Contributions to EU regional policy

Reconsidering theoretical and empirical perspectives on the Structural Funds

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Abbreviations

AT	Austria
BE	Belgium
BG	Bulgaria
bn	Billion
CCC	Circular and cumulative causation
CEE	Central and Eastern European
CEPII	Centre d'Etudes Prospectives et d'Informations Internationales
CM	Council of Ministers
CY	Cyprus
CZ	Czech Republic
DE	Germany
DG Regio	Directorate General for Regional Policy
DK	Denmark
EAFRD	European Agricultural Fund for Rural Development
EAGGF	European Agricultural Guidance and Guarantee Fund
EAGGF-G	European Agricultural Guidance and Guarantee Fund - Guidance Section
EC	European Commission
EC	European Community
ECF	European Cohesion Fund
ECs	European Communities
ECSC	European Coal and Steel Community
EDF	European Development Fund
EE	Estonia

EEC	European Economic Community
EFILWC	European Foundation for the Improvement of the Living and Working Conditions
EIB	European Investment Bank
EMU	European Economic and Monetary Union
EP	European Parliament
ERDF	European Regional Development Fund
ES	Spain
ESF	European Social Fund
EU	European Union
EURATOM	European Atomic Energy Community
FDI	Foreign direct investment
FE	Fixed effects
FI	Finland
FIFG	Financial Instrument for Fisheries Guidance
FR	France
GDP	Gross domestic product
GNI	Gross national income
GR	Greece
HR	Croatia
HU	Hungary
IE	Ireland
IMP	Integrated Mediterranean Programme
IPA	Instrument of Pre-Accession Assistance
ISPA	Instrument for Structural Policies for Pre-Accession
IT	Italy
IV	Instrumental variable
LATE	Local average treatment effect
LT	Lithuania
LU	Luxembourg
LV	Latvia

MFF	Multiannual Fiancial Framework
MT	Malta
NEG	New economic geography
NL	Netherlands
NUTS	Nomenclature of Territorial Units for Statistics
OECD	Organisation for Economic Co-operation and Development
PHARE	Poland and Hungary: Aid for Restructuring of the Economies
PL	Poland
PPS	Purchasing power standards
PT	Portugal
RO	Romania
SAPARD	Special Accession Programme for Agriculture and Rural Development
SE	Sweden
SEA	Single European Act
SI	Slovenia
SK	Slovakia
SMEs	Small and medium-sized enterprises
SOPEMI	Système d'Observation Permanente sur les Migrations
TEU	Treaty on European Union
TFEU	Treaty on the Functioning of the European Union
TIS	Technological innovation systems
UK	United Kingdom
UN	United Nations
US	United States
vs.	Versus
WEF	World Economic Forum

Introduction

Since its foundation by the Treaty of Rome in 1957, the European Union (EU) is confronted with large economic, social and territorial disparities (see, e.g., Molle 2007, pp. 15-99). The economic geography of the EU is characterised by an uneven distribution of economic activity and wealth. As a result, the living and working conditions of citizens across the EU differ tremendously.

To tackle such issues, the EU conducts a regional policy since the beginning of European integration after the Second World War which absorbs a major share of its budget. The main instrument to conduct this policy are the so-called structural funds. With the help of these funds the living and working conditions of EU citizens should be harmonised and improved. Over the course of time, EU regional policy changed from a rather passive and regulative type to a more discretionary and interventionist form of policy. It was conducted and organised in different ways, encompassed different policy objectives as well as funds and financial amounts. In the current planning period 2014-2020, the structural funds include the European Regional Development Fund (ERDF), the European Social Fund (ESF) and the European Cohesion Fund (ECF).[1] The available budget of the three funds amounts to €352bn, which corresponds to 32.5% of the overall EU budget of €1082bn for the 2014-2020 period (European Commission 2014a, p. 2).

This cumulative dissertation contains four self-contained articles which are related to EU regional policy and its structural funds as the overall research topic. Three of these papers have been submitted to or published by peer-reviewed journals. One of these three papers has also been published in the series "Working Papers on Economics & Evolution" of the University of Marburg, Germany. The fourth paper is a replication study of Egger, Eggert and Larch (2014) and has not been published yet. An overview

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[1] The original structural funds are the ERDF and the ESF. The ECF is a separate fund aiming at fostering European cohesion (European Parliament and the Council of the European Union 2013, p. 337). Since this clear-cut distinction is barely found in the literature, all three are assigned the term "structural funds" in this thesis.

over the articles and their state of publication is given in Table 0.1 on this page. My doctoral research, of course, benefited from exchange with many different people from inside and outside academia. I attached specific acknowledgements of these people to the articles in the different chapters of the thesis. For general acknowledgements the reader shall be pointed to the acknowledgements section.

The purpose of this introduction is to elucidate the motivation for my research, to give an outline of my thesis, to present its thematic coherence and to highlight its research contributions to the field of economics.

Table 0.1: Overview of thesis chapters and state of publication

Thesis chapter	Title	Author	Publication
Part A			
1	The EU structural funds as a means to hamper migration	Peter Schmidt	Published in: *Jahrbuch für Regionalwissenschaft / Review of Regional Research, Vol. 33(1), pp. 73-99.*
2	Internal migration and EU regional policy transfer payments: a panel data analysis for 28 EU member countries	Peter Schmidt	Mimeo
Part B			
3	EU regional policy: theoretical foundations and policy conclusions revisited	Peter Schmidt	Mimeo, revise and resubmit to: *Regional Studies - Policy Debates section.*
4	Market failure vs. system failure as a rationale for economic policy? A critique from an evolutionary perspective	Peter Schmidt	Published in: *Working Papers on Economics and Evolution, No. 1504, Philipps University Marburg, Department of Geography.* Revise and resubmit to: *Journal of Evolutionary Economics.*

Motivation

In today's globalised world, in which not only capital owners, land owners and labourers but also nation states compete for economic wealth, it becomes ever more important for those actors to assert their political and economic interests internationally. It is against this background that one should mainly understand political, economic and monetary integration of European member states after the Second World War. The

ability of the EU to enforce its interests against other nation states and economic blocs is largely dependent on its economic power and international competitiveness, respectively. Moreover, the trust in and acceptance of the Euro to function as an international means of exchange and store of value critically depends on the economic power of the EU and the Eurozone. The degree of international competitiveness of the EU as a supranational union of countries arises from the competitiveness and economic situation of its single member states. As mentioned in the beginning of the introduction, the living and working conditions, or to put it differently, the conditions of international competitiveness in the current EU-28 member states, are significantly different. The vast economic disparities within the EU undermine its international economic and political power, which can be well observed, for instance, since the last European financial crisis in 2009.[2] That is why the EU tries to improve and harmonise the conditions of competitiveness across the member states employing an enormous amount of money. The main instrument to achieve this goal is the EU's regional policy with its structural funds, making up the second largest policy field besides the common agricultural policy.

From an economics point of view, the study of EU regional policy attracted my interest mainly for three reasons. First, different strands of economic theory on different levels of analysis (macro-, meso-, micro-level), such as, e.g., international (political) economics, regional economics, monetary economics, historical economics and economic policy, need to be combined in order to explain and understand EU regional policy. Second, these different strands of theory can be applied to a contemporary and real empirical phenomenon. Hence, EU regional policy and the structural funds as an overall research topic allowed and still allow me to undertake and link theoretical as well as empirical research. Third, as EU citizen EU regional policy and the structural funds affect my current and future personal life in many different ways. For instance, this policy invests in European infrastructure (airports, telecommunication, universities, railway stations, roads, motorways, etc.) which I frequently use without even knowing sometimes that it was co-financed by the structural funds. To contribute with my research to a better understanding of EU regional policy might help to improve the efficiency and efficacy of this policy in the future. The three reasons just mentioned, already persuaded me to write my diploma thesis about the relationship of EU regional

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[2] Recall that the Euro-Dollar exchange rate, which is one major indicator for economic power of the EU, significantly declined since 2009 from approximately 1.60€/$ to almost parity in 2016.

policy and internal European migration.[3] This was a further motivation to continue this line of research in my doctoral studies. My cumulative dissertation enabled me to study different angles and perspectives of my research topic, which is European integration in the broader sense and EU regional policy and the structural funds in the narrow sense, where urgent need for further economic research exists. In the following section, I depict this need for research in more detail. At the same time, I give an outline of the thesis, present its thematic coherence and its research contributions to the field of economics.

Outline and contribution

During my research on EU regional policy and the structural funds, I specifically noticed need for economic research on two different but interrelated issues. On the one hand, the relationship between EU structural operations and (internal) migration within the single European market has been barely analysed until recently. Thus, it needs to be studied in more detail. On the other hand, the theoretical explanation of the emergence and development of EU regional policy from an economic point of view and the scientific recommendation of policy instruments to EU regional policymakers derived from these theoretical foundations need to be reconsidered. That is why, I methodologically divided my thesis into two parts (part A and part B), in which I conduct qualitative as well as quantitative research, and wrote two articles per part. However, part A and B are not separate but linked with each other in the sense that the theoretical and empirical conclusions of part A induced my research conducted in part B. In the next paragraphs, I outline the interrelation of part A and B in more detail and thus present the thesis' thematic coherence and its research contributions to the field of economics.

In the economic literature, EU regional policy is largely analysed within the realm of neoclassical welfare economics (see, e.g., Armstrong and Taylor (2006), Holtzmann (1997), Krieger-Boden (2002), Molle (2007), Rolle (2000), Schindler (2005) and Vanhove (1999)). Within different general equilibrium theories of trade, growth and economic geography, EU regional policy is *positively explained* and *normatively legitimated* with reference to instances of (allocative and distributive) market failure in the internal European market. Moreover, economists give policy recommendations to EU regional

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[3] See Schmidt (2010).

policymakers on the basis of market failure theory with which such failures may be tackled in order to improve and harmonise EU citizens' welfare.

Against this theoretical background, there is a large debate among economists whether EU regional policymakers should intervene in the European internal market or not. To put it differently, the debate among pro-policy and contra-policy economists is centred around the justification and legitimisation of EU regional policy interventions. Do market forces alone, i.e. the free flow of goods, services, capital and labour[4], achieve the political goal to improve and harmonise the living and working conditions of EU citizens? Or can similar conditions of international competitiveness of EU member states and their respective regions only be achieved with the help of EU regional policy?

To answer these questions, there also exists a large empirical literature on the effectiveness and efficiency of EU regional policy in terms of its ability to attain the goal of the improvement and harmonisation of the living and working conditions of EU citizens. However, this literature finds mixed empirical evidence on the growth, employment and convergence effects of EU regional policy and its structural funds.[5] Consequently, the question as to whether EU regional policy interventions in the internal European market are legitimate or not can neither be readily and unambiguously answered on theoretical nor on empirical grounds. That is why, this doctoral thesis addresses the question if EU regional policy interventions can at all be scientifically justified and legitimated on theoretical and empirical grounds from an economics point of view.

The first article of the thesis (*The EU structural funds as a means to hamper migration*) enters into one particular aspect of the debate regarding the justification and legitimisation of EU regional policy. It picks up the first issue mentioned above, where I localised the need for further economic research on EU regional policy. The article deals with the relationship of EU (internal) migration and EU regional policies' structural funds. It asks as to whether regional policy or the market force of the free flow of labour (migration) in the internal European market is the better instrument to improve and harmonise the living and working conditions of EU citizens. Beyond that, it investigates how EU structural funds and migration are related with each other.

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[4] These so-called "Four Freedoms" are legally enacted in the internal European market.

[5] The reader shall be exemplarily pointed to Becker, Egger and von Ehrlich (2010; 2012; 2013; 2016), Beugelsdijk and Eijffinger (2005), Breidenbach, Mitze and Schmidt (2011), Cappelen et al. (2003), Dall'erba and Le Gallo (2007; 2008), Ederveen, de Groot and Nahuis (2006), Egger and von Ehrlich (2013), Hagen and Mohl (2009), Midelfart-Knarvik and Overman (2002) and Mohl and Hagen (2008; 2010; 2011).

This conglomerate of regional policy, migration and regional economic development has only been barely studied theoretically and empirically from an economics perspective yet. This is surprising, since (labour) migration within the internal European market has been an important issue on the political agenda in recent decades and massive pre- and post-accession development aid was transferred from richer to comparatively poorer EU member states via EU (regional) policy.[6]

To answer the above question as to whether regional policy or the market force of the free flow of labour (migration) in the internal European market is the better instrument to improve and harmonise the living and working conditions of EU citizens, the first article of the thesis consists of three parts. First, I present the theoretical background concerning migration and the potential need for regional policy to find out whether one of them is a better instrument to achieve a balanced economic development within an internal market. In the second part, I discuss the actual situation of EU internal migration and the structural funds of the EU. In the third part, I examine why migration rates are comparatively low and analyse the interrelation between regional policy and (internal) migration in the EU. Based on neoclassical market failure theory, this paper argues that besides other things like language, culture or institutions, the structural funds of the EU are inhibiting internal migration, which is one of the key measures in achieving convergence among the nations in the single European market. It becomes clear that European regional policy aiming at economic growth and cohesion among the member states cannot be justified and legitimated if the structural funds hamper instead of promote migration. Hence, it should either be completely abolished or reformed in such a way that internal European migration is stimulated.

The finding of the first article that EU regional policy interventions into the single European market cannot be justified, because the structural funds inhibit convergence-promoting internal European migration, is derived against the background of neoclassical market failure theory. Yet, the articles' statement also relies on empirical work of Egger, Eggert and Larch (2011), who find a statistically significant negative impact of EU structural funds on net bilateral migration across EU member states. But at the time the article was written, this empirical paper had only working paper status.

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[6] A prominent example is the eastern enlargement of the EU in 2004. Massive migration flows from eastern to western Europe were expected to take place after the enlargement, putting downward pressure on wages of labour market insiders in the west. As a consequence, many western European countries walled off their labour markets for a maximum of seven years ("2+3+2" rules) and the EU transferred development aid to the Central and Eastern European countries even before 2004 in order to attenuate expected migration (see also the discussion in subsection 1.4.2 on page 33).

Apart from Egger, Eggert and Larch (2011), to the best of my knowledge, no other empirical work analysing the relationship between internal European migration and EU structural funds existed.[7] Hence, the findings in the first article of the thesis are mainly theoretically derived and rest on comparatively few empirical evidence. The articles' assertion that EU regional policy cannot be justified and should be refused or reformed, because it hampers convergence-promoting internal migration in the EU, should thus not be easily taken as a well-established finding. It is a rather preliminary result based on the analysis of neoclassical market failure theory which needs further empirical research.

Due to the weak empirical evidence on the relationship between internal European migration and the structural funds of the EU in the economic literature, the second article (*Internal migration and EU regional policy transfer payments: a panel data analysis for 28 EU member countries*) empirically analyses the effect of EU regional policy transfer payments on migration flows among 28 EU member countries for the period 1985-2013. Using panel data analysis, the hypothesis is tested that EU structural funds payments do hamper internal migration across the member states of the EU. This is done in two ways. First, the paper by Egger, Eggert and Larch (2014) is reestimated and extended. As already mentioned above, until today they are the first and the only ones who empirically tested the above hypothesis, which they have derived from a new economic geography (NEG) model. Second, against the background of the discussion in the first article of part A of the thesis, a more traditional neoclassical model of the migration and regional policy nexus is tested.[8] As in Egger, Eggert and Larch (2014), in both cases a significant effect of EU regional policy expenditures on the measure of bilateral migration among EU member countries is identified. However, contrary to Egger, Eggert and Larch (2014), the effect is mostly positive. In the first case, on average, a one percentage point increase of structural funds expenditures in per cent of GDP leads to an increase of net bilateral migration by about 0.3-0.5%. The neoclassical model yields similar results. On average, a ten percent increase in structural funds expenditures leads to an increase in the measure of bilateral migration by about 0.015-0.17 emigrants per 100,000 individuals in the origin country's population. Hence, EU regional policy transfer payments spur instead of hamper internal migration across

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[7] Notice that a revised and extended version of Egger, Eggert and Larch (2011) has recently been published in the *Review of International Economics* (Egger, Eggert and Larch 2014).

[8] In the first article, the hypothesis that EU structural funds payments do hamper internal European migration is developed against the background of neoclassical migration theory (see the discussion in section 1.4 on page 28).

EU member countries. Possible explanations for this, at first glance, counterintuitive finding are discussed in the conclusion of this paper. It should be noticed, however, that the findings of this article do not necessarily contradict the converse results of Egger, Eggert and Larch (2014), but rather complement them in the sense that the overall empirical evidence on the migration and regional policy nexus is not unambiguous. This can be explained by two facts. First, my replication of Egger, Eggert and Larch (2014) confirms their result of a statistically significant negative effect of structural funds expenditures (in per cent of GDP) on net migration across EU-15 member countries for the period 1986-2004. Second, the result of a positive relationship between EU regional policy and migration is obtained by extending the data for the specification estimated by Egger, Eggert and Larch (2014) and by estimating a different empirical model for EU-28 member countries. Both of the latter two estimates encompass the period 1985-2013. Hence, the positive and negative results do not contradict each other, because they have been obtained on the basis of different empirical models as well as a different number of countries and years analysed.

Taking the first and the second article together, the intermediate conclusion of the thesis is as follows. Due to the ambiguous empirical evidence on the migration and regional policy nexus in the second article, it becomes clear that against the background of the migration-regional policy-development debate in the first article, one can neither argue in favour nor against the intervention of EU regional policy in the internal European market. Assuming that EU internal migration is really convergence-promoting as neoclassical theory predicts, but which actually is itself an empirical question, the positive as well as negative empirical relationship between migration and EU structural funds found in the second article imply, that EU regional policy can be justified in the first case and cannot be justified in the second. Hence, the question of the scientific justification and legitimisation of EU regional policy cannot be readily and unambiguously answered on empirical grounds due to the mixed evidence. This finding is in line with previous theoretical and empirical literature which I have mentioned in the beginning of this outline. That is why, I take a step back and reconsider the theoretical beginnings of the thesis, which took for granted neoclassical market failure theory as the starting point for the *positive explanation* as well as the *normative justification and legitimisation* of EU regional policy. In the following part B, I therefore deal with the issue if the presumed neoclassical theory of market failure itself is appropriate to scientifically *explain* and *justify* EU regional policy interventions

in the single European market.

The third article of the thesis (*EU regional policy: theoretical foundations and policy conclusions revisited*) deals with the theoretical *explanation* and *legitimisation* of EU regional policy as well as the policy recommendations given to EU regional policymakers deduced from theory. As already outlined above, the dominant explanation of EU regional policy that is given in the economics literature rests on insights from neoclassical welfare economics. Following this line of thought, EU regional policy is *explained* and *legitimated* with reference to instances of (allocative and distributive) market failure within the internal European market. Moreover, *policy instruments* are proposed within market failure theory with which such failures may be tackled. However, as the third article explains, market failure is a normative concept, which *justifies and legitimates* EU regional policy based on a political and thus subjective goal or value-judgement.[9] It can neither be used, therefore, to give a scientifically *positive explanation* of the structural funds nor to obtain objective and practically applicable *policy instruments*.

Why is this the case? According to the research programme of John Neville Keynes (1904), which is widely accepted in economics, the *positive science* needs to be clearly distinguished from the *art* and the *normative science* of economics. To put it as Keynes (1904, pp. 34-35),

> "a *positive science* may be defined as a body of systematized knowledge concerning what is; a *normative* or *regulative* science as a body of systematized knowledge relating to criteria of what ought to be, and concerned therefore with the ideal as distinguished from the actual; an *art* as a system of rules for the attainment of a given end. The object of a positive science is the investigation of *uniformities*, of a normative science the determination of *ideals*, of an art the formulation of *precepts*."

Hence, scientific economic theories need to be value-free. Otherwise they are unscientific, because they rest on subjective value-judgements which are not intersubjectively comprehensible and thus lie beyond the scope of scientific analysis (see also Neck 2006).

