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Regional Effects of a Cluster-oriented policy measure - The Case of the InnoRegio program in Germany

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Abstract:

This paper examines regional effects of the InnoRegio program, which was conducted by the German Federal Ministry of Education and Research. The InnoRegio program has been a new tool of innovation policy with the aim to improve innovativeness in East Germany on the basis of prosperous regional networks. Besides the direct support of networks and innovation activities, the program was meant to trigger the regional development in East Germany. While existing studies examine whether the development of networks or cluster was successful, this paper focuses on the investigation of regional economic development. Using regional data, especially on employment and patents, we examine whether the involved industries have developed better in supported regions than in other (East) German regions. Developments are investigated for a time span including years before, during and after the policy measure. We find some positive effects in the regional development that can be assigned to the InnoRegio program.

Keywords: cluster policy, InnoRegio program, cluster, networks, region, employment, innovation, policy evaluation.

JEL Classifications: C22, O12, O25, O33, R11, R28

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I. Introduction

Supporting local networks and cluster has become a very common policy tool (an overview on such activities in Europe is given in Furre 2008, further studies are, e.g. Roelandt & den Hertog 1999, Lundequist & Power 2002, Sölvell et al. 2003, Andersson et al. 2004, Fromhold-Eisebith & Eisebith 2005, Schou 2007 and Huggins 2008). Policies of this type are employed on all levels of policy making: the regional level, the national level, and the sub-national level (e.g. EU). In general, it is believed that local networks and cluster improve the competitiveness of regional economies (see Porter 1990 for a starting point of a huge literature on this). However, some scientists also critically discuss the cluster concept and its policy implementation (e.g. Martin 2003).

Most policy programs that aim at improving networking and clusters are evaluated by scientists and consultants, often financed by the governments that issued these programs. These evaluations are often based on how the actors (mainly firms) develop that are recipients of financial support. Often, their development is compared to the progress of similar actors that have not been supported (e.g. Brown et al. 1995, Falck et al. 2010, Fier et al. 2005, Licht et al. 2012, Mole et al. 2008). Additionally, participants are often directly asked about the impact of the program (e.g. Becker et al. 2005, Eickelpasch et al. 2002, Georghiou & Roessner 2000, Rush et al. 2004). Hence, these investigations mainly show the direct effect of the governmental support at the firm level. While this kind of evaluation provides a good understanding of effects on the recipients of governmental support, it does not account for possible positive effects of supporting networks and clusters on the whole (regional) economy. One of the basic aims of policy measures such as the InnoRegio program is not to make a few firms more competitive, but to increase the competitiveness of a whole region or country and, thus, to generate economic growth. The InnoRegio program belongs to the program family 'Unternehmen Region', which aims to "improve the conditions for innovations and set the course for the long-term success of regions ("clusters") in the New German Länder" (BMBF, n.d.). Usual evaluation methods like the comparison of supported and non-supported firms as well as the interrogation of participating firms are not able to fully capture such long-term effects and impacts that concern the whole regional development.

Furthermore, from the perspective of cluster formation and regional economic growth it is very interesting to study whether governmental programs that finance networking and clustering between regional actors have an impact on the long-run economic development of regions. Hence, besides the methodological aspect concerning evaluations, analysing effects of a networking program on the respective regional development is very interesting from a scientific perspective.

The InnoRegio program is a good instance for such a study for several reasons. First, it is one of the first programs that aimed at placing initial seeds for the emergence of cluster and networks to enhance regional development in East Germany. Since it was already conducted from 2001 till 2006, we are able to study not only the developments at runtime of support but also early developments after the end of the program. Second, the program explicitly aims to impact the whole region and its competitiveness. Third, effects of the program were comprehensively evaluated by a usual study.

On behalf of the German Federal Ministry, the InnoRegio program has been evaluated by the DIW (2005). This evaluation is mainly based on questionnaires that allow for studying network developments and interactions between actors involved in the program. In addition, the growth of supported firms and comparable firms in other regions is studied. Here, some positive trends are observed in the growth of participating firms, although these trends are not significant (DIW 2005). Hence, the impact on the participants is well known and allows us to focus on the effects on regional development in order to complement the evaluation findings by an outside view.

To add this view, we use an alternative way to evaluate success of programs that intend to foster regional industry-specific growth. In the literature, research often focuses at questions of how support is used, how effectively this is done and what are the characteristics of the supported actors (see e.g. Lambrecht & Pirnay 2005). This means that rather the structure of a program and its conduction are evaluated. We use data that is gathered completely independent of the program to focus on effects on the regional economic development. We see this as a complementary – not a competing – approach to the already conducted investigations. The outside perspective is justified by the fact that the InnoRegio program states regional growth in employment and competitiveness as aims of the program. We analyse whether positive effects of the program that have been found at the firm level (e.g. Eickelpasch & Pfeiffer 2004, Eickelpasch et al. 2004) have trickled through to the regional level and triggered a positive regional development. These effects have not been under investigation yet.

Several problems arise when using such an outside view for evaluating effects of policy programs. Some of them are specific to the policy measure that is studied here, while others are more general. We will discuss these problems in detail in order to show the merits of the method that is proposed here.

The paper proceeds as follows. In Section 2 theoretical foundations for the support of local networks and the emergence of local clusters as well as for policy evaluations are presented. Furthermore, this section contains a description of the InnoRegio program. Section 3 describes the regions and industries that are studied.

Additionally, the data used and method applied are described. The results of the analysis are given in Section 4. Section 5 concludes.

II.Theoretical considerations

II.1 Cluster policy and regional growth

Porter (1998) introduced the idea that policy activities might be an initial trigger for the development of a cluster and, thus, enhances regional growth and competitiveness. Shortly after the cluster concept of Porter became well-known among policy makers, many national and local governments set up programs to support clusters (see e.g. Sölvell et al. 2003, Furre 2008). Despite this strong practical interest in cluster policy, there still exist only few empirical studies on the impact of cluster programs on the regional economy (Nishimura & Okamuro 2011). Most literature on cluster policy is of theoretical nature.

Policy makers try to influence the development of local clusters in various ways (see Brenner & Fornahl 2003 Andersson et al. 2004). In the theoretical as well as the empirical literature two different notions of cluster policy can be distinguished: First, there are policy programs and measures that intend to trigger the development of new clusters. Second, there are policy programs and measures that intend to make existing clusters more interactive, efficient and/or competitive. Nevertheless, there are several scientists that criticize the cluster concept as well as the implementation within policy programs (e.g. Fromhold-Eisebith & Eisebith 2008, Martin 2003 among others).

In case studies, policy is often stated to be one of the crucial drivers for the emergence of clusters (see Brenner & Mühlig 2012 for a meta-analysis). Although this role of policy is well known and discussed in the literature (e.g. Fromhold-Eisebith & Eisebith, 2005, Longhi, 1999, Lundequist & Power, 2002), detailed recommendations for policy makers are missing (Lorenzen 2001). Furthermore, policy measures that intend to trigger the emergence of new clusters have only a certain probability to be successful (see Brenner & Schlump 2011). Therefore, most policy programs focus on the second understanding, intending to make existing clusters more competitive. In many cases this implies that policy makers support networking within existing clusters. This is in line with the common understanding of scientists that local innovation networks are important contributors to technological progress and local economic growth and thus regard policy as a potential actor in the emergence of such networks (see, e.g., Bianchi & Bellini 1991 and Bellandi & Caloffi 2010). Hence, a lot of recent policy initiatives that aim at local cluster developments have focused on processes like local knowledge flows, networks and cooperation. These processes are considered to be beneficial to accelerate the regional diffusion of knowledge and the increase of innovative activities. Evaluations of cluster policies also focus on these internal effects of policy support (e.g. Diez 2001, Schmiedeberg 2010). In this study we examine the effects of the InnoRegio program, a governmental program that explicitly aims at triggering the emergence of clusters.

