.D. dependent var	0.027015
F-statistic	0.955429	Durbin-Watson stat	2.073735
Prob(F-statistic)	0.450401		

Dependent Variable: GVA in Tertiary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.031875	0.037583	0.848102	0.399
Private Credit / GDP	-0.000116	5.44E-05	-2.123407	0.0369
LOG(GVA in Tertiary Sector pro capita)	0.000158	0.011276	0.014043	0.9888
CPI Volatility	0.000901	0.001528	0.589397	0.5573
Company Taxation (rate in %)	-0.01063	0.014464	-0.734938	0.4646
R&D expenditure (Aggr.) growth	0.029025	0.038035	0.763115	0.4477

Effects Specification			S.D.	Rho
Cross-section random			0.005967	0.162
Idiosyncratic random			0.013572	0.838

Weighted Statistics			
R-squared	0.118079	Mean dependent var	0.018072
Adjusted R-squared	0.061546	S.D. dependent var	0.015397
F-statistic	2.088667	Durbin-Watson stat	1.657847
Prob(F-statistic)	0.075631		

Dependent Variable: GVA in Activities related to financegrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.00119	0.085658	0.013897	0.9889
Private Credit / GDP	-0.000202	0.000323	-0.626062	0.5331
LOG(GVA in Activities related to financepro capita)	-0.014135	0.017492	-0.808047	0.4215
CPI Volatility	0.004086	0.004649	0.879063	0.3821
Company Taxation (rate in %)	0.0237	0.114606	0.206799	0.8367
R&D expenditure (Aggr.) growth	0.046199	0.299292	0.154363	0.8777

Effects Specification			S.D.	Rho
Cross-section random			0.045389	0.195
Idiosyncratic random			0.09223	0.805

Weighted Statistics			
R-squared	0.047204	Mean dependent var	0.032259

Adjusted R-squared	0.013873	S.D. dependent var	0.096832
F-statistic	0.772864	Durbin-Watson stat	1.937089
Prob(F-statistic)	0.572183		

Dependent Variable: GVA in Business services, real estategrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.055764	0.025535	2.183794	0.032
Private Credit / GDP	-0.000111	7.84E-05	-1.418421	0.1601
LOG(GVA in Business services, real estatepro capita)	-0.01432	0.014943	-0.958299	0.3409
CPI Volatility	-0.001813	0.002461	-0.736457	0.4637
Company Taxation (rate in %)	0.004824	0.016951	0.28456	0.7767
R&D expenditure (Aggr.) growth	0.067761	0.068757	0.985504	0.3274

Effects Specification	S.D.	Rho
Cross-section random	0.006463	0.0982
Idiosyncratic random	0.019586	0.9018

Weighted Statistics			
R-squared	0.13316	Mean dependent var	0.022838
Adjusted R-squared	0.077593	S.D. dependent var	0.023824
F-statistic	2.396403	Durbin-Watson stat	1.854302
Prob(F-statistic)	0.044752		

Dependent Variable: GVA in IT services growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.026963	0.072204	0.373426	0.7101
Private Credit / GDP	-9.88E-05	0.000326	-0.303266	0.7627
LOG(GVA in IT services pro capita)	-0.071736	0.016238	-4.417831	0
CPI Volatility	-0.000307	0.006045	-0.050711	0.9597
Company Taxation (rate in %)	-0.136982	0.167217	-0.819189	0.4159
R&D expenditure (Aggr.) growth	-0.299676	0.257931	-1.161844	0.2498

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.499	Mean dependent var	0.077707
Adjusted R-squared	0.318312	S.D. dependent var	0.088511
F-statistic	2.76166	Durbin-Watson stat	2.748614
Prob(F-statistic)	0.000937		

Dependent Variable: GVA in Research and development growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005

Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.167264	0.05532	-3.023596	0.0037
Private Credit / GDP	9.49E-05	0.000215	0.441254	0.6606
LOG(GVA in Research and development pro capita)	-0.066538	0.024681	-2.695917	0.0091
CPI Volatility	-0.00246	0.003235	-0.760546	0.4499
Company Taxation (rate in %)	-0.044977	0.178904	-0.251406	0.8023
R&D expenditure (Aggr.) growth	0.003604	0.129759	0.027777	0.9779

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.573113	Mean dependent var	0.034909
Adjusted R-squared	0.419153	S.D. dependent var	0.054882
F-statistic	3.722491	Durbin-Watson stat	2.152109
Prob(F-statistic)	0.000026		

Dependent Variable: GVA in Services to companies growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.069233	0.017585	3.937155	0.0002
Private Credit / GDP	-0.000412	0.000109	-3.782005	0.0003
LOG(GVA in Services to companies pro capita)	0.010066	0.008742	1.151413	0.2531
CPI Volatility	0.001009	0.002472	0.40816	0.6843
Company Taxation (rate in %)	-0.013774	0.033845	-0.406957	0.6852
R&D expenditure (Aggr.) growth	0.021141	0.077247	0.273678	0.7851

Effects Specification	S.D.	Rho
Cross-section random	0.012518	0.1809
Idiosyncratic random	0.026633	0.8191

Weighted Statistics			
R-squared	0.144668	Mean dependent var	0.023545
Adjusted R-squared	0.089839	S.D. dependent var	0.029906
F-statistic	2.63853	Durbin-Watson stat	1.946824
Prob(F-statistic)	0.029484		

Source: BAKBASEL

Tab. 9-15 National sector level – Stock turnover to GDP – Baseline regressions

Dependent Variable: GVA in Primary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.056349	0.019155	-2.941777	0.0044
Stock Turnover to MC	0.000534	0.000187	2.85476	0.0056
Stock Turnover to MC [squared]	-2.60E-06	1.01E-06	-2.578642	0.0119
LOG(GVA in Primary Sector pro capita)	-0.013251	0.00822	-1.612192	0.1112
CPI Volatility	-0.000178	0.001645	-0.108256	0.9141
Company Taxation (rate in %)	0.111131	0.024614	4.514855	0
R&D Expenditure (Aggr.) growth	0.002126	0.069636	0.030537	0.9757

Effects Specification	S.D.	Rho
Cross-section random	0.00465	0.0362
Idiosyncratic random	0.02398	0.9638

Weighted Statistics			
R-squared	0.197987	Mean dependent var	0.008782
Adjusted R-squared	0.132959	S.D. dependent var	0.028036
F-statistic	3.044635	Durbin-Watson stat	2.181567
Prob(F-statistic)	0.010223		

Dependent Variable: GVA in Secondary Sector growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.304903	0.064386	4.735511	0
Stock Turnover to MC	8.29E-05	0.000336	0.246689	0.806
Stock Turnover to MC [squared]	-5.29E-07	1.77E-06	-0.299434	0.7657
LOG(GVA in Secondary Sector pro capita)	-0.141395	0.027107	-5.216168	0
CPI Volatility	-0.001007	0.001555	-0.647607	0.5198
Company Taxation (rate in %)	-0.100034	0.063803	-1.567856	0.1224
R&D Expenditure (Aggr.) growth	-0.040536	0.062137	-0.652368	0.5168

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.641514	Mean dependent var	0.016911
Adjusted R-squared	0.496861	S.D. dependent var	0.026256
F-statistic	4.434866	Durbin-Watson stat	1.990944
Prob(F-statistic)	0.000002		

Dependent Variable: GVA in Manufacturing growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.021041	0.017519	1.20104	0.2336
Stock Turnover to MC	-0.000137	0.000177	-0.774454	0.4411
Stock Turnover to MC [squared]	-3.12E-07	1.10E-06	-0.284342	0.7769
LOG(GVA in Manufacturing pro capita)	0.001698	0.00822	0.206591	0.8369
CPI Volatility	6.11E-06	0.001453	0.004206	0.9967
Company Taxation (rate in %)	0.003315	0.044578	0.074365	0.9409
R&D Expenditure (Aggr.) growth	0.034094	0.090317	0.377492	0.7069

Effects Specification	S.D.	Rho
Cross-section random	0.006833	0.0873
Idiosyncratic random	0.022095	0.9127

Weighted Statistics			
R-squared	0.100135	Mean dependent var	0.015038
Adjusted R-squared	0.027173	S.D. dependent var	0.028333
F-statistic	1.372433	Durbin-Watson stat	1.60814
Prob(F-statistic)	0.236997		

Dependent Variable: GVA in Chemical / Pharmagrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.045259	0.027444	1.649159	0.1034
Stock Turnover to MC	-0.000141	0.0003	-0.469826	0.6399
Stock Turnover to MC [squared]	-4.00E-07	1.77E-06	-0.226232	0.8216
LOG(GVA in Chemical / Pharmapro capita)	-0.012069	0.016626	-0.725952	0.4702
CPI Volatility	-0.000329	0.001807	-0.182146	0.856
Company Taxation (rate in %)	0.00756	0.103092	0.073336	0.9417
R&D Expenditure (Aggr.) growth	-0.095537	0.165948	-0.575703	0.5666

Effects Specification	S.D.	Rho
Cross-section random	0.016827	0.216
Idiosyncratic random	0.03206	0.784

Weighted Statistics			
R-squared	0.066326	Mean dependent var	0.025536
Adjusted R-squared	-0.009377	S.D. dependent var	0.039923
F-statistic	0.876134	Durbin-Watson stat	1.695456
Prob(F-statistic)	0.516705		

Dependent Variable: GVA in Capital goods industry growth

Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.020128	0.026404	0.76231	0.4483
Stock Turnover to MC	9.32E-05	0.000327	0.285123	0.7763
Stock Turnover to MC [squared]	-1.34E-06	1.76E-06	-0.758603	0.4505
LOG(GVA in Capital goods industry pro capita)	-0.01188	0.008873	-1.338991	0.1847
CPI Volatility	0.000123	0.002946	0.041671	0.9669
Company Taxation (rate in %)	0.010736	0.032708	0.328225	0.7437
R&D Expenditure (Aggr.) growth	0.037825	0.105864	0.357295	0.7219

Effects Specification	S.D.	Rho
Cross-section random	0.009665	0.0657
Idiosyncratic random	0.036434	0.9343

Weighted Statistics			
R-squared	0.074338	Mean dependent var	0.018701
Adjusted R-squared	-0.000716	S.D. dependent var	0.041164
F-statistic	0.990466	Durbin-Watson stat	1.705233
Prob(F-statistic)	0.438096		

Dependent Variable: GVA in Mechanical engineering growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	-0.014657	0.016041	-0.913771	0.3638
Stock Turnover to MC	0.000365	0.000358	1.019412	0.3113
Stock Turnover to MC [squared]	-2.80E-06	1.85E-06	-1.513687	0.1344
LOG(GVA in Mechanical engineering pro capita)	-0.006588	0.006723	-0.979927	0.3303
CPI Volatility	0.00266	0.001906	1.39568	0.167
Company Taxation (rate in %)	0.020001	0.022955	0.8713	0.3864
R&D Expenditure (Aggr.) growth	0.005701	0.089797	0.063488	0.9495

Effects Specification	S.D.	Rho
Cross-section random	0.006114	0.0458
Idiosyncratic random	0.027918	0.9542

Weighted Statistics			
R-squared	0.116812	Mean dependent var	0.013864
Adjusted R-squared	0.045202	S.D. dependent var	0.032493
F-statistic	1.631227	Durbin-Watson stat	1.685752
Prob(F-statistic)	0.150514		

Dependent Variable: GVA in Precision instrumentsgrowth

Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.01206	0.043317	0.27841	0.7815
Stock Turnover to MC	2.04E-05	0.000474	0.043106	0.9657
Stock Turnover to MC [squared]	-1.55E-06	2.51E-06	-0.619027	0.5378
LOG(GVA in Precision instrumentspro capita)	-0.009694	0.00687	-1.411119	0.1624
CPI Volatility	-0.000823	0.002579	-0.319077	0.7506
Company Taxation (rate in %)	-0.003755	0.083025	-0.045226	0.964
R&D Expenditure (Aggr.) growth	0.246008	0.177827	1.383409	0.1707

Effects Specification	S.D.	Rho
Cross-section random	0.012544	0.0388
Idiosyncratic random	0.062424	0.9612

Weighted Statistics			
R-squared	0.140149	Mean dependent var	0.0466
Adjusted R-squared	0.070432	S.D. dependent var	0.075675
F-statistic	2.01024	Durbin-Watson stat	2.100731
Prob(F-statistic)	0.074911		

Dependent Variable: GVA in Construction growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.103785	0.069845	1.485931	0.1428
Stock Turnover to MC	-0.000633	0.000788	-0.803211	0.4252
Stock Turnover to MC [squared]	3.52E-06	4.26E-06	0.826314	0.4121
LOG(GVA in Construction pro capita)	-0.201872	0.059367	-3.400416	0.0012
CPI Volatility	-0.004875	0.005341	-0.912852	0.3652
Company Taxation (rate in %)	-0.047486	0.086052	-0.551827	0.5832
R&D Expenditure (Aggr.) growth	0.026378	0.085695	0.307817	0.7593

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.539025	Mean dependent var	0.008621
Adjusted R-squared	0.353018	S.D. dependent var	0.043089
F-statistic	2.897872	Durbin-Watson stat	2.165762
Prob(F-statistic)	0.000584		

Dependent Variable: GVA in Trade and repair growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.055685	0.035296	1.57768	0.1189
Stock Turnover to MC	6.23E-06	0.000318	0.019597	0.9844
Stock Turnover to MC [squared]	-8.17E-07	1.73E-06	-0.471358	0.6388
LOG(GVA in Trade and repair pro capita)	-0.020685	0.010851	-1.906332	0.0605
CPI Volatility	-0.000664	0.002144	-0.309862	0.7575
Company Taxation (rate in %)	-0.02525	0.055717	-0.453177	0.6517
R&D Expenditure (Aggr.) growth	-0.024009	0.076232	-0.314953	0.7537

Effects Specification	S.D.	Rho
Cross-section random	0.016362	0.3338
Idiosyncratic random	0.023114	0.6662

Weighted Statistics			
R-squared	0.107746	Mean dependent var	0.012873
Adjusted R-squared	0.035402	S.D. dependent var	0.025702
F-statistic	1.489345	Durbin-Watson stat	1.93978
Prob(F-statistic)	0.193609		

Dependent Variable: GVA in Tertiary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.057968	0.036318	1.596095	0.1147
Stock Turnover to MC	-0.000328	0.00016	-2.055583	0.0434
Stock Turnover to MC [squared]	1.47E-06	8.30E-07	1.770115	0.0808
LOG(GVA in Tertiary Sector pro capita)	-0.00752	0.009236	-0.814213	0.4181
CPI Volatility	0.000362	0.001497	0.241993	0.8095
Company Taxation (rate in %)	-0.01172	0.015392	-0.761394	0.4488
R&D Expenditure (Aggr.) growth	0.005287	0.028215	0.187379	0.8519

Effects Specification	S.D.	Rho
Cross-section random	0.005226	0.1463
Idiosyncratic random	0.012627	0.8537

Weighted Statistics			
R-squared	0.156426	Mean dependent var	0.018458
Adjusted R-squared	0.088028	S.D. dependent var	0.015765
F-statistic	2.286997	Durbin-Watson stat	1.857409
Prob(F-statistic)	0.044318		

Dependent Variable: GVA in Activities related to financegrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.086235	0.081126	1.062971	0.2913
Stock Turnover to MC	-0.001731	0.00078	-2.220392	0.0295
Stock Turnover to MC [squared]	5.71E-06	3.57E-06	1.599001	0.1141
LOG(GVA in Activities related to financepro capita)	-0.018494	0.01334	-1.38642	0.1698
CPI Volatility	0.002524	0.004324	0.583656	0.5612
Company Taxation (rate in %)	-0.037142	0.144975	-0.256193	0.7985
R&D Expenditure (Aggr.) growth	-0.206663	0.282964	-0.73035	0.4675

Effects Specification	S.D.	Rho
Cross-section random	0.049654	0.2368
Idiosyncratic random	0.089141	0.7632

Weighted Statistics			
R-squared	0.155207	Mean dependent var	0.030113
Adjusted R-squared	0.08671	S.D. dependent var	0.096426
F-statistic	2.265895	Durbin-Watson stat	2.002757
Prob(F-statistic)	0.046143		

Dependent Variable: GVA in Business services, real estategrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.105289	0.037293	2.823315	0.0061
Stock Turnover to MC	-0.000632	0.000219	-2.878296	0.0052
Stock Turnover to MC [squared]	2.78E-06	1.12E-06	2.485381	0.0152
LOG(GVA in Business services, real estatepro capita)	-0.031986	0.019476	-1.642327	0.1048
CPI Volatility	-0.002936	0.002371	-1.238393	0.2195
Company Taxation (rate in %)	-0.008218	0.016728	-0.491308	0.6247
R&D Expenditure (Aggr.) growth	-0.012343	0.047345	-0.260699	0.795

Effects Specification	S.D.	Rho
Cross-section random	0.007579	0.1757
Idiosyncratic random	0.016416	0.8243

Weighted Statistics			
R-squared	0.292744	Mean dependent var	0.01995
Adjusted R-squared	0.235399	S.D. dependent var	0.023737
F-statistic	5.104945	Durbin-Watson stat	1.75971
Prob(F-statistic)	0.000196		

Dependent Variable: GVA in IT services growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.03602	0.078403	-0.459422	0.6477
Stock Turnover to MC	0.000722	0.000845	0.854161	0.3966
Stock Turnover to MC [squared]	-2.78E-06	4.43E-06	-0.626605	0.5334
LOG(GVA in IT services pro capita)	-0.094397	0.018721	-5.042281	0
CPI Volatility	0.002728	0.005055	0.539614	0.5916
Company Taxation (rate in %)	-0.199763	0.216713	-0.921786	0.3605
R&D Expenditure (Aggr.) growth	-0.344495	0.202781	-1.698848	0.0948

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.563939	Mean dependent var	0.078533
Adjusted R-squared	0.387984	S.D. dependent var	0.089999
F-statistic	3.205024	Durbin-Watson stat	2.586868
Prob(F-statistic)	0.000186		

Dependent Variable: GVA in Research and development growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.094676	0.052776	-1.793932	0.0781
Stock Turnover to MC	-0.001253	0.000623	-2.012583	0.0489
Stock Turnover to MC [squared]	7.49E-06	3.60E-06	2.080068	0.042
LOG(GVA in Research and development pro capita)	-0.061194	0.019518	-3.13531	0.0027
CPI Volatility	-0.004926	0.003836	-1.284053	0.2043
Company Taxation (rate in %)	-0.041776	0.150214	-0.278107	0.7819
R&D Expenditure (Aggr.) growth	-0.083918	0.131709	-0.637149	0.5266

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.637745	Mean dependent var	0.034992
Adjusted R-squared	0.491572	S.D. dependent var	0.054803
F-statistic	4.362948	Durbin-Watson stat	2.402283
Prob(F-statistic)	0.000003		

Dependent Variable: GVA in Services to companies growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.065055	0.016859	3.858701	0.0002
Stock Turnover to MC	-0.000804	0.000226	-3.555742	0.0007
Stock Turnover to MC [squared]	3.72E-06	1.28E-06	2.894586	0.005
LOG(GVA in Services to companies pro capita)	-0.002028	0.00902	-0.22477	0.8228
CPI Volatility	-0.000507	0.002452	-0.206797	0.8367
Company Taxation (rate in %)	-0.010904	0.028801	-0.378612	0.7061
R&D Expenditure (Aggr.) growth	-0.009004	0.082607	-0.109001	0.9135

Effects Specification	S.D.	Rho
Cross-section random	0.009209	0.1024
Idiosyncratic random	0.027272	0.8976

Weighted Statistics			
R-squared	0.142356	Mean dependent var	0.027201
Adjusted R-squared	0.072817	S.D. dependent var	0.030956
F-statistic	2.047142	Durbin-Watson stat	1.923763
Prob(F-statistic)	0.069889		

Source: BAKBASEL

Tab. 9-16 National sector level – Stock turnover to GDP – Baseline regressions – Linear specification

Dependent Variable: GVA in Primary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.038748	0.017985	-2.154477	0.0344
Stock Turnover to MC	9.02E-05	8.63E-05	1.045987	0.2989
LOG(GVA in Primary Sector pro capita)	-0.013461	0.009116	-1.476638	0.144
CPI Volatility	-4.65E-05	0.001569	-0.029674	0.9764
Company Taxation (rate in %)	0.099328	0.02586	3.840925	0.0003
R&D Expenditure (Aggr.) growth	-0.03568	0.072425	-0.492651	0.6237

Effects Specification	S.D.	Rho
Cross-section random	0.007973	0.1011
Idiosyncratic random	0.023772	0.8989

Weighted Statistics			
R-squared	0.155233	Mean dependent var	0.00774
Adjusted R-squared	0.098915	S.D. dependent var	0.027286
F-statistic	2.756377	Durbin-Watson stat	2.212564
Prob(F-statistic)	0.024338		

Dependent Variable: GVA in Secondary Sector growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.309431	0.060632	5.103454	0
Stock Turnover to MC	-1.05E-05	8.20E-05	-0.128227	0.8984
LOG(GVA in Secondary Sector pro capita)	-0.141532	0.026734	-5.293999	0
CPI Volatility	-0.001042	0.001564	-0.665781	0.5082
Company Taxation (rate in %)	-0.103628	0.062994	-1.645037	0.1054
R&D Expenditure (Aggr.) growth	-0.04732	0.044971	-1.052227	0.2971

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.64043	Mean dependent var	0.016911
Adjusted R-squared	0.504042	S.D. dependent var	0.026256
F-statistic	4.695633	Durbin-Watson stat	2.020578
Prob(F-statistic)	0.000001		

Dependent Variable: GVA in Manufacturing growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005

Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.020918	0.015124	1.383096	0.1707
Stock Turnover to MC	-0.00019	6.74E-05	-2.818697	0.0062
LOG(GVA in Manufacturing pro capita)	0.003215	0.007841	0.409995	0.683
CPI Volatility	2.97E-05	0.001455	0.02042	0.9838
Company Taxation (rate in %)	0.000899	0.044529	0.020178	0.984
R&D Expenditure (Aggr.) growth	0.035343	0.084029	0.420605	0.6752

Effects Specification	S.D.	Rho
Cross-section random	0.006049	0.0699
Idiosyncratic random	0.022061	0.9301

Weighted Statistics			
R-squared	0.099388	Mean dependent var	0.015558
Adjusted R-squared	0.039347	S.D. dependent var	0.028544
F-statistic	1.655346	Durbin-Watson stat	1.603264
Prob(F-statistic)	0.155931		

Dependent Variable: GVA in Chemical / Pharmagrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.049645	0.029063	1.708171	0.0917
Stock Turnover to MC	-0.000218	7.61E-05	-2.870325	0.0053
LOG(GVA in Chemical / Pharmapro capita)	-0.010417	0.016614	-0.627013	0.5326
CPI Volatility	-0.000424	0.001814	-0.233888	0.8157
Company Taxation (rate in %)	0.00662	0.102453	0.064615	0.9487
R&D Expenditure (Aggr.) growth	-0.095707	0.156422	-0.611852	0.5425

Effects Specification	S.D.	Rho
Cross-section random	0.015479	0.1864
Idiosyncratic random	0.032343	0.8136

Weighted Statistics			
R-squared	0.063986	Mean dependent var	0.026813
Adjusted R-squared	0.001585	S.D. dependent var	0.04036
F-statistic	1.025407	Durbin-Watson stat	1.684145
Prob(F-statistic)	0.40893		

Dependent Variable: GVA in Capital goods industry growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.028567	0.022011	1.297879	0.1983
Stock Turnover to MC	-0.000131	0.000121	-1.084095	0.2818
LOG(GVA in Capital goods industry pro capita)	-0.010775	0.008727	-1.234635	0.2208
CPI Volatility	0.000245	0.002941	0.083336	0.9338
Company Taxation (rate in %)	0.002121	0.03127	0.067823	0.9461
R&D Expenditure (Aggr.) growth	0.025358	0.098469	0.257524	0.7975

Effects Specification	S.D.	Rho
Cross-section random	0.009159	0.0601
Idiosyncratic random	0.036209	0.9399

Weighted Statistics			
R-squared	0.068717	Mean dependent var	0.018915
Adjusted R-squared	0.006632	S.D. dependent var	0.041255
F-statistic	1.106814	Durbin-Watson stat	1.697793
Prob(F-statistic)	0.364042		

Dependent Variable: GVA in Mechanical engineering growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.008855	0.007248	1.221802	0.2256
Stock Turnover to MC	-0.000122	9.63E-05	-1.262587	0.2106
LOG(GVA in Mechanical engineering pro capita)	-0.003728	0.006912	-0.539357	0.5912
CPI Volatility	0.002807	0.002049	1.369735	0.1749
Company Taxation (rate in %)	0.001033	0.026536	0.038912	0.9691
R&D Expenditure (Aggr.) growth	-0.023418	0.094136	-0.248774	0.8042

Effects Specification	S.D.	Rho
Cross-section random	0.006786	0.0564
Idiosyncratic random	0.027756	0.9436

Weighted Statistics			
R-squared	0.087558	Mean dependent var	0.013552
Adjusted R-squared	0.026728	S.D. dependent var	0.032363
F-statistic	1.439399	Durbin-Watson stat	1.663356
Prob(F-statistic)	0.220072		

Dependent Variable: GVA in Precision instruments growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.025402	0.03888	0.653336	0.5155
Stock Turnover to MC	-0.000243	0.000228	-1.065496	0.2901
LOG(GVA in Precision instrumentspro capita)	-0.008532	0.006859	-1.243957	0.2174
CPI Volatility	-0.000774	0.002633	-0.294034	0.7695
Company Taxation (rate in %)	-0.01409	0.081564	-0.172752	0.8633
R&D Expenditure (Aggr.) growth	0.239161	0.171626	1.393502	0.1676

Effects Specification	S.D.	Rho
Cross-section random	0.009605	0.0232
Idiosyncratic random	0.062372	0.9768

Weighted Statistics			
R-squared	0.13891	Mean dependent var	0.048146
Adjusted R-squared	0.081504	S.D. dependent var	0.076107
F-statistic	2.419783	Durbin-Watson stat	2.109439
Prob(F-statistic)	0.043379		

Dependent Variable: GVA in Construction growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.071846	0.044981	1.597265	0.1156
Stock Turnover to MC	-1.50E-05	0.000138	-0.108285	0.9141
LOG(GVA in Construction pro capita)	-0.192984	0.05409	-3.567801	0.0007
CPI Volatility	-0.00456	0.005285	-0.862761	0.3918
Company Taxation (rate in %)	-0.019331	0.087729	-0.220355	0.8264
R&D Expenditure (Aggr.) growth	0.071258	0.085214	0.836215	0.4065

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.521911	Mean dependent var	0.008621
Adjusted R-squared	0.340567	S.D. dependent var	0.043089
F-statistic	2.878016	Durbin-Watson stat	2.082379
Prob(F-statistic)	0.000682		

Dependent Variable: GVA in Trade and repair growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.060781	0.02535	2.397703	0.019
Stock Turnover to MC	-0.000135	6.58E-05	-2.046426	0.0442
LOG(GVA in Trade and repair pro capita)	-0.020121	0.009838	-2.045201	0.0443
CPI Volatility	-0.000693	0.002101	-0.329576	0.7426
Company Taxation (rate in %)	-0.028593	0.052385	-0.54583	0.5868
R&D Expenditure (Aggr.) growth	-0.03274	0.071936	-0.455129	0.6503

Effects Specification	S.D.	Rho
Cross-section random	0.015446	0.3103
Idiosyncratic random	0.023031	0.6897

Weighted Statistics			
R-squared	0.100343	Mean dependent var	0.013357
Adjusted R-squared	0.040366	S.D. dependent var	0.025835
F-statistic	1.67303	Durbin-Watson stat	1.941596
Prob(F-statistic)	0.151523		

Dependent Variable: GVA in Tertiary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.045533	0.039665	1.147943	0.2546
Stock Turnover to MC	-7.77E-05	4.75E-05	-1.634304	0.1064
LOG(GVA in Tertiary Sector pro capita)	-0.006853	0.011482	-0.596847	0.5524
CPI Volatility	0.000419	0.001527	0.274353	0.7846
Company Taxation (rate in %)	-0.004378	0.014664	-0.298532	0.7661
R&D Expenditure (Aggr.) growth	0.025481	0.032579	0.78212	0.4366

Effects Specification	S.D.	Rho
Cross-section random	0.005787	0.1758
Idiosyncratic random	0.01253	0.8242

Weighted Statistics			
R-squared	0.124981	Mean dependent var	0.017544
Adjusted R-squared	0.066646	S.D. dependent var	0.015619
F-statistic	2.142476	Durbin-Watson stat	1.77135
Prob(F-statistic)	0.069507		

Dependent Variable: GVA in Activities related to financegrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.04923	0.072841	0.675851	0.5012
Stock Turnover to MC	-0.000759	0.000267	-2.837447	0.0058
LOG(GVA in Activities related to financepro capita)	-0.016708	0.014771	-1.131169	0.2616
CPI Volatility	0.002643	0.004323	0.61138	0.5428
Company Taxation (rate in %)	-0.006416	0.132632	-0.048377	0.9615
R&D Expenditure (Aggr.) growth	-0.126285	0.291231	-0.433623	0.6658

Effects Specification	S.D.	Rho
Cross-section random	0.048746	0.2313
Idiosyncratic random	0.088853	0.7687

Weighted Statistics			
R-squared	0.142069	Mean dependent var	0.030384
Adjusted R-squared	0.084874	S.D. dependent var	0.096559
F-statistic	2.483926	Durbin-Watson stat	2.000007
Prob(F-statistic)	0.03887		

