Chapter 1

Introduction

One of the major targets of today’s policies is the alleviation of regional inequalities. The outstanding meaning of this political goal is emphasized by the integration in important legal foundations, such as the „Schaffung gleichwertiger regionaler Lebensverhältnisse“ in the German Basic Law (Deutsches Grundgesetz) and the “Equivalent living conditions” (Founding Treaties of the European Community). Besides the fundamental legal embedding, this orientation is highlighted by the enormous amount of money spent annually for interests of regional development. Amounting to € 450 billion (Council of the EU 2012), regional policy comprises the largest item of the entire EU budget in the financial period 2014-2020. Since the convergence of living conditions is regarded as a necessary condition for the successful completion of the EU Single Market (Hesse et al. 2012) and an expression of the European solidarity (European Parliament 2006), regional policy may have contributed to the development of the EU.

Notwithstanding the positive effects, the continuously growing amount of spending in regional policy has been put into question, e.g., by the former German president Horst Köhler who singled out overwhelming costs as an unbearable burden for future generations (Strubelt and Gatzweiler 2006). Moreover, it is a challenging but necessary task for regional policy makers to support those projects that promise future growth but do not suffer from windfall effects since private actors would have invested anyway.
(Persson et al. 2012). Only under these restrictive conditions government interventions turn out to be effectively allocative instead of simply redistributive.

Modern regional policy has to meet the challenge of overcoming long-lasting inequalities without installing overwhelming and persistent funding schemes. Therefore, policies have developed away from a focus on redistribution towards providing disadvantaged regions with an adequate endowment of proper resources of production (Südekum 2002). Thus, it is not the aim to alleviate the consequences of regional inequalities in the short run but to overcome their causes by incentivizing sustainable and long-lasting investments. Therefore, beside private aids for investments or employment, a substantial share of regional policy measures is spent for public infrastructure investments which are initiated to stimulate the whole economic environment of a region.

In this endeavor, the important task of empirical research is to evaluate regional policies by examining their impacts. Yet, the results of such evaluations tend to be ambiguous (for literature surveys see Mohl and Hagen 2009 and Persson et al. 2012) leaving open fundamental questions about the effectiveness on regional prosperity. Different empirical results regarding funding-effectiveness are of particular relevance for current European policy makers given their ongoing plans for massive growth- and infrastructure investment-programs. These growth programs are assigned to work via similar transmission channels as regional funding and provide a second pillar to overcoming the European financial and economic crises beside the targeted consolidation of national budgets.

The different findings of empirical studies may result from the distinct non-experimental character of regional policy schemes, which impedes the empirical identification of causal effects of regional policy. This is reflected particularly by the lack of effective counterfactual situations, since an attitude of social justice denies a random distribution of funding to different but completely comparable regions. Furthermore, unobservable regional heterogeneity and manifold dependencies between observed regional characteristics pose pitfalls for sound identification strategies. Probably the most important empirical problem is marked by difficulties to distinguish between cause and consequences in ex-post-evaluations. As regional traits determine the probability for policy interventions, endogeneity problems cannot be solved with ease in the context of policy evaluations.
Introduction

This thesis contributes to the economic literature by probing actual effectiveness of regional policy measures and public investments to overcome regional inequalities and by further emphasizing the endogeneity problems that occur in such regional policy evaluations. Chapter 2 provides a comprehensive study on the effects of European regional policy which is one of the world’s largest funding schemes on the cohesion of regions. This general overview shows rather negligible effects of regional policy measures. Two potential explanation may cause these results. Firstly, heterogeneous regional pre-conditions may hinder successful funding. This is in the focus of Chapter 3 that illustrates the importance of historical traits for today’s heterogeneous prevalence of prosperity factors. Secondly, policy measures potentially do not accelerate growth processes as they are intended to do. This is emphasized in Chapter 4 by showing that neglected endogeneity problems are likely to overestimate growth effects of infrastructure investments.

Chapter 2 (co-authored by Timo Mitze and Christoph M. Schmidt) presents a study on the effects of European regional policy in terms of Structural Funds (SF). This paper conducts a structural approach which combines several improvements in the identification of links between SF-funding and regional growth. In particular, Chapter 2 contributes to the existing literature by i.) offering an identification strategy with a close link to recent growth theory and various transmission channels of funding, ii.) carefully accounting for the spatial and temporal dynamics in regional growth, and iii.) applying actual disbursed amounts awarded to 127 EU15 regions before the crisis instead of frequently applied funding commitments that have been found to be a poor proxy of actual payments.

Since these funds are the largest item of the current EU financial period 2014-2020 and much hope is put in investment programs to overcome the current crisis, there is a strong need for empirical evidence on their effectiveness to provide sound funding concepts for future regional policy schemes. However, missing observations of counterfactual developments without funding and the regional heterogeneity of European regions have made it almost prohibitively difficult to credibly identify their causal effects on growth. Correspondingly, the range of empirical approaches has led to a wide spectrum of conclusions about the actual impacts of the SF reporting both positive and negative effects.