II.2 InnoRegio program

After the breakdown of the GDR in 1990 the economy in the affected region was in bad condition. At present, especially the high number of unemployed people is a serious problem. Furthermore, the firm basis, comprising less large firms, as well as the industry structure differs from the rest of Germany. Thus, private research capacities are often missing (e.g. Günther et al. 2010). As a reaction to existing problems new policy measures have been developed and applied. One important program in East Germany has been InnoRegio, initiated by the BMBF in 1999 and equipped with a financial budget of 255 million €.

The idea behind this program originated from the BioRegio contest, which is seen as an institutional revolution in the German innovation policy because it based its support on a contest of regions (see Dohse 2000). With the InnoRegio program the BMBF took a further step into the direction of a regional bounded, network oriented innovation and cluster policy. While the BioRegio contest was still oriented on detecting strong regions and promoting them to become competitive on an international level, the InnoRegio program aimed at identifying potentials in East Germany that might still need to develop to become a cluster. Hence, the InnoRegio program had a number of aims. Some of them are in line with understanding cluster policy as making clusters more innovative, more interactive and, thus, more competitive. The internal effects have been intensively studied by Eickelpasch et al. (2002) and Eickelpasch & Pfeiffer (2004) as well as the DIW (2005). However, the InnoRegio program also had the aim to trigger or enhance long-term success of regions and clusters. The idea is that financial support of local networks and clusters is able to improve the economic situation of regions with insufficient economic structures. The funding in terms of a contest between competing regions can trigger mobilizing effects, even in regions that are not supported. The corporate elaboration of the regional concepts intensifies the relation between the local actors and causes a better knowledge about the skills and needs of the participating firms. Even this fact can cause economic impulses in a region (see Eickelpasch & Fritsch 2005).

444 regional networks applied for the program, which was organized as a competition for the financial funding. Finally, 23 initiatives were supported. With this decision the winning networks were authorized to realize innovation projects and accompanying activities, supported with a budget between 4 and 20 million €. Additionally, they received external consultation. The selection of initiatives was made on the basis of network and project features, such as the expected impact of projects, sustainability of development and quality of generated cooperation activities (see DIW 2005).

The selection criteria did not explicitly include the initial conditions of the regions. No statement can be given about whether the InnoRegio program followed the basic approach of "Picking the Winners", i.e. choosing the regions with the most promising initial conditions, or the basic approach of "Picking the Losers", i.e. supporting the regions which would need financial funding most because of their lack of economic structures. The funding began in 2001 and ended in 2006. After 2006 the regional networks are supposed to work without financial support (see DIW 2005).

It is obvious that the InnoRegio program follows the cluster theory to a high degree. The support of the connection of historically grown competences, new technologies and existing network activities between economic actors, research institutes and education providers generates innovation potentials that may help to improve the economic situation of the funded regions. This should lead to specific outstanding competences in the region that might cause the emergence of a local cluster.

The InnoRegio Program was evaluated during the program phase. Eickelpasch et al. (2002) and Eickelpasch & Pfeiffer (2004) showed that firms assessed the funding as positive for their innovation behaviour. Furthermore, positive effects on the propensity to patent or the market position are stated by the firms questioned. The evaluation studies also indicate that the supported firms seem to perform much better in terms of innovative activity and slightly better in terms of employment growth than not-funded firms. Nevertheless, one of the objectives of InnoRegio has not been evaluated in this research. Strengthening the regional economic environment is stated in the program description as an important aspect of regional innovation promotion. To capture the impacts of the InnoRegio policy measure on the regional economy, a broader view and respective methods are necessary. As we are focusing on long-term impacts on the regional level, we aim at capturing effects of InnoRegio that have not been subject of research yet. Results of the survey among participating firms during the program phase lead to the expectation that there might be long term effects of the intervention. 60% of the firms expected the beginning of the economic exploitation of their InnoRegio project at the end of the funding or after the end of funding. For patent applications the picture is more mixed, only 33% planned a patent application or already conducted one, 25% were not sure about possible applications (Eickelpasch & Pfeiffer 2004). Thus, there is a high probability that effects are visible after funding with a certain time-lag.

II.3 Policy evaluation

Innovation policy measures like InnoRegio are under strong pressure of justification, so that in recent years the number of evaluation studies has increased tremendously. Thus, policy evaluation has become an important scientific field with a high diversity of approaches and objectives (e.g. Kuhlmann & Bührer 2000). Given that the focus of a huge amount of policy measures like InnoRegio has shifted towards the regional level and more systemic policy measures, the purpose of evaluations has followed that shift and evaluation has to aim more on systemic aspects and overall outcomes (e.g. Arnold 2004, Bellandi & Caloffi 2010 and Kuhlmann 2003a). Rhomberg et al. (2000:11) define evaluations as "systematic and comprehensive investigations that assess relevance, efficiency and effectiveness of research and innovation programs and depend in their composition of methods and procedures from the evaluation object, point in time and evaluation focus". The literature usually distinguishes between formative and summative evaluation methods. Formative evaluations focus on the amelioration of the evaluated object to introduce a learning process. Summative evaluations aim at results and performance to give a concluding stock from the evaluated object (e.g. DeGEval 2002, Kuhlmann 2003b:137) points to five elements every evaluation has to consider. First, the appropriateness and basic presumptions of a program have to be examined. Second, it has to be analyzed if the target group of a program has been reached with the measure. Third and fourth, it has to be evaluated if direct and indirect impacts are achieved and if program targets have been reached. Last but not least, the efficiency of the implementation and administration has to be considered. This is in line with research questions for evaluations discussed by Arnold (2004).

A further distinction of evaluation activity is proposed by Guy (2003). He points to a three dimensional evaluation space that covers the focus of an evaluation, the time dimension and the impact dimension. The focus of evaluation describes whether a single program, program portfolios or overall policies are concerned. The time dimension focuses on short, medium and long-term impacts of the evaluation object. The third dimension describes the impacts on different levels, such as R&D actors, parent organizations or society. Thus, short term impacts of single programs on R&D actors are seen as the 'inner core'. The focus of current evaluation has already developed in all three directions. Nevertheless, given that evaluations become more complex and thus difficult, moving from the 'inner core' to the 'outer circle' is not an easy development.

Therefore, complete evaluations in the ‘outer circle’ are still rare, although evaluations that differ from the 'inner core' in one of the three dimensions are more frequent.

Independent on these differentiations, there are aspects that every evaluation has to take care of. First of all, the choice of indicators measuring the intended output of the program is of crucial importance. Furthermore, measured effects have to be attributes to programs and policies under investigation (e.g. Jaffe 1999). There are different ways to approve the causality of impacts. It is possible to control causality statistically. In addition, the construction of a control group that has not been financed by a policy measure is a possibility to check causality. To check whether the timing of outputs makes sense in relation to inputs is the third option (Davidson 2005). For the right temporal attribution of effects to a policy measure, it is also important to consider a certain time-lag between the end of the evaluated measure and measurable outputs. This holds especially when output indicators that show time-lags, such as patents, are employed (e.g. Fritsch & Slavtschev 2005, Rhomberg et al. 2000, and Schmoch 2004).