In contrast to Keynes' widely accepted economic research programme, market failure theory does not take the normative political goal as determined and given from outside the realm of economics. The theory itself emanates from the political goal of the maximisation of economic welfare, formulates a theory in which this goal is perfectly attained and then compares the existing reality with this ideal norm. If any discrepancies between economic reality and the norm are found, the former is seen as imperfect. EU

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[9] Within neoclassical market failure theory, it is usually the maximisation of economic welfare which is assumed as the (natural and universal) political goal that should be pursued (see Albert 1958).

regional policy interventions in the European internal market can then be *positively explained* and *normatively justified* as an instrument to tackle undesired allocative and distributive market failures. One can neither verify nor falsify such an aprioristic theory, because its result is fixed and independent of what EU regional policymakers factually do. No matter how the structural funds money is spent by EU regional policymakers in the real world, the *legitimate* reason and *explanation* that EU regional policy is conducted, is to tackle market failures in the common European market. One can either believe or not believe in this theory. However, scientifically positive and empirically testable insights into EU regional policy cannot be gained in this way. The same holds true for the deduction of particular policy instruments for EU regional policymakers. The value judgement which is presumed by neoclassical market failure theory is used to justify and recommend certain policy instruments to EU regional policymakers. Hence, the theoretical distinction between political means on the one hand and normative ends on the other does not remain intact. The formulated policy recommendations are value-laden and unscientific.[10]

Given this critique of neoclassical market failure theory, the third paper consequently calls into question the widely prevalent explanation and justification of EU regional policy given in static neoclassical equilibrium economics. It argues that an evolutionary non-equilibrium economics perspective on EU regional policy is much more appropriate to provide a realistic understanding of one of the largest policies conducted by the EU. A consideration of the dynamic character of modern market economies allows for a more substantive politico-economic explanation of EU regional policy and provides reliable policy implications for EU regional policymakers. The reason for that is the fact that evolutionary economic theory is able to clearly distinguish *positive* from *instrumental* and *normative* economics, since it is a dynamic and not, as neoclassical market failure theory, a static theory. Thus, it is inherently aware that a constant (political) overall goal of economic activity, such as economic welfare, is theoretically indeterminable in a constantly changing world. Consequently, evolutionary economic theory does not, as neoclassical market failure theory, emanate from a normative political goal. However, this does neither mean that evolutionary economic theory can be unreservedly seen as the panacea to *positively explain* EU regional policy nor to derive objective policy

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[10]Myrdal (1933) and Streeten (1954) have shown that a value-free distinction between policy instruments and normative policy goals is invalid and that policy instruments always have an intrinsic normative value. Thus, the recommendation or justification of policy instruments on the basis of a normative policy goal is always a normative issue and can never be objectively made.

instruments for EU regional policymakers. This issue is discussed in the fourth article of the thesis.

The fourth paper (*Market failure vs. system failure as a rationale for economic policy? A critique from an evolutionary perspective*) reconsiders the explanation of economic policy from an evolutionary economics perspective. It contrasts the neoclassical equilibrium notions of market and government failure with the dominant evolutionary neo-Schumpeterian and Austrian-Hayekian perceptions. Based on this comparison, the paper criticises the fact that neoclassical failure reasoning still prevails in non-equilibrium evolutionary economics when economic policy issues are examined. This is surprising, since proponents of evolutionary economics usually view their approach as incompatible with its neoclassical counterpart. In addition, it is shown that this "fallacy of failure thinking" even finds its continuation in the alternative concept of "system failure" with which some evolutionary economists try to *explain* and *legitimate* policy interventions in local, regional or national innovation systems. The paper argues that in order to prevent the otherwise fruitful and more realistic evolutionary approach from undermining its own criticism of neoclassical economics and to create a consistent as well as objective evolutionary policy framework, it is necessary to eliminate the equilibrium spirit. Finally, the paper delivers an alternative evolutionary explanation of economic policy which is able to overcome the theory-immanent contradiction of the hitherto evolutionary view on this subject. Although the article deals with economic policy in general and not with EU regional policy in particular, the arguments outlined in this paper can be transferred to this topic without limitation.[11]

Taken together, also the last two articles of the thesis reveal and substantiate the main finding of this thesis, that European regional policy and its structural funds can neither theoretically nor empirically be *justified* and *legitimated* from an economics point of view. Moreover, the thesis finds that the prevalent *positive* and *instrumental* explanation of EU regional policy given in the literature, which rest on neoclassical market failure or evolutionary systems failure theory, needs to be reconsidered, because these theories can neither scientifically explain the emergence and development of this policy nor are they appropriate to derive objective and scientific policy instruments for EU regional policymakers.

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[11] The first draft of the paper is entitled "Market vs. system failure as a rationale for EU regional policy? A critique from an evolutionary economic perspective". I renamed the paper and slightly changed the focus away from EU regional policy to economic policy in general after I have presented the paper at the 55th European Regional Science Association (ERSA) conference in Lisbon. These changes were mainly due to publication purposes.

As the first article of part A and the two articles in part B show, a justification and legitimisation of EU regional policy requires a political and thus subjective value judgement. The latter is not intersubjectively comprehensible (among economists) and can thus not be ultimately justified. Therefore, the prescription of political goals as well as the justification and legitimisation of EU regional policy lies beyond the scope of scientific economic analysis. As the second article shows, EU regional policy can also not be empirically justified and legitimated in this thesis. Even if one assumes the subjective political goal of neoclassical market failure theory implicit in the first article in part A as given, the mixed empirical evidence on the effect of EU regional policy transfer payments on internal migration across the EU, does not allow to unambiguously justify and legitimate structural funds interventions in the single European market on empirical grounds.

Of course, one should be aware that the analysis of the relationship between EU regional policy, migration and economic development is just one aspect of the broader and more general debate as to whether EU regional policy interventions in the common European market can be scientifically justified and legitimated from an economics point of view.[12] However, in light of the vast and mixed empirical literature on the efficiency and efficacy of EU regional policy on other variables of interest, such as growth, employment and regional convergence, I conclude that EU regional policy and the structural funds do currently stand on feet of clay.

This, however, does not mean that EU regional policy should be abolished. As the thesis clearly shows, the decision for or against the conduct of EU regional policy is a political question and cannot be scientifically answered by economists. The necessary value judgements to answer this political question cannot be delivered with the notions of market or system failure. Yet, given a political decision for or against regional policy interventions in the EU market has been taken outside the realm of economics, economists can *positively explain* why EU regional policy is conducted or not. They can also advise EU regional policymakers which policy instruments may be the best to achieve a political goal, given the historical experience with the respective measure in similar situations. Moreover, they can answer the empirical question if a *specific* EU regional policy measure attained the political goal (growth, job creation, convergence,

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[12] Besides migration, EU regional policy may also have effects on the market forces of the free flow of goods, services, capital and land. This needs to be considered if one evaluates structural funds expenditures given the EU's political goal of the improvement and harmonisation of the living and working conditions of EU citizens.

etc.) which should be achieved with it. These empirical economic insights on a certain policy measure can then be used ex post, to evaluate as to whether the structural funds expenditures can be justified in terms of the effective and efficient attainment of the political goal. However, a global scientific answer to the problem if EU regional policy interventions in the internal European market are justified can neither theoretically nor empirically be given.

Part A: EU internal migration and the structural funds

Chapter 1

The EU structural funds as a means to hamper migration[†]

Abstract

Comparing the current economic situation of the United States' and European Union's internal markets, two things are noticeable. On the one hand, the EU is conducting massive regional policy programmes (notably with their Structural Funds) to foster economic cohesion among the 27 nations belonging to the single European market. In the US with its 50 federal states, however, such policies play a rather subordinate role. At first glance, this seems to be consistent with the fact that low (high) levels of inequality are observable in the economic geography of the US (EU). Only 2.5% of the total population in the US lives in regions with less than 75% of the US average GDP per capita, while in the EU approximately 34% of the total population lives in such regions eligible for structural funds support. Yet by taking a closer look, on the other hand, it is revealed that the internal mobility of US citizens is significantly higher than that of EU citizens. According to economic theory, besides the free flow of goods, services and capital, migration plays an important role in assuring convergence in a common market. Following this line of thinking, no regional policy is needed to achieve economic cohesion among the regions or nations of a common market. Thus, comparing the two internal markets of the US and the EU, the question arises as to whether the lower degree of economic cohesion in the EU has something to do with the lower degree of mobility of EU citizens and a higher degree of structural interventions. To answer this question, this paper consists of three parts. First, I present the theoretical background concerning migration and the potential need for regional policy to find out whether one of them is a better instrument to achieve a balanced economic development within an internal market. In the second part, I discuss the actual situation of EU internal migration and the structural funds of the EU. In the last part, I examine why migration rates are comparatively low and analyse the interrelation between regional policy and (internal) migration in the EU. Besides other things like language, culture or institutions, this paper is going to argue that structural funds are inhibiting internal migration, which is one of the key measures in achieving convergence among the nations in the single European market. It becomes clear that European regional policy aiming at economic cohesion among the 27 member states is inconsistent if the structural funds hamper instead of promote migration.

1.1 Introduction

The preamble to the Treaty on the Functioning of the European Union (TFEU)[1] from 2009 states that one of the main goals of European integration is to harmonise and actively improve the living and working conditions of European Union (EU) citizens (Publications Office of the European Union 2010, pp. 15-16). The main policy instrument with which the EU may achieve this is their regional policy, which is mainly implemented by the so-called structural funds. These include the European Regional Development Fund (ERDF), the European Social Fund (ESF) and the European Cohesion Fund (ECF).[2] All three of them transfer financial means payed by richer regions belonging to the single European market to regions lagging behind in their economic development in order to actively improve the living and working conditions of EU citizens. In doing so, the EU follows a different path than the United States (US), where regional policy plays a rather subordinate role (Pierdzioch 2007, p. 1). However, in the US, the economic gap existing amongst the 50 federal states is not as large as that in the 27 member states of the EU. While in the US only three federal states making up only 2.5% of the total US population, namely Arkansas, West Virginia and Mississippi, are lagging behind the other federal states, in the EU approximately 34% of the total population lives in regions with less than 75% of the average GDP per capita, making them eligible for structural funding under the convergence objective.[3] Thus, executing a regional policy to assure harmonic economic development[4] in the US would be virtually redundant.

From an economic point of view, it is noticeable that, given the inequality in the economic geography of the two markets, internal migration rates are significantly different. US citizens are much more internally mobile (5.9% of the population changed their residence in 1999) than citizens in the EU (only 0.1% of the population changed

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[1] Before December 2009, this was the "Treaty establishing the European Economic Community" (EEC Treaty) of 1957 which was renamed in TFEU in Article 2 of the Lisbon Treaty.

[2] Formally, only the ERDF and the ESF belong to the structural funds (Schöndorf-Haubold 2003, p. 8 and p. 74). Nevertheless, the ECF is very often included in discussions about the structural funds in the literature, since it has been integrated into the programming of structural assistance in the period 2007-2013 (European Council 2006, p. 25).

[3] The figures are my own calculations based on Marcu (2011) and the European Commission (2012c) for the EU, and the data for the US is taken from the Bureau of Economic Analysis (2012) and the Census Bureau (2012).

[4] There is no clear-cut definition in the literature of what "harmonic" development means. In this paper, I follow Krieger-Boden (2002, pp. 3-5) who states that besides income (economic cohesion) and employment (social cohesion), convergence encloses further questions of political interest.

their residence in 2000) (Heinz and Ward-Warmedinger 2006, pp. 7-8; Martin 2003, pp. 1-2). Hence, the question arises whether the lower degree of economic cohesion in the EU has something to do with the lower degree of mobility of EU citizens and the higher degree of structural intervention in the internal European market.[5] This question can be split into two subquestions that shall be dealt with in this paper. First, is migration or regional policy more suitable to achieve a harmonic economic development in the internal market of the EU? Second, how are migration and the structural funds related to each other?

To answer these two questions, in the first part of the paper I briefly analyse the theoretical implications of migration and regional policy against the background of a cohesive economic development within the EU common market. To get a deeper understanding of the current situation concerning regional policy and (internal) migration in the EU, I discuss these two issues in the second part of the paper. Before presenting the conclusion, I analyse in the third part why internal European migration is quite low and how internal migration and the structural funds payments are interrelated. I will find that the structural operations hamper internal migration in the EU and thus, by inhibiting market forces, work counterproductive to their own goals of harmonising and improving the living and working conditions of EU citizens. I argue that the strategy followed by European regional policy is inconsistent if the structural funds are inhibiting internal migration, which is one of the key measures in achieving economic convergence among the nations in the single European market and an important adjustment mechanism within the European Monetary Union (EMU).

1.2 Internal migration or regional policy in the EU?

The question whether internal migration or structural funds are more suitable for achieving harmonic economic development is difficult to answer empirically, because one does not observe the counterfactual situation (Berthold and Neumann 2003a, p. 8).[6] Thus, the question can mainly be answered theoretically against the background

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[5] Although such a simple comparison between the internal markets of the US and EU is not unproblematic due to different historical, political, cultural, social, and other conditions, it should be taken as a thought-provoking impulse to deal with the question raised here.

[6] For an empirical analysis of this question, two identical worlds with a common European market would be necessary. One with regional policy without migration, and one without regional policy

of achieving harmonic economic development and improving the living and working conditions of EU citizens. In economics, there is no explicit theory to evaluate whether migration or regional policy is a better instrument to achieve the latter two issues. That is why different trade, growth and regional economic theories are taken into consideration. With the help of these theories, economic activities, i.e. the movement of goods, services, capital and labour, along with their allocative and distributive consequences for the economies under consideration, are explained. Because of the wide field that is covered by these theories, it is not easy to immediately gain clear-cut insights concerning migration and the structural funds in the single European market. But nevertheless, two main pillars can be found in the economic literature which may help to analyse the question raised in this paper, namely the "Thesis of Convergence" and the "Thesis of Divergence" (Berthold and Neumann 2003a, p. 1). While the (neo)classical trade and growth theories can be understood under the thesis of convergence, the new trade and endogenous growth theories are assigned to the thesis of divergence in the literature (Dresel 2005, pp. 13-31; Schindler 2005, pp. 91-130).

Following the thesis of convergence, the free movement of labour (and also of goods, services and capital) will automatically lead to a harmonic economic development, such that living and working conditions, at least in the long run, are approximately the same all over the EU. Hence, the market mechanism itself coordinates the process of convergence, and regional policy interventions are not needed or just needed to accelerate convergence among the nations and regions of the EU. Therefore, EU regional policy has only a regulative task, which is to enforce and ensure the free movement of goods, services and factors of production.[7] In the reverse conclusion, economic divergence only occurs if the free movement of labour, capital, goods and services is imperfect.

Following the thesis of divergence, imperfect markets are the reason why, e.g., migration in addition to other factors leads to the typical pattern of an economically strong agglomeration and a weak periphery lagging behind in its economic development. Hence, according to this theory, not only passive and regulative but also active

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but with migration. Only then could a reliable empirical conclusion as to the advantageousness of migration or regional policy in achieving harmonic economic development be possible.

[7] In practice, the EU has implemented the free movement of goods, services, capital and labour, also known as the so-called "Four Freedoms of the EU". This kind of passive and regulative policy stems from the beginnings of European regional policy in 1957 (Treaty of Rome), while EU regional policy has become more and more active and interventionist by using the structural funds and other policy measures since the 1986 Single European Act (Holtzmann 1997, pp. 86-152).

allocative and distributive policy interventions are needed to alleviate the consequences of inequalities in the economic geography of an internal market. This also means that policymakers could implement policies that work against one or all of the four freedoms of movement of goods, services, labour and capital.[8]

Another strand of the theory in analysing whether internal migration or the structural funds are more suitable to achieve harmonic economic development is the so-called new economic geography (NEG), which emerged at the beginning of the 1990s. It can be seen as a mixture or synthesis of the theses of convergence and divergence, because it can explain developments of convergence as well as divergence, depending on the progress of economic integration in the regions (Ohr 1994, pp. 5-6). In contrast to the traditional theories encompassed in the thesis of convergence that explain the trade relations or different growth rates of two regions by differences in their economic characteristics such as productivity, technology, infrastructure, endowments of natural resources, or factors of production, the NEG analyses economic activities between similar regions (Puga 2002, pp. 382-391). This is not surprising, since the NEG models descend from models of the new trade and growth theories (Martin 1999, pp. 68-71).

Starting from a "natural" allocation of the factors of production and firms between two economic areas, the mobile factors, according to the NEG, will decide on their location depending on the centripetal (promoting agglomeration) and centrifugal (promoting deglomeration) forces. In the beginning of economic integration, which in NEG models is associated with high or medium levels of transaction and transport costs, the factors will locate in the agglomerating area, because they are more highly compensated there. This process goes on until the arbitrage of goods and factor prices reaches an equilibrium, which determines the economic geography of regions and arises from an equilibrium of the two forces mentioned above. Given the mobility of goods, services and factors of production at a certain point in time, the equilibrium in such models depends on the costs of transaction and transport. If these costs start to change over the course of economic integration, it is likely that the economic geography of the regions will also change. Hence, depending on the transport and transaction costs, it is possible that processes of agglomeration or deglomeration will occur in an internal market. At this point, migration plays an important role, because depending on the

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[8] An example is the "2+3+2 rule" which allowed the countries belonging to the EU-15 to wall off their labour markets for a maximum of seven years against the competition of workers from the Central and Eastern European (CEE) countries that joined the EU in 2004 and 2007 (Angenendt 2008, p. 20).

degree of mobility and thus on the location of the mobile factors in the course of integration, processes of agglomeration or deglomeration lead to either diverging or converging economic spatial developments (Schmidt 2010, p. 27).[9]

For the EU, with its advanced economic integration and comparatively low labour mobility, most of the NEG literature implies an inverted U-shape pattern of economic geography. Starting with an even allocation of economic activity between two regions, such models imply that in the course of EU economic integration, core-periphery patterns are observable for medium transaction and transport costs. For higher degrees of integration, i.e. lower transaction and transport costs, an even allocation of economic activity between the two regions should be observed. Since the same amount of goods is produced independent of agglomeration or deglomeration processes within the conventional models of the NEG, allocative policies cannot be legitimated on the basis of this theory (Lammers and Stiller 2000, pp. 18-20). Hence, the diverging or converging economic spatial developments implied by the NEG justify only distributive policies. But, since the explanatory power of NEG models remains very limited at present, concrete distributive policy implications cannot yet be derived from these models (Schindler 2005, pp. 116-117).[10] Therefore, Lammers and Stiller (2000) conclude from their analysis of the famous NEG model of Ludema and Wooton (1997) that EU policymakers should remove all barriers to trade of goods, services and factors, that they should strengthen the European traffic infrastructure, and that migration of labourers in the internal European market should not be allowed until transaction and transport costs are comparatively low due to economic integration.[11]

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[9] The NEG models usually predict a core-periphery pattern à la Krugman (1991a;b) when labour (or capital) is interregionally mobile, when labour is interregionally immobile and vertical linkages exist, or when vertical linkages are combined with interregional labour mobility (Ascani, Crescenzi and Immarino 2012; Ottaviano and Puga 1998). In contrast, NEG models predict an inverted U-shape pattern with intersectoral mobility but interregional immobility of labour. The immobility of labour (or non-tradeable goods) works as a dispersion force in the economic geography (Ottaviano and Puga 1998; Puga 1999). Nevertheless, an inverted U-shape pattern is even possible given interregional mobility of labour, when transaction and transport costs are also assumed in the perfectly competitive market, which most often is the agricultural sector in NEG models (Krieger-Boden 2000; Fujita, Krugman and Venables 2001).

[10] The explanatory weakness of NEG models in this case is due to the problem that researchers must be able to evaluate the exact phase (start, medium, end or somewhere in-between) or amount of transport and transaction costs of the integration process (Lammers and Stiller 2000, p. 20; Schindler 2005, p. 115). Such an indicator does not yet exist. Nevertheless, there are many attempts in the literature to derive concrete policy implications from NEG models (Baldwin et al. 2003; Krieger-Boden 2002; Lammers and Stiller 2000; Ottaviano 2003).

[11] See also Krieger-Boden (2002) and Puga (2002). For a more comprehensive discussion concerning the potential ambiguity of lower transaction and transport costs, see Puga (2002, pp. 394-400) and

To sum up, no unambiguous insights and policy implications concerning migration and the structural funds in the single European market can be gained by looking at economic theory. Nevertheless, all lines of thinking state the importance of the free movement of persons with respect to better allocation and higher economic welfare in a common market. Looking at the models corresponding to the thesis of divergence, migration fosters inequalities in the economic geography, while the models of the NEG, which also include a spatial dimension through the inclusion of transaction and transport costs, imply that migration can foster inequalities as well as equity. The latter depends on the degree of migration and the extent of the costs to cross distance. Consequently, such models imply distributive regional policy interventions, such that policymakers face a trade-off between allocative efficiency and a harmonious distribution (Baldwin et al. 2003, p. 476). This implies that EU regional policy should not prohibit the free flow of factors of production in any way, since it is a vital prerequisite for the enlargement of overall welfare in the EU. Finally, according to NEG models that imply an inverted U-shape pattern in the course of economic integration, EU regional policy should concentrate on ensuring and enforcing the free flow of goods, services and factors, and should reduce transaction and transport costs. Hence, the above-mentioned trade-off between efficiency and convergence disappears. In that case, migration promotes efficient allocation and cohesive economic development in the unified European market.[12]

1.3 Internal migration and the structural funds in practice

In the last section, I analysed the theoretical implications of the ability of migration and regional policy to foster harmonic economic development and economic efficiency in the single European market. I found that migration in an advanced process of economic integration (characterised by low transport and transaction costs)[13] plays an important role to assure both an efficient allocation and a harmonic distribution of income in

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Baldwin et al. (2003, pp. 476-477).