Overall, this study arrives at disillusioning results: There is basically no statistical evidence for positive effects. Most importantly, regions whose neighborhood comprise a relatively high share of grant recipients display a significantly worse growth performance.
due to negative spatial interaction effects. Besides the potential problem that regions poach neighbors' investments, this result suggests that those regions with the highest funding suffer from structural and technological backwardness. Although it is unclear if these findings hint at a causal negative spatial effect or at the backwardness in technological endowment and economic structures of regions characterized by high funding, the results suggest that the funding does not reach its goal, namely the convergence of EU regions.

Chapter 3 (co-authored by Thomas K. Bauer and Christoph M. Schmidt) reveals the heterogeneity of regional distribution of human capital due to different circumstances which regions were exposed to during the course of history. The paper critically discusses an existing evaluation by Falck et al. (2011) which claims to identify historical location of Baroque opera houses as the local trait that causes this distribution of today's human capital. Rejecting those results, Chapter 3 shows that opera house locations are determined by pre-industrial centers of political power. Moreover, these centers still are of regional importance and constitute an important contribution to a city's attractiveness.

Falck et al. (2011) regard the location of Baroque opera houses in Germany as an exogenous variation of today's cultural goods which cannot be caused by current local traits. In their opinion it allows to identify causal influences of cultural goods on the regional attraction of talents (as suggested by Florida 2002). Since the human capital accumulation is an acknowledged prerequisite for regional prosperity, they also assign such importance to cultural amenities. However, Chapter 3 puts the validity of this identification strategy into question, because it also assigns positive causal effects to the location of historical brothels and breweries. As this seems to be far from reality, these findings illustrate a deeper conceptual point: Historical locations of man-made amenities reflect economic and political deliberations. Therefore, these amenities underlie local traits which existed in the time of the respective erection. If the importance of these related local traits for today's prosperity (e.g., administrative power) is not excluded, the identification loses its convincing setup. All opera houses are located in institutional powerful cities and the estimates of opera locations rather reflect the importance of those cities for long-run economic growth. The effect of historical operas disappears upon controlling for the historical importance of these cities.
In the spirit of this dissertation, the study reveals substantial problems of regional policy. Such entrenched heterogeneity stemming from the historical course of a region may not be alleviated by any reasonable countermeasure of regional policy. In addition, the results illustrate that there is a range of potential sources for regional heterogeneity which may rest unobserved in econometric evaluations and cause unobserved heterogeneity. Substantial differences in regional prerequisites seem to be one factor explaining non-effective regional policy.

Turning to the evaluation of investments, Chapter 4 contributes to the detection of endogeneity problems in the evaluation of regional prosperity. Based on two full-fledged studies, this Chapter emphasizes the specific distinction between causes and consequences of regional prosperity in the evaluation of infrastructure investments focusing on ports (Chapter 4.1) and airports (Chapter 4.2) in Germany. While positive regional developments in the environment of those amenities have been hastily identified as an indicator of effectiveness, from an empirical perspective it is not easy to verify this causal link. Such evaluations often disregard that these projects are implemented in promising environments. Measuring whether transport infrastructure indeed commands regional development or is rather an endogenous reflection of higher transportation demand in prospering regions cannot be obtained without exogenous variations in the provision of infrastructure. Thus, Chapter 4 highlights the importance of sound identification strategies which are based on exogenous events to overcome these endogeneity problems.

Chapter 4.1 (co-authored by Timo Mitze) probes the effects of sea and river ports on regional income levels and population distribution in Germany. In this endeavor, documenting a positive correlation between port locations and regional per capita income does not prove whether ports indeed contribute to local growth and development. As such a setting may suffer from potential reverse causality, an identification strategy that is based on exogenous long-run instruments is applied. In contrast to the study criticized in Chapter 3, large historical port facilities built before the onset of the industrial revolution may serve properly as relevant and valid instrument for current ports. These exploited historical ports largely depend on natural conditions such as general vicinity of rivers, flow velocity, water depth and general conditions of the waterside. This especially holds true since we focus on those ports which were at least able to operate ships with a maximum weight of 50 tons. Therefore, a systematic correlation with other historical traits in
the environment of port is less problematic, since locations were rather determined by these conditions than by economic deliberations. In addition, the locations of these pre-industrial ports are not caused by industry. Both factors make them good candidates to provide an exogenous variation of today’s port locations.

The results hint at a positive correlation between port locations and regional per capita GDP, but do not provide evidence for a causal relationship. Estimations relying on the exogenous instrument show no positive effect on the GDP level. Even though the instrument variable has a significant influence on population, the development of the population provides a problematic measure for prosperity as recent studies have shown (Herzer et al. 2012).