Fulfilling these tasks is especially important when analyzing socioeconomic outcomes of policy measures. This is additionally true, given that direct attribution of impacts to measures is not feasible but a rather logic approach is needed (Cozzens & Bortagary 2002). As Lambrecht & Prinay (2005) show, most evaluations only focus on the way the program was implemented and how the structure of the program helps firms. Thus, usually only direct effects of governmental support are evaluated but no socioeconomic outcomes.

Given that there are already existing evaluations of the InnoRegio program (e.g. Eickelpasch et al. 2002, Eickelpasch et al. 2004) we do not aim at conducting a complete evaluation of this policy measure in the sense of Kuhlmann (2003a). Instead, this study should be rather seen as an impact analysis that aims at long-term impacts on regional-industry specific development with a summative character. Employing the classification of Guy (2003), our research focuses on long-term impacts on the society, thus on the ‘outer circle’. Given that we focus only on one program, we remain on the ‘inner core’ in this dimension.

As a consequence of more systemic and complex evaluation, publications with a more comprehensive view on overall policy effects have appeared in recent years. For example, Fier & Czarnitzki (2005) show an overview over recent evaluation results and state by the majority a positive effect of public R&D project promotion. Another example are Czarnitzki et al. (2002) who discuss the effects of policy measures for firms on an overall level in Germany. They show a positive influence on the propensity to innovate for funded firms. Nishimura & Okamuro (2011) discuss differences between direct and more indirect innovation and cluster policy measures in Japan. They find positive impacts especially for policy measures that aim at supporting network and coordination between economic actors. Falck et al. (2010) find for example a small increase of a firms chance to produce an innovation due to the participation in the Bavarian Cluster Policy Program. Additionally, positive results are found for the propensity to cooperate with public research institutes. Nevertheless, in most countries, ongoing innovation policy measures are often implemented by the federal government or state governments. Evaluation is mainly conducted by independent consortia and researchers (examples for a huge amount of literature are Bellandi & Caloffi, 2010, Bergmann et al. 2010, Isaksen 1999, Licht et al. 2012, Staehler et al. 2006). Often, these evaluations focus on one single measure. Most of them are conducted during the realization of the measure or shortly after ending. Additionally, most evaluations are conducted on the firm level and thus ignore effects of funding on regional economic development. As impacts on the regional economy are normally part of the intended impacts of an innovation policy measure it is thus important to evaluate also outcomes on this level. To add an outside perspective to the already existing evaluations, we go beyond the usual approach and analyse the effects of the InnoRegio program on the regional industry-specific development.

II.4 Hypotheses on the regional effect of the InnoRegio program

The main question in this paper is therefore whether effects that are found in the evaluation of the InnoRegio program (see Eickelpasch et al. 2002, Eickelpasch & Pfeiffer 2004) on the firm level also transfer to the regional level. Since one of the aims of the InnoRegio program was to trigger regional development and competitiveness, it can be expected that some developments are observable on the regional level.

The immediate effect on the involved firms is that they receive funds for research projects. This should imply that the number of R&D employees in the region increases, although it is not clear whether this increase is large enough to be seen on the regional level. In addition, the InnoRegio program should be able to improve regional innovation capabilities, so that a higher research intensity and, thus, higher numbers of R&D employees prevail also in the long-run. Thus, we expect:

Hypothesis 1: The number of R&D employees in the supported industry-region combination

a) should increase during the funding period and

b) should remain on a higher level or increase further in the period after funding.

The increased funds for R&D projects due to the InnoRegio program should also imply, in general, a higher number of employees. However, the effect on the R&D employees - discussed above - can be expected to be the main part of this increase. Hence, it is even more questionable whether the effect on normal employment can be detected on the regional level. In the long-run we expect a higher competitiveness of the region due to technological developments triggered by the InnoRegio program that leads to more employment. Thus, we expect:

Hypothesis 2: The number of employees in the supported industry-region combination

a) should increase slightly, maybe not measurably, during the funding period and

b) should increase further in the period after funding.

However, research on effects of innovation on the development of employment has been led to ambivalent results (e.g. Edquist et al. 1998, Rottmann & Ruschinski 1997, and RWI 2005). Empirical studies often show rather positive effects on the development of employment for product innovations whereas results for process innovations are more mixed ranging from positive over neutral to rather negative results (e.g. RWI 2005). Harrison et al. (2008) for example show smaller negative effects of process innovations on the employment growth at the firm level while product innovation lead especially in Germany to high employment growth. Nevertheless, the positive employment effect of product innovations is often higher and thus outweighs negative effects from process innovations. Additionally, innovative firms generally show a higher employment growth than non-innovative firms (e.g. Rottmann & Ruschinski, 1997). Thus, even if small negative effects might occur due to process innovations we expect positive influences of innovative activity on employment growth.

Given that the InnoRegio program funds to a large extent research activity, innovations should result after some time from these activities. We measure the innovative activities in regions with the help of patent applications. A certain time lag from research to the application for a patent has to be considered. Thus, we expect:

Hypothesis 3: The number of patent applications in the supported industry-region combination should increase at the end of the funding period and in the period after funding.

III. Data and method

In spite of the various challenges, there are several good reasons for an analysis from an outside perspective. First of all, the existing evaluations provide good evidence on the internal effects and impacts on firms (e.g. Eickelpasch et al. 2002, Eickelpasch et al. 2004). Thus, these aspects do not need to be further evaluated, but a view from outside is needed to strengthen these impressions and capture effects of policy on the regional development and potential cluster formation. Second, given that we only use data that is collected independently from actors and participants of the program, we rule out biases due to expectations for further funding or selection biases of the interviewed actors (e.g. Rhomberg et al. 2000). Third, we focus on impacts on the regional level, including regional innovation performance and regional economic development. This focus is justified by the aim of the InnoRegio program to enhance regional innovativeness and growth. Therefore, we take care of the systemic character of the policy measure by evaluating the outcomes for the regional innovation system.

Together with the evaluations by Eickelpasch et al. (2002) and Eickelpasch & Pfeiffer (2004) our analysis helps to give an all-encompassing view on the impacts of the InnoRegio Program. To assure a certain time-lag and thus the visibility of effects, we employ data from 1999 to 2011. This also helps to follow the regional development over time and to distinguish three time periods: Developments before funding: 1999-2001, developments during funding: 2001-2006 and developments after funding: 2006-2011 (see Figure 1).

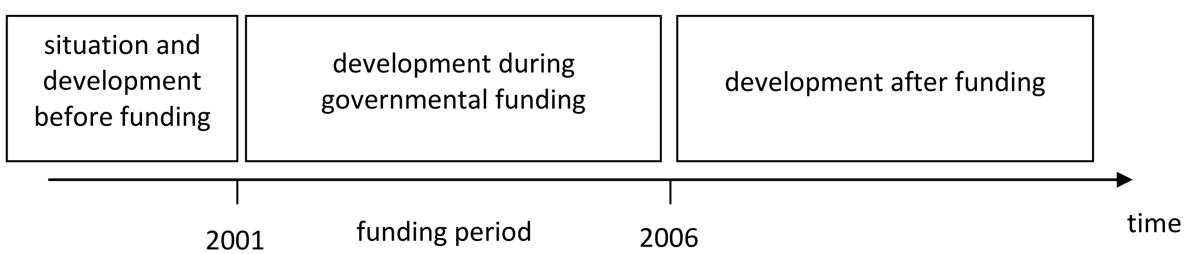

Figure 1: Time frame of the study.