Dependent Variable: GVA in Business services, real estategrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.08342	0.036654	2.275883	0.0257
Stock Turnover to MC	-0.000154	6.11E-05	-2.519027	0.0139
LOG(GVA in Business services, real estatepro capita)	-0.030974	0.021822	-1.419421	0.1599
CPI Volatility	-0.002797	0.00244	-1.146439	0.2553
Company Taxation (rate in %)	0.004404	0.014975	0.294083	0.7695
R&D Expenditure (Aggr.) growth	0.031519	0.054811	0.57506	0.567

Effects Specification	S.D.	Rho
Cross-section random	0.008679	0.2181
Idiosyncratic random	0.016435	0.7819

Weighted Statistics			
R-squared	0.254834	Mean dependent var	0.018592
Adjusted R-squared	0.205156	S.D. dependent var	0.023526
F-statistic	5.129747	Durbin-Watson stat	1.586455
Prob(F-statistic)	0.000423		

Dependent Variable: GVA in IT services growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.012659	0.064523	-0.19619	0.8451
Stock Turnover to MC	0.000222	0.000158	1.404002	0.1657
LOG(GVA in IT services pro capita)	-0.0923	0.018393	-5.018294	0
CPI Volatility	0.002669	0.00497	0.537152	0.5932
Company Taxation (rate in %)	-0.211731	0.196914	-1.075246	0.2867
R&D Expenditure (Aggr.) growth	-0.370587	0.216425	-1.712312	0.0922

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.561501	Mean dependent var	0.078533
Adjusted R-squared	0.395173	S.D. dependent var	0.089999
F-statistic	3.375876	Durbin-Watson stat	2.629122
Prob(F-statistic)	0.000109		

Dependent Variable: GVA in Research and development growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.162433	0.035109	-4.626485	0
Stock Turnover to MC	7.63E-05	0.00027	0.282931	0.7782
LOG(GVA in Research and development pro capita)	-0.064525	0.021591	-2.98852	0.0041
CPI Volatility	-0.004431	0.003995	-1.109137	0.2719
Company Taxation (rate in %)	-0.003545	0.186564	-0.019001	0.9849
R&D Expenditure (Aggr.) growth	0.007409	0.134484	0.05509	0.9563

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.588121	Mean dependent var	0.034992
Adjusted R-squared	0.431891	S.D. dependent var	0.054803
F-statistic	3.764461	Durbin-Watson stat	2.093319
Prob(F-statistic)	0.000027		

Dependent Variable: GVA in Services to companies growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 81
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.038275	0.015162	2.524305	0.0137
Stock Turnover to MC	-0.000169	9.40E-05	-1.794589	0.0767
LOG(GVA in Services to companies pro capita)	-0.002119	0.009119	-0.232321	0.8169
CPI Volatility	-0.000444	0.002571	-0.172521	0.8635
Company Taxation (rate in %)	0.007088	0.032518	0.217954	0.8281
R&D Expenditure (Aggr.) growth	0.044926	0.08447	0.531853	0.5964

Effects Specification	S.D.	Rho
Cross-section random	0.011922	0.1603
Idiosyncratic random	0.027286	0.8397

Weighted Statistics			
R-squared	0.082834	Mean dependent var	0.024472
Adjusted R-squared	0.02169	S.D. dependent var	0.030331
F-statistic	1.354729	Durbin-Watson stat	1.7093
Prob(F-statistic)	0.251066		

Source: BAKBASEL

Tab. 9-17 National sector level – Share of Financial Employment – Baseline regressions

Dependent Variable: GVA in Primary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	-0.044999	0.018542	-2.426857	0.0176
Share of Financial Employment	0.76113	0.646652	1.177031	0.2428
Share of Financial Employment^2	-10.19195	4.770579	-2.136419	0.0358
LOG(GVA in Primary Sector pro capita)	-0.018386	0.008437	-2.179309	0.0324
CPI Volatility	-0.000406	0.002042	-0.198813	0.8429
Company Taxation (rate in %)	0.088334	0.028309	3.120317	0.0025
R&D expenditure (Aggr.) growth	-0.044272	0.066588	-0.664871	0.5081

Effects Specification	S.D.	Rho
Cross-section random	0.00977	0.1551
Idiosyncratic random	0.022804	0.8449

Weighted Statistics			
R-squared	0.209731	Mean dependent var	0.006738
Adjusted R-squared	0.148152	S.D. dependent var	0.026645
F-statistic	3.405872	Durbin-Watson stat	2.397604
Prob(F-statistic)	0.004931		

Dependent Variable: GVA in Secondary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	-0.021173	0.030024	-0.705207	0.4828
Share of Financial Employment	1.098501	0.768825	1.428805	0.1571
Share of Financial Employment^2	-7.662789	5.545169	-1.381886	0.171
LOG(GVA in Secondary Sector pro capita)	-0.004831	0.009933	-0.486366	0.6281
CPI Volatility	0.001304	0.001824	0.714832	0.4769
Company Taxation (rate in %)	0.020276	0.034023	0.595964	0.5529
R&D expenditure (Aggr.) growth	0.102506	0.073827	1.388465	0.169

Effects Specification	S.D.	Rho
Cross-section random	0.005612	0.0788
Idiosyncratic random	0.01919	0.9212

Weighted Statistics			
R-squared	0.122847	Mean dependent var	0.014861
Adjusted R-squared	0.054497	S.D. dependent var	0.025238
F-statistic	1.797326	Durbin-Watson stat	1.785708
Prob(F-statistic)	0.110676		

Dependent Variable: GVA in Manufacturing growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.011619	0.02799	0.415107	0.6792
Share of Financial Employment	1.205387	1.206738	0.99888	0.321
Share of Financial Employment^2	-10.26319	8.800095	-1.166259	0.2471
LOG(GVA in Manufacturing pro capita)	-0.018951	0.011783	-1.608321	0.1119
CPI Volatility	-0.000553	0.001815	-0.304961	0.7612
Company Taxation (rate in %)	0.010066	0.052093	0.193225	0.8473
R&D expenditure (Aggr.) growth	0.047283	0.089033	0.531079	0.5969

Effects Specification	S.D.	Rho
Cross-section random	0.010645	0.1795
Idiosyncratic random	0.022758	0.8205

Weighted Statistics			
R-squared	0.073797	Mean dependent var	0.013299
Adjusted R-squared	0.001625	S.D. dependent var	0.027359
F-statistic	1.022517	Durbin-Watson stat	1.554439
Prob(F-statistic)	0.417169		

Dependent Variable: GVA in Chemical / Pharmagrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	-0.031777	0.048775	-0.651496	0.5167
Share of Financial Employment	2.308603	1.868704	1.235403	0.2204
Share of Financial Employment^2	-14.43533	13.918	-1.03717	0.3029
LOG(GVA in Chemical / Pharmapro capita)	-0.015779	0.014645	-1.077432	0.2847
CPI Volatility	-0.001079	0.001955	-0.55163	0.5828
Company Taxation (rate in %)	0.000257	0.097787	0.002633	0.9979
R&D expenditure (Aggr.) growth	0.006167	0.165934	0.037168	0.9704

Effects Specification	S.D.	Rho
Cross-section random	0.014451	0.1396
Idiosyncratic random	0.035874	0.8604

Weighted Statistics			
R-squared	0.078464	Mean dependent var	0.029177
Adjusted R-squared	0.006656	S.D. dependent var	0.041198
F-statistic	1.092689	Durbin-Watson stat	1.661635
Prob(F-statistic)	0.374416		

Dependent Variable: GVA in Capital goods industry growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.038551	0.037994	1.014682	0.3134
Share of Financial Employment	-0.185914	1.307588	-0.142181	0.8873
Share of Financial Employment^2	-2.193281	9.492521	-0.231054	0.8179
LOG(GVA in Capital goods industry pro capita)	-0.022777	0.013078	-1.741706	0.0856
CPI Volatility	0.000101	0.00266	0.038081	0.9697
Company Taxation (rate in %)	0.007712	0.044575	0.173019	0.8631
R&D expenditure (Aggr.) growth	-0.005093	0.083958	-0.060661	0.9518

Effects Specification	S.D.	Rho
Cross-section random	0.011605	0.0989
Idiosyncratic random	0.035036	0.9011

Weighted Statistics			
R-squared	0.117519	Mean dependent var	0.019099
Adjusted R-squared	0.048754	S.D. dependent var	0.041402
F-statistic	1.708993	Durbin-Watson stat	1.690114
Prob(F-statistic)	0.130161		

Dependent Variable: GVA in Mechanical engineering growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.042188	0.020913	2.017312	0.0471
Share of Financial Employment	-1.670394	0.756446	-2.208213	0.0302
Share of Financial Employment^2	9.427457	5.695784	1.655164	0.102
LOG(GVA in Mechanical engineering pro capita)	-0.010077	0.006897	-1.461186	0.148
CPI Volatility	0.002521	0.001762	1.430781	0.1565
Company Taxation (rate in %)	0.012072	0.031013	0.389265	0.6982
R&D expenditure (Aggr.) growth	-0.065785	0.094212	-0.698268	0.4871

Effects Specification	S.D.	Rho
Cross-section random	0.005872	0.043
Idiosyncratic random	0.027704	0.957

Weighted Statistics			
R-squared	0.167584	Mean dependent var	0.015091
Adjusted R-squared	0.10272	S.D. dependent var	0.032942
F-statistic	2.583631	Durbin-Watson stat	1.761083
Prob(F-statistic)	0.024695		

Dependent Variable: GVA in Precision instrumentsgrowth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.270884	0.18796	-1.441185	0.1547
Share of Financial Employment	4.431468	5.791675	0.765144	0.4472
Share of Financial Employment^2	-25.9745	31.78245	-0.817259	0.417
LOG(GVA in Precision instrumentspro capita)	-0.089325	0.030416	-2.936778	0.0047
CPI Volatility	-0.002755	0.004551	-0.605516	0.5471
Company Taxation (rate in %)	-0.092404	0.162465	-0.568759	0.5716
R&D expenditure (Aggr.) growth	-0.106405	0.188689	-0.56392	0.5749

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.475124	Mean dependent var	0.052031
Adjusted R-squared	0.273921	S.D. dependent var	0.076207
F-statistic	2.361419	Durbin-Watson stat	2.540826
Prob(F-statistic)	0.004111		

Dependent Variable: GVA in Construction growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.076857	0.05912	1.300016	0.1986
Share of Financial Employment	-0.708043	1.823398	-0.388309	0.6992
Share of Financial Employment^2	12.69625	11.29403	1.124156	0.2654
LOG(GVA in Construction pro capita)	-0.210159	0.0587	-3.580202	0.0007
CPI Volatility	-0.003166	0.004233	-0.748075	0.4573
Company Taxation (rate in %)	-0.021069	0.066899	-0.314942	0.7539
R&D expenditure (Aggr.) growth	0.065059	0.115832	0.56167	0.5764

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.540443	Mean dependent var	0.009417
Adjusted R-squared	0.36428	S.D. dependent var	0.043509
F-statistic	3.067853	Durbin-Watson stat	2.137784
Prob(F-statistic)	0.000264		

Dependent Variable: GVA in Trade and repair growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.101642	0.106126	0.957749	0.342
Share of Financial Employment	0.167711	3.460214	0.048468	0.9615
Share of Financial Employment^2	-0.425062	18.41837	-0.023078	0.9817
LOG(GVA in Trade and repair pro capita)	-0.066153	0.014764	-4.480673	0
CPI Volatility	-0.000263	0.002043	-0.128798	0.8979
Company Taxation (rate in %)	-0.090692	0.080304	-1.129354	0.2632
R&D expenditure (Aggr.) growth	-0.043772	0.077693	-0.563406	0.5753

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.425436	Mean dependent var	0.023727
Adjusted R-squared	0.205187	S.D. dependent var	0.029417
F-statistic	1.931613	Durbin-Watson stat	2.38926

Prob(F-statistic)	0.021796

Dependent Variable: GVA in Tertiary Sector growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.15486	0.035814	4.323996	0.0001
Share of Financial Employment	0.781779	1.271385	0.614904	0.5409
Share of Financial Employment^2	-6.410498	7.136034	-0.898328	0.3726
LOG(GVA in Tertiary Sector pro capita)	-0.04943	0.006407	-7.714798	0
CPI Volatility	-0.000833	0.001803	-0.46199	0.6458
Company Taxation (rate in %)	-0.021493	0.036544	-0.588123	0.5587
R&D expenditure (Aggr.) growth	-0.012447	0.035883	-0.346889	0.7299

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.518174	Mean dependent var	0.025051
Adjusted R-squared	0.333475	S.D. dependent var	0.016735
F-statistic	2.805495	Durbin-Watson stat	2.307368
Prob(F-statistic)	0.000726		

Dependent Variable: GVA in Activities related to financegrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.175374	0.069006	-2.541422	0.013
Share of Financial Employment	2.519139	2.942894	0.856007	0.3946
Share of Financial Employment^2	0.184462	21.62122	0.008532	0.9932
LOG(GVA in Activities related to financepro capita)	-0.038947	0.009943	-3.917029	0.0002
CPI Volatility	0.005338	0.004451	1.199336	0.2341
Company Taxation (rate in %)	0.014527	0.104446	0.139088	0.8897
R&D expenditure (Aggr.) growth	0.058003	0.291546	0.198948	0.8428

Effects Specification	S.D.	Rho
Cross-section random	0.042924	0.1855
Idiosyncratic random	0.089948	0.8145

Weighted Statistics			
R-squared	0.124989	Mean dependent var	0.032793
Adjusted R-squared	0.056806	S.D. dependent var	0.097089
F-statistic	1.833141	Durbin-Watson stat	1.934273
Prob(F-statistic)	0.10358		

Dependent Variable: GVA in Business services, real estategrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.03331	0.014096	2.363147	0.0206
Share of Financial Employment	1.379361	0.636581	2.166826	0.0333
Share of Financial Employment^2	-5.264328	4.326974	-1.21663	0.2275
LOG(GVA in Business services, real estatepro capita)	-0.038388	0.010028	-3.828237	0.0003
CPI Volatility	-0.002121	0.002288	-0.926883	0.3569
Company Taxation (rate in %)	0.017996	0.029193	0.616431	0.5394
R&D expenditure (Aggr.) growth	0.063349	0.068741	0.921561	0.3596

Effects Specification	S.D.	Rho
Cross-section random	0.004744	0.0557
Idiosyncratic random	0.019531	0.9443

Weighted Statistics			
R-squared	0.29524	Mean dependent var	0.024873
Adjusted R-squared	0.240324	S.D. dependent var	0.024154
F-statistic	5.376186	Durbin-Watson stat	2.025051
Prob(F-statistic)	0.000111		

Dependent Variable: GVA in IT services growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.143548	0.172773	-0.830847	0.4094
Share of Financial Employment	8.16314	5.802147	1.406917	0.1646
Share of Financial Employment^2	-74.16186	32.63931	-2.272164	0.0267
LOG(GVA in IT services pro capita)	-0.072541	0.010701	-6.778652	0
CPI Volatility	-0.002836	0.005562	-0.509817	0.612
Company Taxation (rate in %)	-0.143409	0.204043	-0.702839	0.4849
R&D expenditure (Aggr.) growth	-0.296765	0.20248	-1.46565	0.148

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.562435	Mean dependent var	0.077707
Adjusted R-squared	0.394702	S.D. dependent var	0.088511
F-statistic	3.353154	Durbin-Watson stat	2.999908
Prob(F-statistic)	0.000089		

Dependent Variable: GVA in Research and development growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.132377	0.113695	-1.164321	0.2489
Share of Financial Employment	-1.163127	2.840845	-0.40943	0.6837
Share of Financial Employment^2	12.72396	16.09316	0.790644	0.4323
LOG(GVA in Research and development pro capita)	-0.064033	0.026662	-2.401614	0.0194
CPI Volatility	-0.002011	0.003466	-0.580236	0.5639
Company Taxation (rate in %)	-0.037234	0.176089	-0.211448	0.8333
R&D expenditure (Aggr.) growth	-0.010874	0.137471	-0.079104	0.9372

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.57813	Mean dependent var	0.034909
Adjusted R-squared	0.416413	S.D. dependent var	0.054882
F-statistic	3.57495	Durbin-Watson stat	2.194084
Prob(F-statistic)	0.000039		

Dependent Variable: GVA in Services to companies growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	-0.021865	0.029853	-0.732451	0.4661
Share of Financial Employment	1.628977	1.004958	1.620941	0.1091
Share of Financial Employment^2	-7.619599	7.084212	-1.075575	0.2855
LOG(GVA in Services to companies pro capita)	-0.017525	0.007978	-2.196812	0.031
CPI Volatility	0.000145	0.002361	0.061306	0.9513
Company Taxation (rate in %)	0.00898	0.029451	0.3049	0.7613
R&D expenditure (Aggr.) growth	0.058331	0.083898	0.695262	0.489

Effects Specification	S.D.	Rho
Cross-section random	0.011121	0.1409
Idiosyncratic random	0.027458	0.8591

Weighted Statistics			
R-squared	0.119693	Mean dependent var	0.025283
Adjusted R-squared	0.051098	S.D. dependent var	0.03025
F-statistic	1.744921	Durbin-Watson stat	1.888281
Prob(F-statistic)	0.121881		

Source: BAKBASEL

Tab. 9-18 National sector level – Share of Financial Employment – Baseline regressions – Linear specification

Dependent Variable: GVA in Primary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.018416	0.010635	-1.731584	0.0873
Share of Financial Employment	-0.460388	0.163206	-2.820903	0.0061
LOG(GVA in Primary Sector pro capita)	-0.018719	0.008925	-2.097426	0.0392
CPI Volatility	-0.000215	0.001962	-0.109714	0.9129
Company Taxation (rate in %)	0.092372	0.033354	2.769464	0.007
R&D expenditure (Aggr.) growth	-0.063583	0.059313	-1.071988	0.287

Effects Specification	S.D.	Rho
Cross-section random	0.009081	0.1343
Idiosyncratic random	0.023055	0.8657

Weighted Statistics			
R-squared	0.179716	Mean dependent var	0.006981
Adjusted R-squared	0.127134	S.D. dependent var	0.026819
F-statistic	3.417814	Durbin-Watson stat	2.302213
Prob(F-statistic)	0.00762		

Dependent Variable: GVA in Secondary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.00961	0.023483	-0.409219	0.6835
Share of Financial Employment	0.184869	0.077609	2.382065	0.0197
LOG(GVA in Secondary Sector pro capita)	0.000522	0.008289	0.062921	0.95
CPI Volatility	0.001528	0.001718	0.889096	0.3767
Company Taxation (rate in %)	0.016504	0.037657	0.438278	0.6624
R&D expenditure (Aggr.) growth	0.098491	0.073499	1.340039	0.1841

Effects Specification	S.D.	Rho
Cross-section random	0.002462	0.0134
Idiosyncratic random	0.021108	0.9866

Weighted Statistics			
R-squared	0.096028	Mean dependent var	0.01719
Adjusted R-squared	0.038081	S.D. dependent var	0.026031
F-statistic	1.657175	Durbin-Watson stat	1.731554
Prob(F-statistic)	0.154934		

Dependent Variable: GVA in Manufacturing growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.024425	0.020785	1.17511	0.2435
Share of Financial Employment	-0.020945	0.112244	-0.186607	0.8525
LOG(GVA in Manufacturing pro capita)	-0.008921	0.00977	-0.913093	0.364
CPI Volatility	0.000117	0.001604	0.072805	0.9421
Company Taxation (rate in %)	0.005062	0.055151	0.091786	0.9271
R&D expenditure (Aggr.) growth	0.052869	0.088856	0.595001	0.5536

Effects Specification	S.D.	Rho
Cross-section random	0.008635	0.1084
Idiosyncratic random	0.024763	0.8916

Weighted Statistics			
R-squared	0.036192	Mean dependent var	0.015178
Adjusted R-squared	-0.025591	S.D. dependent var	0.028155
F-statistic	0.585789	Durbin-Watson stat	1.526085
Prob(F-statistic)	0.710776		

Dependent Variable: GVA in Chemical / Pharmagrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.008349	0.029103	0.286893	0.775
Share of Financial Employment	0.601185	0.134688	4.463531	0
LOG(GVA in Chemical / Pharmapro capita)	-0.00929	0.014414	-0.644527	0.5211
CPI Volatility	-0.000311	0.001521	-0.204715	0.8383
Company Taxation (rate in %)	0.004407	0.095388	0.046198	0.9633
R&D expenditure (Aggr.) growth	0.001357	0.163279	0.008309	0.9934

Effects Specification	S.D.	Rho
Cross-section random	0.01206	0.0925
Idiosyncratic random	0.037774	0.9075

Weighted Statistics			
R-squared	0.056679	Mean dependent var	0.031911
Adjusted R-squared	-0.00379	S.D. dependent var	0.042185
F-statistic	0.937316	Durbin-Watson stat	1.629597
Prob(F-statistic)	0.461682		

Dependent Variable: GVA in Capital goods industry growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.043136	0.023149	1.863441	0.0662
Share of Financial Employment	-0.443571	0.188808	-2.34932	0.0213
LOG(GVA in Capital goods industry pro capita)	-0.01904	0.011512	-1.653868	0.1022
CPI Volatility	0.000326	0.002618	0.124536	0.9012
Company Taxation (rate in %)	0.000738	0.045498	0.016225	0.9871
R&D expenditure (Aggr.) growth	0.00792	0.087408	0.090615	0.928

Effects Specification	S.D.	Rho
Cross-section random	0.009267	0.062
Idiosyncratic random	0.036034	0.938

Weighted Statistics			
R-squared	0.111698	Mean dependent var	0.020581
Adjusted R-squared	0.054756	S.D. dependent var	0.042065
F-statistic	1.961597	Durbin-Watson stat	1.664167
Prob(F-statistic)	0.093675		

Dependent Variable: GVA in Mechanical engineering growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.016326	0.011953	1.365897	0.1759
Share of Financial Employment	-0.548075	0.184752	-2.966542	0.004
LOG(GVA in Mechanical engineering pro capita)	-0.01078	0.007225	-1.492023	0.1397
CPI Volatility	0.002242	0.001831	1.224104	0.2246
Company Taxation (rate in %)	0.009352	0.030165	0.310019	0.7574
R&D expenditure (Aggr.) growth	-0.042439	0.10052	-0.422197	0.674

Effects Specification	S.D.	Rho
Cross-section random	0.004471	0.0253
Idiosyncratic random	0.027758	0.9747

Weighted Statistics			
R-squared	0.148562	Mean dependent var	0.015706
Adjusted R-squared	0.093983	S.D. dependent var	0.033182
F-statistic	2.721951	Durbin-Watson stat	1.701619
Prob(F-statistic)	0.025521		

Dependent Variable: GVA in Precision instrumentsgrowth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.190889	0.119896	-1.592117	0.1165
Share of Financial Employment	0.967427	2.136223	0.452868	0.6523
LOG(GVA in Precision instrumentspro capita)	-0.090086	0.031936	-2.820822	0.0065
CPI Volatility	-0.002017	0.004018	-0.502106	0.6174
Company Taxation (rate in %)	-0.107206	0.151192	-0.709073	0.481
R&D expenditure (Aggr.) growth	-0.094033	0.202119	-0.465234	0.6434

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.466022	Mean dependent var	0.052031
Adjusted R-squared	0.273439	S.D. dependent var	0.076207
F-statistic	2.419857	Durbin-Watson stat	2.5258
Prob(F-statistic)	0.003505		

Dependent Variable: GVA in Construction growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.036608	0.037728	0.970307	0.3357
Share of Financial Employment	0.963454	0.726319	1.326489	0.1896
LOG(GVA in Construction pro capita)	-0.207146	0.061094	-3.390589	0.0012
CPI Volatility	-0.003483	0.004133	-0.842672	0.4027
Company Taxation (rate in %)	-0.013713	0.06581	-0.208371	0.8356
R&D expenditure (Aggr.) growth	0.058377	0.10877	0.5367	0.5934

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.533841	Mean dependent var	0.009417
Adjusted R-squared	0.365718	S.D. dependent var	0.043509
F-statistic	3.1753	Durbin-Watson stat	2.089284
Prob(F-statistic)	0.000194		

Dependent Variable: GVA in Trade and repair growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.102891	0.05401	1.905022	0.0615
Share of Financial Employment	0.110111	0.977721	0.11262	0.9107
LOG(GVA in Trade and repair pro capita)	-0.066059	0.01444	-4.574892	0
CPI Volatility	-0.000248	0.001763	-0.140553	0.8887
Company Taxation (rate in %)	-0.09084	0.075106	-1.209494	0.2311
R&D expenditure (Aggr.) growth	-0.043404	0.078824	-0.550653	0.5839

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.42542	Mean dependent var	0.023727
Adjusted R-squared	0.218195	S.D. dependent var	0.029417
F-statistic	2.052935	Durbin-Watson stat	2.391465
Prob(F-statistic)	0.014373		

Dependent Variable: GVA in Tertiary Sector growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.181289	0.02536	7.148658	0
Share of Financial Employment	-0.057089	0.418416	-0.13644	0.8919
LOG(GVA in Tertiary Sector pro capita)	-0.051618	0.007215	-7.154429	0
CPI Volatility	-0.000707	0.00169	-0.418163	0.6773
Company Taxation (rate in %)	-0.026064	0.035225	-0.739938	0.4622
R&D expenditure (Aggr.) growth	-0.011481	0.03963	-0.289704	0.773

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.506868	Mean dependent var	0.025051
Adjusted R-squared	0.329017	S.D. dependent var	0.016735
F-statistic	2.849956	Durbin-Watson stat	2.277944
Prob(F-statistic)	0.000668		

Dependent Variable: GVA in Activities related to financegrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.18083	0.046851	-3.859695	0.0002
Share of Financial Employment	2.604421	0.46636	5.58457	0
LOG(GVA in Activities related to financepro capita)	-0.040713	0.010382	-3.921417	0.0002
CPI Volatility	0.005265	0.004382	1.201601	0.2332
Company Taxation (rate in %)	0.011972	0.104681	0.114364	0.9092
R&D expenditure (Aggr.) growth	0.048146	0.293429	0.16408	0.8701

Effects Specification	S.D.	Rho
Cross-section random	0.04568	0.2077
Idiosyncratic random	0.089209	0.7923

Weighted Statistics			
R-squared	0.128161	Mean dependent var	0.031563
Adjusted R-squared	0.072274	S.D. dependent var	0.096501
F-statistic	2.293213	Durbin-Watson stat	1.946637

Prob(F-statistic)	0.053407

Dependent Variable: GVA in Business services, real estategrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.048047	0.015407	3.118514	0.0025
Share of Financial Employment	0.753905	0.136038	5.541875	0
LOG(GVA in Business services, real estatepro capita)	-0.038731	0.010247	-3.779582	0.0003
CPI Volatility	-0.002009	0.002283	-0.879901	0.3816
Company Taxation (rate in %)	0.020444	0.027154	0.752878	0.4538
R&D expenditure (Aggr.) growth	0.045723	0.070765	0.646126	0.5201

Effects Specification	S.D.	Rho
Cross-section random	0.003636	0.0332
Idiosyncratic random	0.01962	0.9668

Weighted Statistics			
R-squared	0.281035	Mean dependent var	0.026104
Adjusted R-squared	0.234948	S.D. dependent var	0.024366
F-statistic	6.09787	Durbin-Watson stat	1.992695
Prob(F-statistic)	0.000081		

Dependent Variable: GVA in IT services growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.092268	0.109549	0.842251	0.4029
Share of Financial Employment	-1.815183	2.784164	-0.651967	0.5169
LOG(GVA in IT services pro capita)	-0.071609	0.010575	-6.771848	0
CPI Volatility	-0.000502	0.006006	-0.083636	0.9336
Company Taxation (rate in %)	-0.181142	0.174926	-1.035538	0.3045
R&D expenditure (Aggr.) growth	-0.246455	0.223969	-1.1004	0.2755

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.507384	Mean dependent var	0.077707
Adjusted R-squared	0.32972	S.D. dependent var	0.088511
F-statistic	2.855855	Durbin-Watson stat	2.803605
Prob(F-statistic)	0.000653		

Dependent Variable: GVA in Research and development growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.175019	0.078067	-2.241892	0.0286
Share of Financial Employment	0.546573	0.971498	0.562609	0.5758
LOG(GVA in Research and development pro capita)	-0.065088	0.026845	-2.424595	0.0183
CPI Volatility	-0.002394	0.00333	-0.718875	0.475
Company Taxation (rate in %)	-0.033732	0.171254	-0.196968	0.8445
R&D expenditure (Aggr.) growth	-0.020357	0.12883	-0.158017	0.875

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.573939	Mean dependent var	0.034909
Adjusted R-squared	0.420278	S.D. dependent var	0.054882
F-statistic	3.73509	Durbin-Watson stat	2.146901
Prob(F-statistic)	0.000024		

Dependent Variable: GVA in Services to companies growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 84
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.001175	0.014419	-0.081459	0.9353
Share of Financial Employment	0.6581	0.117149	5.61765	0
LOG(GVA in Services to companies pro capita)	-0.012325	0.007624	-1.616558	0.11
CPI Volatility	0.000558	0.002349	0.237778	0.8127
Company Taxation (rate in %)	0.010979	0.028717	0.382336	0.7033
R&D expenditure (Aggr.) growth	0.056552	0.08524	0.663449	0.509

Effects Specification	S.D.	Rho
Cross-section random	0.009875	0.1127
Idiosyncratic random	0.027713	0.8873

Weighted Statistics			
R-squared	0.108923	Mean dependent var	0.026647
Adjusted R-squared	0.051803	S.D. dependent var	0.030536
F-statistic	1.906902	Durbin-Watson stat	1.862921
Prob(F-statistic)	0.102648		

Source: BAKBASEL

9.1.2.2 Robustness regressions – (Table 5-5)

Tab. 9-19 Robustness - National sector level – Net Private Credit to GDP (to Firms)