These results contradict the benchmark of port evaluations which claim positive effects on the regional economy (e.g., Danielis and Gregori 2013). The mentioned endogeneity problem, however, is not considered adequately in a range of studies. As today’s ports seem to be a consequence of regional prosperity, investments in such infrastructures do not hold as a promising tool to impute growth impulses in lagging regions.

Chapter 4.2 probes similar endogeneity problems in the estimation of growth effects induced by regional airport expansions. Local policy makers invested millions of Euros in airport facilities, aiming to ascertain that those fulfill the requirements of modern airports in an era of a rapidly growing aviation market. However, contrary to those ambitious expectations, today nearly all German regional airports depend on substantial subsidies. In 2014, the European Commission has decided that these subsidies violate European competition law for and consequently prohibited them for the years after 2024. Opponents of the subsidies feel vindicated by this decision, since in their assessment regional airports will never find their niche between the established large airports and will never reach profitability. Supporters of regional airports argue that the narrow focus on the direct losses fails to recognize the importance of regional airports for regional development.

The econometric quantification of this importance is a challenging task, since airport expansions are the outcome of economic and political deliberations in a real-world context and not the result of an analytical experiment. Therefore, the question what counterfactual development an airport region would have realized without the expansion cannot
be answered with ease. Chapter 4.2 exploits a change in the regulation of European aviation in 1997 which led to a substantial redesign of the aviation market. Contrary to airport expansions influenced by positive regional developments, this reform led to investments which were set by exogenous changes in the structure of the aviation market and can therefore be regarded as a (quasi-)experiment. Furthermore, the location of German airports is closely linked to German military history. Therefore, their location rather followed military strategies than economic reasoning making them less dependent on economic preconditions.

Ignoring any potential endogeneity problems, a first estimation comparing prosperity levels in regions with and without airports suggests airport induced regional prosperity. However, following the identification strategy based on exogenous expansions, this effect vanishes and airport expansions are not found to have any positive spillover effect on regional growth. This result is confirmed by various robustness checks. There is no evidence that spillovers spreading out from such expansions of regional airports could justify their overwhelming subsidization. This result is also in contrast to the existing literature which claims positive effects but suffers from a lack of exogenous variation (Allroggen and Malina 2014). As also concluded for port facilities before, regional airports are neither identified to be a local trait which can impute regional growth in lagging regions.

The results of this thesis reveal a disillusioning picture of regional policy effects. Taking the results of Chapter 2 as general overview on the effectiveness of regional policy from different model-frame perspectives, the following papers go beyond these general effects and analyze differences in regional pre-conditions and the appropriateness of particular funding instruments as explanations of these sobering observations. In this context, Chapter 3 shows that the different regional traits may pose regions on paths of developments which cannot be equalized neither by the analyzed funding schemes in Chapter 2 nor by any other reasonable regional policy. Chapter 4 emphasizes that the transfer of locally successful infrastructure projects to other supported regions only works if local economic traits are similar – especially, if the industries have a demand for such investments. Thus, the formation of infrastructure investments only draws the result of a regional development but is not its reason. In the light of the non-effect of European funding
schemes found in Chapter 2, this result is also supported by a recent analysis of the European Court of Auditors that concludes a disappointing cost-benefit relation of EU-funded airports in highly funded regions (ECA 21/2014).

Nevertheless, quitting regional policy actions in Germany or Europe must not be the conclusion of the thesis. The results rather suggest that a political commitment on the ongoing evolution of regional policy is indispensable. Such an evolution has to be commanded by evidence from profound ex-post evaluations of recent funding actions. Related to Chapter 2, future programs should precisely consider the spatial influence of funding in a certain region. In addition, appropriate national policies with regard to regulatory frameworks for labor, product and capital market (Bachtler and Gorzelak 2007) might be installed at first as necessary structural presumptions for funding impulses to work.

Furthermore, policy makers should form realistic expectations of projects with respect to the pre-conditions in a certain region. A meaningful share of potential regional success is determined by those pre-conditions as Chapter 3 proposes. Not every deprived urban area can succeed as a further Berlin-Kreuzberg just by labelling it “creative industries-quarter”. Away from capital cities and industrial cores it might need some more sober policies to succeed in terms of regional developments.

The same applies for large infrastructure investments as a particular measure of regional policy (Chapter 4). Such projects need to be linked to a convincing economic policy as fundamental requirement for success. Merely providing such infrastructure is not a sufficient policy. Furthermore, referring to potential regional spillovers without evidence based evaluation seems not to be a sufficient dealing with restricted public budgets.

Research in regional economics can help to identify regional conditions and suitable funding schemes by evidence from ex-post evaluations. For the purpose of meaningful evaluations, however, the provision of sufficient data and the consideration of evaluation setups in the design of funding schemes are essential requirements. Overcoming the prevailing opinion that accompanying research has to applaud the policy impact in order to justify public spending would be very helpful in order to install sustainable future regional policy measures. Up to this point, the three facets of the title “support, stimulate, succeed” seem not to apply for the current performance of regional policy.