The aim of our analysis is to detect those developments during and after the funding that are neither the consequences of the situation before nor a reflection of overall (industry-specific) trends. Therefore we compare the development in the supported industry-region combinations with the development of the same industry in other regions. Above several hypotheses have been stated on the developments during and after funding (see Section II.4), which will be checked in the following Section.

III.1 Definition of regions, industries and patent classes

Before the analysis can be realized, it is necessary to define regions and industries that will be studied due to their funding by the InnoRegio program. The definition of the regions is done on the level of labour market areas (LMA)[1].

The data for the definition of the regions was gathered from the public websites of the networks. The first step was to identify all network actors that are private companies. Given that the main aim of policy measures is to increase or improve activity in the private sector, we focus our analysis on the effects of the InnoRegio program only in this sector. In the next step we identified every LMA in which a funded company is located and sort them by the number of firms in the network that are located in each LMA. We include in our analysis for each InnoRegio only the LMA that contains the greatest number of companies. Further LMA are considered if they contain at least half as many firms and have a common border with the LMA with the highest number. Through this we obtain for each InnoRegio initiative, at least, one labour market area and for several initiatives a number of neighbouring labour market areas. The results are given in Table 1. For one InnoRegio initiative ("Textilregion Mittelsachsen") the public website did not contain a list of involved private companies. Therefore we excluded this initiative from the further analysis. Hence, we analyse 22 InnoRegio initiatives as presented in Table 1.

[1] Labour market areas are defined according to the commuting activities of employees between regions. We use the definition of 270 labour market areas that is established by the Federal Labour Office in Germany (Bundesagentur für Arbeit).

Network	Name	Labour market area
1	Gesundheit durch Innovation	300
2	BioHyTec	300
3	RIO	300, 307
4	FIRM	302, 303, 306
5	DISCO	206
6	Kunststoffzentrum Westmeckl	213, 214
7	Maritime Allianz	212
8	Nukleus	212, 214, 215
9	InnoPlanta	231, 233
10	MAHREG	231
11	REPHYNA	231
12	NinA	228, 229
13	INNOMED	231
14	InnoSachs	262
15	IAW 2010	262, 264
16	BioMet	266
17	KONUS	266
18	MusiconValley	265
19	RIST	261
20	INPROSYS	251
21	Micro Innovates Macro	241
22	Barrierefreie Modellregion	241, 251, 252

Table 1: List of the 22 networks that are supported in the InnoRegio program and the regions in which they are located (the names of the regions are given in A.1 in the Appendix).

The same data is used for the definition of the industries involved. Again private companies that are listed on the public websites are used. With the help of three databases[2] we obtained industry classifications for each of the funded firms. Nevertheless, two problems have to be mentioned here. First, the three databases do not always agree in their industry classifications of firms. Two databases have a tendency to classify into service industries, while one database contains more classifications into the manufacturing sector. Second, the classifications are sometimes done on the 2-digit level, often on the 3-digit level or on the 4-digit level. Given that the InnoRegio initiatives are very different in their industrial dimension, we do not restrict the analysis to one level. Instead, we use the following procedure: For each InnoRegio initiative we use all industry classifications (2-digit, 3-digit and 4-digit) that are found for at least one involved firm. Then we calculate the share of each industry classification. To this end, we assign the same share (1/(number of firms)) to each firm and distribute this share equally among all industry classifications that we find for the firm. We obtain for each InnoRegio initiative a list of industry classifications and their shares of involvement. This list is dominated by

[2] CreditReform, Hoppenstedt, and Bürger's firm profiles

the core industries in which this initiative is active, but also contains a number of further industries with smaller shares that represent the supplementary activities.
The same approach is used to identify patent classes (IPC codes). We indentified all patents from 1999 till 2008 for firms involved in the initiative. On a 4-digit IPC level the shares are calculated as described above for the industry classification.

III.2 Data and indices

According to the hypotheses, the development of two variables – employment and R&D employment - are studied for the time period from 1999 till 2011. Patent applications are analyzed until 2008 due to data availability. Data on the employment in regions and industries is provided by the Federal Labour Office (Bundesagentur für Arbeit). We use data on the number of employees[3] at June 30 in 1999 to 2011. The data is available for all 4-digit industries (WZ2003 classification) and all labour market areas. Data on R&D employees is obtained from the same source for the same points in time and the same industry classification. We follow Bade (1987) and define R&D employees as the occupational groups of engineers, chemists and natural scientists.[4]
Data on patent applications originates from the Patstat database[5]. All applications with a German inventor with a correct address are assigned to the respective labour market areas. In case of several inventors a proportional assignment is used. It takes some time before patent applications show up in the Patstat database, so that patent data is available only until 2008.
It is not possible to define a sufficient number of regions that are similar to the supported regions in a number of characteristics, because industry structure differs and is important in our approach and labour market areas in Germany differ in the number of inhabitants therein. In order to examine whether the supported regions develop better than other regions, we compare their industry-specific development with the industry-specific development in all other regions in Germany. The units of observation are industry-region combinations, which are called IR-units in the following. Furthermore, we use a relative value to describe the development in regions, the so-called localisation quotient (LQ):

[3] The Federal Labour Office counts all employees that are registered in the obligatory social security system as dependent employees.
[4] Bade (1987) defines R&D workers as employees belonging to the occupational groups 032, 60, 61 or 883 of the German occupation classification (Bundesanstalt für Arbeit, 1988)
[5] September 2011

$$LQ_{i,r} = \frac{\text{var}_{i,r} / \text{var}_r}{\text{var}_i / \text{var}},$$

where *i* denotes the industry classification, *r* the region (labour market area) and var stand for the three different variables that we use. $var_{i,r}$ is its value in class *i* in region *r*, var_r is its value for all classes in region *r*, var_i is its value in class *i* in whole Germany, and *var* is its value in all classes in Germany. The localisation quotient (LQ) is calculated for employment (LQ_{empl}), R&D employment ($LQ_{R\&D}$) and patent applications (LQ_{pat}). All analyses are done for these three variables.

III.3 Statistical approach

As stated above, the aim of our study is to examine whether the industries in which the supported networks are active develop better in funded regions than in other regions in Germany. This means that we compare developments in supported industry-region combinations to developments in other industry-region combinations in Germany.

However, industries differ strongly in their mechanisms and dynamics. Therefore, we do not compare the developments in the supported IR units with all other potential IR units. We only use IR units that refer to the same industries as the supported IR units. This means that we build our set of comparable IR-units on the industries that are present in the supported networks. Above we determined the industrial composition of the 22 supported networks (for each case a large number of industry classes with the respective shares of involvement). In the analysis of patents we only consider 21 supported networks because in one of the networks no firm has applied for any patent. We use these 22 (or 21) industrial compositions for the construction of the comparative sample. The regional unit is again LMA. There are 270 LMA in Germany, so that using the 22 (or 21) industrial compositions in each LMA would imply a comparative sample with 5940 cases. We exclude from this complete sample two kinds of cases: First, we exclude all combinations that are already included in the analysis as one of the 22 (or 21) supported networks. Second, we exclude all cases in which the localisation quotient (LQ_{empl}, $LQ_{R\&D}$ and LQ_{pat}) is small. This is done because the industry-specific development in regions where the industry plays only a minor role differs from the industry-specific development in regions in which it plays a major role. Especially in regions where the industry is (almost) not present, developments will be different. Therefore we include in the comparative sample only IR-units that have similar localisation quotients as our supported networks. The localisation quotients of the supported networks range from 0.42 to 1.78 (LQ_{empl}), 0.47 to 1.89 ($LQ_{R\&D}$) and 0.18 to 2.29 (LQ_{pat}). Therefore, we use all regions with a LQ above 0.3 for the comparative sample. The resulting numbers of comparative cases are given in Table 2.