Dependent Variable: GVA in Primary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.017941	0.022585	0.794389	0.43
Net Private Credit to GDP (to Firms)	-0.00146	0.000569	-2.565573	0.0127
Net Private Credit to GDP (to Firms)^2	1.11E-05	4.97E-06	2.236936	0.0288
LOG(GVA in Primary Sector pro capita)	-0.020339	0.009372	-2.170201	0.0338
CPI Volatility	-0.000317	0.001726	-0.183903	0.8547
Company Taxation (rate in %)	0.063742	0.02646	2.408991	0.0189
R&D expenditure (Aggr.) growth	-0.097681	0.063652	-1.534612	0.1299

Effects Specification	S.D.	Rho
Cross-section random	0.011274	0.2467
Idiosyncratic random	0.019698	0.7533

Weighted Statistics			
R-squared	0.216373	Mean dependent var	0.005697
Adjusted R-squared	0.141742	S.D. dependent var	0.022843
F-statistic	2.899228	Durbin-Watson stat	2.437463
Prob(F-statistic)	0.014676		

Dependent Variable: GVA in Secondary Sector growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.67E-01	0.077614	3.44325	0.0012
Net Private Credit to GDP (to Firms)	-7.61E-04	6.29E-04	-1.210908	0.232
Net Private Credit to GDP (to Firms)^2	1.76E-06	4.25E-06	0.414719	0.6802
LOG(GVA in Secondary Sector pro capita)	-0.102371	0.032734	-3.127343	0.003
CPI Volatility	0.000148	0.001643	0.089905	0.9287
Company Taxation (rate in %)	-0.088072	0.064188	-1.372104	0.1765
R&D expenditure (Aggr.) growth	-0.088117	0.053512	-1.646694	0.1063

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.598638	Mean dependent var	0.014224
Adjusted R-squared	0.410766	S.D. dependent var	0.022593
F-statistic	3.186416	Durbin-Watson stat	2.14921
Prob(F-statistic)	0.000426		

Dependent Variable: GVA in Manufacturing growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.002645	0.024326	0.108717	0.9138
Net Private Credit to GDP (to Firms)	0.000128	0.000712	0.179287	0.8583
Net Private Credit to GDP (to Firms)^2	-2.75E-06	6.09E-06	-0.451277	0.6533
LOG(GVA in Manufacturing pro capita)	0.004705	0.009717	0.484164	0.6299
CPI Volatility	0.002348	0.001578	1.488448	0.1416
Company Taxation (rate in %)	0.00348	0.036928	0.094238	0.9252
R&D expenditure (Aggr.) growth	-0.005485	0.06084	-0.090153	0.9285

Effects Specification	S.D.	Rho
Cross-section random	0.006897	0.1105
Idiosyncratic random	0.019567	0.8895

Weighted Statistics			
R-squared	0.054524	Mean dependent var	0.01276
Adjusted R-squared	-0.035521	S.D. dependent var	0.023516
F-statistic	0.60552	Durbin-Watson stat	1.524721
Prob(F-statistic)	0.724899		

Dependent Variable: GVA in Chemical / Pharmagrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.066571	0.050657	1.314139	0.1936
Net Private Credit to GDP (to Firms)	-0.001362	0.001332	-1.02209	0.3106
Net Private Credit to GDP (to Firms)^2	9.81E-06	1.10E-05	0.892854	0.3753
LOG(GVA in Chemical / Pharmapro capita)	-0.001599	0.010281	-0.155538	0.8769
CPI Volatility	0.002119	0.001823	1.162445	0.2494
Company Taxation (rate in %)	0.038588	0.062649	0.615935	0.5402
R&D expenditure (Aggr.) growth	-0.131738	0.120377	-1.094382	0.278

Effects Specification	S.D.	Rho
Cross-section random	0.015587	0.2321
Idiosyncratic random	0.02835	0.7679

Weighted Statistics			
R-squared	0.073356	Mean dependent var	0.021563
Adjusted R-squared	-1.49E-02	S.D. dependent var	0.031536
F-statistic	0.831208	Durbin-Watson stat	1.47305
Prob(F-statistic)	0.550303		

Dependent Variable: GVA in Capital goods industry growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.002866	0.043557	-0.065807	0.9477
Net Private Credit to GDP (to Firms)	0.001174	0.000762	1.54089	0.1284
Net Private Credit to GDP (to Firms)^2	-1.26E-05	4.83E-06	-2.619679	0.011
LOG(GVA in Capital goods industry pro capita)	-0.015767	0.008565	-1.840881	0.0703
CPI Volatility	0.002062	0.002386	0.864031	0.3908
Company Taxation (rate in %)	0.020129	0.049793	0.404252	0.6874
R&D expenditure (Aggr.) growth	-0.069019	0.076894	-0.897586	0.3728

Effects Specification	S.D.	Rho
Cross-section random	0.012	0.1407
Idiosyncratic random	0.029656	0.8593

Weighted Statistics			
R-squared	0.13237	Mean dependent var	0.016018
Adjusted R-squared	0.049739	S.D. dependent var	0.034936
F-statistic	1.60E+00	Durbin-Watson stat	1.609471
Prob(F-statistic)	0.161415		

Dependent Variable: GVA in Mechanical engineering growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.079246	0.030896	-2.564963	0.0136
Net Private Credit to GDP (to Firms)	0.000472	0.001061	0.444422	0.6588
Net Private Credit to GDP (to Firms)^2	-7.06E-06	8.06E-06	-0.875632	0.3857
LOG(GVA in Mechanical engineering pro capita)	-0.121607	0.031693	-3.836993	0.0004
CPI Volatility	-0.000808	0.001513	-0.533997	0.5959
Company Taxation (rate in %)	-0.026756	0.099506	-0.268884	0.7892
R&D expenditure (Aggr.) growth	-0.27969	0.119207	-2.346262	0.0232

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.547816	Mean dependent var	0.016568
Adjusted R-squared	0.336155	S.D. dependent var	0.033901
F-statistic	2.588179	Durbin-Watson stat	2.139569
Prob(F-statistic)	0.003126		

Dependent Variable: GVA in Precision instrumentsgrowth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.228497	0.11419	-2.001019	0.0512
Net Private Credit to GDP (to Firms)	0.00029	0.001872	0.155158	0.8774
Net Private Credit to GDP (to Firms)^2	7.04E-07	1.45E-05	0.048576	0.9615
LOG(GVA in Precision instrumentspro capita)	-0.105765	0.035838	-2.951224	0.0049
CPI Volatility	-0.000969	0.004522	-0.214373	0.8312
Company Taxation (rate in %)	-0.059176	0.178235	-0.332012	0.7414
R&D expenditure (Aggr.) growth	-0.198988	0.196081	-1.014821	0.3154

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.435201	Mean dependent var	0.045331
Adjusted R-squared	0.170827	S.D. dependent var	0.069682
F-statistic	1.646155	Durbin-Watson stat	2.622478
Prob(F-statistic)	0.075873		

Dependent Variable: GVA in Construction growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.017768	0.038369	-0.463081	0.6449
Net Private Credit to GDP (to Firms)	0.001918	0.001629	1.177585	0.2434
Net Private Credit to GDP (to Firms)^2	-2.43E-05	1.57E-05	-1.549119	0.1264
LOG(GVA in Construction pro capita)	-0.033091	0.0194	-1.705708	0.093
CPI Volatility	-0.000432	0.002993	-0.144368	0.8857
Company Taxation (rate in %)	0.030792	0.047723	0.645231	0.5211
R&D expenditure (Aggr.) growth	-0.023236	0.046107	-0.503966	0.616

Effects Specification	S.D.	Rho
Cross-section random	0.014038	0.1635
Idiosyncratic random	0.031757	0.8365

Weighted Statistics			
R-squared	0.379042	Mean dependent var	0.002181
Adjusted R-squared	0.319903	S.D. dependent var	0.040644
F-statistic	6.409351	Durbin-Watson stat	2.107338
Prob(F-statistic)	0.000026		

Dependent Variable: GVA in Trade and repair growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.022412	0.033167	0.675752	0.5017
Net Private Credit to GDP (to Firms)	0.000566	0.000742	0.763415	0.4481
Net Private Credit to GDP (to Firms)^2	-6.16E-06	4.85E-06	-1.271118	0.2084
LOG(GVA in Trade and repair pro capita)	-0.009643	0.010837	-0.889847	0.3769
CPI Volatility	0.00035	0.001492	0.2346	0.8153
Company Taxation (rate in %)	-0.016517	0.050325	-0.328204	0.7438
R&D expenditure (Aggr.) growth	0.001848	0.082078	0.022521	0.9821

Effects Specification	S.D.	Rho
Cross-section random	0.009654	0.1401
Idiosyncratic random	0.023921	0.8599

Weighted Statistics			
R-squared	0.057998	Mean dependent var	0.016871
Adjusted R-squared	-0.031717	S.D. dependent var	0.026394
F-statistic	0.646468	Durbin-Watson stat	1.816091
Prob(F-statistic)	0.692673		

Dependent Variable: GVA in Tertiary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.026491	0.043092	0.614742	0.5409
Net Private Credit to GDP (to Firms)	0.000414	0.000295	1.403432	0.1654
Net Private Credit to GDP (to Firms)^2	-4.86E-06	2.73E-06	-1.782559	0.0795
LOG(GVA in Tertiary Sector pro capita)	-0.004174	0.013558	-0.307852	0.7592
CPI Volatility	0.001224	0.000811	1.509978	0.136
Company Taxation (rate in %)	-0.015932	0.017207	-0.925901	0.358
R&D expenditure (Aggr.) growth	0.016597	0.037541	0.442102	0.6599

Effects Specification	S.D.	Rho
Cross-section random	0.001707	0.0172
Idiosyncratic random	0.012891	0.9828

Weighted Statistics			
R-squared	0.160502	Mean dependent var	0.021919
Adjusted R-squared	0.08055	S.D. dependent var	0.014527
F-statistic	2.007473	Durbin-Watson stat	1.821478
Prob(F-statistic)	0.077781		

Dependent Variable: GVA in Activities related to financegrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.002498	0.097313	0.025671	0.9796
Net Private Credit to GDP (to Firms)	-0.000559	0.002858	-0.195633	0.8455
Net Private Credit to GDP (to Firms)^2	-2.17E-06	2.15E-05	-0.100941	0.9199
LOG(GVA in Activities related to financepro capita)	-0.020514	0.016571	-1.237974	0.2203
CPI Volatility	0.00492	0.004151	1.185147	0.2404
Company Taxation (rate in %)	0.033271	0.108288	0.307247	0.7597
R&D expenditure (Aggr.) growth	-0.032133	0.29136	-0.110285	0.9125

Effects Specification	S.D.	Rho
Cross-section random	0.046709	0.2176
Idiosyncratic random	0.08857	0.7824

Weighted Statistics			
R-squared	0.086218	Mean dependent var	0.028925
Adjusted R-squared	-0.000809	S.D. dependent var	0.095625
F-statistic	0.990705	Durbin-Watson stat	1.931211
Prob(F-statistic)	0.439352		

Dependent Variable: GVA in Business services, real estategrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.027804	0.02701	1.029391	0.3072
Net Private Credit to GDP (to Firms)	0.001016	0.000413	2.462929	0.0165
Net Private Credit to GDP (to Firms)^2	-1.08E-05	3.70E-06	-2.906876	0.005
LOG(GVA in Business services, real estatepro capita)	-0.017878	0.012167	-1.469412	0.1467
CPI Volatility	-0.000625	0.001115	-0.561033	0.5768
Company Taxation (rate in %)	-0.003519	0.027638	-0.127325	0.8991
R&D expenditure (Aggr.) growth	0.040517	0.056933	0.711664	0.4793

Effects Specification	S.D.	Rho
Cross-section random	0.006378	0.1585
Idiosyncratic random	0.014694	0.8415

Weighted Statistics			
R-squared	0.286031	Mean dependent var	0.017995
Adjusted R-squared	0.218034	S.D. dependent var	0.018963
F-statistic	4.206528	Durbin-Watson stat	1.899706
Prob(F-statistic)	0.001276		

Dependent Variable: GVA in IT services growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.035831	0.110582	-0.324022	0.7474
Net Private Credit to GDP (to Firms)	0.002072	0.002175	0.952563	0.3457
Net Private Credit to GDP (to Firms)^2	-1.81E-05	1.52E-05	-1.189104	0.2404
LOG(GVA in IT services pro capita)	-0.076223	0.010029	-7.600346	0
CPI Volatility	0.000282	0.004037	0.069944	0.9445
Company Taxation (rate in %)	-0.145518	0.171881	-0.846623	0.4015
R&D expenditure (Aggr.) growth	-0.350331	0.204906	-1.709721	0.0939

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.611901	Mean dependent var	0.077211
Adjusted R-squared	0.430237	S.D. dependent var	0.082145
F-statistic	3.36832	Durbin-Watson stat	2.956109
Prob(F-statistic)	0.000236		

Dependent Variable: GVA in Research and development growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.214423	0.073443	-2.919585	0.0054
Net Private Credit to GDP (to Firms)	-0.000188	0.001581	-0.119025	0.9058
Net Private Credit to GDP (to Firms)^2	5.10E-06	1.54E-05	0.331789	0.7415
LOG(GVA in Research and development pro capita)	-0.076724	0.027456	-2.794415	0.0075
CPI Volatility	-0.005306	0.004623	-1.147871	0.2568
Company Taxation (rate in %)	0.067224	0.224268	0.299748	0.7657
R&D expenditure (Aggr.) growth	-0.042453	0.140055	-0.303119	0.7631

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	6.24E-01	Mean dependent var	0.034978
Adjusted R-squared	0.448403	S.D. dependent var	0.05634
F-statistic	3.549608	Durbin-Watson stat	2.055677
Prob(F-statistic)	0.000133		

Dependent Variable: GVA in Services to companies growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.103859	0.047696	2.177524	0.0345
Net Private Credit to GDP (to Firms)	-0.001052	0.001211	-0.868784	0.3894
Net Private Credit to GDP (to Firms)^2	4.30E-06	1.20E-05	0.35877	0.7214
LOG(GVA in Services to companies pro capita)	-0.035291	0.020754	-1.700478	0.0957
CPI Volatility	-0.000809	0.001662	-0.486855	0.6286
Company Taxation (rate in %)	-0.111236	0.098518	-1.129099	0.2646
R&D expenditure (Aggr.) growth	0.023275	0.083481	0.278802	0.7816

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.509263	Mean dependent var	0.028962
Adjusted R-squared	0.279557	S.D. dependent var	0.029582
F-statistic	2.217018	Durbin-Watson stat	2.285336
Prob(F-statistic)	0.011096		

Source: BAKBASEL

Tab. 9-20 Robustness - National sector level – Net Private Credit to GDP (to Firms) – Linear specification

Dependent Variable: GVA in Primary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.022259	0.02621	-0.849253	0.3989
Net Private Credit to GDP (to Firms)	-8.71E-05	0.000207	-0.421427	0.6749
LOG(GVA in Primary Sector pro capita)	-0.019554	0.009186	-2.128632	0.0371
CPI Volatility	0.000249	0.001843	0.134914	0.8931
Company Taxation (rate in %)	6.29E-02	2.87E-02	2.194034	0.0319
R&D expenditure (Aggr.) growth	-0.084759	0.069177	-1.225252	0.225

Effects Specification	S.D.	Rho
Cross-section random	0.010646	0.2246
Idiosyncratic random	0.019781	0.7754

Weighted Statistics			
R-squared	0.161301	Mean dependent var	0.005892
Adjusted R-squared	0.095778	S.D. dependent var	0.023001
F-statistic	2.461731	Durbin-Watson stat	2.340972
Prob(F-statistic)	0.042066		

Dependent Variable: GVA in Secondary Sector growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.25699	0.07402	3.471923	0.0011
HYPOT_NET	-0.000542	0.000175	-3.093753	0.0033
LOG(XP_A1045R_KOPF)	-0.101144	0.032737	-3.089583	0.0033
_STDEV5_WB_CPI(-1)	0.000241	0.001545	0.155746	0.8769
TX_CO_AV	-0.082845	0.063686	-1.300836	0.1995
R&D expenditure AGW_GR(-1)	-0.088128	0.052893	-1.666177	0.1022

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.59751	Mean dependent var	0.014224
Adjusted R-squared	0.421421	S.D. dependent var	0.022593
F-statistic	3.393219	Durbin-Watson stat	2.148351
Prob(F-statistic)	0.000233		

Dependent Variable: GVA in Manufacturing growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.016384	0.023423	0.699481	0.4868
HYPOT_NET	-0.00022	0.000257	-0.857666	0.3943
LOG(XP_A1537R_KOPF)	0.002744	0.010105	0.271511	0.7869
_STDEV5_WB_CPI(-1)	0.002188	0.001559	1.40398	0.1652
TX_CO_AV	0.004929	0.03791	0.130012	0.897
R&D expenditure AGW_GR(-1)	-0.017179	0.062102	-0.276633	0.783

Effects Specification	S.D.	Rho
Cross-section random	0.008143	0.1495
Idiosyncratic random	0.019424	0.8505

Weighted Statistics			
R-squared	0.055386	Mean dependent var	0.011916
Adjusted R-squared	-0.018412	S.D. dependent var	0.023183
F-statistic	0.750506	Durbin-Watson stat	1.52
Prob(F-statistic)	0.588767		

Dependent Variable: GVA in Chemical / Pharmagrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.029813	0.034162	0.87269	0.3861
HYPOT_NET	-0.000145	0.000318	-0.457205	0.6491
LOG(XP_A24R_KOPF)	-0.002124	0.010492	-0.202396	0.8402
_STDEV5_WB_CPI(-1)	0.002594	0.002197	1.1809	0.242
TX_CO_AV	0.03686	0.065381	0.563767	0.5749
R&D expenditure AGW_GR(-1)	-0.120202	0.11899	-1.010183	0.3162

Effects Specification	S.D.	Rho
Cross-section random	0.015359	0.2304
Idiosyncratic random	0.028068	0.7696

Weighted Statistics			
R-squared	0.049921	Mean dependent var	0.021619
Adjusted R-squared	-0.024304	S.D. dependent var	0.031553
F-statistic	0.672562	Durbin-Watson stat	1.479019
Prob(F-statistic)	0.6457		

Dependent Variable: GVA in Capital goods industry growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.04954	0.037034	1.337683	0.1857
HYPOT_NET	-0.000424	0.00034	-1.247853	0.2166
LOG(XP_A2735R_KOPF)	-0.0209	0.008253	-2.532422	0.0138
_STDEV5_WB_CPI(-1)	0.001198	0.002121	0.564876	0.5741
TX_CO_AV	0.028443	0.050482	0.563424	0.5751
R&D expenditure AGW_GR(-1)	-0.119497	0.076586	-1.560308	0.1236

Effects Specification	S.D.	Rho
Cross-section random	0.017019	0.2514
Idiosyncratic random	0.029366	0.7486

Weighted Statistics			
R-squared	0.131817	Mean dependent var	0.013259
Adjusted R-squared	0.06399	S.D. dependent var	0.033689
F-statistic	1.943435	Durbin-Watson stat	1.621832
Prob(F-statistic)	0.099344		

Dependent Variable: GVA in Mechanical engineering growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.009045	0.026285	0.3441	0.7319
HYPOT_NET	-0.00021	0.000227	-0.926347	0.3577
LOG(XP_A29R_KOPF)	-0.007163	0.007398	-0.968249	0.3366
_STDEV5_WB_CPI(-1)	0.002707	0.002203	1.228798	0.2236
TX_CO_AV	0.011663	0.039208	0.29747	0.7671
R&D expenditure AGW_GR(-1)	-0.025196	0.115271	-0.218583	0.8277

Effects Specification	S.D.	Rho
Cross-section random	0.005123	0.0334
Idiosyncratic random	0.02756	0.9666

Weighted Statistics			
R-squared	0.087331	Mean dependent var	0.015358
Adjusted R-squared	0.016028	S.D. dependent var	0.033401
F-statistic	1.224792	Durbin-Watson stat	1.559657
Prob(F-statistic)	0.307855		

Dependent Variable: GVA in Precision instrumentsgrowth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.231205	0.085524	-2.703402	0.0095
HYPOT_NET	0.000378	0.000528	0.716014	0.4775
LOG(XP_A33R_KOPF)	-0.105624	0.036026	-2.931854	0.0051
_STDEV5_WB_CPI(-1)	-0.000938	0.004028	-0.232943	0.8168
TX_CO_AV	-0.057494	0.172838	-0.332647	0.7408
R&D expenditure AGW_GR(-1)	-0.198656	0.196962	-1.008605	0.3182

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.435182	Mean dependent var	0.045331
Adjusted R-squared	0.188074	S.D. dependent var	0.069682
F-statistic	1.761101	Durbin-Watson stat	2.624192
Prob(F-statistic)	0.053216		

Dependent Variable: GVA in Construction growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.072124	0.040558	1.778264	0.0801
HYPOT_NET	-0.001096	0.000464	-2.36312	0.0212
LOG(XP_A45R_KOPF)	-0.03053	0.019402	-1.573595	0.1205
_STDEV5_WB_CPI(-1)	-0.001662	0.003702	-0.448942	0.655
TX_CO_AV	0.036233	0.047079	0.769626	0.4444
R&D expenditure AGW_GR(-1)	-0.057214	0.049864	-1.1474	0.2555

Effects Specification	S.D.	Rho
Cross-section random	0.015311	0.1756
Idiosyncratic random	0.033178	0.8244

Weighted Statistics			
R-squared	0.294083	Mean dependent var	0.002107
Adjusted R-squared	0.238933	S.D. dependent var	0.040537
F-statistic	5.332436	Durbin-Watson stat	2.084167
Prob(F-statistic)	0.00037		

Dependent Variable: GVA in Trade and repair growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.045606	0.025212	1.808949	0.0752
HYPOT_NET	-0.000179	0.000191	-0.940019	0.3507
LOG(XP_A5052R_KOPF)	-0.011313	0.0113	-1.001122	0.3205
_STDEV5_WB_CPI(-1)	-1.30E-05	0.001612	-0.008093	0.9936
TX_CO_AV	-0.014135	0.04834	-0.292409	0.7709
R&D expenditure AGW_GR(-1)	-0.009056	0.07761	-0.116683	0.9075

Effects Specification	S.D.	Rho
Cross-section random	0.009516	0.1383
Idiosyncratic random	0.023756	0.8617

Weighted Statistics			
R-squared	0.044483	Mean dependent var	0.016923
Adjusted R-squared	-0.030166	S.D. dependent var	0.026407
F-statistic	0.595895	Durbin-Watson stat	1.819393
Prob(F-statistic)	0.703133		

Dependent Variable: GVA in Tertiary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.050967	0.038926	1.309349	0.1951
HYPOT_NET	-0.000155	8.53E-05	-1.813982	0.0744
LOG(XP_A5095R_KOPF)	-0.007291	0.012815	-0.568919	0.5714
_STDEV5_WB_CPI(-1)	0.000872	0.000976	0.893715	0.3748
TX_CO_AV	-0.01095	0.014156	-0.773508	0.4421
R&D expenditure AGW_GR(-1)	0.004067	0.034921	0.116457	0.9077

Effects Specification	S.D.	Rho
Cross-section random	0.000498	0.0015
Idiosyncratic random	0.013067	0.9985

Weighted Statistics			
R-squared	0.126619	Mean dependent var	0.022665
Adjusted R-squared	0.058386	S.D. dependent var	0.014604
F-statistic	1.855689	Durbin-Watson stat	1.828896
Prob(F-statistic)	0.114633		

Dependent Variable: GVA in Activities related to financegrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.010623	0.076758	0.138395	0.8904
HYPOT_NET	-0.000828	0.000616	-1.34566	0.1832
LOG(XP_A67R_KOPF)	-0.020516	0.016706	-1.228083	0.2239
_STDEV5_WB_CPI(-1)	0.004806	0.003968	1.211051	0.2303
TX_CO_AV	0.03362	0.106619	0.315329	0.7535
R&D expenditure AGW_GR(-1)	-0.035088	0.296176	-0.118471	0.9061

Effects Specification	S.D.	Rho
Cross-section random	0.046444	0.2187
Idiosyncratic random	0.087771	0.7813

Weighted Statistics			
R-squared	0.08631	Mean dependent var	0.028874
Adjusted R-squared	0.014927	S.D. dependent var	0.095589
F-statistic	1.209121	Durbin-Watson stat	1.932732
Prob(F-statistic)	0.315072		

Dependent Variable: GVA in Business services, real estategrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.073086	0.026443	2.763909	0.0075
HYPOT_NET	-0.000296	0.000175	-1.691382	0.0956
LOG(XP_A7074R_KOPF)	-0.022753	0.012915	-1.761845	0.0829
_STDEV5_WB_CPI(-1)	-0.001364	0.001322	-1.031919	0.306
TX_CO_AV	0.002525	0.031753	0.079529	0.9369
R&D expenditure AGW_GR(-1)	0.01872	0.058734	0.318731	0.751

Effects Specification	S.D.	Rho
Cross-section random	0.006955	0.1825
Idiosyncratic random	0.014722	0.8175

Weighted Statistics			
R-squared	0.220004	Mean dependent var	0.017292
Adjusted R-squared	0.159067	S.D. dependent var	0.018881
F-statistic	3.610338	Durbin-Watson stat	1.767511
Prob(F-statistic)	0.006131		

Dependent Variable: GVA in IT services growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.05412	0.060028	0.901575	0.3718
HYPOT_NET	-0.000335	0.000484	-0.691464	0.4926
LOG(XP_A72R_KOPF)	-0.06921	0.009756	-7.094353	0
_STDEV5_WB_CPI(-1)	4.26E-05	0.003763	0.011308	0.991
TX_CO_AV	-0.172442	0.175337	-0.983487	0.3303
R&D expenditure AGW_GR(-1)	-0.317056	0.203588	-1.557344	0.126

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.603748	Mean dependent var	0.077211
Adjusted R-squared	0.430388	S.D. dependent var	0.082145
F-statistic	3.482626	Durbin-Watson stat	2.882501
Prob(F-statistic)	0.000175		

Dependent Variable: GVA in Research and development growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.237349	0.059751	-3.972277	0.0002
HYPOT_NET	0.000455	0.000531	0.858474	0.3949
LOG(XP_A73R_KOPF)	-0.077061	0.026852	-2.869873	0.0061
_STDEV5_WB_CPI(-1)	-0.005134	0.004529	-1.133562	0.2626
TX_CO_AV	0.077472	0.234526	0.330333	0.7426
R&D expenditure AGW_GR(-1)	-0.044105	0.138872	-0.317594	0.7522

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.622738	Mean dependent var	0.034978
Adjusted R-squared	0.457685	S.D. dependent var	0.05634
F-statistic	3.772974	Durbin-Watson stat	2.060337
Prob(F-statistic)	0.000071		

Dependent Variable: GVA in Services to companies growth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 17
Total panel (unbalanced) observations: 70
White period standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.085151	0.046919	1.814827	0.0758
HYPOT_NET	-0.000508	0.000452	-1.124778	0.2663
LOG(XP_A74R_KOPF)	-0.035721	0.020341	-1.756117	0.0854
_STDEV5_WB_CPI(-1)	-0.000681	0.001663	-0.409187	0.6842
TX_CO_AV	-0.101774	0.097964	-1.038884	0.3041
R&D expenditure AGW_GR(-1)	0.021834	0.084302	0.258995	0.7967

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.505291	Mean dependent var	0.028962
Adjusted R-squared	0.288856	S.D. dependent var	0.029582
F-statistic	2.334608	Durbin-Watson stat	2.270422
Prob(F-statistic)	0.007748		

Source: BAKBASEL

9.1.2.3 Baseline regressions – (Table 5-6)

Tab. 9-21 Baseline - Regional aggregate level – Share of financial employment

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 258
Total panel (unbalanced) observations: 1136
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.035449	0.008429	4.205662	0
Share of Financial Employment	0.561729	0.1109	5.065168	0
Share of Financial Employment^2	-3.337896	1.104848	-3.021136	0.0026
LOG(GVA (Aggr.) pro capita)	-1.20E-02	2.80E-03	-4.303512	0
CPI Volatility	0.000484	0.000383	1.264276	0.2064
Company Taxation (rate in %)	0.01553	0.006339	2.449815	0.0144
R&D expenditure (Aggr.) growth	0.026794	0.007555	3.546529	0.0004

Effects Specification	S.D.	Rho
Cross-section random	0.004805	0.1137
Idiosyncratic random	0.013417	0.8863

Weighted Statistics			
R-squared	0.097162	Mean dependent var	0.016723
Adjusted R-squared	0.092364	S.D. dependent var	0.015049
F-statistic	20.25027	Durbin-Watson stat	1.816921
Prob(F-statistic)	0		

Dependent Variable: GVA (Aggr.) [aggr.- finance] growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 260
Total panel (unbalanced) observations: 1144
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.041136	0.009274	4.435605	0
Share of Financial Employment	0.627369	0.117463	5.340984	0
Share of Financial Employment^2	-4.130891	1.19052	-3.469822	0.0005
LOG(GVA (Aggr.) [aggr.- finance] pro capita)	-0.015443	0.00318	-4.856407	0
CPI Volatility	0.000146	0.000389	0.374262	0.7083
Company Taxation (rate in %)	0.023594	0.006822	3.458634	0.0006
R&D expenditure (Aggr.) growth	0.031247	0.008031	3.890672	0.0001

Effects Specification	S.D.	Rho
Cross-section random	0.00521	0.1165
Idiosyncratic random	0.01435	0.8835

Weighted Statistics			
R-squared	0.109718	Mean dependent var	0.016114
Adjusted R-squared	0.10502	S.D. dependent var	0.016111
F-statistic	23.35396	Durbin-Watson stat	1.731527
Prob(F-statistic)	0		