[12] Concerning the question of whether an inverted U-shape pattern seems plausible in the European case, see e.g., Forslid, Haaland and Midelfart Knarvik (2002) who find such a relationship for Europe.

[13] Transport and transaction costs have declined considerably on a global scale in the last few centuries (see, e.g., Schlichting and Heinrichs 2010, p. 4).

the internal European market. Now, I am going to present the actual situation of migration and regional policy in the EU. In the first subsection, I shortly discuss the main instrument of EU regional policy, namely the three structural funds ERDF, ESF and ECF. I analyse their historical development, their goals, implementation and financial amount.[14] In the second subsection, I define what I mean by (internal) migration and describe the actual situation in the EU. This enables me to study the interrelation of the structural funds and European internal migration in the last part of the paper.

1.3.1 The EU structural funds

The main instruments of EU regional policy are the three structural funds ERDF, ESF and ECF. They were not primarily set up for the sake of a planned political intervention into the allocation and distribution within the internal market of the EU. Rather, they have emerged as a subject of negotiation in the different phases of the deepening and enlargement of the EEC created by the 1957 Treaty of Rome (Feld 2004, pp. 26-27). The establishment of the structural funds was closely tied to the process of European integration. In the early stages of this process, European regional policy set the focus on the establishment of an internal market and the coordination of national economic and financial policies. Over the course of time, from the Single European Act (SEA) in 1986 and the Maastricht Treaty in 1992 to the TFEU of today, this passive and regulative form of policy has increasingly changed to a discretionary and interventionist type of policy (Krieger-Boden 2002, p. 27).

Since the beginning of their implementation, the main goal of the EU's structural fund interventions has been to improve the living and working conditions of its citizens. Nowadays, this goal should be reached by an investment policy that supports economic growth, an improved quality of life and sustainable development, job creation, competitiveness and the abolishment of the still significant economic, social and territorial disparities (European Commission 2012d). In the current programming period 2007-2013, this investment policy has a total funding budget of €347.41 billion[15] and is

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[14] For a detailed discussion, see, e.g., Holtzmann (1997), Schmidt (2010, pp. 41-48) or Schöndorf-Haubold (2003).

[15] This amounts to approximately 35.7% of the total EU budget for that period, or just over €49.6 billion per year. Since all regional policy programmes are co-financed by the member states, the total available budget for the regional and cohesion policy is almost €700 billion (European Commission 2012b).

pursuing three objectives (European Commission 2012c).

The first is the objective of *convergence*, with a total budget of €283.28 billion corresponding to 81.54% of the total structural funding budget for the period 2007-2013. The aim of this objective is to help regions with a per capita GDP of less than 75% of the EU average to catch up with regions that are above this threshold.[16] This objective concerns 17 of the EU-27 member states with a population of 154 million people in 84 different regions at the NUTS-2 level.[17] In addition, 16 so-called "phasing-out regions" with 16.4 million people whose per capita GDP due to statistical reasons is still slightly underneath the threshold of 75% are covered (Schmidt 2010, p. 43). Under this objective, for example, projects such as the improvement of basic infrastructure, water and waste treatment, high-speed internet connections, training and job creation programmes are funded.

The second objective is *regional competitiveness and employment*, with a total budget of €55.41 billion corresponding to 15.95% of the total funding budget in the actual programming period. Independent of structural problems occurring in the process of integration, this objective consequently aims at supporting regions that are not covered under the convergence objective. In a two-stage approach, the attractiveness of regions and that of the workforce living in them, as well as their competitiveness, should be enhanced. On the one hand, a more balanced development in the regions under consideration should be encouraged, and poverty should be eliminated. On the other hand, richer regions should be supported in order to create knock-on effects for all the other regions in the EU. This objective concerns 172 regions with approximately 330 million inhabitants, while projects like the development of clean transport, the support for different kinds of research, small businesses, training and job creation programmes are funded.

The third objective is *European territorial cooperation*, with a total budget of €8.72 billion corresponding to 2.51% of the total funding budget for 2007-2013. It aims at strengthening cross-border, transnational and interregional cooperation. Hence, this objective covers all 271 regions of the EU with its 502.5 million inhabitants (Marcu 2011,

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[16] Article 5 paragraph 1 of the Council Regulation No 1083/2006 exactly defines the regions eligible for funding from the structrual funds under the convergence objective. These are regions whose GDP per capita, measured in purchasing power parities and calculated on the basis of Community figures for the period 2000 to 2002, is less than 75% of the average GDP of the EU-25 for the same reference period (European Council 2006).

[17] "NUTS" stands for the "Nomenclature of Territorial Units for Statistics". It is a geocode standard for referencing the subdivisions of countries and regions in the member states of the EU developed and regulated by the EU.

p. 1) while projects of natural resource management, risk protection, the improvement of transport links, and the creation of networks of universities and research institutes, among others, are funded.

To implement these three goals, the three structural funds are used under some or all of the regional policy objectives. To begin with, the ERDF is used to finance policy measures under all three objectives. By promoting the reduction of regional imbalances, this fund should encourage economic and social cohesion in the EU. Therefore, the ERDF finances

- "direct aid to investments in companies (in particular SMEs) to create sustainable jobs;

- infrastructures linked to research and innovation, telecommunications, environment, energy and transport;

- financial instruments (capital risk funds, local development funds, etc.) to support regional and local development and to foster cooperation between towns and regions;

- technical assistance measures" (European Commission 2012b).

The ESF finances projects under the two objectives of convergence and regional competitiveness and employment. It especially aims at improving employment and working conditions in the EU and supports the following actions:

- "adapting workers and enterprises: lifelong learning schemes, designing and spreading innovative working organisations;

- access to employment for job seekers, the unemployed, women and migrants;

- social integration of disadvantaged people and combating discrimination in the job market;

- strengthening human capital by reforming education systems and setting up a network of teaching establishments" (European Commission 2012b).

The ECF supports only the objective of convergence. It aims at member states whose gross national income (GNI) per capita is lower than 90% of the EU average.[18] It

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[18] For a precise definition of which regions are eligible for an ECF grant, see article 5 paragraph 2 of the Council Regulation No 1083/2006 (European Commission 2012c).

should not only help these economies to catch up with richer member states, but also to stabilise them. During the period 2007-2013, the ECF supported projects under the following categories in 15 selected member states:

- "trans-European transport networks, notably priority projects of European interest as identified by the Union and,

- environment; here, the Cohesion Fund can also support projects related to energy or transport, as long as they clearly present a benefit to the environment: energy efficiency, use of renewable energy, developing rail transport, supporting intermodality, strengthening public transport, etc." (European Commission 2012b).

All regional policy interventions of the EU follow the two principles of subsidiarity and additionality (Weidenfeld and Wessels 1995, p. 293). This means that the EU only co-finances policy projects on the national, regional or local level that are in line with its three regional policy objectives and where political action from the point of view of the member states is necessary. All projects are planned, implemented, administered and budgeted on the national, regional or local level by local businesses or societal partners, as well as civil-societal groups (European Commission 2012a). Nevertheless, since 1985, regional aid under the structural funds as well as national regional aid has only been granted within national development programmes that fit into the all-embracing European regional policy agenda, de facto transforming even national structural policies into an EU regional policy (Krieger-Boden 2002, p. 31).

To sum up, the three structural funds do not only follow economic considerations. Instead, they also cover a wide range of policy fields and try to influence the political, natural, ecological, social and cultural environment in the European internal market.

1.3.2 Internal migration in the EU

In the social sciences, migration is defined as the movement of a person or groups of persons that are associated with a permanent cross-border change of residence from one political residential municipality to another.[19] All non-permanent changes of residence

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[19] Until 1950, according to the recommendations of the United Nations (UN), migration or a change of residence was defined as permanent when it exceeded a period of more than one year. Since the 1960s, a permanent change of residence is defined as one that lasts longer than five years (Han 2000, p. 7).

(commuters, tourists, seasonal workers, etc.) have to be subsumed under the concept of mobility. Since there is no clear-cut application of these two definitions in the literature (Fischer 1999, p. 17), I do not differentiate between migration and mobility in this paper. Moreover, one has to distinguish between internal and international migration. While international migration is defined as the change of residence between different political and geographical entities, internal migration takes place between different political entities of the same geographical area (generally the national state). Since the free movement of persons in the EU is only allowed for people holding an EU citizenship, I concentrate on internal migration in the EU, which can be defined as the immigration or emigration of EU citizens into or out of one member state of the European Union to another member state (Han 2000, p. 9). In other words, the concept of EU internal migration which I analyse here is tied to EU citizenship and encompasses the change of residence of EU citizens between countries belonging to the internal market of the EU. Now, looking at EU internal migration, two things can be noticed. First, it is difficult to draw an exact picture depicting the situation of internal migration in the EU, since there is simply a lack of actual, comparable and complete data (Dijkstra and Gáková 2008, p. 1). Thus, only very general statements can be made, although Eurostat has begun to collect some data on this issue starting from the year 2000 (Eurostat 2010).

Figure 1.1: Share of foreigners in the EU member states in 2011 in % of the total EU population
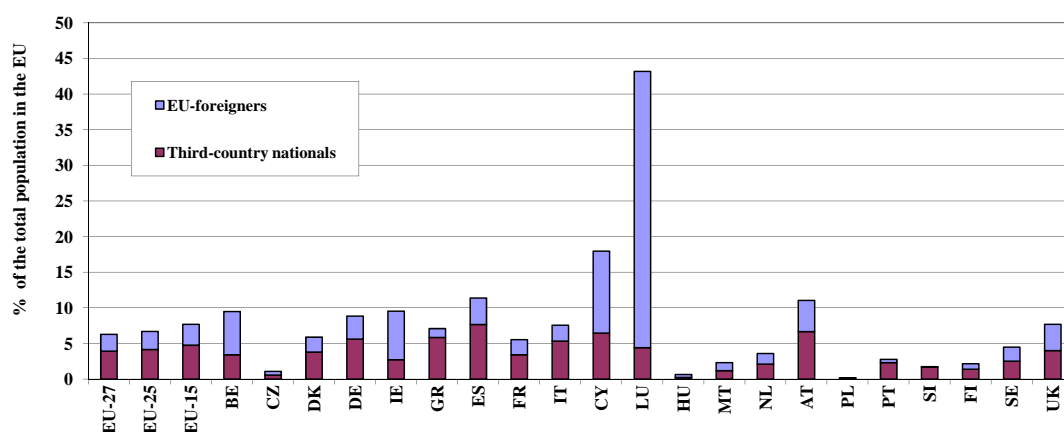
Source: My calculations according to Eurostat (2012).
Note: Data for BG, EE, LV, LT, RO and SK were not available in the Eurostat database, so they have been removed from the figure (see also Table 1.2 on page 43 in the appendix).

Second, looking at some general indicators for the EU's internal migration, they show that the amount is quite low. Although the free movement of persons is nearly unrestricted within the European single market since 2004[20], only 12 million people out of 31 million foreigners coming from other countries stem from other EU member states (see Table 1.2 on page 43 in the appendix). Hence, only 2.37% of the population with an EU citizenship lives and works outside the country of origin in one of the 26 other EU member states. This low level of internal migration is also shown in a breakdown by country in Figure 1.1 on the previous page. Only in Belgium, Ireland, Cyprus, Luxembourg and Hungary does the number of foreigners with EU citizenship lie above the number of third-country nationals living and working in these member states. This is quite surprising, since it is much easier for EU citizens then for third-country nationals to migrate within or immigrate into the EU. The low propensity of EU citizens to migrate is also confirmed in the 2005 "Eurobarometer survey on geographical and labour market mobility" analysed by the "European Foundation for the Improvement of the Living and Working Conditions" (EFILWC) (EFILWC 2006). According to its analysis, only 3% of EU citizens ever migrated beyond the borders of the EU, only 4% migrated within the internal market and the largest share of these were either completely immobile or migrated within cities and regions or across regions of the same national state (see Figure 1.2 on this page). A detailed apportionment by member states and demographic characteristics of those migrants can be found in Table 1.1 on pages 41–42 in the appendix.

Figure 1.2: Mobility of EU-25 citizens according to distance (%)
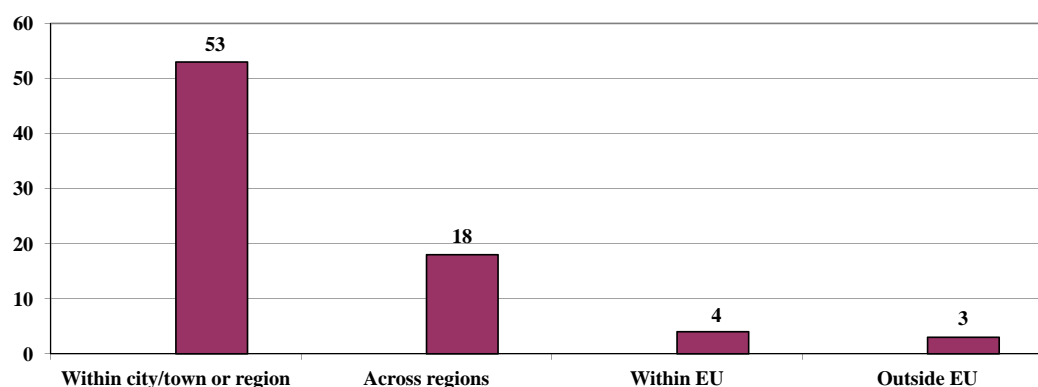
Source: EFILWC (2006, pp. 16-17).

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[20]Concerning the 2+3+2 restrictions on the free movement of labour in the EU since its eastward enlargement in 2004, see footnote 8 on page 19.

It is noticeable here that, independent of sex, age and working status, only slight differences concerning the migration behaviour of EU citizens are found by the Eurobarometer Survey. Furthermore, highly educated individuals are much more mobile than less educated ones, and there are some countries in the EU where the mobility of their citizens lies significantly above the EU average, namely Ireland, Luxembourg, Cyprus and Sweden. But, independent of these differences, one can conclude that even though the opportunity of free movement for EU citizens is almost completely implemented, the level of internal migration is surprisingly low. This raises the question as to why and for what reasons individuals actually migrate or remain immobile. This will be discussed in the following chapter.

1.4 Why is EU internal migration so low?

In order to analyse why and for what reasons migration is comparatively low in the EU, it needs to be clarified why people actually migrate between two different geographical entities. In other words, the determinants of migration must be specified. Unfortunately, no exact, general and overall migration theory attempting to explain the circumstances that lead to the decision to migrate, exists in the literature (Fischer and Straubhaar 1994, p. 97; Haug and Sauer 2006). Since these circumstances are multi-causal, there exist instead different theoretical and empirical approaches on different levels of analysis and from different disciplines. On the one hand, such approaches exist at the micro-, meso- and macro levels of analysis, i.e. at the individual, regional and national levels. On the other hand, one can differentiate between political, geographical, demographical, sociological, ethnological, historical, psychological and economic approaches that theoretically and empirically attempt to explain migration.

In economics, the decision to migrate is generally modeled as an individual decision, where a utility-maximizing and rational individual who tries to improve his or her living situation compares the costs and the utility of migrating from one area to another (Delbrück and Raffelhüschen 1993, p. 1). According to this approach, the potential migrants compare economic variables such as wage levels, unemployment rates, price levels and growth rates at home and at the possible destination. When the benefits of moving are higher then the costs, individuals will start to migrate and relocate their residence. But, since migration is a multidimensional phenomenon, the economic approach seems to be too narrow to completely explain migration. It neglects important

explanatory variables from other disciplines and levels of analysis, such as social and cultural conditions or the political and natural environments.

Therefore, I follow the interdisciplinary model of Fischer and Straubhaar (1994, pp. 81-99) that does not share the division of migration models according to different levels of aggregation or disciplines mentioned above. Instead, they propose a model which combines findings from different disciplines and levels of analysis, which is depicted in Figure 1.3 on the current page. It is based on the economic approach to migration. In addition to this, however, also non-economic circumstances at the national, regional and individual levels that influence the migration decision are included in this model, such as the socio-cultural, natural, ecological and political environments. Thus, "migration is understood as a process of interaction of different societal systems (countries, economies)" (Fischer and Straubhaar 1994, p. 97 my translation).

Figure 1.3: An interdisciplinary model to explain migration
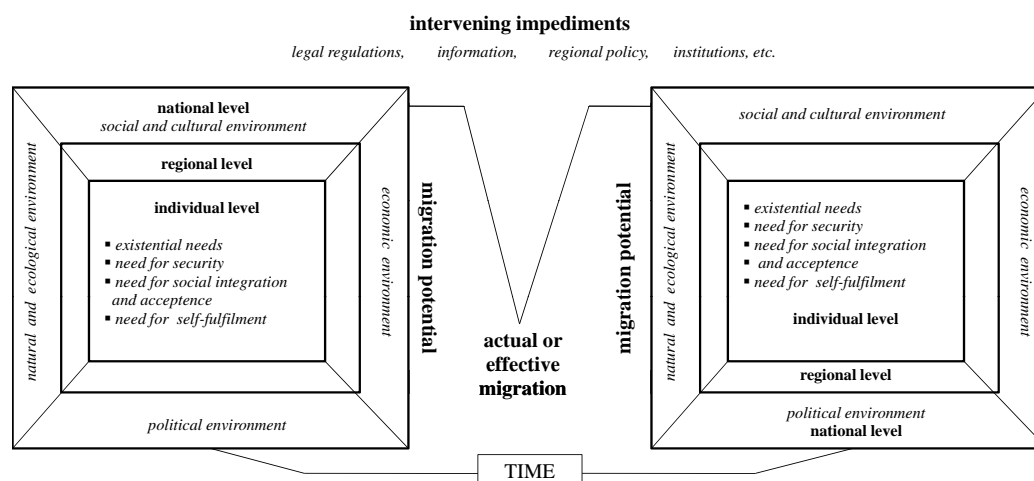
Source: Slightly changed depiction and my translation according to Fischer and Straubhaar (1994, p. 98).

In both locations (depicted by the two boxes), a migration potential arises if the individual (social, political, economic, cultural, etc.) utility of migrating outweighs its costs. But, the actual or effective migration does not only depend on this "migration supply" (push factors), but also on the "migration demand" (pull factors) in the other respective area. The migration demand itself depends on the labour demand, the degree of economic integration, factor endowment, market imperfections, social conditions, etc. Moreover, the effective migration is even smaller when intervening impediments

including legal regulations, imperfect information and institutions, regional policies, and geographical distance are also included in the model. With these different explanatory variables or multidimensionality of migration, it is easier to understand why European internal migration might be this low.

In the following paragraphs, I am going to discuss individual advantages of remaining immobile, the many barriers to migration still existing within the European single market, and the role of the structural funds in terms of internal migration in the EU. All these things influence the migration decision at all levels of aggregation and in all four kinds of environments, as depicted in Figure 1.3. They increase the migration costs and thus foster the immobility of EU citizens.

1.4.1 Reasons for immobility and barriers to internal migration

In contrast to the widely discussed advantages of mobility, there might also be advantages for individuals to remain immobile, although there are huge differences in income or unemployment rates across regions. Such location-specific insider advantages are accumulated in a local learning process over a certain amount of time, requiring certain information and at least temporary immobility, giving rise to an individual "value of immobility" (Dresel 2005, p. 67). As these advantages are location-specific, they are tied to a certain region and thus investments into these insider advantages will transform into sunk costs in case an individual migrates to another region (Fischer 1999, p. 75). Insider advantages can be divided into work- and leisure-oriented location-specific insider advantages, as depicted in Figure 1.4 on the following page.

According to this approach, an individual chooses, forms and acquires firm-specific, place-specific and society-specific advantages over time that yield larger and better compensations and career opportunities related to his or her job. Additionally, place-specific and society-specific advantages can be accumulated related to the leisure time of an individual. Remaining immobile ensures that the human capital gathered in such a way is not devaluated but instead further accumulated, thereby increasing the value of immobility. The important role played by such insider advantages in explaining the immobility of EU citizens is shown by the 2010 "Eurobarometer survey on geographical and labour market mobility" conducted by the Directorate-General for Employment and Social Affairs. In this survey, 39% (27%, 21%, 19%) of the participants declared that they did not migrate due to home (family, friends, language, etc.) considerations

Figure 1.4: The insider-advantage approach towards immobility

| | Value of immobility |
| Accumulation of location-specific advantages |

Work-oriented insider advantages — Leisure-oriented insider advantages

Firm-specific insider advantages | Place-specific insider advantages | Society-specific insider advantages | Place-specific insider advantages | Society-specific insider advantages

higher firm-specific compensation for non-transferable knowledge and abilities

higher space-specific compensation for working due to knowledge of space, society and locational technology

opportunity and carreer advantages from locational social relations, customs, norms preferences ('social capital') and political activities

space-specific knowledge about consumption opportunities (leisure activities, local supply of goods and services etc.), language, culture, climate, local customs

acceptance and social integration due to location-specific social relations ('social capital'=family, friends, social acceptance, etc.) and political activities

Source: Extended depiction according to Fischer et al. (2000, p. 11).