Variable	Number of comparative cases
Employment	4839
R&D employment	3058
Patents	2690

Table 2: Number of comparative cases.

Including the comparative cases, we have data on the development of three variables (LQ_{empl}, $LQ_{R\&D}$ and LQ_{pat}) for a large number of cases and 10 or 13 successive years, respectively. The large number of observations makes a statistical analysis possible. The situation in one year clearly depends on the situation the year before, so that autoregressive processes are given. In combination with the fact that we observe a large number of cases, a panel analysis is the adequate tool to examine the dynamics of the variables.

Hence, we conduct for each variable a panel analysis in which the value of the variable depends on its own past and on other variables. The basic model is given by

$$LQ_{\mathrm{var},i,r,t} = a + b_1 \cdot LQ_{\mathrm{var},i,r,t-1} + b_2 \cdot EAST_r + \varepsilon_{\mathrm{var},i,r,t},$$

where var stands for the three variable types (empl, R&D and pat) and OST is a dummy that is one for regions in East Germany and zero otherwise. We include this East-West dummy in case industries in East German regions develop differently from the regions in West Germany due to their unequal history.

The auto-regressive part is built on one term representing a lag of one year. We checked for the inclusion of further lags - which would allow for a dependence of the current development on changes in the past - but quality of the model did not improve. Similarly, the inclusion of fixed or random effects did not cause any advancement according to the Hausman test. Therefore, we use a pooled model with a one-year-lagged auto-regressive part.

We extend the above model by the inclusion of a dummy *Sup* that is one for the supported IR-units and zero for the comparative IR-units that did not receive InnoRegio funding. Including this dummy allows us to study whether the supported IR-units develop better than others. We also employ an interaction term between this dummy and the lagged LQ-value, so that we obtain the following regression equation:

$$LQ_{\text{var},i,r,t} = a + b_1 \cdot LQ_{\text{var},i,r,t-1} + b_2 \cdot Sup + b_3 \cdot \left[LQ_{\text{var},i,r,t-1} \cdot Sup\right] + b_4 \cdot EAST_r + \varepsilon_{\text{var},i,r,t},$$

The interaction term allows us to examine whether initiatives that are already strong (high LQ) benefit more from the government support than other initiatives.

There are several explanations for a better development of the supported IR-units: First, governmental support might have positive impacts. Second, networks that apply for InnoRegio funding might reside in regions with a better economic background. Third, within the program governmental agencies might have chosen those IR-units that show a better development compared to other applying IR-units. Hence, an overall dummy for the supported cases does not provide adequate information about the effects of the program.

Therefore, we split the dummy *Sup* and define dummies separately for each year. The dummy Sup_t takes the value one for the observations in time *t* for cases that are supported by the InnoRegio program and the value zero otherwise. The results for these dummies tell us whether in each specific year the supported IR-units develop better than other comparable IR-units. If the InnoRegio program attracts or selects regions with an over-average development, all dummies should be positive. If, instead, the InnoRegio support has an impact, dummies should show a higher positive relationship to the development in the years of support than in the other years. Therefore, we will analyze results for the various dummies in detail below. The panel model reads:

$$LQ_{\text{var},i,r,t} = a + b_1 \cdot LQ_{\text{var},i,r,t-1} + b_2 \cdot EAST_r + \sum_t b_{3+t} \cdot Sup_t + \varepsilon_{\text{var},i,r,t}.$$

III.4 Methodological issues

The method applied here to study impacts of policy measures is quite unusual. We do not use any data that is gathered within the program, but rely entirely on data from other sources. This seems especially adequate for the InnoRegio program because one aim of the program is to influence regional development as whole and not only involved actors. Furthermore, an internal evaluation has already shown positive effects for firms involved (e.g. Eickelpasch & Pfeiffer 2004), so that our study complements the existing evaluation. However, the method has, of course, advantages and disadvantages. The major advantage is that the data is objective.

The various disadvantages are discussed in this section. They can be distinguished into general problems, which all evaluations of policy measures on the basis of general statistical data share, and specific problems, which are caused by the characteristics of the InnoRegio program and the data available for this study.

There is one very crucial general problem: Is it possible to adequately identify impacts of policy programs in general statistical data? What is the adequate data to look at? (e.g. Rhomberg et al. 2000). Of course, the answer to these questions highly depends on the aims of the evaluated policy program. For some aims of policy measures it will be very difficult to find official data that allows answering the question whether the aims have been reached. In the case of the InnoRegio program one important aim is to trigger growth in the regions. We argue that it is possible, at least in principal, to study whether this aim is reached with the help of official data. Nevertheless, there are a number of problems that we face in our specific study.

First, the identification of industries involved in a supported network is problematic. We use industry classifications provided in databases on firms (see above). Firms might be active in many industries, but are classified into a few of these, probably at random or according to their history. Furthermore the WZ2003 classification, which is used here, does not contain categories for modern technological fields like biotechnology. To limit the effect of these problems, we include all classifications that we find for the involved firms. This leads to a certain fuzziness, but also minimizes effects of misclassification.

Another problem is caused by the spatial unit of analysis. Many networks are distributed over several regions that typically contain different employment numbers in the supported industries. Furthermore, these regions have different shares of actors involved in the supported network. As a consequence, effects of the policy measures in the funded regions may differ. We use labour market areas to account, at least partly, for this problem. However, especially when several labour market areas are domicile for networks, the requirement to use spatial units blurs the study somewhat.

Furthermore, in the case of the InnoRegio program the increase in employment, R&D employment and patent activity that is expected to result from the program might be in some cases very small compared to total numbers in the region and industry that is affected. Hence, it might be difficult to identify the effects of the program. Due to the comparison with the large number of other German IR-units we rule out biases due to overall and industry specific developments in Germany. However, this implies that if we find effects, they are even more impressive.

Additionally, effects of such an innovation policy can not explicitly be isolated. Not every company in an analysed IR-unit participates in a network and not every company participating in the networks belongs to the identified and analyzed regions. For the InnoRegio program it can be argued that even not supported firms take advantage of the program because of the economic impulses that are created by the network. This is in line with the aim of the program to trigger economic development in supported regions that has to be borne by more than the supported firms. Thus, effects of funding are also expected for other economic actors and thus overall regional development. However, this effect can be expected to take more time than developments for firms involved in funded network. Additionally, complete effects of a funding program might well be recognizable not until networks have evolved for ten years or more. Hence, it is possible to see only early developments in our study.

IV. Impact of the InnoRegio program

In Section II.4 hypotheses have been stated for three variables that represent potential impacts of the InnoRegio program on the regional development. We discuss the results for the effects on R&D employment, overall employment and patents separately in the following.

IV.1 R&D employment

Hypotheses 1a and 1b state that R&D employment should increase especially during funding and possibly also after funding. The regression results for R&D employment are presented in Table 3. We use a pooled panel analysis with a lagged dependent variable (one-year lag). We find a high goodness of fit, mainly driven by the strong autoregressive part. Including more lagged variables or quadratic dependencies as well as using other variants of the panel analysis does not improve the goodness of fit.