Source: BAKBASEL

9.1.2.4 Robustness regressions – (Table 5-7)

Tab. 9-22 Robustness - Regional aggregate level – No Crisis

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 878
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.036527	0.00752	4.857025	0
Share of Financial Employment	0.449827	0.124817	3.603882	0.0003
Share of Financial Employment^2	-3.170402	1.371598	-2.311466	0.021
LOG(GVA (Aggr.) pro capita)	-0.00813	0.002446	-3.324137	0.0009
CPI Volatility	0.000832	0.000407	2.043312	0.0413
Company Taxation (rate in %)	-0.003952	0.007301	-0.541374	0.5884
R&D expenditure (Aggr.) growth	0.004047	0.007996	0.506147	0.6129

Effects Specification	S.D.	Rho
Cross-section random	0.006515	0.22
Idiosyncratic random	0.012268	0.78

Weighted Statistics			
R-squared	0.045751	Mean dependent var	0.016968
Adjusted R-squared	0.039178	S.D. dependent var	0.012871
F-statistic	6.959972	Durbin-Watson stat	2.098254
Prob(F-statistic)	0		

Dependent Variable: GVA (Aggr.) [aggr.- finance] growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 260
Total panel (unbalanced) observations: 884
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.042046	0.007819	5.377386	0
Share of Financial Employment	0.575222	0.130697	4.4012	0
Share of Financial Employment^2	-4.611714	1.480296	-3.1154	0.0019
LOG(GVA (Aggr.) [aggr.- finance] pro capita)	-0.011561	0.002596	-4.454254	0
CPI Volatility	0.000345	0.000394	0.876474	0.381
Company Taxation (rate in %)	0.004107	0.00739	0.555715	0.5785
R&D expenditure (Aggr.) growth	0.010007	0.008151	1.227619	0.2199

Effects Specification	S.D.	Rho
Cross-section random	0.006416	0.2164
Idiosyncratic random	0.012208	0.7836

Weighted Statistics			
R-squared	0.0592	Mean dependent var	0.016888
Adjusted R-squared	0.052764	S.D. dependent var	0.01297
F-statistic	9.197575	Durbin-Watson stat	2.069436
Prob(F-statistic)	0		

Source: BAKBASEL

Tab. 9-23 Robustness - Regional aggregate level – No 80's

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 958
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.03089	0.008113	3.807382	0.0001
Share of Financial Employment	0.66368	0.128035	5.183579	0
Share of Financial Employment^2	-4.165788	1.262185	-3.300458	0.001
LOG(GVA (Aggr.) pro capita)	-0.009824	0.002707	-3.628613	0.0003
CPI Volatility	-0.000367	0.000458	-0.802194	0.4226
Company Taxation (rate in %)	0.006376	0.006904	0.923511	0.356
R&D expenditure (Aggr.) growth	0.025341	0.008085	3.134484	0.0018

Effects Specification	S.D.	Rho
Cross-section random	0.004185	0.0884
Idiosyncratic random	0.013436	0.9116

Weighted Statistics			
R-squared	0.067189	Mean dependent var	0.016675
Adjusted R-squared	0.061304	S.D. dependent var	0.015039
F-statistic	11.41651	Durbin-Watson stat	1.781718
Prob(F-statistic)	0		

Dependent Variable: GVA (Aggr.) [aggr.- finance] growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 260
Total panel (unbalanced) observations: 966
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.034808	0.008653	4.022533	0.0001
Share of Financial Employment	0.695126	0.136811	5.080921	0
Share of Financial Employment^2	-4.753245	1.393479	-3.411064	0.0007
LOG(GVA (Aggr.) [aggr.- finance] pro capita)	-0.012571	0.003025	-4.154994	0
CPI Volatility	-0.000584	0.000463	-1.259907	0.208
Company Taxation (rate in %)	0.015773	0.007556	2.087384	0.0371
R&D expenditure (Aggr.) growth	0.029823	0.00867	3.439952	0.0006

Effects Specification	S.D.	Rho
Cross-section random	0.004532	0.0875
Idiosyncratic random	0.014634	0.9125

Weighted Statistics			
R-squared	0.069923	Mean dependent var	0.015969
Adjusted R-squared	0.064104	S.D. dependent var	0.016248
F-statistic	12.01617	Durbin-Watson stat	1.689015
Prob(F-statistic)	0		

Source: BAKBASEL

Tab. 9-24 Robustness - Regional aggregate level – Without Luxembourg, United Kingdom and Switzerland

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample: 1980 2010 IF CNCODE<>"LU" AND CNCODE<>"UK" AND CNCODE<>"CH"
Periods included: 5
Cross-sections included: 206
Total panel (unbalanced) observations: 934
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.04444	0.011239	3.954282	0.0001
Share of Financial Employment	0.701328	0.139044	5.043927	0
Share of Financial Employment^2	-3.756484	1.52765	-2.458994	0.0141
LOG(GVA (Aggr.) pro capita)	-0.015622	0.003711	-4.209349	0
CPI Volatility	0.000873	0.000438	1.990118	0.0469
Company Taxation (rate in %)	0.010278	0.006586	1.560639	0.119
R&D expenditure (Aggr.) growth	0.021468	0.008005	2.681857	0.0075

Effects Specification	S.D.	Rho
Cross-section random	0.005042	0.123
Idiosyncratic random	0.013462	0.877

Weighted Statistics			
R-squared	0.129911	Mean dependent var	0.016817
Adjusted R-squared	0.124279	S.D. dependent var	0.015039
F-statistic	23.06798	Durbin-Watson stat	1.767302
Prob(F-statistic)	0		

Dependent Variable: GVA (Aggr.) [aggr.- finance] growth
Method: Panel EGLS (Cross-section random effects)
Sample: 1980 2010 IF CNCODE<>"LU" AND CNCODE<>"UK" AND CNCODE<>"CH"
Periods included: 5
Cross-sections included: 206
Total panel (unbalanced) observations: 934
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.046615	0.011621	4.011182	0.0001
Share of Financial Employment	0.815824	0.133113	6.128831	0
Share of Financial Employment^2	-5.340458	1.27371	-4.192838	0
LOG(GVA (Aggr.) [aggr.- finance] pro capita)	-0.017933	0.003939	-4.55221	0
CPI Volatility	0.000468	0.000435	1.076983	0.2818
Company Taxation (rate in %)	0.017772	0.00696	2.553267	0.0108
R&D expenditure (Aggr.) growth	0.026857	0.008408	3.194067	0.0015

Effects Specification	S.D.	Rho
Cross-section random	0.005036	0.1215
Idiosyncratic random	0.01354	0.8785

Weighted Statistics			
R-squared	0.149225	Mean dependent var	0.016604
Adjusted R-squared	0.143718	S.D. dependent var	0.015357
F-statistic	27.09911	Durbin-Watson stat	1.757988
Prob(F-statistic)	0		

Source: BAKBASEL

Tab. 9-25 Robustness - Regional aggregate level – High Finance-intensive subsample (~80 regions)

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 78
Total panel (unbalanced) observations: 348
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.05679	0.012219	4.647523	0
Employment Ratio in Finance to Aggregate	0.531486	0.182584	2.910914	0.0038
Employment Ratio in Finance to Aggregate [squared]	-2.717806	1.389675	-1.955714	0.0513
LOG(GVA (Aggr.) pro capita)	-0.017149	0.004169	-4.113367	0
Company Taxation (rate in %)	0.007777	0.015699	0.495369	0.6207
R&D Expenditure (Aggr.) growth	0.018812	0.013461	1.397567	0.1631

Effects Specification	S.D.	Rho
Cross-section random	0.004087	0.0816
Idiosyncratic random	0.013711	0.9184

Weighted Statistics			
R-squared	0.104943	Mean dependent var	0.019248
Adjusted R-squared	0.091858	S.D. dependent var	0.015298
F-statistic	8.01974	Durbin-Watson stat	1.942811
Prob(F-statistic)	0		

Dependent Variable: GVA (Aggr.) [aggr.- finance] growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 78
Total panel (unbalanced) observations: 348
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.056482	0.011943	4.729218	0
Employment Ratio in Finance to Aggregate	0.593187	0.197232	3.007557	0.0028
Employment Ratio in Finance to Aggregate [squared]	-3.559848	1.600929	-2.223614	0.0268
LOG(GVA (Aggr.) [aggr.- finance] pro capita)	-0.019789	0.004183	-4.730297	0
Company Taxation (rate in %)	0.021212	0.016772	1.264693	0.2068
R&D Expenditure (Aggr.) growth	0.026274	0.014454	1.817802	0.07

Effects Specification	S.D.	Rho
Cross-section random	0.003491	0.0563
Idiosyncratic random	0.014287	0.9437

Weighted Statistics			
R-squared	0.138554	Mean dependent var	0.019428
Adjusted R-squared	0.12596	S.D. dependent var	0.016178
F-statistic	11.00138	Durbin-Watson stat	1.841025
Prob(F-statistic)	0		

Source: BAKBASEL

Tab. 9-26 Robustness - Regional aggregate level – Medium Finance-intensive subsample (~80 regions)

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 79
Total panel (unbalanced) observations: 359
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.001984	0.013527	-0.146659	0.8835
Employment Ratio in Finance to Aggregate	1.634523	0.360774	4.530604	0
Employment Ratio in Finance to Aggregate [squared]	-16.92599	4.547151	-3.72233	0.0002
LOG(GVA (Aggr.) pro capita)	-0.010926	0.003994	-2.735895	0.0065
Company Taxation (rate in %)	0.067556	0.025286	2.671724	0.0079
R&D Expenditure (Aggr.) growth	0.030767	0.012475	2.466266	0.0141

Effects Specification	S.D.	Rho
Cross-section random	0.004299	0.1098
Idiosyncratic random	0.012243	0.8902

Weighted Statistics			
R-squared	0.151772	Mean dependent var	0.018153
Adjusted R-squared	0.139758	S.D. dependent var	0.014729
F-statistic	12.63235	Durbin-Watson stat	1.993654
Prob(F-statistic)	0		

Dependent Variable: GVA (Aggr.) [aggr.- finance] growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 79
Total panel (unbalanced) observations: 359
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.00364	0.014461	-0.251687	0.8014
Employment Ratio in Finance to Aggregate	1.636284	0.366411	4.465704	0
Employment Ratio in Finance to Aggregate [squared]	-16.59403	4.653497	-3.565927	0.0004
LOG(GVA (Aggr.) [aggr.- finance] pro capita)	-0.011729	0.004131	-2.839147	0.0048
Company Taxation (rate in %)	0.074866	0.02849	2.627777	0.009
R&D Expenditure (Aggr.) growth	0.03323	0.013263	2.505529	0.0127

Effects Specification	S.D.	Rho
Cross-section random	0.004294	0.1113
Idiosyncratic random	0.012136	0.8887

Weighted Statistics			
R-squared	0.174416	Mean dependent var	0.017934
Adjusted R-squared	0.162723	S.D. dependent var	0.014891
F-statistic	14.91527	Durbin-Watson stat	1.936644
Prob(F-statistic)	0		

Source: BAKBASEL

Tab. 9-27 Robustness - Regional aggregate level – Low Finance-intensive subsample (~80 regions)

Dependent Variable: GVA (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 106
Total panel (unbalanced) observations: 488
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.066094	0.015995	4.132161	0
Employment Ratio in Finance to Aggregate	0.639057	0.221969	2.879036	0.0042
Employment Ratio in Finance to Aggregate [squared]	-6.026098	2.902889	-2.075897	0.0384
LOG(GVA (Aggr.) pro capita)	-0.02138	0.005009	-4.268248	0
Company Taxation (rate in %)	0.010629	0.008251	1.288239	0.1983
R&D Expenditure (Aggr.) growth	0.029449	0.011376	2.588814	0.0099

Effects Specification	S.D.	Rho
Cross-section random	0.005878	0.1538
Idiosyncratic random	0.013787	0.8462

Weighted Statistics			
R-squared	0.120879	Mean dependent var	0.014618
Adjusted R-squared	0.11176	S.D. dependent var	0.015888
F-statistic	13.25499	Durbin-Watson stat	1.66067
Prob(F-statistic)	0		

Dependent Variable: GVA (Aggr.) [aggr.- finance] growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 106
Total panel (unbalanced) observations: 488
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.066417	0.016176	4.105799	0
Employment Ratio in Finance to Aggregate	0.616907	0.227481	2.711902	0.0069
Employment Ratio in Finance to Aggregate [squared]	-5.486536	3.022834	-1.815031	0.0701
LOG(GVA (Aggr.) [aggr.- finance] pro capita)	-0.022019	0.005131	-4.291578	0
Company Taxation (rate in %)	0.011019	0.008144	1.352957	0.1767
R&D Expenditure (Aggr.) growth	0.033449	0.011531	2.900886	0.0039

Effects Specification	S.D.	Rho
Cross-section random	0.005964	0.1552
Idiosyncratic random	0.013912	0.8448

Weighted Statistics			
R-squared	0.127768	Mean dependent var	0.014358
Adjusted R-squared	0.11872	S.D. dependent var	0.016074
F-statistic	14.12107	Durbin-Watson stat	1.665824
Prob(F-statistic)	0		

Source: BAKBASEL

9.1.2.5 Baseline regressions – (Table 5-8)

Tab. 9-28 Baseline - Regional sector level (80 Regions) – Share of financial employment

Dependent Variable: GVA in Primary Sector _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 75
Total panel (unbalanced) observations: 335
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.03581	0.020401	1.755295	0.0801
Share of financial employment	0.807407	0.808795	0.998284	0.3189
Share of financial employment [squared]	-2.289601	11.2238	-0.203995	0.8385
LOG(GVA in Primary Sector)	-0.011457	0.003351	-3.41856	0.0007
CPI Volatility	-2.07E-05	0.002668	-0.007759	0.9938
Company Taxation (rate in %)	0.113145	0.024728	4.57552	0
R&D Expenditure (Aggr.) growth	-0.057322	0.057336	-0.999767	0.3182

Effects Specification		S.D.	Rho
Cross-section random		0.012673	0.0772
Idiosyncratic random		0.043826	0.9228

Weighted Statistics			
R-squared	0.078669	Mean dependent var	0.012005
Adjusted R-squared	0.061816	S.D. dependent var	0.04974
F-statistic	4.667796	Durbin-Watson stat	1.796603
Prob(F-statistic)	0.000142		

Dependent Variable: GVA in Secondary Sector _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 73
Total panel (unbalanced) observations: 315
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.044893	0.013338	3.365749	0.0009
Share of financial employment	-0.402281	0.642272	-0.626342	0.5316
Share of financial employment [squared]	10.87784	8.541101	1.273588	0.2038
LOG(GVA in Secondary Sector)	-0.00609	0.001367	-4.455804	0
CPI Volatility	0.000908	0.001195	0.76007	0.4478
Company Taxation (rate in %)	0.05455	0.019895	2.741832	0.0065
R&D Expenditure (Aggr.) growth	0.058448	0.027928	2.09283	0.0372

Effects Specification		S.D.	Rho
Cross-section random		0.007799	0.1219
Idiosyncratic random		0.020935	0.8781

Weighted Statistics			
R-squared	0.094334	Mean dependent var	0.00949
Adjusted R-squared	0.076691	S.D. dependent var	0.022881
F-statistic	5.346877	Durbin-Watson stat	1.625541
Prob(F-statistic)	0.000029		

Dependent Variable: GVA in Manufacturing _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 75
Total panel (unbalanced) observations: 327
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.034482	0.013483	2.557454	0.011
Share of financial employment	0.180491	0.523827	0.344563	0.7306
Share of financial employment [squared]	3.645718	5.532458	0.658969	0.5104
LOG(GVA in Manufacturing)	-0.006937	0.001648	-4.210076	0
CPI Volatility	0.001806	0.001234	1.463761	0.1442
Company Taxation (rate in %)	0.068187	0.023928	2.849645	0.0047
R&D Expenditure (Aggr.) growth	0.046492	0.027226	1.707662	0.0887

Effects Specification	S.D.	Rho
Cross-section random	0.010738	0.1915
Idiosyncratic random	0.022062	0.8085

Weighted Statistics			
R-squared	0.108876	Mean dependent var	0.008397
Adjusted R-squared	0.092167	S.D. dependent var	0.024362
F-statistic	6.516158	Durbin-Watson stat	1.586387
Prob(F-statistic)	0.000002		

Dependent Variable: GVA in Chemical / Pharma_BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 79
Total panel (unbalanced) observations: 344
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.115864	0.029177	3.971028	0.0001
Share of financial employment	1.967792	0.618855	3.179733	0.0016
Share of financial employment [squared]	-15.61353	5.406488	-2.887924	0.0041
LOG(GVA in Chemical / Pharma)	-0.020368	0.003847	-5.294513	0
CPI Volatility	0.000166	0.001714	0.096621	0.9231
Company Taxation (rate in %)	0.013355	0.059204	0.225577	0.8217
R&D Expenditure (Aggr.) growth	0.061168	0.055321	1.105687	0.2697

Effects Specification	S.D.	Rho
Cross-section random	0.021834	0.1796
Idiosyncratic random	0.046664	0.8204

Weighted Statistics			
R-squared	0.092461	Mean dependent var	0.01901
Adjusted R-squared	0.076303	S.D. dependent var	0.051394
F-statistic	5.722291	Durbin-Watson stat	1.841119
Prob(F-statistic)	0.000011		

Dependent Variable: GVA in Capital goods industry _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 75
Total panel (unbalanced) observations: 331
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.07309	0.029516	2.476259	0.0138

Share of financial employment	0.818219	1.091759	0.749451	0.4541
Share of financial employment [squared]	-7.254731	12.77156	-0.568038	0.5704
LOG(GVA in Capital goods industry)	-0.013453	0.003841	-3.501914	0.0005
CPI Volatility	-0.001992	0.002587	-0.770085	0.4418
Company Taxation (rate in %)	0.105987	0.042661	2.484428	0.0135
R&D Expenditure (Aggr.) growth	0.130787	0.090559	1.444227	0.1496

Effects Specification	S.D.	Rho
Cross-section random	0.023347	0.2825
Idiosyncratic random	0.03721	0.7175

Weighted Statistics			
R-squared	0.100655	Mean dependent var	0.0115
Adjusted R-squared	0.084001	S.D. dependent var	0.040275
F-statistic	6.043711	Durbin-Watson stat	1.847669
Prob(F-statistic)	0.000005		

Dependent Variable: GVA in Mechanical engineering _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 76
Total panel (unbalanced) observations: 335
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.083114	0.03062	2.714398	0.007
Share of financial employment	-2.115649	1.265018	-1.672426	0.0954
Share of financial employment [squared]	32.08702	18.73868	1.712342	0.0878
LOG(GVA in Mechanical engineering)	-0.010038	0.003475	-2.889084	0.0041
CPI Volatility	-0.001068	0.001746	-0.611718	0.5411
Company Taxation (rate in %)	0.089202	0.049334	1.808134	0.0715
R&D Expenditure (Aggr.) growth	0.034273	0.049483	0.692628	0.489

Effects Specification	S.D.	Rho
Cross-section random	0.017744	0.2286
Idiosyncratic random	0.032596	0.7714

Weighted Statistics			
R-squared	0.063115	Mean dependent var	0.00744
Adjusted R-squared	0.045976	S.D. dependent var	0.037586
F-statistic	3.682695	Durbin-Watson stat	1.865253
Prob(F-statistic)	0.001483		

Dependent Variable: GVA in Precision instruments_BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 73
Total panel (unbalanced) observations: 316
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.018571	0.030574	0.607412	0.544
Share of financial employment	2.173023	1.126299	1.929348	0.0546
Share of financial employment [squared]	-14.48683	9.340465	-1.550975	0.1219
LOG(GVA in Precision instruments)	-0.016425	0.005781	-2.841279	0.0048
CPI Volatility	-0.005348	0.004649	-1.150328	0.2509
Company Taxation (rate in %)	0.170033	0.073009	2.328936	0.0205
R&D Expenditure (Aggr.) growth	0.288757	0.130962	2.204898	0.0282

Effects Specification	S.D.	Rho
Cross-section random	0.041051	0.2134
Idiosyncratic random	0.078812	0.7866

Weighted Statistics			
R-squared	0.09007	Mean dependent var	0.032496

Adjusted R-squared	0.072401	S.D. dependent var	0.087416
F-statistic	5.097758	Durbin-Watson stat	2.054225
Prob(F-statistic)	0.000052		

Dependent Variable: GVA in Construction _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 73
Total panel (unbalanced) observations: 305
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.050446	0.013936	3.619951	0.0003
Share of financial employment	0.91447	0.462894	1.97555	0.0491
Share of financial employment [squared]	-6.969084	4.689831	-1.485999	0.1383
LOG(GVA in Construction)	-0.00978	0.002701	-3.620818	0.0003
CPI Volatility	-0.002953	0.002114	-1.396873	0.1635
Company Taxation (rate in %)	0.04378	0.055824	0.784257	0.4335
R&D Expenditure (Aggr.) growth	0.041406	0.032266	1.283293	0.2004

Effects Specification	S.D.	Rho
Cross-section random	0.011508	0.1336
Idiosyncratic random	0.029307	0.8664

Weighted Statistics			
R-squared	0.047967	Mean dependent var	0.006125
Adjusted R-squared	0.028798	S.D. dependent var	0.035855
F-statistic	2.502379	Durbin-Watson stat	2.07424
Prob(F-statistic)	0.022327		

Dependent Variable: GVA in Trade and repair _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 78
Total panel (unbalanced) observations: 352
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.053945	0.023221	2.323134	0.0208
Share of financial employment	1.102659	0.462965	2.381732	0.0178
Share of financial employment [squared]	-9.618666	4.471653	-2.151032	0.0322
LOG(GVA in Trade and repair)	-0.007492	0.002691	-2.784369	0.0057
CPI Volatility	-0.000254	0.00112	-0.227001	0.8206
Company Taxation (rate in %)	0.015215	0.028162	0.54025	0.5894
R&D Expenditure (Aggr.) growth	0.051098	0.032696	1.562803	0.119

Effects Specification	S.D.	Rho
Cross-section random	0.014217	0.2452
Idiosyncratic random	0.02494	0.7548

Weighted Statistics			
R-squared	0.045247	Mean dependent var	0.01537
Adjusted R-squared	0.028642	S.D. dependent var	0.026997
F-statistic	2.724993	Durbin-Watson stat	1.927358
Prob(F-statistic)	0.013402		

Dependent Variable: GVA in Tertiary Sector _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 70
Total panel (unbalanced) observations: 306
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.020898	0.012607	1.657684	0.0984
Share of financial employment	0.55358	0.176598	3.134691	0.0019
Share of financial employment [squared]	-4.172915	1.755979	-2.376404	0.0181
LOG(GVA in Tertiary Sector)	-0.00185	0.00119	-1.554203	0.1212
CPI Volatility	0.00137	0.000613	2.236166	0.0261
Company Taxation (rate in %)	0.006674	0.01017	0.656217	0.5122
R&D Expenditure (Aggr.) growth	0.034428	0.015402	2.23521	0.0261

Effects Specification	S.D.	Rho
Cross-section random	0.006799	0.1824
Idiosyncratic random	0.014395	0.8176

Weighted Statistics			
R-squared	0.070285	Mean dependent var	0.016948
Adjusted R-squared	0.051629	S.D. dependent var	0.015627
F-statistic	3.767326	Durbin-Watson stat	2.074673
Prob(F-statistic)	0.001244		

Dependent Variable: GVA in Activities related to finance_BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 75
Total panel (unbalanced) observations: 317
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.028135	0.04482	0.627716	0.5307
Share of financial employment	0.989527	1.399843	0.706884	0.4802
Share of financial employment [squared]	-1.8405	12.23644	-0.150411	0.8805
LOG(GVA in Activities related to finance)	-0.01098	0.003701	-2.966612	0.0032
CPI Volatility	0.011084	0.003506	3.16192	0.0017
Company Taxation (rate in %)	0.016538	0.092697	0.178408	0.8585
R&D Expenditure (Aggr.) growth	0.052956	0.094763	0.558826	0.5767

Effects Specification	S.D.	Rho
Cross-section random	0.033921	0.1255
Idiosyncratic random	0.089549	0.8745

Weighted Statistics			
R-squared	0.063089	Mean dependent var	0.037367
Adjusted R-squared	0.044955	S.D. dependent var	0.097291
F-statistic	3.479095	Durbin-Watson stat	1.884307
Prob(F-statistic)	0.002417		

Dependent Variable: GVA in Business services, real estate_BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 74
Total panel (unbalanced) observations: 321
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.042752	0.014541	2.940058	0.0035
Share of financial employment	1.407379	0.310906	4.526699	0
Share of financial employment [squared]	-11.81186	2.534334	-4.660735	0
LOG(GVA in Business services, real estate)	-0.005716	0.001721	-3.320778	0.001
CPI Volatility	-0.002869	0.001189	-2.412405	0.0164
Company Taxation (rate in %)	0.013979	0.018407	0.759423	0.4482
R&D Expenditure (Aggr.) growth	0.113867	0.027479	4.143717	0

Effects Specification	S.D.	Rho
Cross-section random	0.008651	0.1341
Idiosyncratic random	0.021983	0.8659

Weighted Statistics			
R-squared	0.102381	Mean dependent var	0.021723
Adjusted R-squared	0.085229	S.D. dependent var	0.025875
F-statistic	5.969074	Durbin-Watson stat	1.9476
Prob(F-statistic)	0.000006		

Dependent Variable: GVA in IT services _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 73
Total panel (unbalanced) observations: 320
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.121511	0.037043	3.280306	0.0012
Share of financial employment	3.106559	0.96314	3.225448	0.0014
Share of financial employment [squared]	-29.58129	8.412805	-3.516222	0.0005
LOG(GVA in IT services)	-0.026431	0.005675	-4.657263	0
CPI Volatility	0.008559	0.003503	2.44354	0.0151
Company Taxation (rate in %)	0.09716	0.04567	2.127439	0.0342
R&D Expenditure (Aggr.) growth	-0.075522	0.071727	-1.052919	0.2932

Effects Specification	S.D.	Rho
Cross-section random	0.022004	0.1293
Idiosyncratic random	0.0571	0.8707

Weighted Statistics			
R-squared	0.23127	Mean dependent var	0.049266
Adjusted R-squared	0.216534	S.D. dependent var	0.069169
F-statistic	15.69416	Durbin-Watson stat	2.277689
Prob(F-statistic)	0		

Dependent Variable: GVA in Research and development _BRgrowth
Method: Panel Least Squares
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 73
Total panel (unbalanced) observations: 331

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.580578	0.309651	1.874946	0.062
Share of financial employment	2.482357	2.969495	0.835953	0.404
Share of financial employment [squared]	-18.32875	20.48354	-0.894804	0.3717
LOG(GVA in Research and development)	-0.115762	0.043914	-2.636108	0.0089
CPI Volatility	-0.01432	0.007925	-1.807043	0.0719
Company Taxation (rate in %)	0.022023	0.238695	0.092262	0.9266
R&D Expenditure (Aggr.) growth	-0.079546	0.094557	-0.841249	0.401

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.434978	Mean dependent var	0.038932
Adjusted R-squared	0.26009	S.D. dependent var	0.107602
F-statistic	2.487185	Durbin-Watson stat	2.465457
Prob(F-statistic)	0		

Dependent Variable: GVA in Services to companies _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 74
Total panel (unbalanced) observations: 314
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.051302	0.023695	2.16511	0.0311
Share of financial employment	0.69426	0.499926	1.388724	0.1659
Share of financial employment [squared]	-6.330436	4.592719	-1.378363	0.1691
LOG(GVA in Services to companies)	-0.008134	0.003095	-2.628324	0.009
CPI Volatility	0.003029	0.001845	1.641824	0.1017
Company Taxation (rate in %)	0.052373	0.036229	1.445606	0.1493
R&D Expenditure (Aggr.) growth	0.063159	0.037508	1.683904	0.0932

Effects Specification	S.D.	Rho
Cross-section random	0.01421	0.1786
Idiosyncratic random	0.030477	0.8214

Weighted Statistics			
R-squared	0.090713	Mean dependent var	0.022668
Adjusted R-squared	0.072942	S.D. dependent var	0.036008
F-statistic	5.104507	Durbin-Watson stat	1.701215
Prob(F-statistic)	0.000051		

Source: BAKBASEL

9.1.2.6 Robustness regressions (80 Regions) – (Table 5-9)

Tab. 9-29 Robustness - Regional sector level (80 Regions) – No Crisis years (1980 - 2005)

Dependent Variable: GVA in Primary Sector _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 75
Total panel (unbalanced) observations: 260
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	-0.051532	0.028167	-1.82955	0.0685
Share of financial employment	1.119297	0.879315	1.27292	0.2042
Share of financial employment ^2	-9.85925	11.73474	-0.840176	0.4016
LOG(GVA in Primary Sector pro capita)	-0.027077	0.009341	-2.898588	0.0041
CPI Volatility	3.38E-05	0.002493	0.013575	0.9892
Company Taxation (rate in %)	0.086969	0.029711	2.927146	0.0037
R&D expenditure (Aggr.) growth	-0.029255	0.053836	-0.543406	0.5873

Effects Specification		S.D.	Rho
Cross-section random		0.014554	0.1586
Idiosyncratic random		0.033526	0.8414

Weighted Statistics			
R-squared	0.110687	Mean dependent var	0.009733
Adjusted R-squared	0.089597	S.D. dependent var	0.044996
F-statistic	5.248212	Durbin-Watson stat	2.057194
Prob(F-statistic)	0.000041		