(European Commission 2010, pp. 111-115).[21]

Besides the value of staying immobile and the fact that European integration is fairly advanced from an economic point of view, there are still many political, social and institutional barriers to European internal migration, which shall be briefly discussed in the following paragraph.[22] The literature mentions certain key barriers again and again that impede mobility in the EU. These are problems concerning the mutual recognition of qualifications, the (economic) discrimination against migrants in the EU, institutional barriers to migration, as well as minimum employment standards.

Access to occupations in other EU member states is often restricted for internal migrants, because native employers are not able to assess their qualifications, i.e. their human capital. Thus, one faces a typical situation of asymmetric information leading to lower compensation for immigrants compared to native labourers (Berthold and Neumann 2003b, p. 8). In order to overcome such problems, mutual recognition of vocational qualifications and certificates needs to be given; otherwise, these information asymmetries will contribute to the impediment of internal migration within the EU.

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[21] For a more detailed discussion of the "insider-advantage approach towards immobility", see Fischer et al. (2000).

[22] A good overview concerning this topic is given by Berthold and Neumann (2003b), Braunerhjelm et al. (2000), the Social and Economic Council (2001) and Tassinopoulos and Werner (1999).

Another barrier to migration closely connected with the one just mentioned is (economic) discrimination against immigrants. Potential migrants might remain immobile because they would need to accept lower wages, pay higher rents or prices for adequate housing (price discrimination), or cope with discriminatory attitudes and practices in the country of destination (Tassinopoulos and Werner 1999, p. 13).

Institutional barriers to migration within the EU can be found in the housing and labour markets. High taxes on the sale of property, state-controlled rents and the high quotas of residential property might also be reasons why EU citizens are strongly tied to certain locations in the internal market and remain immobile (Braunerhjelm et al. 2000, p. 53; Tassinopoulos and Werner 1999, p. 10).

Moreover, the increasing regulation of the European labour markets in recent decades is often seen as one of the main institutional barriers to internal mobility (Berthold and Neumann 2003b, pp. 12-13). Improved protection against dismissals, state monopolies in the employment service sector and the unified setting of wage levels by trade unions and workers' associations (collective bargaining agents) increase the costs of mobility for potential migrants. The collective bargaining coverage introduced by labour market insiders eliminates labour market competition arising from the right to free movement of labour from other EU member states, i.e. the labour market outsiders. Thus, the signaling function of wages as indicators of regional scarcity and productivity differences is distorted, leading to the disablement of wage differentials as an incentive to migrate within the EU.

Another reason for the low mobility of EU citizens might be the unemployment compensation provided in residents' native regions. Mobility due to reasons of subsistence is no longer necessary. Additionally, in some countries of the EU, unemployment benefits are larger than income levels in other member states, so that immobility instead of mobility might be preferred by the average EU citizen. The same argument holds for differences in the social security or taxation systems or in the relinquishing of voting rights of EU immigrants in other EU member states. For example, internal migrants are able to transfer their social security entitlements to other member states due to the coordination of EU social security legislation, but these entitlements are very different in the various member countries belonging to the EU. In addition, EU internal migrants are only able to vote at the local and European levels, but not at the national level except in their country of origin. Since major living conditions like social security, labour market regulations, taxation, etc. are determined at the national policy level, an

EU immigrant is not able to influence this kind of legislation. Such voting constraints are also a barrier to migration within the EU (Berthold and Neumann 2003b, p. 14).

Finally, minimum employment standards are mentioned in the literature as another reason for the immobility of EU citizens. Regulations such as minimum wages, employment protection legislation or the posting of workers acts, enforcing local employment standards for labourers from other member states, are increasing labour expenses for non-local or non-regional companies within the EU internal market. These expenses against "social dumping" have to be compensated by higher productivity levels of employees and more human capital in order to allow sufficient profits for such companies. According to Berthold and Neumann (2003b, pp. 16-19), the argument of social dumping is used very often to prevent migration of employees from poorer EU member states, so that they are not able to improve their living and working conditions within the EU.

To sum up, most authors emphasise that state regulations like minimum wages and working conditions, employment protection law, discrimination, differences in social security regulations, strong trade unions and the well-established welfare states are barriers to migration within the EU. These barriers are often set up by labour market insiders at the expense of the often poorer labour market outsiders. Among other things mentioned in this paper, they are eliminating intra-European competition, ensuring higher incomes to the labour market insiders and preventing a more efficient allocation of labour and harmonious distribution of incomes inside the EU.

1.4.2 The EU structural funds as a root cause approach to migration

Besides the advantages of immobility and the barriers to migration, the EU structural funds also play an important role in hindering the migration of EU citizens within the single European market. The three structural funds finance measures on the individual, regional and national levels, which affect all kinds of environments as mentioned in the migration model on page 29. For example, the ERDF and the ECF finance infrastructure investments aimed at creating jobs at different locations within the European internal market and connecting them via different means of rail or public transportation. In other words, the two funds intervene in the social and economic, as well as natural and ecological environment of potential migrants. Moreover, the ESF finances projects against discrimination, for lifelong learning, for the strengthening of

local human capital and access to employment for job seekers. The ESF in this way also intervenes in the social, economic and even cultural and political environment of EU citizens that would be potential migrants.

Recognising these interventions, the structural funds can be seen as "intra-European development aid" with which internal migration of EU citizens should intentionally be hampered by improving the living and working conditions in their native regions (Boswell 2005, pp. 14-15; Fischer and Straubhaar 1994, pp. 234-235).[23] This idea, taken from development economics, is known in the literature as the "root cause approach" to migration (Hermele 1997, pp. 150-155). Hence, with the help of the structural funds, the root causes of migration in the native homelands of potential internal migrants are tackled in order to lower or even totally hinder emigration from such areas into other EU member states. All the efforts European politicians are undertaking to specifically hamper a certain form of migration, namely labour migration, show that this argumentation is not trivial. Labour migration should be hindered within the EU to avoid competition by foreign workers in the labour markets of the richer core countries of the internal market (Kureková 2011b). For instance, before the eastern enlargement of the EU, the EU-15 countries introduced different instruments of pre-accession assistance to improve the living and working conditions in these countries, hoping to lower the feared migration potential in 2004 and later (Boswell 2005, p. 15).[24] In the planning period 2000-2006, political, institutional and economic reforms were conducted in the CEE countries with the help of the three financial instruments "PHARE" (Poland and Hungary: Aid for Restructuring of the Economies), "ISPA" (Instrument for Structural Policies for Pre-Accession) and "SAPARD" (Special Accession Programme for Agriculture and Rural Development) to improve the conditions in CEE countries and thus lower the effective emigration from these countries to other EU member states.[25] After the CEE countries joined the EU, the financially more potent structural funds replaced the instruments of pre-accession

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[23] Although this is not officially put forward as a policy objective by EU policymakers.

[24] Additionally, other exceptions to the principle of free movement of labour have been enacted, namely the "Posting of Workers Directive", meant to function as an instrument to prevent "unfair" competition for working conditions and wages in the cross-border provision of services or the 2+3+2 system (see footnote 8 on page 19).

[25] In the current planning period 2007-2013, there is only one single instrument of pre-accession assistance for the potential EU member states of Croatia, Iceland, Montenegro, the Former Yugoslav Republic of Macedonia, Serbia and Turkey called the "Instrument of Pre-Accession Assistance" (IPA), which is continuing this kind of preventive migration policy within the future regions of the EU.

assistance to further tackle the root causes of migration in these countries. In the literature on development economics, the usage of such financial means, i.e. public capital transfers to foster economic development and prevent migration, has been controversially debated for a long time (Angenendt 2008, pp. 36-37). In the context of the EU with its structural funds and other regional policy measures, the theoretical as well as empirical analysis of the interrelation between the structural funds and (internal) migration is a rather recent field of study. Nevertheless, all authors writing on this issue conclude that the interregional public capital transfers hamper convergence-promoting migration. For example, I (2010) examined this from an explicitly interdisciplinary and more theoretical point of view, while Kessler and Lessmann (2010) analyse the relation between inter-governmental transfers, interregional disparities and migration theoretically and empirically within a general economic framework. Egger, Eggert and Larch (2011) specifically investigate the relation between structural operations and migration within the EU both theoretically and empirically. They build up a new economic geography model in which two economies finance their common regional policy through a common pool. International transfers into this pool are inversely related to GDP per capita and paid by the tax revenue of each country. For this, Egger, Eggert and Larch model international transfers like structural funds as payments from the rich countries to the poorer countries. Infrastructure investments financed out of this pool reduce local fixed plant setup costs or transport costs, thereby fostering horizontal multinational firm activities. The higher activity level enhances factor price equalisation and thus eliminates the incentive to migrate under certain circumstances. When the initial labour endowment between the two countries modeled is relatively equal, both types of public infrastructure investments reduce migration. In contrast, for larger differences in the initial labour endowment between the two countries, both types of public infrastructure investments foster migration. To find out which scenario might be predominant in the EU, Egger, Eggert and Larch employ a panel of net migration flows between EU member states to empirically test the hypotheses inferred from their new economic geography model. Surprisingly, although there are so many different barriers to internal migration such as language, culture and institutions, they "find that the EU's structural expenditures reduce net migration on average" (Egger, Eggert and Larch 2011, p. 26).[26] Of course, one should keep in mind that this is an

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[26] In Table 2 of their paper, they report the coefficients of two different models (Model 3 and Model 5) that they have estimated. Taking net immigration flows among EU-15 member countries over the period 1986-1996 as the dependent variable, they find an average statistically significant negative

overall or average effect for the EU-15 countries. Thus, massive emigration of Bulgarian or Romanian citizens to Western Europe after they joined the EU in 2007, although massive pre-accession and structural fund interventions took and are still taking place, is maybe not consistent with the finding that the EU structural funds are a means to hamper migration.

Compared to the four freedoms of the EU internal market, especially the principle of free movement of labour, the actual regional policy of the EU counteracts its own principles that are enacted in the European process of integration and regional policy implementation when it hampers convergence-promoting migration. On the one hand, free labour movements in the internal market should be possible but, on the other hand, European policy implements many measures that are designed to prevent migration. In contrast to the structural funds and EU internal migration literature, the development economics literature, in which the use of financial means to foster economic development and prevent migration has in the meantime been rethought, is already one step ahead (Angenendt 2008, pp. 36-37). Here, migration is still seen as negative, i.e. as competition for the labour markets of the rich countries of the EU. But, as outlined in section 1.2, migration is also seen positively as a means to achieve allocative efficiency that has an impact on economic development, e.g., in the form of remittances or brain gain. Consequently, against the background of the oft-mentioned ineffectiveness of development aid, it seems to be state of the art in this literature to prefer (controlled) migration[27] instead of public capital transfers to foster economic development. This might also be true in the case of the structural funds, given the mixed negative or only slightly positive empirical impact evaluations undertaken by economists thus far (see Hagen and Mohl 2009).

Since the structural funds are unlikely to be discontinued in the future, the economics literature implies that they should be reformed in such a way that they instead do promote internal migration in the EU. On the one hand, this could be done by taking into greater account the alignment of the structural fund spending with mobility

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impact of the structural funds on net migration of -34.18% (10% significance level) and -41.83% (5% significance level). Their sample contains 371 observations, while the structural fund expenditures are constructed as a share of GDP at the country level. They also included country- and time-fixed effects in their regression to account for cultural and geographical characteristics, as well as for common shocks to intra-EU migration.

[27]Controlled migration is often preferred, because it is of course well-known, that migration cannot only have positive effects. In contrast, large-scale emigration or immigration within a short period of time can have deteriorating economic effects (widening of the income gap, brain drain, unemployment, wage reductions, etc.) on sending and receiving regions (Kureková 2011a, The Economist 2012).

incentives and mobility aid. On the other hand, the remaining barriers to migration in the EU should be removed and the structural funds should be retracted to their core objectives.[28] Additionally, Fischer and Straubhaar (1994, p. 284) propose different measures to foster individual mobility, which are depicted in Figure 1.5 on this page. In short, these measures encompass the abolishment of market imperfections and the alleviation of adjustment processes by reducing barriers to market exit and entry for potential migrants.

Figure 1.5: Measures to promote individual mobility
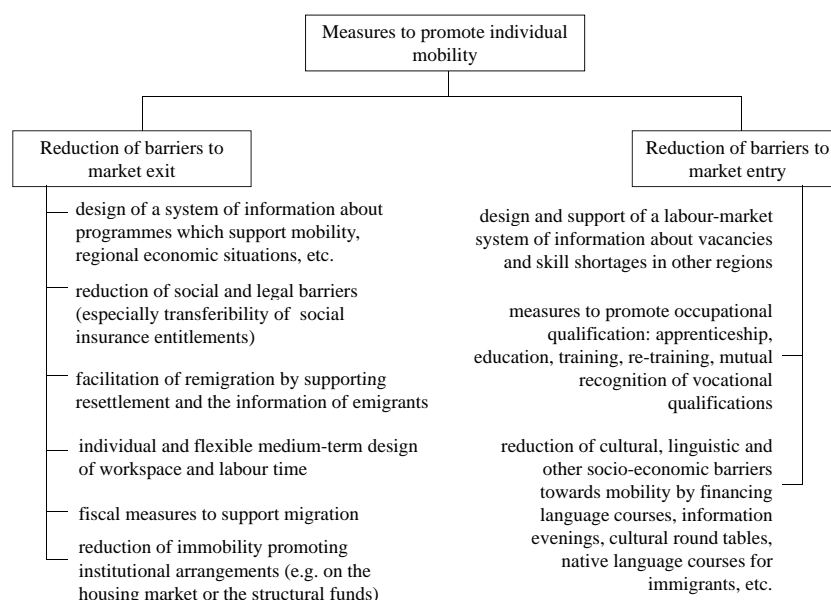
Source: Slightly changed depiction and own translation according to Fischer and Straubhaar (1994, p. 284).

1.5 Conclusion

In this paper, I aimed to answer the question whether the low degree of economic cohesion in the EU has something to do with the low mobility of EU citizens and

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[28] The core objectives are the assurance of the free flow of goods, services, capital and workers, as well as the reduction of intra-European transaction and transport costs (see discussion in section 1.2 on page 17). Additionally, some authors propose to realign EU budget spending away from international and interregional redistribution to the provision of European public goods (Feld 2004, Feld and Schnellenbach 2007), unconditional financial transfers between countries and regions and a monitoring process of EU and national policy measures and their effectiveness (Krieger-Boden 2002, p. 24).

the high degree of structural intervention of EU regional policy. As I have outlined in the first part of the paper, economic theory predicts that, in an advanced process of economic integration such as in the EU, migration plays a vital role in improving the allocative efficiency, ensuring convergence among its member states and increasing the overall welfare of EU citizens. At the same time, I found that EU regional policy should be concentrating on ensuring and enforcing the free flow of goods, services and factors and should reduce transaction and transport costs within the internal European market.

In the second part of the paper, I described the different areas of intervention by the EU structural funds, their goals, history and financial amount, as well as the situation concerning internal migration in the unified European market. I found that the degree of interventionism by EU regional policy up to today increased in comparison to its rather regulative beginnings. In the current planning period 2007-2013, almost €700 billion[29] were to be invested within the internal market of the EU to reach the defined policy goals. In so doing, the structural funds were to finance measures on the individual, regional and national levels, as well as in the cultural, social, political, natural, ecological and economic environment. Hence, the structural funds are intervening in the allocation of factors of production and in the distribution of incomes within the EU. Additionally, after having defined what is meant by the concept of internal migration in the EU, I ascertained that the propensity of EU citizens to migrate is surprisingly low in light of the right to free movement within the single European market. In comparison to the internal market of the US, internal migration of EU citizens is only half that of US citizens (Heinz and Ward-Warmedinger 2006, p. 7 and p. 12).[30]

In the last section of the paper, I analysed why individuals ultimately migrate or not, and what other reasons might inhibit a larger volume of internal migration in the EU. Here, I followed Kureková (2011a, see abstract and pp. 5-6), who pointed "out the limited ability of the neoclassical framework to understand migration patterns in their complexity", presenting the interdisciplinary model to explain migration proposed by Fischer and Straubhaar (1994, pp. 81-99). According to this model, the individual decision to migrate depends on the cost-benefit equation of moving from

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[29] See footnote 15 on page 22 for a breakdown of EU- and co-financing.

[30] One can also find critique of such a simplified comparison in the literature. Ester and Krieger (2008a) argue that the mobility gap between the EU and US is smaller. They compare mobility levels within EU member states and between the federal states of the US, which they find to be a more reasonable comparison, because one compares equal cultural, social, political and language areas. Nevertheless, internal mobility in the US still remains higher than intra-member state mobility in the EU.

one country or region to another and residing at two different locations in the internal EU market. This equation does not only take into account economic determinants of the migration decision at the individual, regional and national levels, but also political, cultural, natural, ecological, legal, institutional and social determinants. Knowing that migration is a complex human behavioural process, I examined the advantages of immobility, barriers to migration in the internal market of the EU and especially the structural funds as a cause for EU internal migration being comparatively low. I found theoretical and empirical evidence that the EU structural funds in terms of a "root cause approach" appear to function like intra-European development aid. By improving the local living and working conditions, they lower convergence-promoting migration in the EU. Besides many other policy measures at the national as well as supranational level, European policy and certain interest groups (unions, tax payers, employers, etc.) aim at inhibiting labour migration within the EU to protect their local labour markets from foreign competition connected with downward pressure on wages, the substitution of native by foreign workers, or social security migration (see, e.g., Heinz and Ward-Warmedinger 2006, pp. 25-30). In the context of the four enacted freedoms of the internal European market, it becomes clear that such policies and especially the structural funds stand in sharp contrast to the idea of unrestricted movement of people. Therefore, policies hampering internal migration, which plays an important role for the process of convergence in the EU and is an important adjustment mechanism in the EMU, are inconsistent as long as they do not promote migration. To finance convergence-promoting migration activities and eliminate the barriers to labour migration in the European labour market discussed above, EU regional policy needs to be aligned with the core idea of European integration, namely the achievement of long-term peace via the implementation of the four freedoms of the EU. Given this kind of structural spending, EU regional policy would no longer be inconsistent, at least to the extent of factor movements, as it no longer hampers migration and might also foster convergence-promoting capital flows. Since the analysis of the interrelation of the structural funds and (internal) migration is a rather new field of study in economics, more research, especially empirical research, must be done in order to get closer to the "true" relation between migration and EU structural operations. To do this, however, better data on more disaggregated NUTS levels concerning the structural funds payments and internal migration in the context of the EU are necessary.

Acknowledgements

Appendix

Table 1.1: Mobility level of EU citizens by distance, demographic characteristics, country and destination (%)

	Within city, town or region	Across regions	Within EU	Outside EU
Total				
EU-25	53	18	4	3
EU-15	55	19	5	3
NMS	45	9	1	1
Sex				
Male	52	17	4	3
Female	55	19	4	3
Age				
18-24	19	7	2	0
25-34	48	17	5	3
35-44	61	18	5	3
45-54	62	19	4	4
55-64	60	21	4	4
65+	59	20	4	3
Level of Education				
Low or No	59	13	4	2
Average	56	17	3	3
High	54	27	7	5
Still Studying	17	9	3	1
Employment Status				
Employed	56	18	4	3
Unemployed	49	16	4	2
Retired	59	20	4	3
House Husband/-wife	56	16	5	2

Country	Within city/town or region	Across regions	Within EU	Outside EU
Austria	56	10	4	1
Belgium	62	14	5	3
Cyprus	53	19	9	3
Czech Republic	44	9	2	0
Denmark	65	38	8	6
Estonia	54	25	1	2
Finland	68	36	5	3
France	61	30	3	4
Germany	62	19	5	4
Greece	36	17	5	2
Hungary	51	11	1	1
Ireland	47	20	15	5
Italy	46	8	2	0
Latvia	48	24	2	3
Lithuania	62	8	1	1
Luxembourg	57	21	14	3
Malta	30	7	3	3
Netherlands	59	23	5	3
Poland	43	8	1	0
Portugal	44	9	5	2
Slovakia	36	6	2	0
Slovenia	40	10	2	2
Spain	49	11	5	3
Sweden	70	44	8	5
United Kingdom	55	25	7	6

Source: EFILWC (2006, pp. 16-17), countries alphabetically arranged by the author.