	Model 1		**Model 2**	
Variables	**Estimate**	**p-value**	**Estimate**	**p-value**
Constant	**0.02712705*** **	0.000000	**0.02773055*** **	0.000000
lag($LQ_{R\&D}$,1)	**0.94331475*** **	0.000000	**0.94213834*** **	0.000000
Sup	**0.03283172*** **	0.000000	-0.01532387	0.19353
Sup* lag($LQ_{R\&D}$,1)			**0.04959100*** **	0.000006
East	**-0.00226467* **	0.01206	**-0.00223139* **	0.01336
Adj. R^2	0.8993		0.8995	

Table 3: Results for the panel analysis with R&D employment ($LQ_{R\&D}$) as dependent variable.

The coefficient for the East German regions is significantly negative, meaning that regions in West Germany develop better than regions in East Germany. The results for the constant and the lagged variable show that the situation of R&D employment is quite stable (94% of R&D employment shows up again in the next year) but there is a certain convergence tendency between the regions. We do not find evidence for further cluster formation in the sense that strong regions become even stronger just because they are already strong.

The overall panel analysis (Table 3) shows that IR-units that are supported by the InnoRegio program develop better than other IR units (Model 1). This difference is driven especially by the more specialised (higher LQ), supported units (Model 2). This means that those IR unit that are supported by the program and show a high specialisation in the supported industries show in the whole period of observation a higher growth than other units.

Variables	**Estimate**	**p-value**
Constant	**0.02803670*****	0.000000
lag($LQ_{R\&D}$,1)	**0.94393243*****	0.000000
Sup_{2000}	**0.03561586***	0.039461
Sup_{2001}	**0.05006636****	0.003795
Sup_{2002}	**0.07182631*****	3.294e-05
Sup_{2003}	**0.03414705***	0.048406
Sup_{2004}	-0.00610596	0.724133
Sup_{2005}	0.00376319	0.827777
Sup_{2006}	**0.04005957***	0.020559
Sup_{2007}	0.01203073	0.486726
Sup_{2008}	**0.14918123*****	0.000000
Sup_{2009}	**0.03675609***	0.033679
Sup_{2010}	-0.02441253	0.158353
Sup_{2011}	-0.01221012	0.480355
East	**-0.00228215***	0.010783
Adj. R^2	0.9004	

Table 4: Results for the panel analysis with R&D employment ($LQ_{R\&D}$) as dependent variable including dummies for the supported IR-units in each year[6].

A more detailed answer to our research question is obtained from examining the dummy variables $Init_t$, which describe how the development of supported initiatives deviates from the development of other IR-units in each year. These results are presented in Table 4 and visualised in Figure 2. Figure 2 shows the cumulated estimates of the coefficients for the yearly dummy variables $Init_t$. Since these coefficients stand for the additional change of the LQ-values in each year in the funded IP-units, Figure 2 shows the overall difference of the development in the supported IR-units compared to other IR-units.

[6] Results for the year-dummies can be obtained on request.

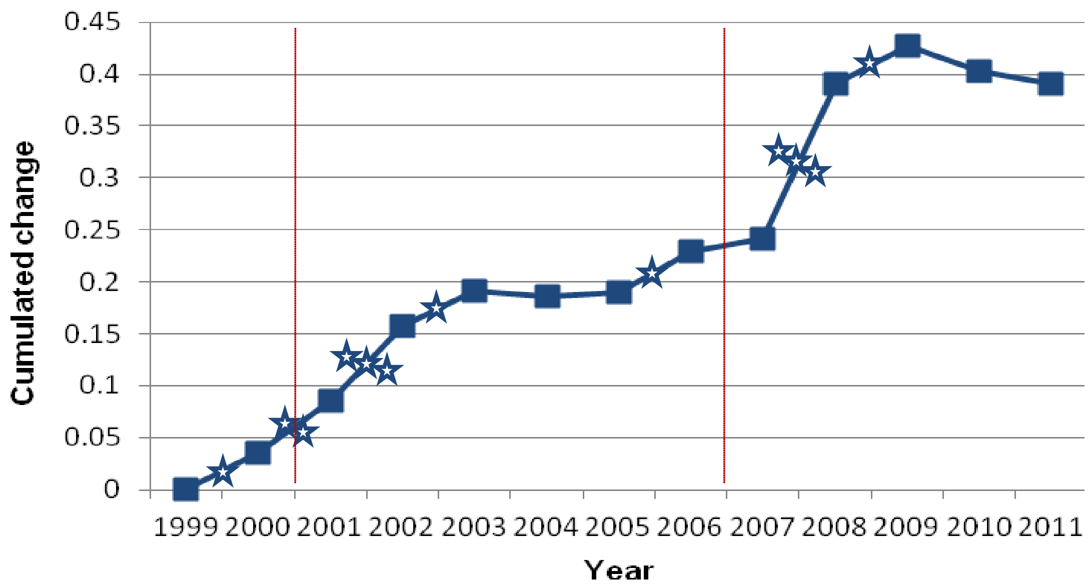

*Figure 2: Cumulated additional change of R&D employment in the supported IR-units (significant changes: *=0.05, **=0.01, ***=0.001).*

We find that supported IR-units develop already better between 1999 and 2000, thus before funding started. Two interpretations are possible: First, it might be that those IR-units applied for InnoRegio support that already increased their R&D employment in order to generate more innovations because of promising perspectives in their industry. Second, it might be that applicants that better development in R&D employment and thus possibly in innovations had a better chance to be funded, maybe due to a convincing description of research intentions, applications and goals. In both cases, IR-units that received InnoRegio funding had developed already better than average in terms of R&D employment before funding.

Nevertheless, this positive development receives a further push with beginning of funding, so that the R&D employment develops much better during funding period in the supported IR-units compared to average IR-units. In order to exclude the possibility that this development is a consequence of the positive development from 1999 to 2000, we included the development from 1999 to 2000 in our regression. The results do not change and the goodness of the model decreases. Hence, we observe at the beginning of funding a development of R&D employment in supported IR-units that is strongly and significantly above average and not caused by the development before funding. Hypothesis 1a is confirmed, especially for the beginning of the funding phase.

At the end of funding supported IR-units develop averagely. Hence, the positive development at the beginning of funding might represent R&D jobs that have been generated in firms with money from InnoRegio funds. However, from 2007 to 2008 we observe another strong above-average increase in R&D employment. Instead of a decreasing R&D employment after funding, a further increase is visible. The statistical analysis is not able to show whether this is an effect of the InnoRegio program or not. However, we do not find evidence that developments that appeared at the beginning of funding disappeared at the end. In contrast, we observe further above average development after funding, which confirms Hypothesis 1b.

IV.2 Employment

Hypotheses 2a and 2b state that employment should increase after funding and slightly during funding. The regression results for employment are presented in Table 5. We again use a pooled panel analysis with a lagged dependent variable (one-year lag). As above, the goodness of fit is high and other versions do not improve the goodness of fit.

	Model 1		**Model 2**	
Variables	**Estimate**	**p-value**	**Estimate**	**p-value**
Constant	**0.01243857*** **	0.00000	**0.01253127*** **	0.00000
lag(LQ_{emp},1)	**0.98228910*** **	0.00000	**0.98213143*** **	0.00000
Sup	**0.01213440*** **	0.00002	-0.00313412	0.69841
Sup* lag(LQ_{emp},1)			**0.01644127* **	0.04367
East	-0.00043431	0.32200	-0.00043516	0.32100
Adj. R^2	0.9636		0.9635	

Table 5: Results for the panel analysis with employment (LQ_{emp}) as dependent variable.

As in the analysis of R&D employment, we find some convergence tendency, but also an even stronger dependence on the value in the previous year. A significant difference between East and West Germany is not found in the case of employment.