Dependent Variable: GVA in Secondary Sector _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 73
Total panel (unbalanced) observations: 242
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.045564	0.023917	1.905075	0.058
Share of financial employment	-0.788663	0.933655	-0.844706	0.3991
Share of financial employment ^2	14.1118	13.83733	1.019835	0.3089
LOG(GVA in Secondary Sector pro capita)	-0.018421	0.006959	-2.646868	0.0087
CPI Volatility	0.000494	0.00115	0.429091	0.6682
Company Taxation (rate in %)	0.04153	0.019297	2.152118	0.0324
R&D expenditure (Aggr.) growth	0.005015	0.034841	0.143946	0.8857

Effects Specification		S.D.	Rho
Cross-section random		0.009108	0.2202
Idiosyncratic random		0.017142	0.7798

Weighted Statistics			
R-squared	0.076123	Mean dependent var	0.01079
Adjusted R-squared	0.052535	S.D. dependent var	0.01894
F-statistic	3.227156	Durbin-Watson stat	1.808215
Prob(F-statistic)	0.004583		

Dependent Variable: GVA in Manufacturing _BRgrowth

Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 75
Total panel (unbalanced) observations: 252
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.020434	0.014698	1.390282	0.1657
Share of financial employment	-0.518499	0.578182	-0.896775	0.3707
Share of financial employment ^2	10.03363	6.130465	1.636683	0.103
LOG(GVA in Manufacturing pro capita)	-0.010371	0.007457	-1.390739	0.1656
CPI Volatility	0.000997	0.001142	0.872839	0.3836
Company Taxation (rate in %)	0.05105	0.020955	2.436138	0.0156
R&D expenditure (Aggr.) growth	-0.004946	0.035467	-0.139448	0.8892

Effects Specification	S.D.	Rho
Cross-section random	0.010401	0.238
Idiosyncratic random	0.01861	0.762

Weighted Statistics			
R-squared	0.053481	Mean dependent var	0.012177
Adjusted R-squared	0.030301	S.D. dependent var	0.020578
F-statistic	2.307202	Durbin-Watson stat	1.728385
Prob(F-statistic)	0.034756		

Dependent Variable: GVA in Chemical / Pharma_BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 79
Total panel (unbalanced) observations: 265
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.015239	0.027749	0.54917	0.5834
Share of financial employment	0.518986	0.832098	0.623707	0.5334
Share of financial employment ^2	-1.321398	7.018608	-0.188271	0.8508
LOG(GVA in Chemical / Pharmapro capita)	-0.014723	0.005929	-2.483236	0.0137
CPI Volatility	-0.000203	0.001845	-0.109988	0.9125
Company Taxation (rate in %)	-0.028604	0.06622	-0.431953	0.6661
R&D expenditure (Aggr.) growth	0.04251	0.05207	0.816396	0.415

Effects Specification	S.D.	Rho
Cross-section random	0.030561	0.3537
Idiosyncratic random	0.041309	0.6463

Weighted Statistics			
R-squared	0.030059	Mean dependent var	0.018595
Adjusted R-squared	0.007502	S.D. dependent var	0.043899
F-statistic	1.332589	Durbin-Watson stat	1.876263
Prob(F-statistic)	0.242914		

Dependent Variable: GVA in Capital goods industry _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 75
Total panel (unbalanced) observations: 256
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.01405	0.026343	0.533344	0.5943
Share of financial employment	1.038487	1.244116	0.834719	0.4047
Share of financial employment ^2	-13.61022	14.39177	-0.945695	0.3452
LOG(GVA in Capital goods industry pro capita)	-0.024322	0.005139	-4.733116	0
CPI Volatility	-0.001404	0.002248	-0.624733	0.5327
Company Taxation (rate in %)	0.063896	0.035139	1.818375	0.0702
R&D expenditure (Aggr.) growth	-0.001399	0.083767	-0.016697	0.9867

Effects Specification	S.D.	Rho
Cross-section random	0.026084	0.3513
Idiosyncratic random	0.035447	0.6487

Weighted Statistics			
R-squared	0.055714	Mean dependent var	0.016165
Adjusted R-squared	0.03296	S.D. dependent var	0.036791
F-statistic	2.448548	Durbin-Watson stat	1.739362
Prob(F-statistic)	0.02559		

Dependent Variable: GVA in Mechanical engineering _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 76
Total panel (unbalanced) observations: 259
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.032579	0.022783	1.429979	0.154
Share of financial employment	-2.025619	1.346324	-1.504556	0.1337
Share of financial employment ^2	28.86541	19.74442	1.461953	0.145
LOG(GVA in Mechanical engineering pro capita)	-0.018817	0.006296	-2.988536	0.0031
CPI Volatility	-0.000762	0.001716	-0.444267	0.6572
Company Taxation (rate in %)	0.021419	0.031791	0.673762	0.5011
R&D expenditure (Aggr.) growth	0.011034	0.056112	0.196647	0.8443

Effects Specification	S.D.	Rho
Cross-section random	0.021141	0.3663
Idiosyncratic random	0.027805	0.6337

Weighted Statistics			
R-squared	0.065332	Mean dependent var	0.008937
Adjusted R-squared	0.043078	S.D. dependent var	0.032663
F-statistic	2.935722	Durbin-Watson stat	2.09662
Prob(F-statistic)	0.008713		

Dependent Variable: GVA in Precision instruments_BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 73
Total panel (unbalanced) observations: 243
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.073184	0.035265	-2.075273	0.039
Share of financial employment	1.113351	1.052113	1.058205	0.291
Share of financial employment ^2	-4.844754	8.33839	-0.581018	0.5618
LOG(GVA in Precision instrumentspro capita)	-0.026799	0.00558	-4.802484	0
CPI Volatility	-0.008982	0.004447	-2.019778	0.0445
Company Taxation (rate in %)	0.199236	0.057892	3.441507	0.0007
R&D expenditure (Aggr.) growth	0.067474	0.144218	0.467863	0.6403

Effects Specification	S.D.	Rho
Cross-section random	0.046798	0.264
Idiosyncratic random	0.078135	0.736

Weighted Statistics			
R-squared	0.077451	Mean dependent var	0.041827
Adjusted R-squared	0.053996	S.D. dependent var	0.082527
F-statistic	3.302147	Durbin-Watson stat	2.138014
Prob(F-statistic)	0.003863		

Dependent Variable: GVA in Construction _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 73
Total panel (unbalanced) observations: 232
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.037808	0.015366	2.460469	0.0146
Share of financial employment	1.082123	0.420837	2.571361	0.0108
Share of financial employment ^2	-9.679179	3.804918	-2.54386	0.0116
LOG(GVA in Construction pro capita)	-0.040879	0.01101	-3.712981	0.0003
CPI Volatility	-0.002	0.002111	-0.947226	0.3445
Company Taxation (rate in %)	-0.106784	0.048635	-2.195632	0.0291
R&D expenditure (Aggr.) growth	0.048812	0.030796	1.58503	0.1144

Effects Specification	S.D.	Rho
Cross-section random	0.015451	0.2283
Idiosyncratic random	0.028407	0.7717

Weighted Statistics			
R-squared	0.113062	Mean dependent var	0.006477
Adjusted R-squared	0.08941	S.D. dependent var	0.034417
F-statistic	4.780282	Durbin-Watson stat	2.024308
Prob(F-statistic)	0.000131		

Dependent Variable: GVA in Trade and repair _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 78
Total panel (unbalanced) observations: 274
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.022607	0.017269	1.309077	0.1916
Share of financial employment	1.525562	0.466936	3.267174	0.0012
Share of financial employment ^2	-13.31648	4.252149	-3.131705	0.0019
LOG(GVA in Trade and repair pro capita)	-0.022129	0.004841	-4.570761	0
CPI Volatility	-0.001984	0.001379	-1.439023	0.1513
Company Taxation (rate in %)	-0.008596	0.03905	-0.220131	0.8259
R&D expenditure (Aggr.) growth	0.007441	0.0364	0.204434	0.8382

Effects Specification	S.D.	Rho
Cross-section random	0.012992	0.2196
Idiosyncratic random	0.024489	0.7804

Weighted Statistics			
R-squared	0.079331	Mean dependent var	0.020328
Adjusted R-squared	0.058642	S.D. dependent var	0.026697
F-statistic	3.834437	Durbin-Watson stat	1.991703
Prob(F-statistic)	0.001099		

Dependent Variable: GVA in Tertiary Sector _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 70
Total panel (unbalanced) observations: 236
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.034025	0.012537	2.714007	0.0072
Share of financial employment	0.474152	0.250379	1.893741	0.0595
Share of financial employment ^2	-3.521335	2.573388	-1.368365	0.1725
LOG(GVA in Tertiary Sector pro capita)	-0.005985	0.003718	-1.609838	0.1088
CPI Volatility	0.001378	0.000717	1.920887	0.056
Company Taxation (rate in %)	-0.020616	0.01042	-1.978525	0.0491
R&D expenditure (Aggr.) growth	0.008267	0.015662	0.527867	0.5981

Effects Specification	S.D.	Rho
Cross-section random	0.008678	0.2835
Idiosyncratic random	0.013797	0.7165

Weighted Statistics			
R-squared	0.047427	Mean dependent var	0.017057
Adjusted R-squared	0.022469	S.D. dependent var	0.01446
F-statistic	1.900261	Durbin-Watson stat	2.294747
Prob(F-statistic)	0.081715		

Dependent Variable: GVA in Activities related to finance_BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 75
Total panel (unbalanced) observations: 242
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.111259	0.056618	-1.965092	0.0506
Share of financial employment	1.562161	1.400623	1.115333	0.2658
Share of financial employment ^2	-4.236139	12.90598	-0.328231	0.743
LOG(GVA in Activities related to financepro capita)	-0.035739	0.008375	-4.267365	0
CPI Volatility	0.005387	0.003636	1.481474	0.1398
Company Taxation (rate in %)	0.069813	0.093022	0.750499	0.4537
R&D expenditure (Aggr.) growth	-0.059563	0.115767	-0.514506	0.6074

Effects Specification	S.D.	Rho
Cross-section random	0.026264	0.0802
Idiosyncratic random	0.088965	0.9198

Weighted Statistics			
R-squared	0.098135	Mean dependent var	0.049963
Adjusted R-squared	0.075109	S.D. dependent var	0.098561
F-statistic	4.261869	Durbin-Watson stat	1.898651
Prob(F-statistic)	0.000426		

Dependent Variable: GVA in Business services, real estate_BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 74
Total panel (unbalanced) observations: 247
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.031467	0.011934	2.636758	0.0089
Share of financial employment	2.108006	0.431187	4.888847	0
Share of financial employment ^2	-16.94452	3.470575	-4.882337	0
LOG(GVA in Business services, real estatepro capita)	-0.02929	0.006267	-4.673786	0
CPI Volatility	-0.004163	0.001233	-3.375964	0.0009
Company Taxation (rate in %)	0.001541	0.019169	0.080388	0.936
R&D expenditure (Aggr.) growth	0.06213	0.028917	2.148572	0.0327

Effects Specification	S.D.	Rho
Cross-section random	0.01145	0.2272
Idiosyncratic random	0.021119	0.7728

Weighted Statistics			
R-squared	0.155962	Mean dependent var	0.022177
Adjusted R-squared	0.134861	S.D. dependent var	0.025066
F-statistic	7.391208	Durbin-Watson stat	2.125277
Prob(F-statistic)	0		

Dependent Variable: GVA in IT services _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 73
Total panel (unbalanced) observations: 247
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	-0.00395	0.03464	-0.114023	0.9093
Share of financial employment	2.116795	0.894534	2.366368	0.0188
Share of financial employment ^2	-20.41932	7.885067	-2.589619	0.0102
LOG(GVA in IT services pro capita)	-0.047464	0.00654	-7.257884	0
CPI Volatility	0.005427	0.003558	1.525215	0.1285
Company Taxation (rate in %)	-0.079428	0.073649	-1.078463	0.2819
R&D expenditure (Aggr.) growth	-0.199214	0.076303	-2.610817	0.0096

Effects Specification	S.D.	Rho
Cross-section random	0.014652	0.0519
Idiosyncratic random	0.06265	0.9481

Weighted Statistics			
R-squared	0.321548	Mean dependent var	0.06598
Adjusted R-squared	0.304587	S.D. dependent var	0.076639
F-statistic	18.95774	Durbin-Watson stat	2.029978
Prob(F-statistic)	0		

Dependent Variable: GVA in Research and development _BRgrowth
Method: Panel Least Squares
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 73
Total panel (unbalanced) observations: 258

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.345798	0.166069	-2.082258	0.0387
Share of financial employment	2.525556	4.061036	0.6219	0.5348
Share of financial employment ^2	-18.98287	26.71488	-0.710573	0.4783
LOG(GVA in Research and development pro capita)	-0.161307	0.059875	-2.694041	0.0077
CPI Volatility	-0.013008	0.009551	-1.36197	0.1749
Company Taxation (rate in %)	-0.214319	0.288583	-0.742658	0.4587
R&D expenditure (Aggr.) growth	-0.079071	0.118838	-0.665366	0.5067

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.519767	Mean dependent var	0.043726
Adjusted R-squared	0.310504	S.D. dependent var	0.115685
F-statistic	2.483792	Durbin-Watson stat	2.701542
Prob(F-statistic)	0		

Dependent Variable: GVA in Services to companies _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 74
Total panel (unbalanced) observations: 240
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.023497	0.01763	1.332763	0.1839
Share of financial employment	0.604076	0.584166	1.034083	0.3022
Share of financial employment ^2	-5.009246	5.632944	-0.889277	0.3748
LOG(GVA in Services to companies pro capita)	-0.030981	0.010803	-2.867808	0.0045
CPI Volatility	0.00109	0.001763	0.617927	0.5372
Company Taxation (rate in %)	0.030148	0.024484	1.231327	0.2194
R&D expenditure (Aggr.) growth	-0.026252	0.042616	-0.61603	0.5385

Effects Specification	S.D.	Rho
Cross-section random	0.018797	0.3237
Idiosyncratic random	0.027173	0.6763

Weighted Statistics			
R-squared	0.123004	Mean dependent var	0.022208
Adjusted R-squared	0.10042	S.D. dependent var	0.033383
F-statistic	5.446591	Durbin-Watson stat	2.022226
Prob(F-statistic)	0.000027		

Source: BAKBASEL

Tab. 9-30 Robustness - Regional sector level (80 Regions) – No 80's (1990-2010)

Dependent Variable: GVA in Primary Sector _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 75
Total panel (unbalanced) observations: 284
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	-0.007793	0.013285	-0.586579	0.558
Share of financial employment	-0.440378	0.748628	-0.588247	0.5568
Share of financial employment ^2	12.30409	10.46891	1.175299	0.2409
LOG(GVA in Primary Sector pro capita)	-0.00888	0.007096	-1.251372	0.2119
CPI Volatility	-0.002962	0.001893	-1.564856	0.1188
Company Taxation (rate in %)	0.094292	0.025995	3.627277	0.0003
R&D expenditure (Aggr.) growth	-0.055283	0.066152	-0.835694	0.404

Effects Specification	S.D.	Rho
Cross-section random	0.005841	0.0179
Idiosyncratic random	0.043265	0.9821

Weighted Statistics			
R-squared	0.077751	Mean dependent var	0.01279
Adjusted R-squared	0.057774	S.D. dependent var	0.046131
F-statistic	3.892117	Durbin-Watson stat	1.728702
Prob(F-statistic)	0.00095		

Dependent Variable: GVA in Secondary Sector _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 73
Total panel (unbalanced) observations: 268
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.009829	0.020018	0.49099	0.6238
Share of financial employment	-0.568477	0.792166	-0.717624	0.4736
Share of financial employment ^2	12.17754	11.74744	1.036612	0.3009
LOG(GVA in Secondary Sector pro capita)	0.002073	0.006819	0.304028	0.7613
CPI Volatility	-0.000949	0.001093	-0.867799	0.3863
Company Taxation (rate in %)	-0.002095	0.017385	-0.120492	0.9042
R&D expenditure (Aggr.) growth	0.058648	0.033413	1.755272	0.0804

Effects Specification	S.D.	Rho
Cross-section random	0.007118	0.1026
Idiosyncratic random	0.021054	0.8974

Weighted Statistics			
R-squared	0.027667	Mean dependent var	0.008388
Adjusted R-squared	0.005315	S.D. dependent var	0.02255
F-statistic	1.237778	Durbin-Watson stat	1.667554
Prob(F-statistic)	0.287231		

Dependent Variable: GVA in Manufacturing _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4

Cross-sections included: 75
Total panel (unbalanced) observations: 280
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	-0.004695	0.012862	-0.365049	0.7154
Share of financial employment	-0.127328	0.557361	-0.228448	0.8195
Share of financial employment ^2	7.744078	5.656518	1.369054	0.1721
LOG(GVA in Manufacturing pro capita)	-0.002125	0.006276	-0.338554	0.7352
CPI Volatility	0.000955	0.001192	0.801037	0.4238
Company Taxation (rate in %)	0.026852	0.022685	1.183669	0.2376
R&D expenditure (Aggr.) growth	0.047298	0.032961	1.434961	0.1524

Effects Specification	S.D.	Rho
Cross-section random	0.0109	0.1954
Idiosyncratic random	0.022115	0.8046

Weighted Statistics			
R-squared	0.050776	Mean dependent var	0.007322
Adjusted R-squared	0.029914	S.D. dependent var	0.023994
F-statistic	2.433871	Durbin-Watson stat	1.651625
Prob(F-statistic)	0.026164		

Dependent Variable: GVA in Chemical / Pharma_BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 79
Total panel (unbalanced) observations: 296
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.028503	0.027064	1.053171	0.2931
Share of financial employment	0.956146	0.820725	1.165001	0.245
Share of financial employment ^2	-6.947086	6.57904	-1.055942	0.2919
LOG(GVA in Chemical / Pharmapro capita)	-0.009455	0.006696	-1.412073	0.159
CPI Volatility	-0.000356	0.001935	-0.183917	0.8542
Company Taxation (rate in %)	-0.104524	0.087186	-1.198869	0.2316
R&D expenditure (Aggr.) growth	0.032325	0.063406	0.509803	0.6106

Effects Specification	S.D.	Rho
Cross-section random	0.02024	0.1628
Idiosyncratic random	0.045905	0.8372

Weighted Statistics			
R-squared	0.02512	Mean dependent var	0.018348
Adjusted R-squared	0.004881	S.D. dependent var	0.052309
F-statistic	1.241148	Durbin-Watson stat	1.82559
Prob(F-statistic)	0.285161		

Dependent Variable: GVA in Capital goods industry _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 75
Total panel (unbalanced) observations: 280
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	-0.000524	0.026205	-0.019983	0.9841
Share of financial employment	1.267268	1.396766	0.907287	0.3651
Share of financial employment ^2	-12.08994	15.40374	-0.784871	0.4332
LOG(GVA in Capital goods industry pro capita)	-0.045591	0.010106	-4.511442	0
CPI Volatility	-0.004686	0.002413	-1.942359	0.0531

Company Taxation (rate in %)	0.130525	0.042426	3.076537	0.0023
R&D expenditure (Aggr.) growth	0.101355	0.100867	1.004838	0.3159

Effects Specification	S.D.	Rho
Cross-section random	0.025344	0.3342
Idiosyncratic random	0.035774	0.6658

Weighted Statistics			
R-squared	0.179849	Mean dependent var	0.010063
Adjusted R-squared	0.161823	S.D. dependent var	0.040907
F-statistic	9.977564	Durbin-Watson stat	1.903706
Prob(F-statistic)	0		

Dependent Variable: GVA in Mechanical engineering _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 76
Total panel (unbalanced) observations: 284
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.009873	0.01978 5	0.499011	0.6182
Share of financial employment	-1.140943	1.16371 5	-0.980432	0.3277
Share of financial employment ^2	10.22303	14.5500 7	0.70261	0.4829
LOG(GVA in Mechanical engineering pro capita)	-0.017259	0.00504	-3.424574	0.0007
CPI Volatility	-0.001099	0.00177 9	-0.617585	0.5374
Company Taxation (rate in %)	0.063159	0.04122	1.532237	0.1266
R&D expenditure (Aggr.) growth	-0.035344	0.04967	-0.711582	0.4773

Effects Specification	S.D.	Rho
Cross-section random	0.0159	0.1924
Idiosyncratic random	0.032578	0.8076

Weighted Statistics			
R-squared	0.059812	Mean dependent var	0.005063
Adjusted R-squared	0.039446	S.D. dependent var	0.036834
F-statistic	2.936963	Durbin-Watson stat	1.917991
Prob(F-statistic)	0.008554		

Dependent Variable: GVA in Precision instruments_BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 73
Total panel (unbalanced) observations: 270
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.139482	0.037809	-3.689105	0.0003
Share of financial employment	1.604363	1.189082	1.349245	0.1784
Share of financial employment ^2	-8.666112	10.08427	-0.859369	0.3909
LOG(GVA in Precision instrumentspro capita)	-0.028019	0.007717	-3.631033	0.0003
CPI Volatility	-0.00494	0.005151	-0.959123	0.3384
Company Taxation (rate in %)	0.267186	0.093376	2.861391	0.0046
R&D expenditure (Aggr.) growth	0.218181	0.166677	1.309007	0.1917

Effects Specification	S.D.	Rho
Cross-section random	0.04094	0.2192
Idiosyncratic random	0.07726	0.7808

Weighted Statistics

R-squared	0.11488	Mean dependent var	0.031201
Adjusted R-squared	0.094688	S.D. dependent var	0.089141
F-statistic	5.689166	Durbin-Watson stat	1.990711
Prob(F-statistic)	0.000014		

Dependent Variable: GVA in Construction _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 73
Total panel (unbalanced) observations: 262
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.030191	0.014008	2.155223	0.0321
Share of financial employment	0.785954	0.543524	1.446033	0.1494
Share of financial employment ^2	-6.163529	5.28918	-1.165309	0.245
LOG(GVA in Construction pro capita)	-0.023889	0.008749	-2.730357	0.0068
CPI Volatility	-0.00696	0.002315	-3.007053	0.0029
Company Taxation (rate in %)	-0.054842	0.055678	-0.984985	0.3256
R&D expenditure (Aggr.) growth	0.024787	0.0343	0.722669	0.4705

Effects Specification	S.D.	Rho
Cross-section random	0.012099	0.1769
Idiosyncratic random	0.026095	0.8231

Weighted Statistics			
R-squared	0.097339	Mean dependent var	0.00425
Adjusted R-squared	0.0761	S.D. dependent var	0.034188
F-statistic	4.583018	Durbin-Watson stat	1.859392
Prob(F-statistic)	0.000194		

Dependent Variable: GVA in Trade and repair _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 78
Total panel (unbalanced) observations: 298
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.01651	0.014357	1.149974	0.2511
Share of financial employment	1.914746	0.500893	3.822667	0.0002
Share of financial employment ^2	-14.78055	4.389865	-3.366973	0.0009
LOG(GVA in Trade and repair pro capita)	-0.029287	0.005833	-5.021252	0
CPI Volatility	-0.002989	0.001627	-1.837526	0.0672
Company Taxation (rate in %)	-0.024763	0.041317	-0.599348	0.5494
R&D expenditure (Aggr.) growth	0.065707	0.035422	1.85496	0.0646

Effects Specification	S.D.	Rho
Cross-section random	0.015746	0.3217
Idiosyncratic random	0.022866	0.6783

Weighted Statistics			
R-squared	0.10624	Mean dependent var	0.013923
Adjusted R-squared	0.087812	S.D. dependent var	0.026751
F-statistic	5.765112	Durbin-Watson stat	1.946104
Prob(F-statistic)	0.000011		

Dependent Variable: GVA in Tertiary Sector _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4

Cross-sections included: 70
Total panel (unbalanced) observations: 256
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.025063	0.0108	2.320639	0.0211
Share of financial employment	0.73021	0.250122	2.91941	0.0038
Share of financial employment ^2	-5.061078	2.34542	-2.157856	0.0319
LOG(GVA in Tertiary Sector pro capita)	-0.007183	0.003901	-1.841416	0.0668
CPI Volatility	0.000256	0.000797	0.320817	0.7486
Company Taxation (rate in %)	-0.005968	0.009673	-0.616957	0.5378
R&D expenditure (Aggr.) growth	0.01907	0.016937	1.125968	0.2613

Effects Specification	S.D.	Rho
Cross-section random	0.005754	0.1355
Idiosyncratic random	0.014538	0.8645

Weighted Statistics			
R-squared	0.0495	Mean dependent var	0.0177
Adjusted R-squared	0.026597	S.D. dependent var	0.015908
F-statistic	2.161238	Durbin-Watson stat	1.947398
Prob(F-statistic)	0.047323		

Dependent Variable: GVA in Activities related to finance_BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 75
Total panel (unbalanced) observations: 268
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.112471	0.071632	-1.570129	0.1176
Share of financial employment	2.053541	1.659001	1.237818	0.2169
Share of financial employment ^2	-6.117856	14.1413	-0.432623	0.6656
LOG(GVA in Activities related to financepro capita)	-0.032398	0.009934	-3.261284	0.0013
CPI Volatility	0.00884	0.004889	1.808031	0.0718
Company Taxation (rate in %)	-0.008393	0.123544	-0.067933	0.9459
R&D expenditure (Aggr.) growth	0.029543	0.105394	0.280307	0.7795

Effects Specification	S.D.	Rho
Cross-section random	0.03931	0.1721
Idiosyncratic random	0.086231	0.8279

Weighted Statistics			
R-squared	0.080569	Mean dependent var	0.033799
Adjusted R-squared	0.059432	S.D. dependent var	0.100421
F-statistic	3.811861	Durbin-Watson stat	1.861907
Prob(F-statistic)	0.001166		

Dependent Variable: GVA in Business services, real estate_BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 74
Total panel (unbalanced) observations: 272
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.