Table 1.2: Total population, EU-foreigners and foreigners in the 27 EU member states in 2011 (1,000)

Geo	EU-foreigners	Third-country nationals	EU total population	Share of EU-foreigners %	Share of third-country nationals %	Share of all foreigners %
EU-27	11,738.6	19,453.5	495,146.5	2.37	3.93	6.30
EU-25	11,735.0	19,441.6	466,257.6	2.52	4.17	6.69
EU-15	11,509.3	18,680.6	392,901.4	2.93	4.75	7.68
Austria (AT)	364.1	552.0	8,290.4	4.39	6.66	11.05
Belgium (BE)	668.2	374.1	10,989.4	6.08	3.40	9.48
Bulgaria (BG)	-	7.8	7,504.9	-	0.10	-
Cyprus (CY)	88.7	50.0	772.5	11.48	6.47	17.95
Czech Republic (CZ)	53.3	60.0	10,545.6	0.51	0.57	1.07
Denmark (DK)	117.2	210.8	5,565.6	2.11	3.79	5.89
Estonia (EE)	-	187.4	1,336.5	-	14.02	-
Finland (FI)	41.9	74.3	5,365.2	0.78	1.38	2.17
France (FR)	1,313.4	2,099.2	61,757.3	2.13	3.40	5.53
Germany (DE)	2,598.4	4,539.7	80,806.2	3.22	5.62	8.83
Greece (GR)	136.3	637.1	10,925.1	1.25	5.83	7.10
Hungary (HU)	42.4	23.1	9,832.5	0.43	0.23	0.67
Ireland (IE)	305.5	122.6	4,490.5	6.80	2.73	9.53
Italy (IT)	1,335.9	3,226.0	60,328.2	2.21	5.35	7.56
Latvia (LV)	-	348.4	2,229.6	-	15.63	-
Lithuania (LT)	-	14.0	3,231.3	-	0.43	-
Luxembourg (LU)	193.7	22.1	499.6	38.77	4.42	43.19
Malta (MT)	4.8	4.9	418.4	1.15	1.17	2.32
Netherlands (NL)	242.5	343.8	16,400.2	1.48	2.10	3.57
Poland (PL)	18.3	36.8	37,503.0	0.05	0.10	0.15
Portugal (PT)	49.4	246.3	10,646.7	0.46	2.31	2.78
Rumania (RO)	-	-	21,384.1	-	-	-
Slovakia (SK)	5.6	-	5,435.3	0.10	-	-
Slovenia (SI)	1.5	34.6	2,051.3	0.07	1.69	1.76
Spain (ES)	1,696.1	3,522.3	45,908.1	3.69	7.67	11.37
Sweden (SE)	184.3	237.2	9,418.8	1.96	2.52	4.48
United Kingdom (UK)	2,262.2	2,473.0	61,510.2	3.68	4.02	7.70

Source: My own calculations according to Eurostat (2012).
Note: Data for BG, EE, LV, LT, RO and SK were not available in the Eurostat database.

Chapter 2

Internal migration and EU regional policy transfer payments: a panel data analysis for 28 EU member countries

Abstract

This paper analyses the effect of EU regional policy transfer payments on migration flows among 28 EU member countries. The hypothesis is tested that EU structural funds payments do hamper internal migration across the EU. This is done in two ways. First, the paper by Egger, Eggert and Larch (2014) is reestimated and extended. Until today they are the first and the only ones that have empirically tested the above hypothesis, which they have derived from a new economic geography (NEG) model. Second, a more traditional neoclassical model of the migration and regional policy nexus is tested. As in Egger, Eggert and Larch (2014), in both cases a significant effect of EU regional policy expenditures on the measure of bilateral migration among EU member countries is identified. However, contrary to Egger, Eggert and Larch (2014), the effect is mostly positive. In the first case, on average, a one percentage point increase of structural funds expenditures in per cent of GDP leads to an increase of net bilateral migration by about 0.3-0.5%. The neoclassical model yields similar results. On average, a ten percent increase in structural funds expenditures leads to an increase in the measure of bilateral migration by about 0.015-0.17 emigrants per 100,000 individuals in the origin country's population. Hence, EU regional policy transfer payments spur instead of hamper internal migration across EU member countries. Possible explanations for this, at first glance, counterintuitive finding are given.

2.1 Introduction

The economic geography of the European Union (EU) is characterised by tremendous regional disparities. The living and working conditions of citizens across the EU, most often measured in terms of gross domestic product (GDP) per capita and unemployment rates, are markedly different. The EU therefore conducts a regional policy since its foundation by the Treaty of Rome in 1957 which is supposed to improve and harmonise the conditions of its citizens. The main instruments to execute this policy are the two structural funds, the European Regional Development Fund (ERDF) and the European Social Fund (ESF), as well as the European Cohesion Fund (ECF).[1] In the current planning period 2014-2020 an amount of €352bn, 32.5% of the overall EU budget of €1082bn, is spend on EU regional policy with the help of these three funds (European Commission 2014b).

Depending on the regional policy objective between 13.5% and 61% of the total population of the EU is supported by the structural funds of the EU (European Commission 2014a, pp. 182-187). More specifically, 25.4% of the population of the EU is covered by the "less developed" objective according to which a region receives regional policy support when its GDP per capita in purchasing power standards (PPS) is less than 75% of the EU member states' average. With 53.3% of the total budget for the planning period 2014-2020, it is the largest regional policy objective in terms of the money spend on it.

Applying the 75% GDP-criteria to the internal market of the United States (US) and its federal states, only 4.5% of the total population of the US would be eligible for regional policy support.[2] In other words, the income gap in the US internal market is much smaller compared to the EU, although "regional or spatial planning policies has never become as significant an issue as it is in Europe" (Martin 2003, p. 20).

One possible explanation for this finding given in the economic literature is that US citizens are much more internally mobile between the different US federal states than EU citizens are across EU member countries (see, e.g., Martin 2003, pp. 20-21). As Ester and Krieger (2008b) point out, in the former EU-15, before the eastern

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[1] Since this clear-cut distinction is barely found in the literature, all three funds are assigned the term "structural funds" in this paper.

[2] The corresponding states are Arkansas, Idaho, Mississippi, South Carolina and West Virginia. The figures are own calculations on the basis of 2014 GDP data by state (in millions of current dollars) taken from Bureau of Economic Analysis (2016) and 2014 population data by state taken from Census Bureau (2016).

enlargement of 2004 and 2007, approximately 0.1% of the working age population moved to another country in a given year, while in the US about 3% of the working age population changed residence between US federal states.[3] They also remark that the migration gap between the EU and the US even continues to persist, when geographical mobility within instead of between member states of the EU is analysed.

The conglomerate of regional disparities, low mobility of citizens and high relevance of regional policy in the EU compared to the US, led some authors to argue that the structural funds of the EU distort and hamper convergence promoting migration across Europe (see, e.g., Kessler and Lessmann (2010); Kessler, Hansen and Lessmann (2011); Schmidt (2013) and Sinn and Ochel (2003)). Accordingly, from a normative point of view EU regional policy is a bad thing. It would not only slow down the speed of regional convergence or consolidate regional economic disparities in the EU, but would also lead to allocative inefficiencies and welfare losses in the internal European market (Wildasin 1994). However, until today there barely exists any empirical evidence for the above hypothesis that the regional policy of the EU hampers (internal) migration across member states. To the best of my knowledge Egger, Eggert and Larch (2014) is the only exception. Their estimates for the EU-15 countries suggest "that a one percentage point increase in structural funds expenditures (measured in per cent of GDP) reduces the level of bilateral net migration flows [across EU member countries, P.S.] by about 0.4-0.8%" (Egger, Eggert and Larch 2014, p. 368).

Due to the lack of empirical research, the goal of this paper is to add to the scarce empirical literature on the relationship between migration across EU member countries and the structural funds of the EU. This article will contribute to the existing literature in several ways. First, the econometric specification of Egger, Eggert and Larch (2014) is reestimated and extended to a longer time period. Their analysis encompasses the years 1986-2004, i.e. a period in which the EU comprised 12 (1986-1995) and 15 (1995-2004) member states, respectively. In this paper the period 1985-2013 is analysed so as to include the enlargements of the EU in 2004 (EU-25), 2007 (EU-27) and 2013 (EU-28).

Second, a different estimation strategy is presented in the paper solely focusing on the relationship between EU internal migration and the structural funds. Egger, Eggert and Larch (2014) do also estimate the relationship between net bilateral migration across EU

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[3] Heinz and Ward-Warmedinger (2006, p. 7) even report a migration rate of 5.9% for the US in 1999. Dijkstra and Gáková (2008, pp. 2-3) report a share of cross-boarder mobility of working age residents in the EU of 0.14% and in the US of 1.98% for the period 2005-2006.

member countries and the structural funds of the EU. Yet, they rather concentrate on empirically testing the new economic geography (NEG) model of international migration which underlies their paper. In contrast, the different estimation strategy employed emanates from a rather traditional neoclassical model of international migration, of which the hypothesis that EU structural funds hamper (convergence-promoting) migration accross Europe is usually derived from in the literature (see the sources mentioned above). Moreover, in Model (8) of their empirical analysis, Egger, Eggert and Larch (2014) include foreign direct investments (FDIs) as an additional control variable into the regression model. They assume FDIs to be endogenous in the regression of structural funds on net migration, since the activity of multinational firms acts towards factor price equalisation. Consequently, they employ an instrumental variable regression to account for the potential endogeneity of FDIs in order to obtain unbiased estimates. However, they do not control for the potential endogeneity of the structural funds variable, although the focus of their paper lies on the migration and structural funds nexus and they themselves conjecture that FDIs mitigate "the incentive to migrate similar to structural funds expenditure" (Egger, Eggert and Larch 2014, p. 366).

That is why the third contribution of the paper will be to account for the potential endogeneity of the structural funds variable. Inspired by the political economy literature on EU decision making and the allocation of the EU budget, different a priori voting power indices[4] for the EU Council of Ministers (CM) are employed as instrumental variables. As, for instance, Kauppi and Widgrén (2004) among many other authors have shown, the national and regional allocation of the structural funds budget does seldom follow the economic needs of a member state or region.[5] The structural funds are rather a subject of negotiation between EU member states. Hence, their allocation to a large extend depends on political bargaining power of national and regional politicians in the respective decision making bodies responsible for the budget and its allocation across the EU, namely the CM, the EU Parliament (EP) and the European Commission (EC). Although the determination and allocation of the EU budget is a complex process involving more than the three bodies just mentioned, it turns out that the CM (i.e.

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[4] I employ the three most common a priori voting power indices, namely the Shapley-Shubik index, the Banzhaf index and the Nucleolus. More detailed information on the concept of a priori voting power and the respective indices can be found, for instance, in Felsenthal and Machover (1998), Felsenthal and Machover (2004), Antonakakis, Badinger and Reuter (2014) and Garcia-Valiña, Zaporozhets and Kurz (2015).

[5] On this issue see also Bodenstein and Kemmerling (2011), Bouvet and Dall'erba (2010), Dellmuth (2011), Dotti (2010), Kauppi and Widgrén (2007), Kauppi and Widgrén (2008), Kemmerling and Bodenstein (2006), Garcia-Valiña, Zaporozhets and Kurz (2015) and Vedrine (2012).

the member states) is the key decision maker in terms of this subject.[6] The CM determines the ceiling of the budget for the seven year planning period in the so-called "Multiannual Fiancial Framework" (MFF), formerly known as "Financial Perspective". Thus, it sets narrow financial restrictions for how much structural payments each member state will later receive from the EC according to the "European Structural and Investment Funds Regulations" and the annual EU budget jointly adopted by the CM and the EP.[7] That is why it seems reasonable to employ a priori voting power indices for the CM as instrumental variables for the structural funds, since the political bargaining power of the member states in the CM is a major determinant of how much structural funds payments a member country receives.[8]

The remainder of this paper is structured as follows. The second section of the paper is devoted to reconstruct the empirical model, data and results of Egger, Eggert and Larch (2014) for the period 1985-2013, including 27 EU member countries. Contrary to Egger, Eggert and Larch (2014), I find that on average a one percentage point increase of structural funds expenditures in per cent of GDP leads to an increase in the measure of net bilateral migration by about 0.3-0.5%. In the subsequent third section, I describe and present my own estimation strategy, the collected data as well as the empirical results obtained. In contrast to Egger, Eggert and Larch (2014), a neoclassical model of the migration and regional policy nexus is estimated which confirms the formerly obtained results. On average, a ten percent increase in structural funds expenditures leads to an increase in the measure of bilateral migration by about 0.015-0.17 emigrants per 100,000 individuals in the origin country's population. In the final section, the paper draws its conclusion.

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[6] This holds true although the EP formally gained decision making power in the EU budget procedure over the last three decades. In fact, however, the EP's power in EU budget allocation on the member states is still quite small (Kauppi and Widgrén 2008).

[7] As Schöndorf-Haubold (2003, pp. 129-158) remarks, the Commission would never have the scope to allocate the structural funds to the member states on its own according to the vaguely formulated structural funds regulations. Hence, it can be assumed that the member states already know how much structural spending each member state will approximately receive when they decide on the MFF.

[8] Moreover, there is no need to believe that migration and the purely theoretical concept of a priori voting power are correlated. These indices should only effect migration through their effect on the allocation of the structural funds and should thus be qualified to be not only relevant but also exogenous instrumental variables (see also the discussion in section 2.3).

2.2 Replicating Egger, Eggert and Larch (2014)

The article by Egger, Eggert and Larch (2014) is divided into two parts. In the first part, they present a simplified and analytical solvable core-periphery NEG model à la Krugman (1991b). More specifically, they adapt the framework proposed by Pflüger (2004) and include "common pool financed infrastructure investments" (2014, p. 353) to derive the following three testable hypotheses (pp. 361-362) from it:

- *Result 1. Migration flows should be larger the bigger the endowment differences with the immobile factor(s).*
- *Result 2. The incentive to migrate is stronger at very low/high trade costs than at intermediate levels of trade costs.*
- *Result 3. Common pool financed public infrastructure investments mitigate the incentives to migrate.*

2.2.1 Empirical model and data

In the second part of their paper, Egger, Eggert and Larch (2014) present the data used and the empirical results they obtained for the EU-15 member states[9] over the years 1986-2004. They estimated *ten*[10] different versions of the following empirical model:

$$
\begin{aligned}
Mig_{ijt} =& \beta + \beta_0 EndowDiff_{ijt} + \beta_1 TC_{ijt} + \beta_2 TCsquared_{ijt} + \beta_3 SfGDP_{ijt} \\
& + \beta_4 EndowDiffSfGDP_{ijt} + \beta_5 FDI_{ijt-1} + \beta_6 CL_{ijt} + \beta_7 ADCL_{ijt} \quad (2.1) \\
& + \beta_8 ADEWSS_{ijt} + \beta_9 IvC_{ijt} + \beta_{10} ADIvC_{ijt} + \delta_i I_i + \delta_j I_j + \delta_t I_t + \epsilon_{ijt}
\end{aligned}
$$

The dependent variable Mig_{ijt} is net bilateral migration between countries i and j in year t. It is calculated as the absolute difference between two countries' bilateral immigration flows in logs. The independent variables in Equation 2.1 are defined as follows. $EndowDiff_{ijt}$ is the absolute difference in (log) labour endowments ($|\ln L_{it} - \ln L_{jt}|$) or difference in population size of country i and j. TC_{ijt} and $TCsquared_{ijt}$ are measures of trade costs between two countries. The former term is approximated by the log of geographical distance between two countries ($\ln dist_{ij}$). The latter term are the squared and demeaned trade costs ($[\ln dist_{ij} - \text{mean}(\ln dist_{ij})]^2$) and

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[9] Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom.

[10] See Table 2.2 on page 56 for the respective specifications of Models (1)-(10).

control whether trade costs affect net migration in a nonmonotonical way. $SfGDP_{ijt}$ is the main variable of interest and contains the structural funds expenditures as per cent of GDP in countries i and j in year t. $EndowDiffSfGDP_{ijt}$ is an interaction term between the absolute difference in labour endowments and the structural funds expenditures as per cent of GDP. This variable is included in the equation to test whether the effect of structural funds expenditures on net migration is driven by population size differences between two countries. To account for multinational firm activity, foreign direct investments (FDIs) are included in the model as an additional control variable. Egger, Eggert and Larch (2014, p. 366) hypothesise that FDIs act "as an additional force towards factor price equalisation ... [which mitigate, P.S.] the incentive to migrate similar to structural funds expenditures". FDI_{ijt-1} is once-lagged and defined as the sum of FDI inflows of countries i and j. Since FDIs are assumed to be endogenous, in their Model (8) Egger, Eggert and Larch (2014, pp. 366-368) employ two-stage least squares with instrumental variables to obtain consistent estimates. As instruments they include the log capital-labour ratio of countries i and j in t (CL_{ijt}), the absolute difference in log capital-labour ratio in two countries ($ADCL_{ijt}$), the absolute difference in the endowment with workers of at least secondary schooling of two countries ($ADEWSS_{ijt}$), the log average of and the absolute difference in log investment costs in two countries (IvC_{ijt} and $ADIvC_{ijt}$). In Model (9) and (10), Egger, Eggert and Larch (2014) estimate a reduced form of Model (8) and replace FDI_{ijt-1} by the instruments used in Model (8). I_i, I_j and I_t are country and year fixed effects (FE). The former account for time-invariant effects such as culture and geographical characteristics of the countries, while the latter absorb common shocks to EU internal migration such as changes in the legislature as a result of the introduction of the single European market and the Euro.

In a first step, I reestimated the above model with the dataset kindly provided by Peter Egger and obtained the same results that Egger, Eggert and Larch (2014) present in their paper.[11] However, the following problems occurred during the replication, which is why I contacted Mario Larch and Peter Egger and asked for clarification. First, I was not able to rebuild the dataset of Egger, Eggert and Larch (2014) from the original sources. This holds especially true for the migration data, the population data, the data on secondary school enrolment ratios as well as the GDP and structural funds data. I will further elaborate on this issue in more detail below, when I describe

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[11] As remarked by Peter Egger himself, the only exception is Model (8), where one obtains slightly different results due to a change in the *ivreg2* command of Stata.

the data I use in the augmented reestimation of Equation 2.1. Differences in data are probably due to data revisions in the respective databases. This has also been remarked by Peter Egger, who had similar problems in other studies in which the data were used. Second, the overall number of observations is only 1008 and not 1009, as indicated by Egger, Eggert and Larch (2014). One country-pair, namely Finland and Austria in 1996, entered into the regression twice, which is also confirmed by Peter Egger. Moreover, Egger, Eggert and Larch (2014) did not estimate their panel for the period 1986-2004 as they indicate, but the period 1985-2004. Third, I found minor differences between the estimation strategies indicated in the text of the paper and the estimations actually conducted. The reported coefficients in Model (7) and Model (10) have been estimated with the complete data matrix and not only with the lower triangular matrix, i.e. with 2018 and 1942 instead of 1009 and 971 observations. Although the basic results remain the same, the significance levels of some coefficients do change such that some of them even become insignificant. Again, this problem was confirmed by Peter Egger. Fourth, in their Table 4 Egger, Eggert and Larch (2014, p. 367) indicate that they used once-lagged FDIs as an additional control variable in Model (8). Yet, the coefficients they report are obtained without using lagged values of FDIs. This does not influence the results very much. Only the levels of significance do change for some of the coefficients. Fifth, the results obtained in Model (8) of Egger, Eggert and Larch (2014) are driven by the fact that they replace the missing values of their FDI variable by zero.[12] In this vein, the four instrumental variables used for FDIs are able to pass Sargan's over-identification test at a *p*-value of 0.2111. This indicates that the instrumental variables were correctly excluded, i.e. that they only indirectly influence net migration through FDI flows. When the missing values of the FDI variable are not replaced by zero, the null hypothesis of Sargan's over-identification test must be rejected. Thus, the excluded instrumental variables are in some way explanatory variables of net migration in their own right and might not be correctly excluded from the structural equation. All in all, however, the important result that EU structural funds reduce net migration on average remains the same, which is why I augmented the dataset of Egger, Eggert and Larch (2014) as a further check of robustness concerning the migration and regional policy nexus.[13]

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[12] According to Peter Egger, this is a common procedure in research on international economics. Concerning this issue, he also points out the paper of Helpman, Melitz and Rubinstein (2008).