For the InnoRegio support we find similar results as in the case of R&D employment. Again the supported IR-units develop above average. If a combined term is used, we find that especially supported IR-units with a high specialisation (high LQ) show above-average developments.

Variables	Estimate	p-value
Constant	**0.00988921*** **	0.000000
lag($LQ_{R\&D}$,1)	**0.98225650*** **	0.000000
Sup_{2000}	0.01358705	0.1641491
Sup_{2001}	**0.02059485***	0.0349652
Sup_{2002}	**0.03396237*** **	0.0005065
Sup_{2003}	**0.02945084** **	0.0025680
Sup_{2004}	0.00567657	0.5611295
Sup_{2005}	0.00427853	0.6613605
Sup_{2006}	0.00557420	0.5682103
Sup_{2007}	-0.00155143	0.8737972
Sup_{2008}	0.01745609	0.0739086
Sup_{2009}	**0.02021946***	0.0384492
Sup_{2010}	0.01780301	0.0683658
Sup_{2011}	**-0.02130204***	0.0292034
East	-0.00043449	0.3211845
Adj. R^2	0.9633	

Table 6: Results for the panel analysis with employment (LQ_{emp}) as dependent variable including dummies for the supported IR-units in each year[7].

The results for the detailed dummies provide further information about the temporal structure of the development (Table 6). We observe an above-average development in the supported IR-units at the beginning. However, in the case of employment this development becomes significant for the first time in the year 2001, the year in which funding started. The strongest above-average development is observed in the years 2002 and 2003. In total we observe a similar development as for R&D employment (see Figure 3), which happens approximately one year later in the case of employment. Again we tested whether the development depends on the development before funding and do not find any evidence for such a dependence.

As for R&D employment, there are two possible interpretations: First, positive development of overall employment starts with funding and is a consequence of funding. Second, development in total employment is a result of the development in R&D employment and follows this development with a one-year time-lag. The latter explanation would require the R&D employment to have a quite direct impact on total employment. This

[7] Results for the year-dummies can be obtained on request.

seems to be rather unrealistic because R&D employment can be expected to influence innovation activity, then innovation output, competitiveness and finally growth. This causal chain normally takes longer than one year. Hence, there seems to be a direct impact of funding on employment dynamics, which is more visible than we expected in Hypothesis 2a, where we claimed that there might be a minor positive development of employment during funding.

Later developments, which we expected in Hypothesis 2b according to the above described causal chain, show up only to some extent. We observe, at least, from 2007 to 2010 a clear above-average development of employment in the supported IR-units after the end of InnoRegio funding. Part of this development is neutralized by the decrease in employment between 2010 and 2011 that may be influenced by the world economic crises. Hence, we require data on additional years to make a final statement about whether there are further positive developments after funding. However, we can state that the positive development during funding is definitely not reversed after funding. Thus, hypothesis 2b is partly confirmed.

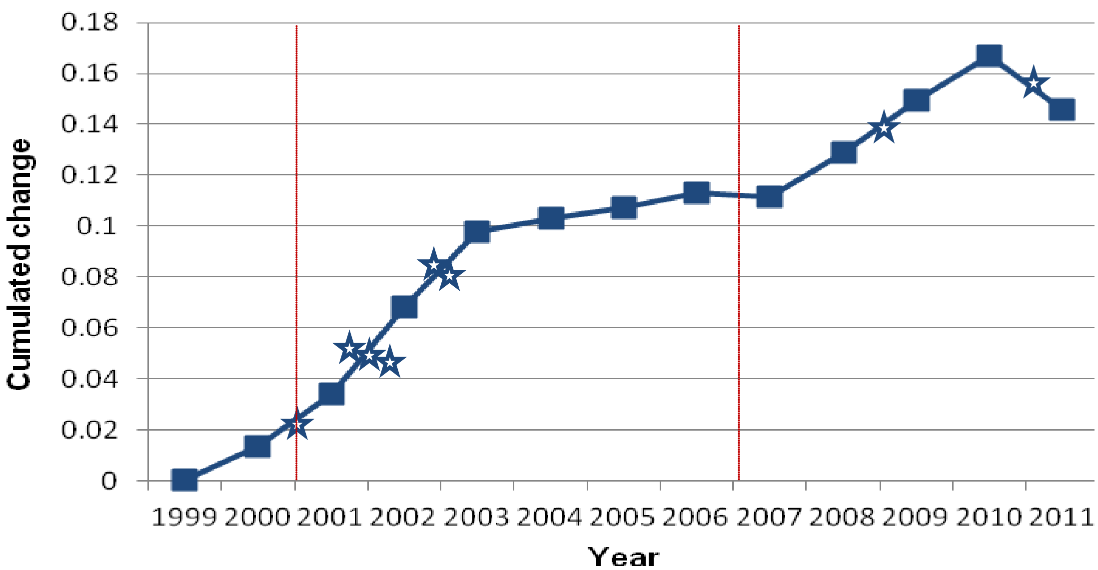

*Figure 3: Cumulated additional change of employment in the supported IR-units (significant changes: *=0.05, **=0.01, ***=0.001).*

IV.3 Innovations

Hypothesis 3 states that innovation activity should increase at the end of funding and after funding. The regression results for patents are presented in Table 7. We use a pooled panel analysis with a lagged dependent variable (one-year lag) like in the previous analysis. Again the goodness of fit is high and is not improved by other versions.

	Model 1		Model 2	
Variables	**Estimate**	**p-value**	**Estimate**	**p-value**
Constant	**0.0900882*** **	0.000000	**0.0911049*** **	0.000000
lag(LQ_{pat},1)	**0.7849141*** **	0.000000	**0.7829487*** **	0.000000
Sup	**0.0583986*** **	0.0003395	-0.0141454	0.5936905
Sup* lag(LQ_{pat},1)			**0.0991795*** **	0.0005253
East	**-0.0228818*** **	0.000000	**-0.0229524*** **	0.000000
Adj. R^2	0.6158		0.6160	

Table 7: Results for the panel analysis with patents (LQ_{pat}) as dependent variable.

The results are similar to those of the other analysis. Again there is a convergence tendency. The path dependence is weaker than for both employment numbers. Firms in East German regions show lower patent activities.

Again we find that the supported IR-units develop, on average, better than other units. This difference is highly significant. If we use a combined term, we find that especially funded IR-units with a high specialisation (high LQ_{pat}) show above-average developments. This is also in line with previous findings. The IR units with high specialisation and program support are those that growth most in terms of patent output.

Variables	**Estimate**	**p-value**
Constant	0.0083436	0.0696592
lag($LQ_{R\&D}$,1)	**0.7831886*** **	0.000000
Sup_{2000}	0.0737292	0.1195185
Sup_{2001}	**0.1750854*** **	0.0002187
Sup_{2002}	0.0175860	0.7104533
Sup_{2003}	**0.1323672** **	0.0051987

Sup_{2004}	0.0632460	0.1818361
Sup_{2005}	0.0069376	0.8835570
Sup_{2006}	0.0567056	0.2312051
Sup_{2007}	**0.1340974** **	0.0046386
Sup_{2008}	**-0.1302049** **	0.0059853
East	**-0.0229438** ***	0.000000
Adj. R^2	0.6248	

Table 8: Results for the panel analysis with patents (LQ_{pat}) as dependent variable including dummies for the supported IR-units in each year[8]*.*

Patent data is only available until 2008. Hence, a detailed examination of the yearly developments is only possible until 2008. The results are presented in Table 8. Again we find a development that is significantly above average for the year 2001, the beginning of funding. However, this development cannot be the result of funding because it takes some time before investments in R&D turn into innovations that are patented. It seems that there have been already developments before funding.