C	0.035354	0.010964	3.224645	0.0014
Share of financial employment	1.566105	0.419685	3.731624	0.0002
Share of financial employment ^2	-11.95328	3.360247	-3.557261	0.0004
LOG(GVA in Business services, real estatepro capita)	-0.025635	0.005918	-4.331806	0
CPI Volatility	-0.004118	0.001448	-2.844508	0.0048
Company Taxation (rate in %)	-0.004262	0.021472	-0.198513	0.8428
R&D expenditure (Aggr.) growth	0.076929	0.027662	2.780995	0.0058

Effects Specification	S.D.	Rho
Cross-section random	0.007785	0.1245
Idiosyncratic random	0.020644	0.8755

Weighted Statistics			
R-squared	0.133266	Mean dependent var	0.021522
Adjusted R-squared	0.113642	S.D. dependent var	0.025214
F-statistic	6.790931	Durbin-Watson stat	1.930084
Prob(F-statistic)	0.000001		

Dependent Variable: GVA in IT services _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 73
Total panel (unbalanced) observations: 270
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	-0.029974	0.031023	-0.9662	0.3348
Share of financial employment	2.935014	0.931727	3.150079	0.0018
Share of financial employment ^2	-25.27023	7.867898	-3.211815	0.0015
LOG(GVA in IT services pro capita)	-0.052763	0.006659	-7.923322	0
CPI Volatility	0.002339	0.003606	0.648655	0.5171
Company Taxation (rate in %)	-0.075112	0.073086	-1.027734	0.305
R&D expenditure (Aggr.) growth	-0.235833	0.078395	-3.008249	0.0029

Effects Specification	S.D.	Rho
Cross-section random	0.025405	0.166
Idiosyncratic random	0.056945	0.834

Weighted Statistics			
R-squared	0.295859	Mean dependent var	0.044179
Adjusted R-squared	0.279795	S.D. dependent var	0.069331
F-statistic	18.41745	Durbin-Watson stat	2.270745
Prob(F-statistic)	0		

Dependent Variable: GVA in Research and development _BRgrowth
Method: Panel Least Squares
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 73
Total panel (unbalanced) observations: 278

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.411827	0.187314	-2.198634	0.0291
Share of financial employment	3.706442	4.711181	0.786733	0.4324
Share of financial employment ^2	-33.0159		-0.705803	0.4811

	23.30275	4		
LOG(GVA in Research and development pro capita)	-0.13882	0.05669	-2.448737	0.0152
	-	0.00842		
CPI Volatility	0.019229	9	-2.281255	0.0236
Company Taxation (rate in %)	0.164447	0.42684	0.385265	0.7005
	-	0.12359		
R&D expenditure (Aggr.) growth	0.110703	9	-0.895661	0.3715

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.472845	Mean dependent var	0.037006
Adjusted R-squared	0.266222	S.D. dependent var	0.109231
F-statistic	2.288438	Durbin-Watson stat	2.329859
Prob(F-statistic)	0.000002		

Dependent Variable: GVA in Services to companies _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 74
Total panel (unbalanced) observations: 268
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.010947	0.016054	0.681936	0.4959
Share of financial employment	0.906403	0.527755	1.717471	0.0871
Share of financial employment ^2	-7.911212	4.318746	-1.831831	0.0681
LOG(GVA in Services to companies pro capita)	-0.018478	0.007298	-2.53211	0.0119
CPI Volatility	0.001365	0.002111	0.646913	0.5183
Company Taxation (rate in %)	0.005209	0.019697	0.264455	0.7916
R&D expenditure (Aggr.) growth	0.010954	0.04073	0.268947	0.7882

Effects Specification	S.D.	Rho
Cross-section random	0.011959	0.1358
Idiosyncratic random	0.03017	0.8642

Weighted Statistics			
R-squared	0.064532	Mean dependent var	0.022372
Adjusted R-squared	0.043027	S.D. dependent var	0.034808
F-statistic	3.00078	Durbin-Watson stat	1.723826
Prob(F-statistic)	0.007481		

Source: BAKBASEL

Tab. 9-31 Robustness - Regional sector level (80 Regions) – Country dummies

Dependent Variable: GVA in Primary Sector _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 75
Total panel (unbalanced) observations: 335
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	-0.048221	0.021026	-2.293436	0.0225
Share of financial employment	1.323124	0.912519	1.449969	0.1481
Share of financial employment ^2	-4.113491	12.31835	-0.333932	0.7387
LOG(GVA in Primary Sector pro capita)	-0.030235	0.012038	-2.511616	0.0125
CPI Volatility	-0.000327	0.0027	-0.120994	0.9038
Company Taxation (rate in %)	0.058385	0.023932	2.439639	0.0152
R&D expenditure (Aggr.) growth	-0.047631	0.065587	-0.726237	0.4682
DUM_UK	-0.027765	0.014179	-1.958181	0.0511
DUM_US	0.001321	0.014451	0.091377	0.9273
DUM_CH	-0.040316	0.015135	-2.663735	0.0081
DUM_DE	0.005822	0.018216	0.319608	0.7495
DUM_SE	0.028628	0.010231	2.798276	0.0055
DUM_BE	-0.020172	0.013214	-1.526584	0.1279
DUM_AT	-0.008848	0.009276	-0.953797	0.3409
DUM_FK	0.00271	0.017474	0.155076	0.8769
DUM_NO	0.026234	0.007786	3.369418	0.0008
DUM_NL	0.01215	0.009299	1.306561	0.1923

Effects Specification	S.D.	Rho
Cross-section random	0.010893	0.057
Idiosyncratic random	0.044296	0.943

Weighted Statistics			
R-squared	0.138421	Mean dependent var	0.012475
Adjusted R-squared	0.095071	S.D. dependent var	0.050123
F-statistic	3.193108	Durbin-Watson stat	1.730812
Prob(F-statistic)	0.000041		

Dependent Variable: GVA in Secondary Sector _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 73
Total panel (unbalanced) observations: 315
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.00822	0.019552	0.420445	0.6745
Share of financial employment	0.725451	0.782883	0.92664	0.3549
Share of financial employment ^2	-5.635444	11.99105	-0.469971	0.6387
LOG(GVA in Secondary Sector pro capita)	-0.018255	0.00671	-2.720572	0.0069
CPI Volatility	0.000751	0.001055	0.711589	0.4773
Company Taxation (rate in %)	0.050817	0.020387	2.492649	0.0132
R&D expenditure (Aggr.) growth	0.04381	0.031047	1.411068	0.1593
DUM_UK	-0.011223	0.004809	-2.333886	0.0203
DUM_US	0.00288	0.008245	0.349244	0.7272
DUM_CH	0.023492	0.005574	4.214448	0
DUM_DE	-0.022988	0.005709	-4.02663	0.0001
DUM_SE	0.022969	0.007109	3.23088	0.0014
DUM_BE	0.007743	0.006684	1.158521	0.2476

DUM_AT	0.024981	0.008106	3.081994	0.0022
DUM_FK	-0.000775	0.005493	-0.141004	0.888
DUM_NO	0.014651	0.006857	2.136535	0.0335
DUM_NL	0.012049	0.004995	2.412149	0.0165

Effects Specification	S.D.	Rho
Cross-section random	0.00546	0.0618
Idiosyncratic random	0.021271	0.9382

Weighted Statistics			
R-squared	0.185076	Mean dependent var	0.010704
Adjusted R-squared	0.141322	S.D. dependent var	0.023529
F-statistic	4.229906	Durbin-Watson stat	1.623281
Prob(F-statistic)	0		

Dependent Variable: GVA in Manufacturing _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 75
Total panel (unbalanced) observations: 327
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.00488	0.015388	-0.31714	0.7514
Share of financial employment	0.49822	0.578771	0.860824	0.39
Share of financial employment ^2	-1.609456	5.799689	-0.277507	0.7816
LOG(GVA in Manufacturing pro capita)	-0.016136	0.008101	-1.991943	0.0473
CPI Volatility	0.00192	0.001109	1.731438	0.0844
Company Taxation (rate in %)	0.063435	0.026571	2.387371	0.0176
R&D expenditure (Aggr.) growth	0.031325	0.030347	1.032209	0.3028
DUM_UK	-0.013002	0.005171	-2.514659	0.0124
DUM_US	0.004804	0.008476	0.566773	0.5713
DUM_CH	0.026348	0.006413	4.108273	0.0001
DUM_DE	-0.021542	0.005937	-3.628691	0.0003
DUM_SE	0.032973	0.006506	5.068301	0
DUM_BE	0.007675	0.01031	0.744458	0.4572
DUM_AT	0.026763	0.008321	3.216536	0.0014
DUM_FK	-0.002251	0.005798	-0.388286	0.6981
DUM_NO	0.000167	0.005337	0.031222	0.9751
DUM_NL	0.018367	0.00613	2.996363	0.003

Effects Specification	S.D.	Rho
Cross-section random	0.008835	0.1341
Idiosyncratic random	0.022454	0.8659

Weighted Statistics			
R-squared	0.200577	Mean dependent var	0.009332
Adjusted R-squared	0.159317	S.D. dependent var	0.024998
F-statistic	4.861241	Durbin-Watson stat	1.603214
Prob(F-statistic)	0		

Dependent Variable: GVA in Chemical / Pharma_BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 79
Total panel (unbalanced) observations: 344
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.066458	0.021425	-3.101834	0.0021
Share of financial employment	2.155449	0.619784	3.477741	0.0006
Share of financial employment ^2	-13.30198	4.79057	-2.7767	0.0058

LOG(GVA in Chemical / Pharmapro capita)	-0.033455	0.006046	-5.533795	0
CPI Volatility	-2.80E-05	0.002122	-0.01321	0.9895
Company Taxation (rate in %)	0.0251	0.067894	0.369689	0.7119
R&D expenditure (Aggr.) growth	0.048096	0.055868	0.860879	0.3899
DUM_UK	-0.002282	0.014733	-0.154888	0.877
DUM_US	-0.014519	0.015951	-0.910222	0.3634
DUM_CH	0.099406	0.019865	5.004173	0
DUM_DE	-0.005516	0.015398	-0.358235	0.7204
DUM_SE	0.056142	0.020933	2.681989	0.0077
DUM_BE	0.113755	0.050973	2.231655	0.0263
DUM_AT	0.029977	0.013343	2.246664	0.0253
DUM_FK	0.012439	0.011766	1.057209	0.2912
DUM_NO	0.025041	0.010901	2.297233	0.0222
DUM_NL	0.064252	0.015394	4.17379	0

Effects Specification	S.D.	Rho
Cross-section random	0.020215	0.1587
Idiosyncratic random	0.04654	0.8413

Weighted Statistics			
R-squared	0.167465	Mean dependent var	0.019703
Adjusted R-squared	0.126729	S.D. dependent var	0.051813
F-statistic	4.111013	Durbin-Watson stat	1.862351
Prob(F-statistic)	0		

Dependent Variable: GVA in Capital goods industry _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 75
Total panel (unbalanced) observations: 331
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.008392	0.032599	0.257442	0.797
Share of financial employment	1.891111	1.179775	1.602943	0.11
Share of financial employment ^2	-26.77709	14.08512	-1.901091	0.0582
LOG(GVA in Capital goods industry pro capita)	-0.043357	0.007249	-5.98082	0
CPI Volatility	-0.002464	0.001851	-1.330912	0.1842
Company Taxation (rate in %)	0.058288	0.040355	1.444388	0.1496
R&D expenditure (Aggr.) growth	0.062785	0.079109	0.793646	0.428
DUM_UK	-0.020571	0.009556	-2.152687	0.0321
DUM_US	0.035172	0.017302	2.032861	0.0429
DUM_CH	0.014807	0.011092	1.334852	0.1829
DUM_DE	-0.007085	0.01013	-0.699434	0.4848
DUM_SE	0.054264	0.015385	3.526944	0.0005
DUM_BE	-0.031748	0.024875	-1.276316	0.2028
DUM_AT	0.015923	0.010541	1.510667	0.1319
DUM_FK	-0.006479	0.009355	-0.692639	0.489
DUM_NO	-0.004987	0.012267	-0.406562	0.6846
DUM_NL	-0.009886	0.010158	-0.973211	0.3312

Effects Specification	S.D.	Rho
Cross-section random	0.018217	0.1976
Idiosyncratic random	0.036709	0.8024

Weighted Statistics			
R-squared	0.256186	Mean dependent var	0.013279
Adjusted R-squared	0.218285	S.D. dependent var	0.04161
F-statistic	6.759301	Durbin-Watson stat	1.780171
Prob(F-statistic)	0		

Dependent Variable: GVA in Mechanical engineering _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 76

Total panel (unbalanced) observations: 335
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.009196	0.026377	-0.348632	0.7276
Share of financial employment	-0.632741	1.267864	-0.499061	0.6181
Share of financial employment ^2	16.1499	17.4455	0.925734	0.3553
LOG(GVA in Mechanical engineering pro capita)	-0.037701	0.007806	-4.829909	0
CPI Volatility	-0.002231	0.001316	-1.695671	0.0909
Company Taxation (rate in %)	0.103845	0.037282	2.785386	0.0057
R&D expenditure (Aggr.) growth	-0.040715	0.047332	-0.860215	0.3903
DUM_UK	-0.040585	0.009893	-4.102273	0.0001
DUM_US	-0.02607	0.012472	-2.090234	0.0374
DUM_CH	0.01888	0.009835	1.919742	0.0558
DUM_DE	-0.031575	0.008896	-3.549216	0.0004
DUM_SE	0.036773	0.012189	3.016794	0.0028
DUM_BE	-0.088468	0.021795	-4.05905	0.0001
DUM_AT	-0.007638	0.011181	-0.683165	0.495
DUM_FK	-0.002163	0.008899	-0.243008	0.8082
DUM_NO	-0.015389	0.020642	-0.745518	0.4565
DUM_NL	0.004257	0.014135	0.301156	0.7635

Effects Specification	S.D.	Rho
Cross-section random	0.01461	0.1701
Idiosyncratic random	0.032272	0.8299

Weighted Statistics			
R-squared	0.204742	Mean dependent var	0.008295
Adjusted R-squared	0.164729	S.D. dependent var	0.038302
F-statistic	5.116885	Durbin-Watson stat	1.834057
Prob(F-statistic)	0		

Dependent Variable: GVA in Precision instruments_BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 73
Total panel (unbalanced) observations: 316
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.085301	0.028786	-2.963249	0.0033
Share of financial employment	0.116703	0.97493	0.119704	0.9048
Share of financial employment ^2	0.052983	8.398788	0.006308	0.995
LOG(GVA in Precision instrumentspro capita)	-0.032719	0.006494	-5.038707	0
CPI Volatility	-0.002237	0.004341	-0.515342	0.6067
Company Taxation (rate in %)	0.106665	0.054752	1.948145	0.0523
R&D expenditure (Aggr.) growth	0.132014	0.119709	1.102798	0.271
DUM_UK	-0.028048	0.015473	-1.812763	0.0709
DUM_US	0.093683	0.019655	4.76638	0
DUM_CH	0.077913	0.022782	3.419865	0.0007
DUM_DE	0.102575	0.022821	4.494806	0
DUM_SE	0.031059	0.016421	1.891424	0.0595
DUM_BE	-0.070718	0.037409	-1.890393	0.0597
DUM_AT	0.029352	0.02319	1.265711	0.2066
DUM_FK	0.01263	0.012993	0.972077	0.3318
DUM_NO	-0.025623	0.020757	-1.234426	0.218
DUM_NL	-0.008868	0.017429	-0.508821	0.6113

Effects Specification	S.D.	Rho
Cross-section random	0.014729	0.0345
Idiosyncratic random	0.077942	0.9655

Weighted Statistics			
R-squared	0.303408	Mean dependent var	0.044901
Adjusted R-squared	0.266132	S.D. dependent var	0.094699
F-statistic	8.139545	Durbin-Watson stat	2.122664
Prob(F-statistic)	0		

Dependent Variable: GVA in Tertiary Sector _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 70
Total panel (unbalanced) observations: 306
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.041211	0.010321	3.992822	0.0001
Share of financial employment	0.296773	0.229316	1.294167	0.1966
Share of financial employment ^2	-1.979431	1.949065	-1.01558	0.3107
LOG(GVA in Tertiary Sector pro capita)	-0.011225	0.003094	-3.628014	0.0003
CPI Volatility	0.001215	0.000704	1.726446	0.0853
Company Taxation (rate in %)	-0.016731	0.009843	-1.699846	0.0902
R&D expenditure (Aggr.) growth	0.03671	0.015691	2.339484	0.02
DUM_UK	0.014562	0.005291	2.752065	0.0063
DUM_US	0.016715	0.004736	3.529175	0.0005
DUM_CH	0.00547	0.004985	1.097188	0.2735
DUM_DE	0.00149	0.004122	0.361424	0.718
DUM_SE	0.001593	0.002729	0.583618	0.5599
DUM_BE	0.010609	0.002784	3.810555	0.0002
DUM_AT	0.005618	0.00281	1.999194	0.0465
DUM_FK	0.007085	0.002446	2.895855	0.0041
DUM_NO	0.003478	0.009685	0.35908	0.7198
DUM_NL	0.019155	0.007585	2.525428	0.0121

Effects Specification	S.D.	Rho
Cross-section random	0.005168	0.1226
Idiosyncratic random	0.013823	0.8774

Weighted Statistics			
R-squared	0.161844	Mean dependent var	0.018825
Adjusted R-squared	0.115441	S.D. dependent var	0.015968
F-statistic	3.487776	Durbin-Watson stat	2.111307
Prob(F-statistic)	0.00001		

Dependent Variable: GVA in Business services, real estate_BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 74
Total panel (unbalanced) observations: 321
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.052573	0.01061	4.955086	0
Share of financial employment	1.2501	0.338105	3.697374	0.0003
Share of financial employment ^2	-8.773956	2.566441	-3.418725	0.0007
LOG(GVA in Business services, real estatepro capita)	-0.035176	0.005605	-6.276037	0
CPI Volatility	-0.003904	0.001194	-3.26937	0.0012
Company Taxation (rate in %)	-0.039988	0.017984	-2.223534	0.0269
R&D expenditure (Aggr.) growth	0.098969	0.026585	3.722697	0.0002
DUM_UK	0.020296	0.005346	3.796273	0.0002
DUM_US	0.03109	0.006126	5.074881	0
DUM_CH	-0.007463	0.006636	-1.124504	0.2617
DUM_DE	0.014219	0.005466	2.601423	0.0097
DUM_SE	0.007283	0.005742	1.268358	0.2056
DUM_BE	0.022458	0.011426	1.965405	0.0503
DUM_AT	0.021094	0.006128	3.442505	0.0007
DUM_FK	0.012188	0.00649	1.877883	0.0614
DUM_NO	0.021922	0.003366	6.512948	0
DUM_NL	0.02858	0.010458	2.732785	0.0066

Effects Specification	S.D.	Rho

Cross-section random	0.00604	0.0787
Idiosyncratic random	0.020669	0.9213

Weighted Statistics			
R-squared	0.2615	Mean dependent var	0.024064
Adjusted R-squared	0.222631	S.D. dependent var	0.026426
F-statistic	6.727815	Durbin-Watson stat	1.937367
Prob(F-statistic)	0		

Dependent Variable: GVA in IT services _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 73
Total panel (unbalanced) observations: 320
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	-0.066208	0.031695	-2.088891	0.0376
Share of financial employment	2.460772	0.991066	2.482955	0.0136
Share of financial employment ^2	-20.26226	8.402725	-2.411391	0.0165
LOG(GVA in IT services pro capita)	-0.050676	0.006381	-7.941569	0
CPI Volatility	-0.00023	0.003637	-0.063371	0.9495
Company Taxation (rate in %)	0.063195	0.045763	1.380906	0.1683
R&D expenditure (Aggr.) growth	-0.096312	0.06609	-1.457287	0.1461
DUM_UK	0.048537	0.012539	3.870922	0.0001
DUM_US	-0.026651	0.013316	-2.001432	0.0462
DUM_CH	0.002916	0.019469	0.149801	0.881
DUM_DE	0.004843	0.012684	0.381784	0.7029
DUM_SE	0.050335	0.011158	4.511077	0
DUM_BE	-0.001481	0.008607	-0.172017	0.8635
DUM_AT	-0.012279	0.016173	-0.75922	0.4483
DUM_FK	0.027837	0.013276	2.096755	0.0368
DUM_NO	0.01245	0.008181	1.521866	0.1291
DUM_NL	0.070747	0.019893	3.55645	0.0004

Effects Specification	S.D.	Rho
Cross-section random	0.006876	0.0146
Idiosyncratic random	0.056563	0.9854

Weighted Statistics			
R-squared	0.40872	Mean dependent var	0.061655
Adjusted R-squared	0.377497	S.D. dependent var	0.073423
F-statistic	13.09047	Durbin-Watson stat	2.355668
Prob(F-statistic)	0		

Dependent Variable: GVA in Services to companies _BRgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2005
Periods included: 5
Cross-sections included: 74
Total panel (unbalanced) observations: 314
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.032971	0.014979	2.201192	0.0285
Share of financial employment	-0.545831	0.610771	-0.893676	0.3722
Share of financial employment ^2	4.531414	5.536685	0.818435	0.4138
LOG(GVA in Services to companies pro capita)	-0.031891	0.008946	-3.564672	0.0004
CPI Volatility	0.000372	0.001815	0.204831	0.8378
Company Taxation (rate in %)	0.002267	0.023376	0.096993	0.9228
R&D expenditure (Aggr.) growth	0.051251	0.037164	1.379036	0.1689
DUM_UK	0.04255	0.010452	4.071153	0.0001
DUM_US	0.04072	0.01249	3.260312	0.0012

DUM_CH	0.022879	0.012557	1.82197	0.0695
DUM_DE	-0.001749	0.008642	-0.20237	0.8398
DUM_SE	-0.025936	0.006895	-3.761448	0.0002
DUM_BE	0.060527	0.004069	14.87591	0
DUM_AT	0.006036	0.012197	0.494904	0.621
DUM_FK	0.016785	0.022608	0.742431	0.4584
DUM_NO	0.033744	0.007484	4.50863	0
DUM_NL	0.060066	0.015858	3.787824	0.0002

Effects Specification	S.D.	Rho
Cross-section random	0.006058	0.0397
Idiosyncratic random	0.029793	0.9603

Weighted Statistics			
R-squared	0.272755	Mean dependent var	0.029454
Adjusted R-squared	0.233577	S.D. dependent var	0.037963
F-statistic	6.961906	Durbin-Watson stat	1.713966
Prob(F-statistic)	0		

Source: BAKBASEL

9.1.2.7 Robustness regressions (281 Regions) – (Table 5-10)

Tab. 9-32 Robustness - Regional sector level (281 Regions) – No crisis (1980-2005)

Dependent Variable: GVA in Primary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 877
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.065975	0.021342	-3.091281	0.0021
Share of Financial Employment	0.724287	0.533522	1.357557	0.175
Share of Financial Employment^2	-7.383759	5.807242	-1.271474	0.2039
LOG(GVA in Primary Sector pro capita)	-0.00777	0.003176	-2.446804	0.0146
CPI Volatility	0.00017	0.002093	0.081316	0.9352
Company Taxation (rate in %)	0.1773	0.028222	6.282323	0
R&D expenditure (Aggr.) growth	-0.021212	0.027326	-0.776255	0.4378

Effects Specification	S.D.	Rho
Cross-section random	0.011489	0.0512
Idiosyncratic random	0.049437	0.9488

Weighted Statistics			
R-squared	0.071346	Mean dependent var	0.014984
Adjusted R-squared	0.064941	S.D. dependent var	0.056615
F-statistic	11.13994	Durbin-Watson stat	1.847683
Prob(F-statistic)	0		

Dependent Variable: GVA in Secondary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 878
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.045949	0.006993	6.570789	0
Share of Financial Employment	0.033162	0.188327	0.176087	0.8603
Share of Financial Employment^2	-0.823765	1.794886	-0.458951	0.6464
LOG(GVA in Secondary Sector pro capita)	-0.018424	0.003024	-6.092734	0
CPI Volatility	-6.18E-05	0.000655	-0.094343	0.9249
Company Taxation (rate in %)	0.013783	0.012853	1.072356	0.2839
R&D expenditure (Aggr.) growth	0.005417	0.017155	0.315746	0.7523

Effects Specification	S.D.	Rho
Cross-section random	0.011076	0.2445
Idiosyncratic random	0.019472	0.7555

Weighted Statistics			
R-squared	0.069166	Mean dependent var	0.01331
Adjusted R-squared	0.062754	S.D. dependent var	0.021299
F-statistic	10.78662	Durbin-Watson stat	2.139059

Prob(F-statistic)	0

Dependent Variable: GVA in Manufacturing growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 878
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.041601	0.008552	4.864407	0
Share of Financial Employment	-0.208042	0.238749	-0.871383	0.3838
Share of Financial Employment^2	0.62541	2.116001	0.295562	0.7676
LOG(GVA in Manufacturing pro capita)	-0.017012	0.002966	-5.736631	0
CPI Volatility	-0.000221	0.000717	-0.307737	0.7584
Company Taxation (rate in %)	0.033139	0.016539	2.003668	0.0454
R&D expenditure (Aggr.) growth	-0.016054	0.01955	-0.821182	0.4118

Effects Specification	S.D.	Rho
Cross-section random	0.014728	0.2686
Idiosyncratic random	0.024306	0.7314

Weighted Statistics			
R-squared	0.074063	Mean dependent var	0.015441
Adjusted R-squared	0.067684	S.D. dependent var	0.026284
F-statistic	11.61138	Durbin-Watson stat	1.784978
Prob(F-statistic)	0		

Dependent Variable: GVA in Chemical / Pharmagrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 257
Total panel (unbalanced) observations: 876
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.011626	0.017795	0.653312	0.5137
Share of Financial Employment	-0.823206	0.482574	-1.705863	0.0884
Share of Financial Employment^2	8.134415	4.249963	1.913997	0.0559
LOG(GVA in Chemical / Pharmapro capita)	-0.022073	0.004958	-4.451708	0
CPI Volatility	0.002552	0.001519	1.680574	0.0932
Company Taxation (rate in %)	0.021756	0.039267	0.554045	0.5797
R&D expenditure (Aggr.) growth	-0.01547	0.036929	-0.418911	0.6754

Effects Specification	S.D.	Rho
Cross-section random	0.028575	0.224
Idiosyncratic random	0.053188	0.776

Weighted Statistics			
R-squared	0.103237	Mean dependent var	0.02823
Adjusted R-squared	0.097046	S.D. dependent var	0.062244
F-statistic	16.67353	Durbin-Watson stat	2.106811
Prob(F-statistic)	0		

Dependent Variable: GVA in Capital goods industry growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 878

Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.032187	0.010783	2.984926	0.0029
Share of Financial Employment	0.096907	0.399447	0.242602	0.8084
Share of Financial Employment^2	-2.627372	3.620039	-0.725785	0.4682
LOG(GVA in Capital goods industry pro capita)	-0.017442	0.002808	-6.210581	0
CPI Volatility	-0.001624	0.001038	-1.563667	0.1183
Company Taxation (rate in %)	0.028666	0.021564	1.329346	0.1841
R&D expenditure (Aggr.) growth	-0.016975	0.029194	-0.581451	0.5611

Effects Specification	S.D.	Rho
Cross-section random	0.02461	0.3154
Idiosyncratic random	0.036253	0.6846

Weighted Statistics			
R-squared	0.056491	Mean dependent var	0.01889
Adjusted R-squared	0.049991	S.D. dependent var	0.038545
F-statistic	8.691563	Durbin-Watson stat	1.968939
Prob(F-statistic)	0		

Dependent Variable: GVA in Mechanical engineering growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 876
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.00656	0.010261	-0.639285	0.5228
Share of Financial Employment	0.044294	0.426134	0.103944	0.9172
Share of Financial Employment^2	-3.036237	4.048858	-0.7499	0.4535
LOG(GVA in Mechanical engineering pro capita)	-0.019787	0.002342	-8.448717	0
CPI Volatility	-0.000421	0.001205	-0.348986	0.7272
Company Taxation (rate in %)	0.03197	0.017177	1.861207	0.0631
R&D expenditure (Aggr.) growth	0.007637	0.029974	0.254779	0.799

Effects Specification	S.D.	Rho
Cross-section random	0.023943	0.2621
Idiosyncratic random	0.040179	0.7379

Weighted Statistics			
R-squared	0.101234	Mean dependent var	0.016904
Adjusted R-squared	0.095029	S.D. dependent var	0.046963
F-statistic	16.3136	Durbin-Watson stat	2.044552
Prob(F-statistic)	0		

Dependent Variable: GVA in Precision instrumentsgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 876
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	-0.065283	0.021593	-3.023335	0.0026
Share of Financial Employment	1.326179	0.68235	1.943545	0.0523
Share of Financial Employment^2	-7.728421	6.390274	-1.209404	0.2268
LOG(GVA in Precision instrumentspro capita)	-0.027411	0.004687	-5.848323	0
CPI Volatility	-0.007727	0.00334	-2.313825	0.0209
Company Taxation (rate in %)	0.099364	0.042744	2.324657	0.0203
R&D expenditure (Aggr.) growth	0.096861	0.065259	1.484261	0.1381

Effects Specification			S.D.	Rho
Cross-section random			0.025922	0.0729
Idiosyncratic random			0.092446	0.9271

Weighted Statistics			
R-squared	0.103317	Mean dependent var	0.060182
Adjusted R-squared	0.097126	S.D. dependent var	0.101485
F-statistic	16.68794	Durbin-Watson stat	2.277611
Prob(F-statistic)	0		

Dependent Variable: GVA in Construction growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 878
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.014958	0.007563	1.977639	0.0483
Share of Financial Employment	0.389794	0.250545	1.555786	0.1201
Share of Financial Employment^2	-1.93753	2.670855	-0.725434	0.4684
LOG(GVA in Construction pro capita)	-0.041433	0.005898	-7.025324	0
CPI Volatility	0.000235	0.000954	0.246715	0.8052
Company Taxation (rate in %)	-0.025409	0.019472	-1.304868	0.1923
R&D expenditure (Aggr.) growth	0.049002	0.017969	2.727019	0.0065

Effects Specification			S.D.	Rho
Cross-section random			0.011788	0.1481
Idiosyncratic random			0.028269	0.8519

Weighted Statistics			
R-squared	0.112941	Mean dependent var	0.011129
Adjusted R-squared	0.10683	S.D. dependent var	0.034855
F-statistic	18.48269	Durbin-Watson stat	2.204096
Prob(F-statistic)	0		

Dependent Variable: GVA in Trade and repair growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 878
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.014426	0.007509	1.921223	0.055
Share of Financial Employment	0.931175	0.270951	3.436685	0.0006
Share of Financial Employment^2	-6.897848	2.798248	-2.46506	0.0139
LOG(GVA in Trade and repair pro capita)	-0.016489	0.002884	-5.718008	0
CPI Volatility	0.000825	0.000665	1.241411	0.2148
Company Taxation (rate in %)	0.009506	0.016566	0.573843	0.5662
R&D expenditure (Aggr.) growth	-0.018365	0.017079	-1.075277	0.2825

Effects Specification			S.D.	Rho
Cross-section random			0.012398	0.2121
Idiosyncratic random			0.023894	0.7879

Weighted Statistics			
R-squared	0.046606	Mean dependent var	0.019901
Adjusted R-squared	0.040038	S.D. dependent var	0.025833
F-statistic	7.096323	Durbin-Watson stat	2.066711
Prob(F-statistic)	0		

Dependent Variable: GVA in Tertiary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 878
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.03089	0.005657	5.460328	0
Share of Financial Employment	0.604975	0.131149	4.612891	0
Share of Financial Employment^2	-4.338097	1.486966	-2.917416	0.0036
LOG(GVA in Tertiary Sector pro capita)	-0.007124	0.002095	-3.400084	0.0007
CPI Volatility	0.001266	0.00038	3.333054	0.0009
Company Taxation (rate in %)	-0.012072	0.006772	-1.78256	0.075
R&D expenditure (Aggr.) growth	0.00523	0.00779	0.671333	0.5022

Effects Specification	S.D.	Rho
Cross-section random	0.006328	0.2082
Idiosyncratic random	0.012341	0.7918

Weighted Statistics			
R-squared	0.070427	Mean dependent var	0.01884
Adjusted R-squared	0.064023	S.D. dependent var	0.013097
F-statistic	10.99817	Durbin-Watson stat	2.020658
Prob(F-statistic)	0		

Dependent Variable: GVA in Activities related to financegrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 257
Total panel (unbalanced) observations: 865
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.140392	0.023173	-6.058333	0
Share of Financial Employment	2.889096	0.634464	4.553598	0
Share of Financial Employment^2	-16.17304	6.927015	-2.334777	0.0198
LOG(GVA in Activities related to financepro capita)	-0.025593	0.005302	-4.826927	0
CPI Volatility	0.001783	0.002188	0.814658	0.4155
Company Taxation (rate in %)	0.136352	0.03848	3.543437	0.0004
R&D expenditure (Aggr.) growth	0.008641	0.064134	0.134735	0.8929

Effects Specification	S.D.	Rho
Cross-section random	0.018323	0.0402
Idiosyncratic random	0.089564	0.9598

Weighted Statistics			
R-squared	0.090269	Mean dependent var	0.058413
Adjusted R-squared	0.083907	S.D. dependent var	0.100317
F-statistic	14.18935	Durbin-Watson stat	2.109837
Prob(F-statistic)	0		

Dependent Variable: GVA in Business services, real estategrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 878
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.026559	0.006034	4.401701	0

Share of Financial Employment	1.225177	0.216387	5.661971	0
Share of Financial Employment^2	-8.983427	2.02585	-4.434399	0
LOG(GVA in Business services, real estatepro capita)	-0.025494	0.003958	-6.440354	0
CPI Volatility	-0.001715	0.000697	-2.461856	0.014
Company Taxation (rate in %)	0.028655	0.014932	1.919039	0.0553
R&D expenditure (Aggr.) growth	0.033782	0.015885	2.126667	0.0337