[13] Controlling for the five problems just mentioned, though, changes the range of the effect of structural funds on net migration. Hence, on average a one percentage point increase in structural funds expenditures in per cent of GDP reduces net bilateral migration by about 0.3-0.7%.

To estimate the ten different versions of Equation 2.1 for the period 1985-2013 and 27 EU member states[14], I consulted the same data sources as Egger, Eggert and Larch (2014) indicate in their paper. The only exceptions are the data on structural funds and GDP, which they somewhat imprecisely indicated as taken from the European Commission and which I thus was not able to specify any further.

To calculate the dependent variable Mig_{ijt} in Equation 2.1, I employ data on net bilateral immigration as published by the Organisation for Economic Co-operation and Development (OECD) in their *"International Migration Database"* (OECD 2016b).[15] Net bilateral migration is defined as absolute difference of log immigration of i (from j) and log immigration of j (from i). Thus, my overall data matrix consists of $27 \cdot 26 \cdot 29 = 20358$ observations. Since the overall matrix is symmetric by design, only data of one triangular matrix are used, i.e. theoretically I end up with $20358 \div 2 = 10179$ observations. Unfortunately, the OECD dataset just contains $3110 \div 2 = 1555$ observations on net migration across 21 EU member countries.[16] That is why I also gathered immigration data from Eurostat (2016b). In the OECD dataset an immigrant is defined by its country of birth and its nationality, respectively. In contrast, in the Eurostat database a broader concept of immigration is employed. Here, an immigrant is defined by its country of previous residence. For 1985-2013, the Eurostat (2016b) database delivers $4820 \div 2 = 2410$ observations on net bilateral migration across 25 EU member countries.[17]

The data on the independent variables of Equation 2.1 are taken from the following respective sources. Descriptive statistics for all the variables I used are provided in Table 2.1 on page 54 for OECD migration data and in Table 2.6 in the appendix on page 62 for Eurostat migration data. The population figures for $EndowDiff_{ijt}$ are taken from Eurostat (2015).[18] The data for TC_{ijt} and $TCsquared_{ijt}$ are taken from

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[14] Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, United Kingdom. The only EU-28 country missing is Romania due to unavailable net migration data.

[15] The data contained in this database is equivalent to the data published in the OECD series "Trends in International Migration" and its continuing series "International Migration Outlook". Both series rest upon the OECD's "Continuous Reporting System on Migration" (known by its French acronym SOPEMI - Système d'Observation Permanente sur les Migrations).

[16] The countries missing from the list in footnote 14 in the OECD dataset are Bulgaria, Croatia, Cyprus, Latvia, Lithuania and Malta.

[17] The countries missing from the list in footnote 14 in the Eurostat dataset are France and Hungary.

[18] Egger, Eggert and Larch (2014) take population data from the World Bank's *"World Development Indicators"*. However, the data in World Bank (2015) must have been revised, such that the data do not coincide any longer. Since the World Bank (2015) population data series has missing values,

the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) (2011) *"GeoDist"* database, which provides several geographical variables for 225 countries. In Model (5) Egger, Eggert and Larch (2014) substitute ln dist$_{ij}$ and [ln dist$_{ij}$ - mean(ln dist$_{ij}$)]^2 by a survey-based trade cost index of the World Economic Forum (WEF). They use the log average of trade costs between countries i and j as well as the squared and demeaned values of this term. The WEF data in Egger, Eggert and Larch (2014) for the period 1986-2000 were provided by Keith Maskus and have been used in Carr, Markusen and Maskus (2001) and Markusen and Maskus (2002). For 2001-2004 Egger, Eggert and Larch (2014) augmented the data from the original source themselves. I contacted Keith Maskus and he kindly provided updated trade cost data for the period 1985-2004, which I updated myself from the original source for the period 2005-2013. For $SfGDP_{ijt}$ and $EndowDiffSfGDP_{ijt}$ the data on EU structural funds have been taken from two sources. First, structrual funds payment data by member states (for 1976-2009) were kindly provided by the Directorate General for Regional Policy (DG Regio) of the EC. These data do largely correspond to the data reported in the 2008 Financial Report on the EU budget (European Commission 2009), which itself refers to the European Court of Auditors (ECA) as source of the figures. Second, regional policy payment data (for 1993-2013) have also been taken from the Excel-file on the Inforegio "data for research" webpage of the European Commission (2016). To compute the structural funds variable used in my sample, I take the data for research and replace missing values by DG Regio data. GDP (in current prices) data is taken from Eurostat (2016a).

Data on FDI_{ijt-1} are taken from the OECD's *"International Direct Investment Statistics Database"* (OECD 2016a). Data on the capital-labour ratio CL_{ijt}, which Egger, Eggert and Larch (2014) used and which have been originally employed in Baier, Dwyer and Tamura (2006), were kindly provided to me in an updated form by Gerald P. Dwyer and Robert Tamura.

The endowment with workers of at least secondary schooling $ADEWSS_{ijt}$ is proxied by gross secondary school enrolment ratios taken from the World Bank's *"World Development Indicators"* (World Bank 2015). Data on investment costs (IvC_{ijt} and $ADIvC_{ijt}$) are also taken from a survey-based investment cost index of the WEF. As the trade cost index mentioned above, the investment cost index for 1985-2004 was kindly provided by Keith Maskus. For the period 2005-2013 I updated the investment cost index by myself from the original source.

I decided to take (complete) Eurostat migration data.

Table 2.1: Descriptive statistics OECD migration data

Variables	Obs.	Mean	Std. dev.	Minimum	Maximum
Absolute net log migration from i to j OECD, (Mig_{ijt})	1555	1.6674	1.2395	0.0000	5.9915
(a) Absolute difference in labour endowments: $\|\ln L_{it} - \ln L_{jt}\|$, ($EndowDiff_{ijt}$)	1555	1.5136	1.1189	0.0006	5.3033
(b) Bilateral distance as a proxy for trade costs: $\ln \text{dist}_{ij}$, (TC_{ijt})	1555	6.7628	0.7040	4.0879	7.9903
(c) Squared demeaned trade costs: $[\ln \text{dist}_{ij} - \text{mean}(\ln \text{dist}_{ij})]^2$, ($TCsquared_{ijt}$)	1555	0.5904	1.1681	0.0000	8.8995
(d) Structural funds expenditures as % of GDP in countries i and j, ($SfGDP_{ijt}$)	1551	0.3362	0.4489	0.0000	3.0546
(e) Interaction with $\|\ln L_{it} - \ln L_{jt}\|$, ($EndowDiffSfGDP_{ijt}$)	1551	0.5203	0.9683	0.0000	10.5718
(f) Linear trade costs WEF, (TC_{ijt})	1288	3.1512	0.3203	1.7422	3.7147
(g) Quadratic trade costs WEF, ($TCsquared_{ijt}$)	1288	1326899	3460.279	1319254	1337376
(h) Once-lagged net FDI inflows between i and j, (FDI_{ijt-1})	1555	1.7065	7.1551	-87.1355	130.5139
(i) Log capital-labour ratio of countries i and j in t, (CL_{ijt})	1168	23.7405	0.3090	21.7958	25.3610
(j) Absolute difference in log capital-labour ratio of countries i and j in t, ($ADCL_{ijt}$)	1168	0.0749	0.2429	0.0000	1.7667
(k) Absolute difference in endowment with workers of at least secondary schooling of countries i and j in t, ($ADEWSS_{ijt}$)	1360	3031229	2462893	637.4359	8270869
(l) Log investment costs of countries i and j in t, (IvC_{ijt})	1288	3.6519	0.2089	2.8623	4.0523
(m) Absolute log difference in investment costs of countries i and j in t, ($ADIvC_{ijt}$)	1288	0.2335	0.1692	0.0000	1.0255

2.2.2 Results

As mentioned earlier, Egger, Eggert and Larch (2014) estimate ten different versions of Equation 2.1. I reestimated the ten models with the data described in subsection 2.2.1 above. The results for OECD migration data are reported in Table 2.2 on page 56 and for Eurostat migration data in Table 2.5 on page 75 in the appendix.

In the simplest regression in Model (1), *Result 1* of the NEG model is tested. Egger, Eggert and Larch (2014, pp. 363-364) find that trade costs and population size differences between two countries do positively effect net migration on average. The two coefficients are highly significant on the 1%-level. "To the extend that L differences capture differences in endowments with immobile workers, this finding may

support Result 1" (Egger, Eggert and Larch 2014, pp. 363-364). In contrast to that, my reestimation shows the opposite result. With OECD data, labour endowment differences and trade costs between two countries do significantly hamper net migration on average. With Eurostat data, which are far more similar to the migration data used by Egger, Eggert and Larch (2014), the effect of the two variables on migration is still negative but not significantly different from zero anymore.

To test a typical implication of core-periphery NEG models à la Krugman (1991b), Model (2) tests *Result 2*, i.e. whether trade costs have a nonlinear effect on migration. Similar to Egger, Eggert and Larch (2014), I find that squared demeaned trade costs do not exhibit a significant effect on migration.[19] This holds true for OECD as well as Eurostat migration data. With OECD data, however, the inclusion of quadratic trade costs leads to a smaller (in absolute terms) and insignificant coefficient for the main effect of trade costs.

In order to test *Result 3* of the NEG model, Egger, Eggert and Larch (2014) include structural fund expenditures in two countries in per cent of GDP in a given year into the regression. They find that a one percentage point increase in the measure of regional policy efforts reduces EU internal migration by 0.7% on average. The authors interpret this as a sizeable effect given the fact that EU regional policy expenditures via the structural funds vary between 0% and around 3% in their sample. In my two samples, EU structural funds expenditures vary between 0% and 3% (OECD migration data) and 0% and around 4% (Eurostat migration data). Hence, I would also conclude that the structural funds variable in my reestimations of Model (3) exhibits a substantial effect on net migration in the EU. Yet, contrary to Egger, Eggert and Larch (2014), on average structural funds expenditures in per cent of GDP in two countries have a positive and highly significant effect on net migration by about 0.3%. Moreover, the negative effect of endowment differences becomes even larger, though it is only significant with OECD migration data. The inclusion of an interaction term between structural funds in per cent of GDP of two countries and population size differences in Model (4) does not influence the results very much. The interaction term's effect on migration is not significantly different from zero. This basically corresponds to the out-

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[19] As Egger, Eggert and Larch (2014, p. 364) suggest, this could imply "that the variance in empirical trade costs is not large enough between country-pairs to display a nonlinear effect". Since an alternative and time-variant survey-based measure of trade costs in Model (5) yields a significant effect on migration for OECD as well as Eurostat data, "the result [could, P.S.] partly be driven by the measurement of trade frictions through distance" (Egger, Eggert and Larch 2014, p. 378, footnote 27).

Table 2.2: Reestimation of Egger, Eggert and Larch (2014) for 1986-2013 across 21 EU member countries (OECD)

Explanatory variables	(1) β	(1) std	(2) β	(2) std	(3) β	(3) std	(4) β	(4) std	(5) β	(5) std	(6) β	(6) std
(a) Absolute difference in labour endowments: $|\ln L_{it} - \ln L_{jt}|$	-0.2141	0.0366***	-0.2115	0.0366***	-0.2238	0.0368***	-0.2277	0.0391***	-0.1809	0.0381***	-0.2439	0.0336***
(b) Bilateral distance as a proxy for trade costs: $\ln \text{dist}_{ij}$	-0.2190	0.0669***	-0.1395	0.1083	-0.1666	0.1079	-0.1662	0.1079	—	—	-0.0879	0.1037
(c) Squared demeaned trade costs: $[\ln \text{dist}_{ij} - \text{mean}(\ln \text{dist}_{ij})]^2$	—	—	0.0474	0.0511	0.0371	0.0513	0.0376	0.0513	—	—	0.0530	0.0453
(d) Structural funds expenditures as % of GDP in countries i and j	—	—	—	—	0.2892	0.0725***	0.2682	0.1190 **	0.0972	0.0904	0.3321	0.0689***
(e) Interaction with $|\ln L_{it} - \ln L_{jt}|$	—	—	—	—	—	—	0.0116	0.0494	—	—	—	—
(f) Linear trade costs WEF	—	—	—	—	—	—	—	—	-1.2454	0.6355 *	—	—
(g) Quadratic trade costs WEF	—	—	—	—	—	—	—	—	-0.0002	0.0001***	—	—
R^2	0.5312		0.5315		0.5370		0.5370		0.5701		0.5817	
Estimation Approach	FE		FE		FE		FE		FE		FE	
Country FE (p-value of F-test)	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000	
Time FE (p-value of F-test)	0.0000		0.0000		0.0000		0.0000		0.0001		0.0968	
Observations (country pairs across years)	1555		1555		1551		1551		1284		1488	

Notes: Dependent variable is net bilateral migration between countries i and j in year t. Net bilateral migration is defined as absolute difference of log immigration of i (from j) and log immigration of j (from i). Immigration data are taken from OECD (2016b). Reported standard errors are robust to heteroskedasticity. Fixed effects (FE) are not reported for the sake of brevity. *, **, *** indicates that coefficients are significant at 10%, 5% and 1%, respectively. (5) as Model (3) but using a survey-based annual trade cost index (in logs) from World Economic Forum (WEF) for trade costs instead of log distance. (6) as Model (3) but excluding influential observations according to Hadi (1992). For the countries included in the estimation, see footnote 16.

Table 2.2 continued...

Explanatory variables	(7) β	(7) std	(8) β	(8) std	(9) β	(9) std	(10) β	(10) std
(a) Absolute difference in labour endowments: $|\ln L_{it} - \ln L_{jt}|$	-0.2088	0.0504***	-0.1929	0.0481***	-0.2740	0.1276**	-0.1104	0.2264
(b) Bilateral distance as a proxy for trade costs: $\ln dist_{ij}$	0.0558	0.2057	0.0685	0.2254	0.1038	0.1157	0.1934	0.3428
(c) Squared demeaned trade costs: $[\ln dist_{ij} - mean(\ln dist_{ij})]^2$	0.1216	0.0787	0.0846	0.0685	0.1077	0.0434**	0.1031	0.1094
(d) Structural funds expenditures as % of GDP in countries i and j	0.2898	0.1062***	0.1587	0.1580	0.1625	0.1352	0.2619	0.2453
(h) Once-lagged net FDI inflows between i and j	—	—	0.0208	0.0618	—	—	—	—
(i) Log capital-labour ratio of countries i and j in t	—	—	—	—	0.1396	0.1311	0.2596	0.1609
(j) Absolute difference in log capital-labour ratio of countries i and j in t	—	—	—	—	0.0958	0.1823	0.2019	0.2428
(k) Absolute difference in endowment with workers of at least secondary schooling of countries i and j in t	—	—	—	—	0.0043	0.0052	-0.0018	0.0094
(l) Log investment costs of countries i and j in t	—	—	—	—	-0.0834	0.3897	0.0309	0.5946
(m) Absolute log difference in investment costs of countries i and j in t	—	—	—	—	0.2765	0.1531 *	0.1154	0.2689
R^2	0.5137		0.8618		0.7613		0.5758	
Estimation Approach	FE		FE		FE		FE	
Country FE (p-value of F-test)	0.0000		0.0000		0.0000		0.0000	
Time FE (p-value of F-test)	0.4174		0.0003		0.2430		0.8936	
Observations (country pairs across years)	1551		799		691		799	

Notes: Dependent variable is net bilateral migration between countries i and j in year t. Net bilateral migration is defined as absolute difference of log immigration of i (from j) and log immigration of j (from i). Immigration data are taken from OECD (2016b). Reported standard errors are robust to heteroskedasticity. Fixed effects (FE) are not reported for the sake of brevity. *, **, *** indicates that coefficients are significant at 10%, 5% and 1%, respectively. Model (7) contains estimates for estimating Model (3) by least absolute deviations (median regression). Model (8) as Model (3) but including instrumented, once-lagged net foreign direct investment inflows. Instruments are the variables included in Models (9) and (10). The Hausman-Wu F-statistic of testing the exogeneity of FDIs yields a p-value of 0.7240. The instruments pass Sargan's test of over-identifying restrictions at a p-value of 0.4753. The F-statistic of testing the joint relevance of the instruments exhibits a p-value of 0.2535. Model (9) shows the result from estimating the reduced-form version of Model (8) but excluding influential observations according to Hadi (1992). Model (10) contains the results from estimating Model (9) by least absolute deviations (median regression). For the countries included in the estimation, see footnote 16.

come of Egger, Eggert and Larch (2014). Using Eurostat migration data, though, the positive coefficient of structural funds even increases to about 0.4%.

After the basic estimations in Model (1) - (4), Egger, Eggert and Larch (2014) conduct a sensitivity analysis in Model (5) - (10). To do this, they use alternative measures of trade costs, include additional control variables and control for outliers. In Model (5), instead of ln $dist_{ij}$ and [ln $dist_{ij}$ - mean(ln $dist_{ij}$)]^2 a survey-based measure for trade costs, taken from the WEF, is employed for the two variables TC_{ijt} and $TCsquared_{ijt}$ in Equation 2.1. In contrast to Egger, Eggert and Larch (2014, pp. 365-366), the coefficients of the survey-based trade costs (main effect and quadratic term) are negative, i.e. a one percentage point increase in these costs reduces net migration on average. The coefficients are also significant, except for the trade costs' main effect on EU internal migration when Eurostat migation data is used. Notice that the coefficient of the structural funds variable becomes insignificant and remarkably decreases in comparison to former model specifications. This holds true for either of the two migration datasets and could partly be driven by the comparatively sharp drop in the number of observations due to limited data availability of the survey-based trade costs. Using Eurostat migration data in Model (5) casts doubt on the overall model specification of the migration and regional policy nexus, since none of the coefficients, except the quadratic trade cost term which is very close to zero, is significant. Hence, *Result 2* of the NEG model cannot be confirmed with the help of the data and the model specification used.

In Model (6), outliers are excluded following a method proposed by Hadi (1992). This reduces the number of observations. Nevertheless, the results do not change very much in comparison to Model (3) with OECD as well as Eurostat migration data. Rather than excluding outliers from the data, in Model (7) a median regression is estimated. Observations with extreme values are given less weight in such an estimation. Again, the results are similar to those obtained in Model (3). The endowment differences parameter is still negative and the coefficient of the structural funds variable is positive. Both are statistically significant at 1%, while linear and quadratic trade costs remain insignificant. Interestingly, the sign of the linear trade cost coefficient changes, but the parameter is still not significantly different from zero. Similar to Egger, Eggert and Larch (2014, p. 366), I can thus conclude that the former results are not driven by outliers.

In Model (8), once-lagged FDI are included as an additional control variable in order

to account for multinational firm activity and its effects on factor prices or migration, respectively. As outlined in subsection 2.2.1 above, Egger, Eggert and Larch (2014, p. 366-367) use an instrumental variable (IV) estimation, since they assume that FDIs are endogenous. It turns out, that contrary to the finding of Egger, Eggert and Larch (2014, p. 368), I do obtain a positive parameter estimate of once-lagged FDIs on internal migration. This holds true for OECD and Eurostat migration data. However, the coefficients are not statistically different from zero. Notice also that the structural funds parameter estimates stay positive but become insignificant and smaller in absolute value than before. Taking a look at the Hausman-Wu test for both types of migration data, the exogeneity of FDIs cannot be rejected given the chosen specification of the model (p-values (OECD / Eurostat): 0.7240 / 0.9160). The F-test that the excluded instruments are not jointly relevant in the first-stage can also not be rejected in both cases at p-values of 0.2535 (OECD migration data) and 0.3675 (Eurostat migration data). Moreover, Sargan's test of over-identifying restrictions, which indicates inter alia that the excluded instruments do only indirectly affect migration through FDIs, is only passed with OECD migration data (at a p-value of 0.4753). With Eurostat migration data and the given specification, Sargan's test exhibits a p-value of 0.0413, i.e. the excluded instruments are not adequate. Taken together, the results in Model (8) might be driven by a misspecification of the model given the underlying data.

In Model (9), a reduced form of Model (8) is estimated to mitigate concerns about weak instruments (see also Angrist and Krueger 2001, pp. 79-80). Once-lagged FDIs are replaced by the identifying instruments and outliers are again excluded according to the procedure proposed by Hadi (1992). With OECD migration data the parameter estimate of structural funds remains positive but insignificant, while the results for endowment differences are similar to the former models. Surprisingly, quadratic trade costs exhibit a positive and significant (5%-level) coefficient. With Eurostat migration data, changes in results are more substantial. The parameter for endowment differences becomes positive and significant at 10% which is in line with *Result 1* derived from the NEG model. Linear and quadratic trade costs do also exhibit a positive and significant coefficient. The estimate for the structural funds variable is still not significantly different from zero but has a negative sign. The latter two results correspond to the predictions of the NEG model.