In the middle of the funding period (2003) we observe another significant above-average development of patent numbers. All other developments during funding are also above average, although not significant (see Figure 4). This positive development sustains throughout the whole funding period. Again we included the development before funding as independent variable in the regression, but did neither find a change in the results nor an improvement of the goodness of fit. Hence, the developments during funding are not the result of the developments before.

After funding we observe a significant above-average development in 2007 and a reversal of this development in 2008. Further data is necessary to make a statement about the development of patent activities after funding. Hence, Hypothesis 3 cannot be completely confirmed. We observe a positive development of the patent activity during funding. However, we are not able to make a judgement on the developments after funding.

[8] Results for the year-dummies can be obtained on request.

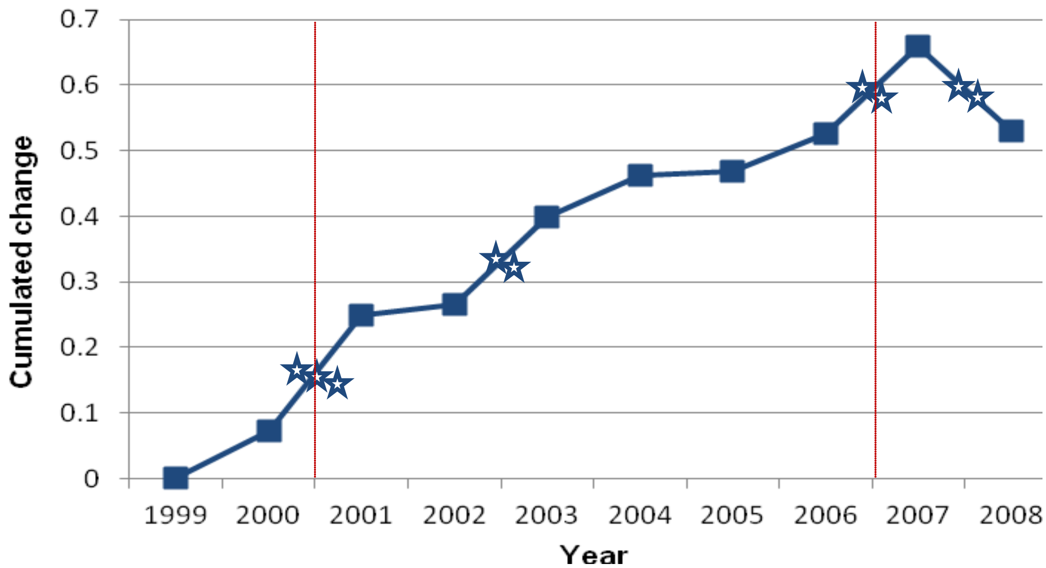

*Figure 4: Cumulated additional change of patents in the supported IR-units (significant changes: *=0.05, **=0.01, ***=0.001).*

IV.4 Overall results

Previous research on the effects of cluster type policy had mainly shown positive results, even though only few studies exist (e.g. Falck et al. 2010, Nishimura & Okamuro 2011). Combining the different results from analysing impacts on the regional development of the InnoRegio promotion, we obtain four general findings. First, there is an over-average development before funding, at least for R&D employment and innovation activity (according to patents). Hence, more dynamic IR-units either apply with a higher probability or are chosen with a higher probability for funding. Considering aspects of cluster policy, these results show that at least some clustering is already visible before funding referring to cluster policy ideas. Second, there is a clear over-average development during funding that is visible in all variables. This comparably better development cannot be explained by the development before funding, so that it seems to be an effect of funding. Hence, it seems that the InnoRegio funding has triggered and enhanced further development of clustering within supported regions and networks. Third, this effect is permanent. We do not observe a decrease after funding, which would be the case if the increase, e.g. in R&D employment, would be only caused by additional funds. Given that network and cluster policy aims at making funded firms and regions more innovative and competitive especially after funding, it seems that the InnoRegio measure has fulfilled this goal. Fourth, IR-units with higher specialisation (LQ) at the beginning benefit more from the governmental support than other IR-units. This dependence is found for all three variables and confirms the idea that supporting strengths is more effective (e.g. Koschatzky 2000). This is also in line with the basic idea of cluster policy and shows that this kind of policy is a helpful tool to strengthen already existing and emerging economic activities. Admittedly, focussing public policy only on some regions discriminates against firms in regions that did not receive support. Policy measures like this oppose policies aiming at regions facing serious economic problems and balancing regional disparities (e.g. Dohse 2000). This has to be kept in mind when interpreting positive results from regional policy measures in terms of contests. However, Koschatzky (2000: 22) notes that InnoRegio is more focussed to "spatial balancing objectives" then other competitive policies.

To conclude, results of this summative and long-term impact analysis confirm and support findings from evaluations at run-time of the measure as well as shortly after ending that have been discussed by Eickelpasch & Pfeiffer (2004) and Eickelpasch et al. (2004). Their results show positive effects in terms of employment growth and innovation activities as well as patent applications for funded firms. This seems to have triggered overall development in the supported IR-units. Due to some methodological shortcomings that have been discussed in Section III.4 some uncertainty about the attribution of impacts to the program remains. Therefore, results have to be interpreted with some care and findings cannot be transferred to other innovations policy measures.

V. Conclusions

The paper at hand provides two things. First, it analyses impacts of the InnoRegio program of the German Ministry of Education and Research from an outside perspective and adds to the already existing evaluation literature of this policy measure. We find that supported IR-units show an over-average development during funding. Furthermore, positive effects of the InnoRegio program do not end and are not reversed after funding, but seem to be sustainable and even trigger some further developments. Not all supported IR-units benefit from the program in the same way. More specialised IR-units seem to profit more than less specialised IR-units. These results support policies that follow the maxim “strengthen the strengths”. However, we confirm this maxim on the level of a combination of industries and regions. This means that the idea is not to support successful or specialised regions. The idea is to support industries within regions that already show a high degree of concentration of this industry in this region. It is the match between region and industry that seems to make governmental support more or less effective.

Second, the paper presents a way in which policy measures can be evaluated without using any data gathered within the program, meaning usually questionnaires conducted with the recipients of funds. Such an outside evaluation seems especially adequate for programs that aim at impacts that go beyond the recipients, as it is the case in the InnoRegio program as well as analysis of long-term effect at a certain time after the end of funding. Advantages and disadvantages of the approach proposed here have been discussed in the paper. We conclude that an outside analysis is well possible and complements an inside evaluation with interesting insights. Furthermore, the outside perspective provides a number of options that are hopefully more frequently used in the future. For example, it allows for comparing different programs and activities. Additionally, it even allows comparing effects of one policy measure to effects of other events and actions, such as (university) education or company decisions.

However, the approach proposed here is only adequate for examining the industry-specific regional effects of governmental programs. Other objectives cannot be studied in this way. Hence, this analysis supplements other evaluation approaches and is only applicable if industry-specific regional effects are, at least, one of the objectives of the program.

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Appendix

Code	Name of region
206	Greifswald
212	Rostock
213	Wismar
214	Schwerin
215	Parchim
228	Salzwedel
229	Stendal
231	Magdeburg
233	Staßfurt
241	Erfurt
251	Meiningen
252	Gotha
261	Freiberg
262	Chemnitz
263	Annaberg
264	Zwickau
265	Plauen
266	Dresden
300	Berlin
302	Cottbus
303	Frankfurt (Oder)
306	Finsterwalde
307	Oranienburg

Table A.1: Names of regions