Effects Specification	S.D.	Rho
Cross-section random	0.01125	0.2444
Idiosyncratic random	0.019782	0.7556

Weighted Statistics			
R-squared	0.113965	Mean dependent var	0.022116
Adjusted R-squared	0.107862	S.D. dependent var	0.023891
F-statistic	18.67189	Durbin-Watson stat	1.92302
Prob(F-statistic)	0		

Dependent Variable: GVA in IT services growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 875
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.003201	0.01896	0.168837	0.866
Share of Financial Employment	1.325818	0.659428	2.010558	0.0447
Share of Financial Employment^2	-9.706453	6.776022	-1.432471	0.1524
LOG(GVA in IT services pro capita)	-0.041795	0.003397	-12.30238	0
CPI Volatility	-0.00081	0.002157	-0.375335	0.7075
Company Taxation (rate in %)	-0.105192	0.039506	-2.662702	0.0079
R&D expenditure (Aggr.) growth	-0.038755	0.043599	-0.888897	0.3743

Effects Specification	S.D.	Rho
Cross-section random	0.030671	0.2075
Idiosyncratic random	0.059939	0.7925

Weighted Statistics			
R-squared	0.222888	Mean dependent var	0.054844
Adjusted R-squared	0.217516	S.D. dependent var	0.070223
F-statistic	41.49259	Durbin-Watson stat	1.915493
Prob(F-statistic)	0		

Dependent Variable: GVA in Research and development growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 252
Total panel (unbalanced) observations: 853
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.12466	0.025625	-4.864804	0
Share of Financial Employment	2.288066	0.666919	3.430798	0.0006
Share of Financial Employment^2	-15.85198	5.572431	-2.844715	0.0046
LOG(GVA in Research and development pro capita)	-0.038971	0.006735	-5.78638	0
CPI Volatility	-0.00112	0.002817	-0.39748	0.6911
Company Taxation (rate in %)	-0.021475	0.045687	-0.470048	0.6384
R&D expenditure (Aggr.) growth	-0.061748	0.048271	-1.279207	0.2012

Effects Specification	S.D.	Rho
Cross-section random	0.034638	0.181

Idiosyncratic random		0.073677	0.819

Weighted Statistics			
R-squared	0.136686	Mean dependent var	0.032386
Adjusted R-squared	0.130563	S.D. dependent var	0.088527
F-statistic	22.32415	Durbin-Watson stat	2.228595
Prob(F-statistic)	0		

Dependent Variable: GVA in Services to companies growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 878
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	-0.010527	0.009373	-1.123009	0.2617
Share of Financial Employment	1.56418	0.333465	4.69069	0
Share of Financial Employment^2	-11.0591	3.055588	-3.619303	0.0003
LOG(GVA in Services to companies pro capita)	-0.027451	0.003619	-7.586324	0
CPI Volatility	-0.002418	0.000973	-2.486551	0.0131
Company Taxation (rate in %)	0.048188	0.019356	2.48954	0.013
R&D expenditure (Aggr.) growth	0.011445	0.020002	0.572167	0.5674

Effects Specification	S.D.	Rho
Cross-section random	0.017804	0.2805
Idiosyncratic random	0.028517	0.7195

Weighted Statistics			
R-squared	0.10378	Mean dependent var	0.025295
Adjusted R-squared	0.097607	S.D. dependent var	0.033604
F-statistic	16.80998	Durbin-Watson stat	1.908958
Prob(F-statistic)	0		

Source: BAKBASEL

Tab. 9-33 Robustness - Regional sector level (281 Regions) – No 80's (1990-2010)

Dependent Variable: GVA in Primary Sector growth
Method: Panel Least Squares
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 957

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	-0.211978	0.084473	-2.509424	0.0123
Share of Financial Employment	-3.402172	2.826915	-1.203493	0.2292
Share of Financial Employment^2	45.67446	26.57108	1.718954	0.0861
LOG(GVA in Primary Sector pro capita)	-0.158909	0.03034	-5.237583	0
CPI Volatility	0.011657	0.006004	1.941499	0.0526
Company Taxation (rate in %)	0.009717	0.078195	0.124268	0.9011
R&D expenditure (Aggr.) growth	0.035621	0.058891	0.604854	0.5455

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.33387	Mean dependent var	0.00383
Adjusted R-squared	0.081068	S.D. dependent var	0.114492
F-statistic	1.320676	Durbin-Watson stat	2.018869
Prob(F-statistic)	0.002689		

Dependent Variable: GVA in Secondary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 958
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.018161	0.007594	2.391373	0.017
Share of Financial Employment	0.247289	0.190188	1.300233	0.1938
Share of Financial Employment^2	-1.869509	1.625814	-1.149891	0.2505
LOG(GVA in Secondary Sector pro capita)	-0.011367	0.003128	-3.633954	0.0003
CPI Volatility	-0.001642	0.000683	-2.403669	0.0164
Company Taxation (rate in %)	0.025182	0.013049	1.929811	0.0539
R&D expenditure (Aggr.) growth	0.057879	0.016156	3.582564	0.0004

Effects Specification	S.D.	Rho
Cross-section random	0.009741	0.1618
Idiosyncratic random	0.022174	0.8382

Weighted Statistics			
R-squared	0.039939	Mean dependent var	0.008962
Adjusted R-squared	0.033882	S.D. dependent var	0.024857
F-statistic	6.593732	Durbin-Watson stat	1.847333
Prob(F-statistic)	0.000001		

Dependent Variable: GVA in Manufacturing growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 958
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.008147	0.009228	0.88284	0.3775
Share of Financial Employment	0.421421	0.256392	1.643656	0.1006
Share of Financial Employment^2	-3.386989	2.196068	-1.542297	0.1233
LOG(GVA in Manufacturing pro capita)	-0.017834	0.003168	-5.630118	0
CPI Volatility	-0.000595	0.000697	-0.85426	0.3932
Company Taxation (rate in %)	0.057409	0.019652	2.921312	0.0036
R&D expenditure (Aggr.) growth	0.05855	0.019978	2.930726	0.0035

Effects Specification	S.D.	Rho
Cross-section random	0.014998	0.2403
Idiosyncratic random	0.026667	0.7597

Weighted Statistics			
R-squared	0.077768	Mean dependent var	0.010116
Adjusted R-squared	0.07195	S.D. dependent var	0.029916
F-statistic	13.36574	Durbin-Watson stat	1.895217
Prob(F-statistic)	0		

Dependent Variable: GVA in Chemical / Pharmagrowth

Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 257
Total panel (unbalanced) observations: 956
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.013698	0.016743	0.818128	0.4135
Share of Financial Employment	0.305429	0.534718	0.571197	0.568
Share of Financial Employment^2	0.249192	4.638621	0.053721	0.9572
LOG(GVA in Chemical / Pharmapro capita)	-0.012519	0.003998	-3.131657	0.0018
CPI Volatility	-0.001571	0.001813	-0.866583	0.3864
Company Taxation (rate in %)	-0.04245	0.046703	-0.908921	0.3636
R&D expenditure (Aggr.) growth	0.083016	0.074073	1.120731	0.2627

Effects Specification	S.D.	Rho
Cross-section random	0.023128	0.1178
Idiosyncratic random	0.063278	0.8822

Weighted Statistics			
R-squared	0.03141	Mean dependent var	0.023861
Adjusted R-squared	0.025286	S.D. dependent var	0.069238
F-statistic	5.129079	Durbin-Watson stat	1.944855
Prob(F-statistic)	0.000034		

Dependent Variable: GVA in Capital goods industry growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 958
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.01435	0.010788	-1.33012	0.1838
Share of Financial Employment	0.590532	0.417748	1.413611	0.1578
Share of Financial Employment^2	-5.47283	3.917932	-1.396867	0.1628
LOG(GVA in Capital goods industry pro capita)	-0.018862	0.002861	-6.592753	0
CPI Volatility	-0.001972	0.001178	-1.674056	0.0944
Company Taxation (rate in %)	0.092311	0.0234	3.944932	0.0001
R&D expenditure (Aggr.) growth	0.063465	0.033396	1.900341	0.0577

Effects Specification	S.D.	Rho
Cross-section random	0.021084	0.2417
Idiosyncratic random	0.037348	0.7583

Weighted Statistics			
R-squared	0.079762	Mean dependent var	0.013203
Adjusted R-squared	0.073956	S.D. dependent var	0.042957
F-statistic	13.73805	Durbin-Watson stat	1.971485
Prob(F-statistic)	0		

Dependent Variable: GVA in Mechanical engineering growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 957
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.015393	0.010017	-1.536745	0.1247
Share of Financial Employment	-	0.338438	-0.578161	0.5633

	0.195672			
Share of Financial Employment^2	-1.39087	2.885086	-0.482089	0.6299
	-			
LOG(GVA in Mechanical engineering pro capita)	0.015519	0.002008	-7.728861	0
CPI Volatility	0.00139	0.001383	1.00506	0.3151
Company Taxation (rate in %)	0.040574	0.02111	1.922058	0.0549
R&D expenditure (Aggr.) growth	0.027146	0.031019	0.875131	0.3817

Effects Specification	S.D.	Rho
Cross-section random	0.01666	0.1322
Idiosyncratic random	0.042692	0.8678

Weighted Statistics			
R-squared	0.087454	Mean dependent var	0.009777
Adjusted R-squared	0.081691	S.D. dependent var	0.050386
F-statistic	15.1739	Durbin-Watson stat	2.065541
Prob(F-statistic)	0		

Dependent Variable: GVA in Precision instrumentsgrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 957
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	-0.11555	0.023063	-5.010237	0
Share of Financial Employment	1.559655	0.654422	2.383258	0.0174
Share of Financial Employment^2	-9.263363	6.156217	-1.504717	0.1327
LOG(GVA in Precision instrumentspro capita)	-0.02799	0.007562	-3.701293	0.0002
CPI Volatility	-0.00557	0.00472	-1.180055	0.2383
Company Taxation (rate in %)	0.183089	0.050333	3.637553	0.0003
R&D expenditure (Aggr.) growth	0.087629	0.073479	1.19257	0.2333

Effects Specification	S.D.	Rho
Cross-section random	0.031029	0.1199
Idiosyncratic random	0.084079	0.8801

Weighted Statistics			
R-squared	0.096537	Mean dependent var	0.038855
Adjusted R-squared	0.090831	S.D. dependent var	0.10068
F-statistic	16.91824	Durbin-Watson stat	2.029577
Prob(F-statistic)	0		

Dependent Variable: GVA in Construction growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 958
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.003084	0.006201	0.497316	0.6191
Share of Financial Employment	0.230901	0.244064	0.946068	0.3444
Share of Financial Employment^2	-1.145505	2.466726	-0.464383	0.6425
LOG(GVA in Construction pro capita)	-0.01659	0.005172	-3.207932	0.0014
CPI Volatility	-0.003792	0.001251	-3.030066	0.0025
Company Taxation (rate in %)	0.018437	0.016771	1.099388	0.2719
R&D expenditure (Aggr.) growth	0.053311	0.017896	2.978887	0.003

Effects Specification	S.D.	Rho
Cross-section random	0.003044	0.0109
Idiosyncratic random	0.02905	0.9891

Weighted Statistics			
R-squared	0.033422	Mean dependent var	0.005079
Adjusted R-squared	0.027324	S.D. dependent var	0.036159
F-statistic	5.48059	Durbin-Watson stat	1.883848
Prob(F-statistic)	0.000014		

Dependent Variable: GVA in Trade and repair growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 958
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	-0.002842	0.00669	-0.424854	0.671
Share of Financial Employment	1.315597	0.266754	4.931879	0
Share of Financial Employment^2	-8.749944	2.5204	-3.471649	0.0005
LOG(GVA in Trade and repair pro capita)	-0.018817	0.003003	-6.265529	0
CPI Volatility	0.000623	0.000776	0.802983	0.4222
Company Taxation (rate in %)	0.014297	0.015346	0.931655	0.3518
R&D expenditure (Aggr.) growth	0.012023	0.015516	0.774888	0.4386

Effects Specification	S.D.	Rho
Cross-section random	0.013213	0.2487
Idiosyncratic random	0.022966	0.7513

Weighted Statistics			
R-squared	0.059981	Mean dependent var	0.013688
Adjusted R-squared	0.054051	S.D. dependent var	0.026525
F-statistic	10.11369	Durbin-Watson stat	1.930379
Prob(F-statistic)	0		

Dependent Variable: GVA in Tertiary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 958
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.028036	0.006604	4.245067	0
Share of Financial Employment	0.840386	0.145526	5.774818	0
Share of Financial Employment^2	-5.519857	1.480898	-3.727372	0.0002
LOG(GVA in Tertiary Sector pro capita)	-0.010513	0.002556	-4.113116	0
CPI Volatility	0.000397	0.000447	0.886548	0.3755
Company Taxation (rate in %)	0.00259	0.006986	0.370768	0.7109
R&D expenditure (Aggr.) growth	0.016346	0.008476	1.928572	0.0541

Effects Specification	S.D.	Rho
Cross-section random	0.004506	0.1015
Idiosyncratic random	0.013406	0.8985

Weighted Statistics			
R-squared	0.090454	Mean dependent var	0.018612
Adjusted R-squared	0.084716	S.D. dependent var	0.01505
F-statistic	15.76282	Durbin-Watson stat	1.84063
Prob(F-statistic)	0		

Dependent Variable: GVA in Activities related to financegrowth
Method: Panel EGLS (Cross-section random effects)

Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 257
Total panel (unbalanced) observations: 948
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.211538	0.02963	-7.139278	0
Share of Financial Employment	4.074819	0.905316	4.500992	0
Share of Financial Employment^2	-21.80578	8.911681	-2.446876	0.0146
LOG(GVA in Activities related to financepro capita)	-0.031356	0.00707	-4.435247	0
CPI Volatility	0.00754	0.002929	2.574649	0.0102
Company Taxation (rate in %)	0.124209	0.049713	2.498521	0.0126
R&D expenditure (Aggr.) growth	0.053121	0.068023	0.780932	0.435

Effects Specification	S.D.	Rho
Cross-section random	0.042371	0.1975
Idiosyncratic random	0.085416	0.8025

Weighted Statistics			
R-squared	0.104274	Mean dependent var	0.030906
Adjusted R-squared	0.098563	S.D. dependent var	0.101253
F-statistic	18.2574	Durbin-Watson stat	1.79885
Prob(F-statistic)	0		

Dependent Variable: GVA in Business services, real estategrowth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 958
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.011891	0.005814	2.045187	0.0411
Share of Financial Employment	1.128729	0.230437	4.898214	0
Share of Financial Employment^2	-8.373058	2.23141	-3.752362	0.0002
LOG(GVA in Business services, real estatepro capita)	-0.013674	0.00292	-4.682843	0
CPI Volatility	-0.001237	0.000754	-1.639514	0.1014
Company Taxation (rate in %)	0.01657	0.015241	1.087191	0.2772
R&D expenditure (Aggr.) growth	0.041753	0.015184	2.749778	0.0061

Effects Specification	S.D.	Rho
Cross-section random	0.005322	0.0504
Idiosyncratic random	0.023094	0.9496

Weighted Statistics			
R-squared	0.066652	Mean dependent var	0.023137
Adjusted R-squared	0.060763	S.D. dependent var	0.026319
F-statistic	11.31867	Durbin-Watson stat	1.76185
Prob(F-statistic)	0		

Dependent Variable: GVA in IT services growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 956
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.02687	0.015164	-1.77193	0.0767
Share of Financial Employment	1.691827	0.499505	3.387004	0.0007
Share of Financial Employment^2	-11.91985	4.723208	-2.523676	0.0118

LOG(GVA in IT services pro capita)	-0.043063	0.003684	-11.68983	0
CPI Volatility	-0.000423	0.002296	-0.184359	0.8538
Company Taxation (rate in %)	-0.064295	0.037088	-1.733561	0.0833
R&D expenditure (Aggr.) growth	-0.039173	0.037344	-1.048988	0.2945

Effects Specification	S.D.	Rho
Cross-section random	0.018076	0.083
Idiosyncratic random	0.060069	0.917

Weighted Statistics			
R-squared	0.260108	Mean dependent var	0.05509
Adjusted R-squared	0.25543	S.D. dependent var	0.07316
F-statistic	55.60326	Durbin-Watson stat	2.201579
Prob(F-statistic)	0		

Dependent Variable: GVA in Research and development growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 252
Total panel (unbalanced) observations: 934
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.139047	0.024729	-5.622753	0
Share of Financial Employment	2.697133	0.659861	4.087427	0
Share of Financial Employment^2	-17.19803	5.241817	-3.280928	0.0011
LOG(GVA in Research and development pro capita)	-0.03669	0.005596	-6.556384	0
CPI Volatility	-0.006116	0.003359	-1.820947	0.0689
Company Taxation (rate in %)	0.015608	0.043621	0.357813	0.7206
R&D expenditure (Aggr.) growth	0.083827	0.044973	1.863926	0.0626

Effects Specification	S.D.	Rho
Cross-section random	0.019343	0.0639
Idiosyncratic random	0.074017	0.9361

Weighted Statistics			
R-squared	0.148885	Mean dependent var	0.034756
Adjusted R-squared	0.143376	S.D. dependent var	0.090004
F-statistic	27.02664	Durbin-Watson stat	2.108579
Prob(F-statistic)	0		

Dependent Variable: GVA in Services to companies growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1990 2005
Periods included: 4
Cross-sections included: 258
Total panel (unbalanced) observations: 958
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.005633	0.008196	-0.687337	0.492
Share of Financial Employment	1.271398	0.313288	4.05824	0.0001
Share of Financial Employment^2	-8.853645	3.007647	-2.943712	0.0033
LOG(GVA in Services to companies pro capita)	-0.018507	0.002965	-6.241015	0
CPI Volatility	-0.003365	0.001147	-2.933111	0.0034
Company Taxation (rate in %)	0.044017	0.019109	2.303437	0.0215
R&D expenditure (Aggr.) growth	0.027334	0.018047	1.514627	0.1302

Effects Specification	S.D.	Rho
Cross-section random	0.011717	0.1338
Idiosyncratic random	0.029813	0.8662

Weighted Statistics

R-squared	0.068353	Mean dependent var	0.02461
Adjusted R-squared	0.062475	S.D. dependent var	0.033453
F-statistic	11.62888	Durbin-Watson stat	1.955019
Prob(F-statistic)	0		

Source: BAKBASEL

Tab. 9-34 Robustness - Regional sector level (281 Regions) – Only Financial regions

Dependent Variable: GVA in Primary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample: 1980 2010 IF REGION="AT13" OR REGION="BEL10"
OR
REGION="DE71" OR REGION="ED3" OR REGION="ES30" OR
REGION="ES51" OR REGION="FI18" OR REGION="FK11" OR
REGION="IT20" OR REGION="ITE4" OR REGION="IR2" OR
REGION="LUX" OR REGION="NL32" OR REGION="NO01" OR
REGION="PT17" OR REGION="SE01" OR REGION="UKI1" OR
REGION="UKM2" OR REGION="USNY" OR REGION="GE" OR
REGION="ZH"
Periods included: 5
Cross-sections included: 20
Total panel (unbalanced) observations: 92
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	-0.00488	0.049821	-0.097957	0.9222
Share of Financial Employment	-1.048938	1.487378	-0.705226	0.4826
Share of Financial Employment^2	5.555939	11.03557	0.503457	0.6159
LOG(GVA in Primary Sector pro capita)	-0.015963	0.01172	-1.36209	0.1768
CPI Volatility	-0.005587	0.00647	-0.863548	0.3903
Company Taxation (rate in %)	0.089325	0.050829	1.757359	0.0825
R&D expenditure (Aggr.) growth	0.059371	0.137447	0.431958	0.6669

Effects Specification	S.D.	Rho
Cross-section random	0.01197	0.0522
Idiosyncratic random	0.050995	0.9478

Weighted Statistics			
R-squared	0.067564	Mean dependent var	0.00802
Adjusted R-squared	0.001745	S.D. dependent var	0.063311
F-statistic	1.026519	Durbin-Watson stat	2.399826
Prob(F-statistic)	0.413822		

Dependent Variable: GVA in Secondary Sector growth
Method: Panel EGLS (Cross-section random effects)
Sample: 1980 2010 IF REGION="AT13" OR REGION="BEL10"
OR
REGION="DE71" OR REGION="ED3" OR REGION="ES30" OR
REGION="ES51" OR REGION="FI18" OR REGION="FK11" OR
REGION="IT20" OR REGION="ITE4" OR REGION="IR2" OR
REGION="LUX" OR REGION="NL32" OR REGION="NO01" OR
REGION="PT17" OR REGION="SE01" OR REGION="UKI1" OR

REGION="UKM2" OR REGION="USNY" OR REGION="GE" OR
REGION="ZH"
Periods included: 5
Cross-sections included: 20
Total panel (unbalanced) observations: 93
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.056731	0.052942	1.071566	0.2869
Share of Financial Employment	-0.136585	0.864777	-0.157943	0.8749
Share of Financial Employment^2	0.148146	5.719575	0.025902	0.9794
LOG(GVA in Secondary Sector pro capita)	-0.025868	0.013403	-1.930017	0.0569
CPI Volatility	-0.000277	0.002292	-0.120945	0.904
Company Taxation (rate in %)	0.01816	0.053021	0.342512	0.7328
R&D expenditure (Aggr.) growth	0.05763	0.069258	0.832108	0.4077

Effects Specification	S.D.	Rho
Cross-section random	0.011785	0.1917
Idiosyncratic random	0.0242	0.8083

Weighted Statistics			
R-squared	0.105371	Mean dependent var	0.010451
Adjusted R-squared	0.042955	S.D. dependent var	0.029061
F-statistic	1.688201	Durbin-Watson stat	1.900598
Prob(F-statistic)	0.133569		

Dependent Variable: GVA in Manufacturing growth
Method: Panel EGLS (Cross-section random effects)
Sample: 1980 2010 IF REGION="AT13" OR REGION="BEL10"
OR
REGION="DE71" OR REGION="ED3" OR REGION="ES30" OR
REGION="ES51" OR REGION="FI18" OR REGION="FK11" OR
REGION="IT20" OR REGION="ITE4" OR REGION="IR2" OR
REGION="LUX" OR REGION="NL32" OR REGION="NO01" OR
REGION="PT17" OR REGION="SE01" OR REGION="UKI1" OR
REGION="UKM2" OR REGION="USNY" OR REGION="GE" OR
REGION="ZH"
Periods included: 5
Cross-sections included: 20
Total panel (unbalanced) observations: 93
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.004317	0.035192	0.122659	0.9027
Share of Financial Employment	1.031461	0.81513	1.265395	0.2091
Share of Financial Employment^2	-9.348319	5.520309	-1.693441	0.094
LOG(GVA in Manufacturing pro capita)	-0.017293	0.009888	-1.748856	0.0839
CPI Volatility	0.000113	0.002663	0.042415	0.9663
Company Taxation (rate in %)	0.006763	0.060913	0.111035	0.9118
R&D expenditure (Aggr.) growth	0.052317	0.071359	0.73316	0.4655

Effects Specification	S.D.	Rho
Cross-section random	0.016731	0.2841
Idiosyncratic random	0.026562	0.7159

Weighted Statistics			
R-squared	0.080513	Mean dependent var	0.008062
Adjusted R-squared	0.016362	S.D. dependent var	0.031147
F-statistic	1.255063	Durbin-Watson stat	1.761105
Prob(F-statistic)	0.286774		

Dependent Variable: GVA in Chemical / Pharmagrowth
Method: Panel EGLS (Cross-section random effects)
Sample: 1980 2010 IF REGION="AT13" OR REGION="BEL10"
OR
REGION="DE71" OR REGION="ED3" OR REGION="ES30" OR

REGION="ES51" OR REGION="FI18" OR REGION="FK11" OR
REGION="IT20" OR REGION="ITE4" OR REGION="IR2" OR
REGION="LUX" OR REGION="NL32" OR REGION="NO01" OR
REGION="PT17" OR REGION="SE01" OR REGION="UKI1" OR
REGION="UKM2" OR REGION="USNY" OR REGION="GE" OR
REGION="ZH"
Periods included: 5
Cross-sections included: 20
Total panel (unbalanced) observations: 93
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	-0.014946	0.045904	-0.325597	0.7455
Share of Financial Employment	0.461342	1.463233	0.31529	0.7533
Share of Financial Employment^2	-1.808311	10.58324	-0.170866	0.8647
LOG(GVA in Chemical / Pharmapro capita)	-0.013422	0.012456	-1.077484	0.2843
CPI Volatility	9.57E-05	0.005729	0.016702	0.9867
Company Taxation (rate in %)	0.052938	0.105246	0.502995	0.6163
R&D expenditure (Aggr.) growth	0.047575	0.124238	0.382936	0.7027

Effects Specification	S.D.	Rho
Cross-section random	0.026189	0.1961
Idiosyncratic random	0.053031	0.8039

Weighted Statistics			
R-squared	0.040032	Mean dependent var	0.024291
Adjusted R-squared	-0.026942	S.D. dependent var	0.054042
F-statistic	0.597721	Durbin-Watson stat	1.590236
Prob(F-statistic)	0.731374		

Dependent Variable: GVA in Capital goods industry growth
Method: Panel EGLS (Cross-section random effects)
Sample: 1980 2010 IF REGION="AT13" OR REGION="BEL10"
OR
REGION="DE71" OR REGION="ED3" OR REGION="ES30" OR
REGION="ES51" OR REGION="FI18" OR REGION="FK11" OR
REGION="IT20" OR REGION="ITE4" OR REGION="IR2" OR
REGION="LUX" OR REGION="NL32" OR REGION="NO01" OR
REGION="PT17" OR REGION="SE01" OR REGION="UKI1" OR
REGION="UKM2" OR REGION="USNY" OR REGION="GE" OR
REGION="ZH"
Periods included: 5
Cross-sections included: 20
Total panel (unbalanced) observations: 93
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.041179	0.049119	0.838358	0.4042
Share of Financial Employment	-0.633813	1.188808	-0.53315	0.5953
Share of Financial Employment^2	2.031748	8.40564	0.241712	0.8096
LOG(GVA in Capital goods industry pro capita)	-0.006498	0.011188	-0.58078	0.5629
CPI Volatility	0.002779	0.004221	0.6582	0.5122
Company Taxation (rate in %)	-0.038611	0.054202	-0.712359	0.4782
R&D expenditure (Aggr.) growth	0.076863	0.076794	1.000905	0.3197

Effects Specification	S.D.	Rho
Cross-section random	0.017532	0.1443
Idiosyncratic random	0.042689	0.8557

Weighted Statistics			
R-squared	0.072104	Mean dependent var	0.012395
Adjusted R-squared	0.007367	S.D. dependent var	0.050276
F-statistic	1.113795	Durbin-Watson stat	1.803405
Prob(F-statistic)	0.361092		

Dependent Variable: GVA in Mechanical engineering growth

Method: Panel EGLS (Cross-section random effects)
Sample: 1980 2010 IF REGION="AT13" OR REGION="BEL10"
OR
REGION="DE71" OR REGION="ED3" OR REGION="ES30" OR
REGION="ES51" OR REGION="FI18" OR REGION="FK11" OR
REGION="IT20" OR REGION="ITE4" OR REGION="IR2" OR
REGION="LUX" OR REGION="NL32" OR REGION="NO01" OR
REGION="PT17" OR REGION="SE01" OR REGION="UKI1" OR
REGION="UKM2" OR REGION="USNY" OR REGION="GE" OR
REGION="ZH"
Periods included: 5
Cross-sections included: 20
Total panel (unbalanced) observations: 93
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.023308	0.039799	0.585631	0.5597
Share of Financial Employment	-2.25743	1.217726	-1.853808	0.0672
Share of Financial Employment^2	13.63216	8.717229	1.563818	0.1215
LOG(GVA in Mechanical engineering pro capita)	-0.031066	0.012575	-2.470536	0.0155
CPI Volatility	0.002062	0.003201	0.644152	0.5212
Company Taxation (rate in %)	0.068592	0.053996	1.270315	0.2074
R&D expenditure (Aggr.) growth	-0.046223	0.069048	-0.669444	0.505

Effects Specification	S.D.	Rho
Cross-section random	0.020852	0.1917
Idiosyncratic random	0.042817	0.8083

Weighted Statistics			
R-squared	0.19364	Mean dependent var	0.00697
Adjusted R-squared	0.137382	S.D. dependent var	0.052061
F-statistic	3.442011	Durbin-Watson stat	1.649923
Prob(F-statistic)	0.004286		

Dependent Variable: GVA in Precision instrumentsgrowth
Method: Panel EGLS (Cross-section random effects)
Sample: 1980 2010 IF REGION="AT13" OR REGION="BEL10"
OR
REGION="DE71" OR REGION="ED3" OR REGION="ES30" OR
REGION="ES51" OR REGION="FI18" OR REGION="FK11" OR
REGION="IT20" OR REGION="ITE4" OR REGION="IR2" OR
REGION="LUX" OR REGION="NL32" OR REGION="NO01" OR
REGION="PT17" OR REGION="SE01" OR REGION="UKI1" OR
REGION="UKM2" OR REGION="USNY" OR REGION="GE" OR
REGION="ZH"
Periods included: 5
Cross-sections included: 20
Total panel (unbalanced) observations: 93
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.060636	0.08134	-0.745463	0.458
Share of Financial Employment	0.068753	2.324229	0.029581	0.9765
Share of Financial Employment^2	3.934508	16.54061	0.23787	0.8125
LOG(GVA in Precision instrumentspro capita)	-0.010609	0.006726	-1.577223	0.1184
CPI Volatility	0.012527	0.006591	1.900586	0.0607
Company Taxation (rate in %)	0.003602	0.105176	0.034245	0.9728
R&D expenditure (Aggr.) growth	0.186424	0.162255	1.148955	0.2538