Model (10) contains the results from estimating Model (9) by a median regression approach as in Model (7). Recall that outliers are not excluded, but get less weight in

the estimation. With OECD migration data, I obtain only insignificant results. The point estimates for endowment differences and the structural funds remain similar to those in Model (3), while the coefficient of linear trade costs becomes positive. With Eurostat migration data, the estimate for endowment differences and linear trade costs becomes positive and significant at the 5%-level. The structural funds parameter is still insignificant, but has a negative sign now.

To sum up, with the augmented dataset I am not able to find strong empirical support for the hypotheses derived from the NEG model proposed by Egger, Eggert and Larch (2014). More specifically, my results even contradict most of these hypotheses and this is independent of the migration data used. Net EU internal migration is not larger but smaller the bigger the population size differences between two countries (strongly supported). The second hypothesis that trade costs influence net migration in a non-linear way is weakly supported. This is also found by Egger, Eggert and Larch (2014). However, the coefficient of quadratic survey-based trade costs is negative and not positive. Most importantly, I cannot find empirical support for the hypothesis that structural funds do hamper internal European migration. With the given datasets and specification, I find that on average a one percentage point increase in structural funds in per cent of GDP fosters net bilateral migration between two EU member countries by about 0.3-0.5%.

Yet, the latter statement has to be qualified. I also restricted my dataset in several ways in order to better compare my results to the findings of Egger, Eggert and Larch (2014) and to account for specific shocks to EU internal migration such as the enlargements of the EU in 2004, 2007 and 2013, the subsequent impediments to the free mobility of people within the internal European market known as the "2+3+2" rules and the European financial crisis in 2009.[20] First, I analysed the EU-15 countries for the period 1985-2013 (a) and 1985-2004 (b). With a maximum of 878 (a) / 422 (b) OECD migration data, the effect of EU structural funds on migration remains positive, but becomes insignificant in most of the models estimated. With a maximum of 953 (a) / 618 (b) Eurostat migration data, I find a negative and mostly significant effect of regional policy on net bilateral migration by about 0.33-0.62%. However, this effect seems to be mainly driven by differences in countrysize, because in Model (4) the structural funds coefficient becomes positive and insignificant while the coefficient

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[20] I do not report the detailed results of all these estimations in this paper, but they are available from the author upon request. For EU-15 member countries and the period 1985-2013, however, see Table 2.7 and Table 2.8 on page 78 and on page 80, respectively.

of the interaction term is negative and significant in both cases (a) and (b). The latter results may indicate that the positive effect of EU structural funds on net migration I found in the previous estimations is partly driven by the three enlargements of the EU in 2004, 2007 and 2013. Second, against the background of the "2+3+2" rules, the free mobility of labour after 2004 was only in force for EU citizens of EU-15 member states. Only Ireland, the United Kingdom and Sweden allowed free mobility for citizens of new member countries after 2004. The 12 other EU member countries walled off their labour markets for a maximum of 7 years. Hence, I also obtained results for EU-12 member countries for the period 1985-2013. With OECD migration data, the coefficient for EU structural funds remains positive, but is insignificant in all ten models. With Eurostat migration data, the evidence is mixed, i.e. EU structural funds exhibit a positive and negative effect on internal EU migration. Yet, the coeffcients are never significant. Notice that the restriction of the dataset in this case left a maximum of 610 observations for OECD migration data and 675 observations for Eurostat migration data. Third, to account for EU internal migration related to the European financial crisis, I restricted the dataset to the period 1985-2008. With OECD migration data (maximum of 1009 observations), EU structural funds still exhibit a positive and mostly significant effect on migration. With Eurostat migration data (maximum of 2001 observations), evidence is again mixed, but only the positive structural funds' coefficients are significant.

All in all, the different restrictions of my datasets indicate that my initial results do not necessarily contradict the findings of Egger, Eggert and Larch (2014). Especially, the analysis for EU-15 member states, in which free mobility was always in force after a country became member of the EU, suggests that EU structural funds do indeed hamper migration in a market regime of unrestricted labour mobility.[21] This empirical result, though, is still highly dependent on the period and countries analysed as well as the migration data used.[22]

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[21] However, adding Malta and Cyprus to the estimation (EU-17), for which mobility was unrestricted immediately after entering the EU in 2004, further diminishes the negative effect of EU structural funds on migration found with the Eurostat migration data.

[22] Moreover, free bilateral movement of labour between EU-15 member states was differently regulated in the analysed period 1985-2013. For example, free movement for citizens from Finland and Sweden to Denmark (and vice versa) is already allowed since 1954, although Finland and Sweden not entered the EU until 1995. Hence, even those results should be cautiously interpreted.

2.3 A neoclassical approach to the migration-regional policy-nexus

To further investigate the question whether EU structural funds do hamper European internal migration, I estimate a neoclassical migration model in this section of the paper. This is due to two reasons.

First, Egger, Eggert and Larch (2014) build their empirical specification on a new economic geography model. The dominant paradigm in the literature to theoretically and empirically explain migration, however, is neoclassical migration theory. Moreover, the hypotheses that EU structural funds hamper (convergence-promoting) migration is usually derived within neoclassical models (see, e.g. Schmidt 2013 and Sinn and Ochel 2003). Hence, it is worthwhile to analyse the relationship between EU structural funds and migration also from a neoclassical perspective. In neoclassical theory, migration between two countries is usually explained by (economic, social, political, geographical, cultural, etc.) differences between these two entities. The decision of an individual to migrate depends on so-called "push-" and "pull-factors" in the country of origin and country of destination, such as income, (un)employment and language, which have an effect on a migrants' utility and costs of migration. Moreover, intervening impediments like legal regulations, distance between two countries, institutions and regional policy have also an effect on the utility and the costs of migration (Schmidt 2013, pp. 83-85). The potential migrant compares the utility and the costs arising from intervening impediments, push- and pull-factors at a certain point in time. As long as the utility to migrate outweighs the costs, migration from the host to the destination country takes place.[23]

Second, the conventional dependent variable in empirical neoclassical migration models is defined as a migration rate: Mig_{ijt}/Pop_{it}, i.e. as (e)migration from the origin country i to the destination country j in year t divided by the population of the origin country in year t (Faini and Venturini 1994, p. 79). In comparison to Egger, Eggert and Larch (2014), who used net migration as the dependent variable, the emigration rate has the advantage to yield much more observations which can be used to analyse the effect of EU structural funds on internal European migration.[24]

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[23]I do not further elaborate on the neoclassical theory of migration, since it has been extensively discussed in the migration literature. See, e.g., the seminal paper of Massey et al. (1993), which combines and discusses different migration theories.

[24]In Egger, Eggert and Larch (2014) net migration is calculated as the absolute difference between

2.3.1 Empirical model and data

The following empirical model basically builds on Mayda (2010), who partly estimated a similar specification. It is defined as follows:

$$
\begin{aligned}
\frac{Mig_{ijt}}{Pop_{it}} =& \beta + \beta_0 \left(\frac{pwGDP_{jt-1}}{pwGDP_{it-1}} \right) + \beta_1 pwGDP_{it-1} + \beta_2 SF_{it} + \beta_3 dist_{ij} \\
&+ \beta_4 border_{ij} + \beta_5 comlang_{ij} + \beta_6 unempl_{it-1} + \beta_7 unempl_{jt-1} \\
&+ \beta_8 vPower_{it} + \delta_i I_i + \delta_j I_j + \delta_t I_t + \epsilon_{ijt}
\end{aligned}
\tag{2.2}
$$

where the dependent variable $\frac{Mig_{ijt}}{Pop_{it}}$ is the emigration rate from origin country i to destination country j in year t (Mig_{ijt} is the inflow into country j from country i at time t, Pop_{it} is the population of the origin country at time t). As in section 2.2 above, I estimate Equation 2.2 twice with two different dependent variables, because I gathered migration data from two different sources. One source is the *"International Migration Database"* of the OECD (2016b) and the other is Eurostat (2016b).[25] Population data is taken from Eurostat (2015). For the period 1985-2013 and 28 EU member countries I theoretically have a total of $28 \cdot 27 \cdot 29 = 21924$ observations for OECD and Eurostat migration data each.[26] However, due to missing values of the dependent and independent variables, I end up with a maximum of 5070 observations for OECD migration data and 5375 for Eurostat migration data. For further details on descriptive statistics for all the variables I use in the estimations, see Table 2.3 on page 65 for OECD migration data and Table 2.10 in the appendix on page 84 for Eurostat migration data.

As a proxy for relative wages or income, respectively, I include the quotient $\frac{pwGDP_{jt-1}}{pwGDP_{it-1}}$, which is calculated by the (log) per worker GDPs in purchasing power standards (PPS) (current prices) in the destination and origin country. The term $pwGDP_{it-1}$ is the (log) per worker GDP in purchasing power standards (PPS) (current prices) in the

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two countries' bilateral immigration flows. Hence, as soon as one of these two flow values per country-pair is missing, net migration cannot be calculated, which immensely reduces the number of available observations. Using the emigration rate as the dependent variable, an observation is only "lost" when it is indeed missing.

[25] Recall that in the OECD dataset an immigrant is defined by its country of birth and its nationality, respectively. In contrast, in the Eurostat database a broader concept of immigration is employed and an immigrant is defined by its country of previous residence.

[26] The countries included are Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

origin country. The quotient as well as the level of GDP are lagged by one year.[27] I include the destination countries' relative per worker GDP and not simply its level ($pwGDP_{jt-1}$), because this yields more reliable results for the income variables in terms of the coefficients' signs (see elaborations below). This is in line with previous empirical research which found that "the linearity relationship in the wages-migration tandem does not hold and that both the degree of wage differential and the level of the country income matter" (Kureková 2011c, p. 5). Data on GDP in PPS (current prices) is taken from Eurostat (2016a). Labour force data is collected from the World Bank's *"World Development Indicators"* (World Bank 2015).

The parameter SF_{it} is the main variable of interest in this setting. It measures the amount of EU structural funds money in logs, which is transferred to the origin country in year *t*. As in section 2.2 above, data on EU structural funds have been taken from two sources. First, structrual funds payment data by member states (for 1976-2009) were kindly provided by the Directorate General for Regional Policy (DG Regio) of the EC. These data do largely correspond to the data reported in the 2008 Financial Report on the EU budget (European Commission 2009), which itself refers to the European Court of Auditors (ECA) as source of the figures. Second, regional policy payment data (for 1993-2013) have also been taken from the Excel-file on the Inforegio "data for research" webpage of the European Commission (2016). To compute the structural funds variable used in my sample, I take DG Regio data and replace missing values by the data for research. Notice that initially I do not include lagged values of SF_{it}, although the structural funds may be treated as endogenous in Equation 2.2. This is due to two reason. First, EU structural funds distribution on the member states is more or less predetermined within the Multiannual Financial Framework for the seven year planning period. Thus, migration in general should not have any influence on how much structural funds money a member country will receive, although the structural funds might be politically intended to hamper (EU internal) migration. Second, I

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[27] As Mayda (2010, pp. 1262-1263) outlines in more detail, I include lagged values of per worker GDP in order to address the (potential) problems "of reverse causality and, more in general, of endogeneity in the time series dimension of the analysis" (p. 1262). On the one hand, a negative β_1 and a positive β_0 may reflect reverse causality, i.e. immigration into a country is not only driven by income differences, but may influence the income level in a country itself. On the other hand, unobservable and omitted factors nested in the error term ϵ_{ijt} may drive contemporaneous wages and migration, which results in biased estimates. That is why, although "it is unrealistic to claim that wages at home and abroad are strictly exogenous, it is plausible to assume that they are predetermined, in the sense that immigrant inflows–and third factors in the error term–can only affect contemporaneous and future wages" (Mayda 2010, p. 1263).

address the problem of endogeneity of the structural funds variable with the help of an instrumental variable estimation in Model (7) (see also elaborations below).

The three variables $dist_{ij}$, $border_{ij}$ and $comlang_{ij}$ are taken from the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) (2011) *"GeoDist"* database, which provides several geographical variables for 225 countries. $dist_{ij}$ is the (log) great circle distance between origin and destination country. $border_{ij}$ and $comlang_{ij}$ are dummy variables which are equal to 1, if origin and destination country share a land border and if the same language is spoken in both locations, respectively.

I also control for (once-lagged) unemployment in the origin and destination country ($unempl_{it-1}$ and $unempl_{jt-1}$). Unemployment data is taken from the World Bank's *"World Development Indicators"* (World Bank 2015). In Model (7) presented in the following results section, I also address the potential endogeneity of the structural funds

Table 2.3: Descriptive statistics OECD migration data

Variables	Obs.	Mean	Std. dev.	Minimum	Maximum
Emigration rate of country i to country j OECD, $(\frac{Mig_{ijt}}{Pop_{it}})$	5070	18.7516	62.1513	0.0000	1284.603
(a) Relative log per worker GDP (destination to origin country), $(\frac{pwGDP_{jt-1}}{pwGDP_{it-1}})$	5070	13.9407	0.5220	12.1498	16.1277
(b) Log per worker GDP (origin country), $(pwGDP_{it-1})$	5070	-3.1426	0.3709	-4.5385	-1.8840
(c) Log structural funds expenditure (origin country), (SF_{it})	5070	19.7712	2.8732	5.3962	23.0713
(d) Log distance, $(dist_{ij})$	5070	6.9290	0.6855	4.0879	8.1206
(e) Land border, $(border_{ij})$	5070	0.1509	0.3580	0	1
(f) Common language, $(comlang_{ij})$	5070	0.0637	0.2443	0	1
(g) Unemployment rate (destination country), $(unempl_{jt})$	4931	8.1651	3.8518	1.8000	24.8000
(h) Unemployment rate (origin country), $(unempl_{it})$	4916	8.5510	3.9757	1.8000	24.8000
(i) Log structural funds expenditure (origin country) alternative, (SF_{it})	5070	19.8922	1.9666	7.0632	23.0713
(j) SSI (origin country), $(vPower_{it})$	4822	4.7369	3.3126	0.8200	17.3800
(k) NBI (origin country), $(vPower_{it})$	4822	4.7115	2.9854	0.9400	15.7700
(l) NUCL (origin country), $(vPower_{it})$	4822	4.7249	3.2231	0.0000	25.0000
(m) population (destination)	5070	25107028	25598353	411600	82500849
(n) population (origin)	5070	21349341	24402211	402668	82500849

variable in Equation 2.2. To do this, I use instrumental variable (IV) estimation. As already outlined in the introduction of the paper, I employ a priori voting power indices, such as the Shapley-Shubik index (SSI), the Banzhaf index (NBI) and the Nucleolus (NUCL), for the origin country ($vPower_{it}$) as IVs. Since I also want to mitigate concerns about weak instruments, in Model (8) I also estimate the reduced form equation of Model (7), which is why the term $vPower_{it}$ also appears in Specification (2). Data on the SSI and NBI are taken from Antonakakis, Badinger and Reuter (2014, pp. 15-16), while data on the NUCL is collected from Garcia-Valiña, Zaporozhets and Kurz (2015, pp. 27-28).

Finally, I also introduce origin and destination countries' (I_i and I_j) as well as year fixed effects (I_t). The former account for time-invariant effects such as culture and geographical characteristics of the countries, while the latter absorb common shocks to EU internal migration such as changes in the legislature as a result of the introduction of the single European market and the Euro. According to neoclassical migration theory, I expect that $\beta_0 \geq 0$, $\beta_1 \leq 0$, $\beta_2 \leq 0$, $\beta_3 \leq 0$, $\beta_4 \geq 0$, $\beta_5 \geq 0$, $\beta_6 \geq 0$ and $\beta_7 \leq 0$.

2.3.2 Results

Table 2.4 on the next page presents the results from the estimation of Equation 2.2 using OECD migration data. The results for Eurostat migration data are reported in Table 2.9 on page 82 in the appendix.

The simplest regression that only involves the relative income gap between the two countries j and i, the income level of the origin country as well as EU structural funds is reported in Model (1). With OECD migration data the corresponding results indicate that the relative income gap and the structural funds matter on average. However, both coefficients show an unexpected sign. For instance, a 10% increase in the relative income gap between two countries reduces the emigration rate by 2.9 emigrants per 100,000 individuals of the origin countries' population. The parameter is significantly different from zero at the 1%-level. This may imply a hump-shaped relationship between income and migration (Kureková 2011c, p. 5). The lower the relative income in the origin country relative to the destination country the lesser it may be affordable for potential migrants to move to the economically more advanced country. In terms of the structural funds variable, the results show that EU regional policy does not hamper but foster internal European migration. On average, a 10% increase in EU structural transfer payments increases the emigration rate by 0.13 emigrants per 100,000 individuals of the origin countries' population. The parameter is

Table 2.4: Determinants of bilateral immigrant flows for 1985-2013 across EU-28 member countries (OECD)

Explanatory variables	(1) β	(1) std	(2) β	(2) std	(3) β	(3) std	(4) β	(4) std	(5) β	(5) std
(a) Relative log per worker GDP (destination to origin country)	-29.05	9.04***	-35.25	9.24***	-72.10	9.72***	-71.15	9.65***	-40.90	6.48***
(b) Log per worker GDP (origin country)	-32.60	21.48	-37.73	21.57 *	-62.49	22.68***	-19.42	14.18	-47.94	10.32***
(c) Log structural funds expenditure (origin country)	1.28	0.56 **	1.23	0.55 **	1.60	0.64 **	—	—	0.56	0.32 *
(d) Log distance	—	—	-8.86	3.12***	-8.95	3.19***	-9.39	3.01***	-5.47	1.86***
(e) Land border	—	—	0.53	3.98	-0.52	4.45	-0.93	4.29	2.40	2.61
(f) Common language	—	—	16.81	3.53***	17.74	3.66***	18.16	3.64***	14.24	2.64***
(g) Unemployment rate (destination country)	—	—	—	—	-2.94	0.53***	-3.04	0.53***	-1.00	0.25***
(h) Unemployment rate (origin country)	—	—	—	—	1.33	0.34***	1.28	0.33***	0.47	0.21 **
(i) Log structural funds expenditure (origin country) alternative	—	—	—	—	—	—	0.63	0.58	—	—
R^2	0.3203		0.3321		0.3466		0.3437		0.4461	
Estimation Approach	FE		FE		FE		FE		FE	
Country FE (p-value of F-test)	0.0000		0.0000		0.0000		0.0000		0.0000	
Time FE (p-value of F-test)	0.0004		0.0000		0.0000		0.0002		0.0000	
Observations	5070		5070		4777		4943		4732	

Notes: Dependent variable is the emigration rate of origin country i to destination country j in year t. The emigration rate is defined as the immigrant inflow from origin to destination country [multiplied by 100,000] divided by origin country's population. Thus, it gives the number of incoming immigrants per 100,000 individuals in the origin country's population. Immigration data are taken from OECD (2016b). The explanatory variables are described in detail in section 4.1. Reported standard errors are robust to heteroskedasticity. The constant and the fixed effects (FE) are not reported for the sake of brevity. *, **, *** indicates that coefficients are significant at 10%, 5% and 1%, respectively. (4) as Model (3) but using an alternative measure for EU structural funds. (5) as Model (3) but excluding influential observations according to Hadi (1992). For the countries included in the estimation, see footnote 26.

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Table 2.4 continued...