Effects Specification	S.D.	Rho
Cross-section random	0.025275	0.0927
Idiosyncratic random	0.07909	0.9073

Weighted Statistics			
R-squared	0.15216	Mean dependent var	0.032226
Adjusted R-squared	0.093008	S.D. dependent var	0.090852
F-statistic	2.572373	Durbin-Watson stat	2.277982
Prob(F-statistic)	0.024351		

Dependent Variable: GVA in Construction growth
Method: Panel Least Squares
Sample: 1980 2010 IF REGION="AT13" OR REGION="BEL10"
OR
REGION="DE71" OR REGION="ED3" OR REGION="ES30" OR
REGION="ES51" OR REGION="FI18" OR REGION="FK11" OR
REGION="IT20" OR REGION="ITE4" OR REGION="IR2" OR
REGION="LUX" OR REGION="NL32" OR REGION="NO01" OR
REGION="PT17" OR REGION="SE01" OR REGION="UKI1" OR
REGION="UKM2" OR REGION="USNY" OR REGION="GE" OR
REGION="ZH"
Periods included: 5
Cross-sections included: 20
Total panel (unbalanced) observations: 93

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	-0.045517	0.081484	-0.558605	0.5783
Share of Financial Employment	2.135615	1.743156	1.225143	0.2248
Share of Financial Employment^2	-8.16665	12.62912	-0.646652	0.5201
LOG(GVA in Construction pro capita)	-0.156097	0.044442	-3.512366	0.0008
CPI Volatility	0.000163	0.004022	0.040647	0.9677
Company Taxation (rate in %)	0.047914	0.089106	0.53772	0.5926
R&D expenditure (Aggr.) growth	0.025152	0.107451	0.234075	0.8156

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.492372	Mean dependent var	0.008986
Adjusted R-squared	0.302959	S.D. dependent var	0.045893
F-statistic	2.599459	Durbin-Watson stat	2.037529
Prob(F-statistic)	0.001018		

Dependent Variable: GVA in Trade and repair growth
Method: Panel EGLS (Cross-section random effects)
Sample: 1980 2010 IF REGION="AT13" OR REGION="BEL10"
OR
REGION="DE71" OR REGION="ED3" OR REGION="ES30" OR
REGION="ES51" OR REGION="FI18" OR REGION="FK11" OR
REGION="IT20" OR REGION="ITE4" OR REGION="IR2" OR
REGION="LUX" OR REGION="NL32" OR REGION="NO01" OR
REGION="PT17" OR REGION="SE01" OR REGION="UKI1" OR
REGION="UKM2" OR REGION="USNY" OR REGION="GE" OR
REGION="ZH"
Periods included: 5
Cross-sections included: 20
Total panel (unbalanced) observations: 93
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.048978	0.043401	1.128494	0.2622
Share of Financial Employment	0.505441	0.907433	0.557001	0.579
Share of Financial Employment^2	-1.924634	6.570765	-0.292909	0.7703
LOG(GVA in Trade and repair pro capita)	-0.038078	0.010438	-3.648107	0.0005
CPI Volatility	-7.16E-06	0.002449	-0.002922	0.9977
Company Taxation (rate in %)	-0.019689	0.052307	-0.376402	0.7075
R&D expenditure (Aggr.) growth	-0.007249	0.074218	-0.097668	0.9224

Effects Specification	S.D.	Rho
Cross-section random	0.011017	0.1176
Idiosyncratic random	0.030177	0.8824

Weighted Statistics			
R-squared	0.141228	Mean dependent var	0.017388
Adjusted R-squared	0.081313	S.D. dependent var	0.03235
F-statistic	2.357162	Durbin-Watson stat	2.144252

Prob(F-statistic)	0.037217

Dependent Variable: GVA in Tertiary Sector growth
Method: Panel Least Squares
Sample: 1980 2010 IF REGION="AT13" OR REGION="BEL10"
OR
REGION="DE71" OR REGION="ED3" OR REGION="ES30" OR
REGION="ES51" OR REGION="FI18" OR REGION="FK11" OR
REGION="IT20" OR REGION="ITE4" OR REGION="IR2" OR
REGION="LUX" OR REGION="NL32" OR REGION="NO01" OR
REGION="PT17" OR REGION="SE01" OR REGION="UKI1" OR
REGION="UKM2" OR REGION="USNY" OR REGION="GE" OR
REGION="ZH"
Periods included: 5
Cross-sections included: 20
Total panel (unbalanced) observations: 93

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	0.227538	0.073644	3.089701	0.0029
Share of Financial Employment	0.357038	1.074887	0.332164	0.7408
Share of Financial Employment^2	-3.869473	6.971206	-0.555065	0.5807
LOG(GVA in Tertiary Sector pro capita)	-0.060394	0.013265	-4.553066	0
CPI Volatility	-0.002444	0.001913	-1.277546	0.2058
Company Taxation (rate in %)	-0.034562	0.042252	-0.818009	0.4163
R&D expenditure (Aggr.) growth	-0.018421	0.040559	-0.454173	0.6512

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.469407	Mean dependent var	0.026615
Adjusted R-squared	0.271424	S.D. dependent var	0.018843
F-statistic	2.370952	Durbin-Watson stat	2.415484
Prob(F-statistic)	0.002704		

Dependent Variable: GVA in Activities related to financegrowth
Method: Panel EGLS (Cross-section random effects)
Sample: 1980 2010 IF REGION="AT13" OR REGION="BEL10"
OR
REGION="DE71" OR REGION="ED3" OR REGION="ES30" OR
REGION="ES51" OR REGION="FI18" OR REGION="FK11" OR
REGION="IT20" OR REGION="ITE4" OR REGION="IR2" OR
REGION="LUX" OR REGION="NL32" OR REGION="NO01" OR
REGION="PT17" OR REGION="SE01" OR REGION="UKI1" OR
REGION="UKM2" OR REGION="USNY" OR REGION="GE" OR
REGION="ZH"
Periods included: 5
Cross-sections included: 20
Total panel (unbalanced) observations: 93
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.033916	0.083535	-0.406004	0.6857
Share of Financial Employment	-0.816227	2.439446	-0.334595	0.7387
Share of Financial Employment^2	17.22941	18.14754	0.949408	0.3451
LOG(GVA in Activities related to financepro capita)	-0.0269	0.011903	-2.259936	0.0264
CPI Volatility	0.005506	0.006363	0.865314	0.3893
Company Taxation (rate in %)	-0.017681	0.081039	-0.218173	0.8278
R&D expenditure (Aggr.) growth	0.0133	0.159144	0.08357	0.9336

Effects Specification	S.D.	Rho
Cross-section random	0.038618	0.1405
Idiosyncratic random	0.095502	0.8595

Weighted Statistics			
R-squared	0.080024	Mean dependent var	0.030203
Adjusted R-squared	0.01584	S.D. dependent var	0.099349
F-statistic	1.246784	Durbin-Watson stat	1.817532

Prob(F-statistic)	0.290763

Dependent Variable: GVA in Business services, real estategrowth
Method: Panel Least Squares
Sample: 1980 2010 IF REGION="AT13" OR REGION="BEL10" OR
REGION="DE71" OR REGION="ED3" OR REGION="ES30" OR
REGION="ES51" OR REGION="FI18" OR REGION="FK11" OR
REGION="IT20" OR REGION="ITE4" OR REGION="IR2" OR
REGION="LUX" OR REGION="NL32" OR REGION="NO01" OR
REGION="PT17" OR REGION="SE01" OR REGION="UKI1" OR
REGION="UKM2" OR REGION="USNY" OR REGION="GE" OR
REGION="ZH"
Periods included: 5
Cross-sections included: 20
Total panel (unbalanced) observations: 93

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.185592	0.082157	2.258989	0.0271
Share of Financial Employment	1.015586	1.810353	0.560988	0.5767
Share of Financial Employment^2	-5.748823	11.58608	-0.496184	0.6214
LOG(GVA in Business services, real estatepro capita)	-0.092555	0.014669	-6.309702	0
CPI Volatility	-0.005439	0.003211	-1.693924	0.0949
Company Taxation (rate in %)	-0.077725	0.062326	-1.247077	0.2167
R&D expenditure (Aggr.) growth	0.004047	0.056154	0.072065	0.9428

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.50321	Mean dependent var	0.029486
Adjusted R-squared	0.317841	S.D. dependent var	0.028192
F-statistic	2.714636	Durbin-Watson stat	2.583244
Prob(F-statistic)	0.000622		

Dependent Variable: GVA in IT services growth
Method: Panel Least Squares
Sample: 1980 2010 IF REGION="AT13" OR REGION="BEL10"
OR
REGION="DE71" OR REGION="ED3" OR REGION="ES30" OR
REGION="ES51" OR REGION="FI18" OR REGION="FK11" OR
REGION="IT20" OR REGION="ITE4" OR REGION="IR2" OR
REGION="LUX" OR REGION="NL32" OR REGION="NO01" OR
REGION="PT17" OR REGION="SE01" OR REGION="UKI1" OR
REGION="UKM2" OR REGION="USNY" OR REGION="GE" OR
REGION="ZH"
Periods included: 5
Cross-sections included: 20
Total panel (unbalanced) observations: 93

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.145146	0.146343	-0.991816	0.3249
Share of Financial Employment	7.458866	4.655146	1.602284	0.1138
Share of Financial Employment^2	-60.01879	32.42575	-1.850961	0.0686
LOG(GVA in IT services pro capita)	-0.080389	0.009316	-8.62907	0
CPI Volatility	-0.006015	0.007	-0.859327	0.3932
Company Taxation (rate in %)	-0.073535	0.204327	-0.359889	0.7201
R&D expenditure (Aggr.) growth	-0.327108	0.138426	-2.363059	0.021

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.597845	Mean dependent var	0.081498
Adjusted R-squared	0.447787	S.D. dependent var	0.098611
F-statistic	3.984092	Durbin-Watson stat	2.946467
Prob(F-statistic)	0.000003		

Dependent Variable: GVA in Research and development growth
Method: Panel Least Squares
Sample: 1980 2010 IF REGION="AT13" OR REGION="BEL10"
OR
REGION="DE71" OR REGION="ED3" OR REGION="ES30" OR
REGION="ES51" OR REGION="FI18" OR REGION="FK11" OR
REGION="IT20" OR REGION="ITE4" OR REGION="IR2" OR
REGION="LUX" OR REGION="NL32" OR REGION="NO01" OR
REGION="PT17" OR REGION="SE01" OR REGION="UKI1" OR
REGION="UKM2" OR REGION="USNY" OR REGION="GE" OR
REGION="ZH"
Periods included: 5
Cross-sections included: 20
Total panel (unbalanced) observations: 93

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	-0.06405	0.083002	-0.771674	0.443
Share of Financial Employment	-1.333802	2.196857	-0.607141	0.5458
Share of Financial Employment^2	10.07606	14.55639	0.692209	0.4912
LOG(GVA in Research and development pro capita)	-0.051897	0.020696	-2.50753	0.0146
CPI Volatility	-0.009041	0.006993	-1.292921	0.2005
Company Taxation (rate in %)	0.026319	0.223239	0.117897	0.9065
R&D expenditure (Aggr.) growth	0.057389	0.118876	0.482761	0.6308

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.583618	Mean dependent var	0.035523
Adjusted R-squared	0.428251	S.D. dependent var	0.081734
F-statistic	3.756393	Durbin-Watson stat	2.331444
Prob(F-statistic)	0.000008		

Dependent Variable: GVA in Services to companies growth
Method: Panel EGLS (Cross-section random effects)
Sample: 1980 2010 IF REGION="AT13" OR REGION="BEL10"
OR
REGION="DE71" OR REGION="ED3" OR REGION="ES30" OR
REGION="ES51" OR REGION="FI18" OR REGION="FK11" OR
REGION="IT20" OR REGION="ITE4" OR REGION="IR2" OR
REGION="LUX" OR REGION="NL32" OR REGION="NO01" OR
REGION="PT17" OR REGION="SE01" OR REGION="UKI1" OR
REGION="UKM2" OR REGION="USNY" OR REGION="GE" OR
REGION="ZH"
Periods included: 5
Cross-sections included: 20
Total panel (unbalanced) observations: 93
Swamy and Arora estimator of component variances

Variable	Coeffi-cient	Std. Error	t-Statistic	Prob.
C	-0.01285	0.032359	-0.397113	0.6923
Share of Financial Employment	1.667809	1.000667	1.666697	0.0992
Share of Financial Employment^2	-10.00544	7.734956	-1.293535	0.1993
LOG(GVA in Services to companies pro capita)	-0.027074	0.012229	-2.214005	0.0295
CPI Volatility	0.001033	0.003118	0.331474	0.7411
Company Taxation (rate in %)	0.012126	0.025333	0.478668	0.6334
R&D expenditure (Aggr.) growth	-0.02871	0.076205	-0.376748	0.7073

Effects Specification	S.D.	Rho
Cross-section random	0.01428	0.1757
Idiosyncratic random	0.030926	0.8243

Weighted Statistics			
R-squared	0.125958	Mean dependent var	0.026222
Adjusted R-squared	0.064979	S.D. dependent var	0.034873

F-statistic	2.065583	Durbin-Watson stat	2.018789
Prob(F-statistic)	0.065584		

Source: BAKBASEL

9.2 Innovation

9.2.1 National Aggregate level

9.2.1.1 Baseline regressions – (Table 5-11)

Tab. 9-35 Baseline - National aggregate level – All indicators

Dependent Variable: Patents (Aggr.) growth
Method: Panel Least Squares
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 18
Total panel (unbalanced) observations: 66

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.075167	0.103842	-0.723862	0.4732
Private Credit / GDP	0.000892	0.0013	0.686347	0.4963
Private Credit / GDP [squared]	-2.67E-06	5.76E-06	-0.463135	0.6457
LOG(Patents (Aggr.) pro capita)	-0.066066	0.022552	-2.929503	0.0055
CPI Volatility	0.008757	0.004981	1.757817	0.0861
Company Taxation (rate in %)	-0.111951	0.187182	-0.598085	0.553
R&D Expenditure (Aggr.) growth	-0.738196	0.244056	-3.024699	0.0042

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.656132	Mean dependent var	0.088128
Adjusted R-squared	0.467823	S.D. dependent var	0.068854
F-statistic	3.484342	Durbin-Watson stat	2.834949
Prob(F-statistic)	0.000221		

Dependent Variable: Patents (Aggr.) growth
Method: Panel Least Squares
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 18
Total panel (unbalanced) observations: 63

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.051498	0.100102	-0.514455	0.6098
Stock Turnover to MC	0.00061	0.000715	0.852674	0.399
Stock Turnover to MC [squared]	-2.28E-06	3.46E-06	-0.658878	0.5138
LOG(Patents (Aggr.) pro capita)	-0.076457	0.034499	-2.216217	0.0326
CPI Volatility	0.012871	0.003688	3.490059	0.0012
Company Taxation (rate in %)	-0.210719	0.221498	-0.951337	0.3473
R&D Expenditure (Aggr.) growth	-0.767639	0.222527	-3.449649	0.0014

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.704597	Mean dependent var	0.087494
Adjusted R-squared	0.530385	S.D. dependent var	0.069481
F-statistic	4.044476	Durbin-Watson stat	2.497098
Prob(F-statistic)	0.000062		

Dependent Variable: Patents (Aggr.) growth
Method: Panel Least Squares
Sample (adjusted): 1985 2000
Periods included: 4

Cross-sections included: 18
Total panel (unbalanced) observations: 66

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.299783	0.156182	-1.919445	0.0617
INSNONLIFE	0.137106	0.095458	1.4363	0.1583
INSNONLIFE^2	-0.012381	0.014508	-0.853413	0.3983
LOG(Patents (Aggr.) pro capita)	-0.061731	0.016393	-3.765627	0.0005
CPI Volatility	0.008259	0.00636	1.298631	0.2012
Company Taxation (rate in %)	-0.148322	0.159997	-0.927029	0.3592
R&D Expenditure (Aggr.) growth	-0.58561	0.202208	-2.896073	0.006

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.71045	Mean dependent var	0.088128
Adjusted R-squared	0.551886	S.D. dependent var	0.068854
F-statistic	4.480543	Durbin-Watson stat	2.713606
Prob(F-statistic)	0.000013		

Source: BAKBASEL

Tab. 9-36 Baseline - National aggregate level – All indicators – Linear specification

Dependent Variable: Patents (Aggr.) growth
Method: Panel Least Squares
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 18
Total panel (unbalanced) observations: 66

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.054848	0.087326	-0.628086	0.5333
Private Credit / GDP	0.000423	0.000497	0.851215	0.3994
LOG(Patents (Aggr.) pro capita)	-0.066083	0.022809	-2.897283	0.0059
CPI Volatility	0.008764	0.004924	1.78004	0.0821
Company Taxation (rate in %)	-0.119147	0.183186	-0.650416	0.5189
R&D expenditure (Aggr.) growth	-0.743184	0.242798	-3.060915	0.0038

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.654795	Mean dependent var	0.088128
Adjusted R-squared	0.478178	S.D. dependent var	0.068854
F-statistic	3.707435	Durbin-Watson stat	2.81616
Prob(F-statistic)	0.000117		

Dependent Variable: Patents (Aggr.) growth
Method: Panel Least Squares
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 18
Total panel (unbalanced) observations: 63

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.029542	0.08361	-0.353325	0.7257
Stock Turnover to MC	0.0002	0.00025	0.799456	0.4287

LOG(Patents (Aggr.) pro capita)	-0.074865	0.034488	-2.17077	0.0359
CPI Volatility	0.012917	0.003597	3.591416	0.0009
Company Taxation (rate in %)	-0.229037	0.204301	-1.121078	0.2689
R&D expenditure (Aggr.) growth	-0.784559	0.228094	-3.439638	0.0014

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.701557	Mean dependent var	0.087494
Adjusted R-squared	0.537413	S.D. dependent var	0.069481
F-statistic	4.27404	Durbin-Watson stat	2.554614
Prob(F-statistic)	0.000034		

Dependent Variable: Patents (Aggr.) growth
Method: Panel Least Squares
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 18
Total panel (unbalanced) observations: 66

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.158529	0.088048	-1.80048	0.0788
INSNONLIFE	0.049692	0.020938	2.373272	0.0222
LOG(Patents (Aggr.) pro capita)	-0.057524	0.017912	-3.211438	0.0025
CPI Volatility	0.008999	0.006053	1.486656	0.1444
Company Taxation (rate in %)	-0.110395	0.184799	-0.597377	0.5534
R&D expenditure (Aggr.) growth	-0.635361	0.2109	-3.012621	0.0043

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.70553	Mean dependent var	0.088128
Adjusted R-squared	0.55487	S.D. dependent var	0.068854
F-statistic	4.682947	Durbin-Watson stat	2.641186
Prob(F-statistic)	0.000008		

Source: BAKBASEL

9.2.1.2 Robustness regressions – (Table 5-12)

Tab. 9-37 Robustness - National aggregate level – Net private Credit / GDP to Firms – Quadratic and Linear specifications

Dependent Variable: Patents (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 17
Total panel (unbalanced) observations: 53
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.046161	0.071268	0.647712	0.5204
Net Private Credit to GDP (to Firms)	-0.000197	0.002485	-0.079358	0.9371
Net Private Credit to GDP (to Firms)^2	1.54E-06	2.34E-05	0.06615	0.9475
LOG(Patents (Aggr.) pro capita)	-0.030332	0.008101	-3.744429	0.0005
CPI Volatility	0.013728	0.004244	3.2348	0.0023
Company Taxation (rate in %)	-0.127304	0.047825	-2.661893	0.0107
R&D expenditure (Aggr.) growth	-0.529139	0.151558	-3.491341	0.0011

Effects Specification	S.D.	Rho
Cross-section random	0.013858	0.1078
Idiosyncratic random	0.039875	0.8922

Weighted Statistics			
R-squared	0.532466	Mean dependent var	0.076196
Adjusted R-squared	0.471484	S.D. dependent var	0.063584
F-statistic	8.73144	Durbin-Watson stat	1.78667
Prob(F-statistic)	0.000002		

Dependent Variable: Patents (Aggr.) growth
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1985 2000
Periods included: 4
Cross-sections included: 17
Total panel (unbalanced) observations: 53
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.041289	0.045529	0.906875	0.3691
Net Private Credit to GDP (to Firms)	-3.71E-05	0.000585	-0.063545	0.9496
LOG(Patents (Aggr.) pro capita)	-0.030666	0.00763	-4.019001	0.0002
CPI Volatility	0.013805	0.004144	3.331396	0.0017
Company Taxation (rate in %)	-0.125546	0.048511	-2.588002	0.0128
R&D expenditure (Aggr.) growth	-0.536343	0.141619	-3.787225	0.0004

Effects Specification	S.D.	Rho
Cross-section random	0.014703	0.1231
Idiosyncratic random	0.039252	0.8769

Weighted Statistics			
R-squared	0.53416	Mean dependent var	0.074458
Adjusted R-squared	0.484602	S.D. dependent var	0.063127
F-statistic	10.77859	Durbin-Watson stat	1.806733
Prob(F-statistic)	0.000001		

Source: BAKBASEL

9.3 Systemic Risks - Volatility

9.3.1 National Aggregate level

9.3.1.1 Baseline regressions – (Table 5-13)

Tab. 9-38 Baseline - National aggregate level

Dependent Variable: GVA Volatility (Aggr.)
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1980 2000
Periods included: 3
Cross-sections included: 18
Total panel (unbalanced) observations: 51
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.054775	0.009215	5.944227	0
Private Credit / GDP	-0.000108	5.58E-05	-1.933126	0.0594
CPI Volatility	-0.000283	0.000863	-0.327758	0.7446
Company Taxation (rate in %)	-0.054148	0.017259	-3.13731	0.003
R&D Expenditure (Aggr.) growth	-0.08099	0.048945	-1.6547	0.1048

Effects Specification	S.D.	Rho
Cross-section random	0.00583	0.2628
Idiosyncratic random	0.009764	0.7372

Weighted Statistics			
R-squared	0.259626	Mean dependent var	0.01469
Adjusted R-squared	0.195245	S.D. dependent var	0.011665
F-statistic	4.032682	Durbin-Watson stat	1.642706
Prob(F-statistic)	0.006929		

Dependent Variable: GVA Volatility (Aggr.)
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1980 2000
Periods included: 3
Cross-sections included: 18
Total panel (unbalanced) observations: 51
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.05303	0.012806	4.140955	0.0002
Private Credit / GDP	-6.38E-05	0.0002	-0.319283	0.751
Private Credit / GDP [squared]	-2.49E-07	1.06E-06	-0.234534	0.8156
CPI Volatility	-0.000213	0.000901	-0.237031	0.8137
Company Taxation (rate in %)	-0.05487	0.017581	-3.121029	0.0031
R&D Expenditure (Aggr.) growth	-0.083499	0.049523	-1.686045	0.0987

Effects Specification	S.D.	Rho
Cross-section random	0.006145	0.2825
Idiosyncratic random	0.009793	0.7175

Weighted Statistics			
R-squared	0.266148	Mean dependent var	0.01432
Adjusted R-squared	0.184609	S.D. dependent var	0.011602
F-statistic	3.264055	Durbin-Watson stat	1.681061
Prob(F-statistic)	0.013414		

Dependent Variable: GVA Volatility (Aggr.)
Method: Panel EGLS (Cross-section random effects)

Sample (adjusted): 1980 2000
Periods included: 3
Cross-sections included: 18
Total panel (unbalanced) observations: 49
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.036834	0.007002	5.260094	0
Stock Turnover to MC	4.80E-05	4.12E-05	1.166255	0.2498
CPI Volatility	-0.00019	0.000914	-0.207426	0.8366
Company Taxation (rate in %)	-0.045133	0.01757	-2.568815	0.0137
R&D Expenditure (Aggr.) growth	-0.033367	0.052419	-0.636547	0.5277

Effects Specification	S.D.	Rho
Cross-section random	0.004949	0.1838
Idiosyncratic random	0.010429	0.8162

Weighted Statistics			
R-squared	0.208506	Mean dependent var	0.016407
Adjusted R-squared	0.136552	S.D. dependent var	0.012228
F-statistic	2.897764	Durbin-Watson stat	1.443832
Prob(F-statistic)	0.032587		

Dependent Variable: GVA Volatility (Aggr.)
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1980 2000
Periods included: 3
Cross-sections included: 18
Total panel (unbalanced) observations: 49
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.035663	0.008388	4.251841	0.0001
Stock Turnover to MC	8.58E-05	0.00012	0.712677	0.4799
Stock Turnover to MC [squared]	-2.19E-07	6.85E-07	-0.319182	0.7511
CPI Volatility	-0.000108	0.000931	-0.116337	0.9079
Company Taxation (rate in %)	-0.045806	0.017938	-2.553515	0.0143
R&D Expenditure (Aggr.) growth	-0.034747	0.052673	-0.659683	0.513

Effects Specification	S.D.	Rho
Cross-section random	0.005519	0.2228
Idiosyncratic random	0.010307	0.7772

Weighted Statistics			
R-squared	0.222234	Mean dependent var	0.015616
Adjusted R-squared	0.131796	S.D. dependent var	0.012079
F-statistic	2.457307	Durbin-Watson stat	1.466566
Prob(F-statistic)	0.048087		

Source: BAKBASEL

9.3.2 Regional Aggregate level

9.3.2.1 Baseline regressions – (Table 5-14)

Tab. 9-39 Baseline - Regional aggregate level

Dependent Variable: GVA Volatility (Aggr.)
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1980 2000
Periods included: 3
Cross-sections included: 260
Total panel (unbalanced) observations: 726
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.045385	0.003706	12.24495	0
Private Credit / GDP	-6.26E-05	4.82E-05	-1.299705	0.1941
Private Credit / GDP^2	1.30E-07	2.36E-07	0.550039	0.5825
CPI Volatility	-0.000354	0.000268	-1.323082	0.1862
Company Taxation (rate in %)	-0.041454	0.00605	-6.85239	0
R&D expenditure (Aggr.) growth	-0.004757	0.00955	-0.498094	0.6186

Effects Specification	S.D.	Rho
Cross-section random	0.004953	0.1957
Idiosyncratic random	0.010043	0.8043

Weighted Statistics			
R-squared	0.074897	Mean dependent var	0.018466
Adjusted R-squared	0.068473	S.D. dependent var	0.011229
F-statistic	11.65839	Durbin-Watson stat	1.619328
Prob(F-statistic)	0		

Dependent Variable: GVA Volatility (Aggr.)
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1980 2000
Periods included: 3
Cross-sections included: 260
Total panel (unbalanced) observations: 715
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.027681	0.002781	9.954305	0
Stock Turnover to MC	0.000207	3.54E-05	5.846454	0
Stock Turnover to MC ^2	-9.22E-07	1.83E-07	-5.023378	0
CPI Volatility	0.000242	0.000277	0.87401	0.3824
Company Taxation (rate in %)	-0.03811	0.006136	-6.21045	0
R&D expenditure (Aggr.) growth	0.011929	0.009804	1.21675	0.2241

Effects Specification	S.D.	Rho
Cross-section random	0.005432	0.2287
Idiosyncratic random	0.009975	0.7713

Weighted Statistics			
R-squared	0.117192	Mean dependent var	0.017778
Adjusted R-squared	0.110966	S.D. dependent var	0.011155
F-statistic	18.8238	Durbin-Watson stat	1.512203
Prob(F-statistic)	0		

Source: BAKBASEL

9.3.2.2 Alternative regressions – (Table 5-15)

Tab. 9-40 Robustness - Regional aggregate level – Net private Credit / GDP to Firms

Dependent Variable: GVA Volatility (Aggr.)
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1980 2000
Periods included: 3
Cross-sections included: 259
Total panel (unbalanced) observations: 684
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.050699	0.005229	9.696103	0
Net Private Credit to GDP (to Firms)	-0.000405	0.000142	-2.844719	0.0046
Net Private Credit to GDP (to Firms)^2	3.55E-06	1.23E-06	2.887382	0.004
CPI Volatility	-0.000553	0.000296	-1.86818	0.0622
Company Taxation (rate in %)	-0.036939	0.006794	-5.437103	0
R&D Expenditure (Aggr.) growth	0.006035	0.010209	0.591191	0.5546

Effects Specification	S.D.	Rho
Cross-section random	0.005161	0.2034
Idiosyncratic random	0.010214	0.7966

Weighted Statistics			
R-squared	0.070175	Mean dependent var	0.018603
Adjusted R-squared	0.063317	S.D. dependent var	0.011433
F-statistic	10.23382	Durbin-Watson stat	1.625109
Prob(F-statistic)	0		

Dependent Variable: GVA Volatility (Aggr.)
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 1980 2000
Periods included: 3
Cross-sections included: 259
Total panel (unbalanced) observations: 684
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.038599	0.003238	11.91936	0
Net Private Credit to GDP (to Firms)	-2.90E-06	2.83E-05	-0.102509	0.9184
CPI Volatility	-0.000249	0.000277	-0.898301	0.3693
Company Taxation (rate in %)	-0.037217	0.006833	-5.446553	0
R&D Expenditure (Aggr.) growth	0.001388	0.010195	0.136191	0.8917

Effects Specification	S.D.	Rho
Cross-section random	0.004935	0.1817
Idiosyncratic random	0.010475	0.8183

Weighted Statistics			
R-squared	0.058115	Mean dependent var	0.019118
Adjusted R-squared	0.052566	S.D. dependent var	0.011531
F-statistic	10.47369	Durbin-Watson stat	1.617465
Prob(F-statistic)	0		

Source: BAKBASEL

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