Explanatory variables	(6) β	(6) std	(7) β	(7) std	(8) β	(8) std	(9) β	(9) std	(10) β	(10) std
(a) Relative log per worker GDP (destination to origin country)	-3.49	0.75***	-69.58	9.88***	-69.91	9.91***	-72.10	17.64***	-21.30	6.98***
(b) Log per worker GDP (origin country)	-4.62	1.47***	-36.64	32.27	-76.43	33.59 **	-62.49	23.60***	2.03	17.12
(c) Log structural funds expenditure (origin country)	0.26	0.05***	-9.77	9.02	—	—	1.60	0.61***	1.70	0.58***
(d) Log distance	-1.05	0.19***	-8.42	3.40 **	-8.53	3.41 **	-8.95	8.90	-3.46	0.06***
(e) Land border	0.92	0.24***	0.09	4.63	-0.05	4.65	-0.52	13.02	17.05	14.21
(f) Common language	4.91	1.18***	18.05	3.66***	18.04	3.69***	17.74	11.05	32.35	30.24
(g) Unemployment rate (destination country)	-0.01	0.02	-2.59	0.51***	-2.59	0.52***	-2.94	0.74***	-2.52	0.35***
(h) Unemployment rate (origin country)	0.08	0.02***	1.28	0.34***	1.23	0.34***	1.33	0.40***	1.23	0.21***
(j) SSI (origin country)	—	—	—	—	1.97	1.81	—	—	—	—
R^2	0.2724		0.3336		0.3422		0.3466		0.7866	
Estimation Approach	FE		FE		FE		FE		FE	
Country FE (p-value of F-test)	0.0000		0.0000		0.0000		0.0000		0.0000	
Time FE (p-value of F-test)	0.0000		0.0002		0.0053		0.0006		0.0088	
Observations	4777		4563		4563		4777		4777	

Notes: Dependent variable is the emigration rate of origin country i to destination country j in year t. The emigration rate is defined as the immigrant inflow from origin to destination country [multiplied by 100,000] divided by origin country's population. Thus, it gives the number of incoming immigrants per 100,000 individuals in the origin country's population. Immigration data are taken from OECD (2016b). The explanatory variables are described in detail in section 3.1. Reported standard errors are robust to heteroskedasticity. The constant and the fixed effects (FE) are not reported for the sake of brevity. *, **, *** indicates that coefficients are significant at 10%, 5% and 1%, respectively. Model (6) contains estimates for estimating Model (3) by least absolute deviations (median regression). Model (7) as Model (3) but including instrumented log structural funds expenditures in the origin country. The Durbin-Wu-Hausman χ^2-statistic of testing the exogeneity of structural funds yields a *p*-value of 0.1501. Instruments are the variables included in Model (8). Sargan's test of over-identifying restrictions cannot be reported, since the model is exactly identified. The *F*-statistic of testing the relevance of the instrument exhibits a *p*-value of 0.0000. Model (8) shows the result from estimating the reduced-form version of Model (7). Model (9) [(10)] contains the results from estimating Model (3) with standard errors clustered by country-pairs [with country-pair fixed effects instead of individual country fixed effects]. For the countries included in the estimation, see footnote 26.

statistically significant at the 5%-level. With Eurostat migration data, the results are similar to the OECD results. The sign of the income level of the origin country is also negative as expected. Beyond that, however, it is significantly different from zero at the 1%-level.

In Model (2) and (3), I add additional control variables. Controlling for the distance between two countries, a common border and a common language in Model (2), the results in terms of the parameter estimates for the variables of Model (1) remain almost the same.[28] The only exception is that the income level of the origin country becomes significant at 10% with OECD migration data and that the level of statistical significance of the structural funds variable rises to the 5%-level with Eurostat migration data. Adding once-lagged unemployment rates in the origin and destination country to the regression, the coefficients of both variables are significantly different from zero at 1% and show the expected sign. This holds true for OECD and Eurostat migration data. Accordingly, on average, an increase in the destination countries' unemployment rate reduces emigration from the origin country, while an increase in the origin countries' unemployment rate spurs out-migration from the origin country.

In Model (4), I replace the structural funds variable by an alternative measure. Instead of using the combination of payment data from the 2008 Financial Report on the EU budget (European Commission 2009) and filling missing values with Inforegio's "data for research" (European Commission 2016), I employ the inverted combination of the two data sources. With both types of migration data, it becomes clear that the results on the effect of EU structural funds on migration do heavily depend on the data used in the regression. The obtained parameter estimates for the alternative measure of EU structural funds are both insignificant. This has to be kept in mind and the obtained results should therefore be taken with a pinch of salt.

In Model (5) and (6), I continue with robustness checks and test whether the results of the former estimations are driven by influential observations and outliers, respectively. Model (5) excludes outliers following a procedure proposed by Hadi (1992) for multivariate models. Hence, the number of observations decreases. In Model (6), I estimate Model (3) using median regression, i.e. influential observations of the dependent variable are not dropped but given less weight. Taken the results of Model (5) and (6) together, I may conclude that my original findings are not driven by outliers.

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[28] With OECD as well as Eurostat migration data, the parameter estimates of Model (2) are not significantly different from those of Model (1). The 95% confidence intervals of the respective parameters are overlapping between the two models.

With OECD as well as Eurostat migration data, the results of Model (3), though the parameter estimates of all variables are smaller in absolute value in Model (5) and (6), remain stable.

Next, I address the potential endogeneity of the structural funds variable in Equation 2.2. Since EU structural funds intervene in the political, economic, social, cultural as well as natural and ecological environment of potential migrants, I hypothesise that they also indirectly affect migration flows through these factors (still partly) nested in the error term. As already mentioned in the introduction to this paper, I employ different a priori voting power indices as identifying instrument in Model (7) to account for the issue of endogeneity. However, I only report the results for the Shapley-Shubik index, which is the most common voting power index employed in distributive contexts such as EU regional policy (Garcia-Valiña, Zaporozhets and Kurz 2015, p. 6). Interestingly, with OECD and Eurostat migration data the instrumental variable estimation in Model (7) yields a comparatively large negative parameter estimate of structural funds expenditures on migration (-9.77 with OECD data and -18.38 with Eurostat data). This implies that a 10% increase in EU regional policy transfer payments to the origin country reduces this countries' emigration by about 1.0 or 1.8 emigrants per 100,000 individuals of the origin countries' population. Recall that this effect can be interpreted as a local average treatment effect ("LATE"), i.e. this result is only valid for those countries which received EU structural funds due to their power in the European Council of Ministers. At the same time, this implies that a positive relationship between migration and EU regional policy is valid for those countries which received structural funds money due to "other factors" than political power in the CM. As already elucidated in the introduction, those "other factors" are usually located in the "economic needs" of EU member states in the literature (see, e.g., Kauppi and Widgrén 2004). This is an interesting result which may indicates that EU structural funds money ends up in the wrong channels, provided that it is politically intended to hamper migration from comparatively poorer to richer EU member states.[29]

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[29] Another explanation for the detected negative effect in Model (7) can be the fact that EU member countries are contained in the sample, which entered the EU during the analysed observation period. Those countries not only become eligible for structural funds payments for the first time when they enter the EU, but their citizens can also freely migrate to another EU member country (besides the exceptions enacted with the "2+3+2" rules). I included several different dummy variables ("first year in the EU after 1985", "first five years in the EU after 1985", dummies for the number of EU member countries: "EU-12", "EU-15", "EU-25", "EU-27") to account for this explanation. However, the results remain unchanged so as to conclude, at least provisionally, that political power may drive the negative parameter estimate of EU structural funds.

With OECD and Eurostat migration data, the F-statistic of testing the relevance of the instrument in the first-stage regression exhibits a p-value of 0.0000. Notice, however, that given the chosen specification, the exogeneity of EU structural funds can only be rejected with Eurostat migration data by means of a Durbin-Wu-Hausman $\mathcal{X}^2$-test at a p-value of 0.0330. Since the model is exactly identified, Sargan's test of over-identifying restrictions cannot be reported. Nevertheless, I would argue that a priori voting power indices are exogenous and do only indirectly affect migration through EU structural funds, since they are derived "from abstract game theoretical considerations that are by no means related to [EU internal migration, P.S.] " (Kauppi and Widgrén 2007, p. 698). To mitigate concerns about a weak instrument, in Model (8) I also estimate a reduced form of Model (7) substituting the structural funds variable by the employed instrumental variable. Only with OECD data, the parameter estimate of the SSI variable of the origin country is insignificant, which indicates that the instrument is either too weak or the effect of interest is absent.[30] With Eurostat migration data, concerns about SSI being a weak instrument can be declined.

In Model (9), I estimate the same specification as in Model (3), but employ cluster-robust standard errors clustered by country-pairs instead of just using standard errors robust to heteroskedasticity. As Stock and Watson (2008) show, in fixed-effects regression, conventional heteroskedasticity-robust standard errors are inconsistent if the number of time periods is fixed. Standard errors are too small and can lead to over-rejection of standard Wald tests, i.e. the parameter estimates can become significant too fast. The results in Model (9), however, are mixed. With OECD migration data, the two parameters for distance and common language indeed become insignificant. The significance levels for all the other parameters remain the same and for EU structural funds the level of significance even increases from 5% to 1%. With Eurostat migration data, only the parameter estimate for distance becomes insignificant. Moreover, the significance levels of the unemployment rate in the destination and origin country decline. All other estimates do not change their level of significance. Taken together, I would conclude that the positive relationship between EU structural funds expenditures and migration found in the former models is robust.

In the final Model (10), I substitute individual country fixed effects by country-pair fixed effects for each combination of origin and destination country. In this way, I can account for time-invariant aspects attached to specific combinations of two countries

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[30] This was already indicated in Model (7) by the usual test statistics (Kleibergen-Paap Wald rk stats, Anderson-Rubin Wald tests, etc.) reported by *ivreg2* in Stata.

such as the destination country's immigration policy which is specific for each origin
country (Mayda 2010, p. 1266). With OECD migration data, the results of the original
Model (3) remain stable. The effect of EU structural funds even increases to a highly
significant parameter estimate of 1.7. The same holds true with Eurostat migration
data. However, in the latter case the estimate of the common language variable heavily
increases, indicating that a common language spoken in the two countries is a major
determinant of migration between them.

To sum up the results of subsection 2.3.2, also the neoclassical migration model
substantiates that EU structural funds have a positive effect on EU internal migration
across EU-28 member countries. On average, a ten percent increase in structural
funds expenditures leads to an increase in the measure of bilateral migration by about
0.026-0.17 (OECD) [0.015-0.11(Eurostat)] emigrants per 100,000 individuals in the
origin country's population.[31] Evaluated at the respective mean of the origin countries'
population in the sample, this translates into the finding that 6-36 (OECD) [3-23
(Eurostat)] emigrants per year are incentivised to emigrate due to EU structural funds
expenditures. Given that many different factors do influence the decision to migrate, I
would conclude that this is a fairly sizeable yearly effect.

Considering the results for the other explanatory variables of Equation 2.2, the
parameter estimates do usually show the expected signs and the relevant variables
of the neoclassical migration model are also highly significant (unemployment rates,
distance, language, income level in the origin country). Whether two countries share a
common land border or not, seems not to influence bilateral migration between them.
The negative coefficients for the relative income between the origin and destination
country are unexpected. However, this finding could also be in line with the hypothesis
of a hump-shaped relationship between income and migration (Kureková 2011c, p. 5).
Accordingly, migration is an increasing function of the income in the origin country.
Since I do not find this relationship in the data, because the estimate of the origin
country's income mostly yield a negative sign, this issue might need to be considered
from the other side of the coin. The lower the relative income in the origin country
relative to the destination country the lesser it may be affordable for potential migrants
to move to the economically more advanced country.

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[31]I also restricted my two samples to EU-15 member states for the period 1985-2013. The obtained
results are mixed, but I mostly find negative parameter estimates for the structural funds variable.
However, almost all the estimates are insignificant.

2.4 Conclusion

This paper tests the hypothesis that EU structural funds payments do hamper internal migration across the EU. The only empirical paper analysing this issue until today is Egger, Eggert and Larch (2014). This paper is replicated for EU-15 member countries and the time period 1985-2004. The obtained result that EU structural funds expenditures do hamper internal migration in the EU could be basically confirmed. Moreover, the specification of Egger, Eggert and Larch (2014) is extended to 27 EU member countries for the period 1985-2013 using migration data from two different sources. Contrary to these authors, with OECD as well as Eurostat migration data a stable and significant positive effect of EU regional policy transfer payments on net bilateral migration across EU member countries is obtained. This was done with the same empirical specification, which Egger, Eggert and Larch have derived from a new economic geography model.

Estimating a rather neoclassical migration model in the second part of the paper confirms the positive results obtained for the migration and structural funds nexus. However, this does not mean that the results of this article do necessarily contradict the findings of Egger, Eggert and Larch (2014). They rather complement them in the sense that the overall empirical evidence on the migration and regional policy nexus is not unambiguous.

As the paper also shows, whether one finds a positive or negative relationship between EU structural funds does heavily depend on the estimated empirical specification, on the migration and structural funds data used as well as the analysed period and number of EU member countries included in the estimation. In several cases, for example, a negative relationship between migration and EU regional policy could be identified for EU-15 member countries. This may indicates that the eastern enlargement of the EU is the reason for the change in the sign of the investigated relationship between EU transfer payments and migration.

Beyond that, other authors argue "that pro-mobility policies and the rise of non-labour migration have countered the diminishing appeal of intra-EU mobility that might be expected on the basis of purely economic conditions" (Recchi 2008, abstract). Hence, the outcomes of this paper would imply that EU structural funds spending is not large enough to counter the mobility induced by these policies and non-labour market effects on migration. Further research in this direction as well as on more disaggregated

NUTS[32] levels is needed to answer these question. Until then, the results of this paper indicate that the current regime of EU structural funds foster instead of hamper EU internal migration. In light of Egger, Eggert and Larch (2014), however, the provisional quintessence must be that the overall empirical evidence on the migration and EU structrual funds nexus in not unambiguous.

Acknowledgements

Appendix

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[32] NUTS stands for the "Nomenclature of Territorial Units for Statistics". It is a geocode standard for referencing the subdivisions of countries and regions in the member states of the EU developed and regulated by the European Union.

A.1

Table 2.5: Reestimation of Egger, Eggert and Larch (2014) for 1985-2013 across 25 EU member countries (Eurostat)

Explanatory variables	(1) β	(1) std	(2) β	(2) std	(3) β	(3) std	(4) β	(4) std	(5) β	(5) std	(6) β	(6) std
(a) Absolute difference in labour endowments: $\|\ln L_{it} - \ln L_{jt}\|$	-0.0052	0.0322	-0.0052	0.0322	-0.0199	0.0332	0.0049	0.0444	-0.0242	0.0347	-0.0116	0.0284
(b) Bilateral distance as a proxy for trade costs: $\ln \text{dist}_{ij}$	-0.0355	0.0377	-0.0170	0.0569	-0.0337	0.0626	-0.0411	0.0631	—	—	-0.0275	0.0594
(c) Squared demeaned trade costs: $[\ln \text{dist}_{ij} - \text{mean}(\ln \text{dist}_{ij})]^2$	—	—	0.0121	0.0289	0.0070	0.0299	0.0055	0.0300	—	—	0.0198	0.0282
(d) Structural funds expenditures as % of GDP in countries i and j	—	—	—	—	0.3347	0.0955***	0.4413	0.1427***	-0.0064	0.1502	0.4501	0.0797***
(e) Interaction with $\|\ln L_{it} - \ln L_{jt}\|$	—	—	—	—	—	—	-0.0898	0.1093	—	—	—	—
(f) Linear trade costs WEF	—	—	—	—	—	—	—	—	-0.3317	0.4832	—	—
(g) Quadratic trade costs WEF	—	—	—	—	—	—	—	—	-0.0001	0.0000**	—	—
R^2	0.4844		0.4844		0.4903		0.4907		0.5128		0.5725	
Estimation Approach	FE		FE		FE		FE		FE		FE	
Country FE (p-value of F-test)	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000	
Time FE (p-value of F-test)	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000	
Observations (country pairs across years)	2410		2410		2215		2215		1496		2162	

Notes: Dependent variable is net bilateral migration between countries i and j in year t. Net bilateral migration is defined as absolute difference of log immigration of i (from j) and log immigration of j (from i). Immigration data are taken from Eurostat (2016b). Reported standard errors are robust to heteroskedasticity. Fixed effects (FE) are not reported for the sake of brevity. *, **, *** indicates that coefficients are significant at 10%, 5% and 1%, respectively. (5) as Model (3) but using a survey-based annual trade cost index (in logs) from World Economic Forum (WEF) for trade costs instead of log distance. (6) as Model (3) but excluding influential observations according to Hadi (1992). For the countries included in the estimation, see footnote 17.

Table 2.5 continued...

Explanatory variables	(7) β	(7) std	(8) β	(8) std	(9) β	(9) std	(10) β	(10) std
(a) Absolute difference in labour endowments: $\lvert \ln L_{it} - \ln L_{jt} \rvert$	-0.0094	0.0380	0.0094	0.0516	0.1570	0.0871 *	0.1212	0.1321
(b) Bilateral distance as a proxy for trade costs: $\ln dist_{ij}$	0.0420	0.0860	0.3186	0.1358**	0.2239	0.0691***	0.2595	0.1087***
(c) Squared demeaned trade costs: $[\ln dist_{ij} - mean(\ln dist_{ij})]^2$	0.0188	0.0410	0.0762	0.0578	0.0664	0.0287 **	0.0813	0.0410**
(d) Structural funds expenditures as % of GDP in countries i and j	0.2875	0.0798***	0.0235	0.2248	-0.0102	0.1574	-0.0365	0.2144
(h) Once-lagged net FDI inflows between i and j	—	—	0.0137	0.0727	—	—	—	—
(i) Log capital-labour ratio of countries i and j in t	—	—	—	—	0.3443	0.2458	0.0378	0.5246
(j) Absolute difference in log capital-labour ratio of countries i and j in t	—	—	—	—	0.5540	0.3105 *	0.5885	0.6048
(k) Absolute difference in endowment with workers of at least secondary schooling of countries i and j in t	—	—	—	—	-0.0062	0.0037 *	-0.0045	0.0055
(l) Log investment costs of countries i and j in t	—	—	—	—	0.8792	0.2785***	0.8298	0.4130**
(m) Absolute log difference in investment costs of countries i and j in t	—	—	—	—	0.1952	0.1054 *	0.1940	0.1656
R^2	0.4588		0.8010		0.7586		0.5485	
Estimation Approach	FE		FE		FE		FE	
Country FE (p-value of F-test)	0.0000		0.0000		0.0000		0.0000	
Time FE (p-value of F-test)	0.0000		0.0091		0.0000		0.2316	
Observations (country pairs across years)	2215		1016		930		1016	

Notes: Dependent variable is net bilateral migration between countries i and j in year t. Net bilateral migration is defined as absolute difference of log immigration of i (from j) and log immigration of j (from i). Immigration data are taken from Eurostat (2016b). Reported standard errors are robust to heteroskedasticity. Fixed effects (FE) are not reported for the sake of brevity. *, **, *** indicates that coefficients are significant at 10%, 5% and 1%, respectively. Model (7) contains estimates for estimating Model (3) by least absolute deviations (median regression). Model (8) as Model (3) but including instrumented, once-lagged net foreign direct investment inflows. Instruments are the variables included in Models (9) and (10). The Hausman-Wu F-statistic of testing the exogeneity of FDIs yields a p-value of 0.9160. The instruments do not pass Sargan's test of over-identifying restrictions at a p-value of 0.0413. The F-statistic of testing the joint relevance of the instruments exhibits a p-value of 0.3675. Model (9) shows the result from estimating the reduced-form version of Model (8) but excluding influential observations according to Hadi (1992). Model (10) contains the results from estimating Model (9) by least absolute deviations (median regression).

A.2

Table 2.6: Descriptive statistics Eurostat migration data

Variables	Obs.	Mean	Std. dev.	Minimum	Maximum
Absolute net log migration from i to j Eurostat, (Mig_{ijt})	2410	1.4425	1.2398	0.0000	7.0978
(a) Absolute difference in labour endowments: $\lvert \ln L_{it} - \ln L_{jt} \rvert$, ($EndowDiff_{ijt}$)	2410	1.4579	1.0732	0.0004	5.2007
(b) Bilateral distance as a proxy for trade costs: $\ln \text{dist}_{ij}$, (TC_{ijt})	2410	6.9467	0.7274	4.0879	8.2108
(c) Squared demeaned trade costs: $[\ln \text{dist}_{ij} - \text{mean}(\ln \text{dist}_{ij})]^2$, ($TCsquared_{ijt}$)	2410	0.5444	1.1517	0.0000	8.8995
(d) Structural funds expenditures as % of GDP in countries i and j, ($SfGDP_{ijt}$)	2215	0.2361	0.3308	0.0000	4.1487
(e) Interaction with $\lvert \ln L_{it} - \ln L_{jt} \rvert$, ($EndowDiffSfGDP_{ijt}$)	2215	0.3723	0.5867	0.0000	6.0094
(f) Linear trade costs WEF, (TC_{ijt})	1669	3.1862	0.3235	1.7422	3.8748
(g) Quadratic trade costs WEF, ($TCsquared_{ijt}$)	1669	1326469	3644.426	1316160	1337376
(h) Once-lagged net FDI inflows between i and j, (FDI_{ijt-1})	2410	0.7496	3.7439	-19.1946	67.4534
(i) Log capital-labour ratio of countries i and j in t, (CL_{ijt})	1951	23.6264	0.2907	22.2385	24.8513
(j) Absolute difference in log capital-labour ratio of countries i and j in t, ($ADCL_{ijt}$)	1951	0.0346	0.1544	0.0000	1.3965
(k) Absolute difference in endowment with workers of at least secondary schooling of countries i and j in t, ($ADEWSS_{ijt}$)	1982	2424089	2390115	1327.443	8212937
(l) Log investment costs of countries i and j in t, (IvC_{ijt})	1669	3.6355	0.2183	2.8623	4.0804
(m) Absolute log difference in investment costs of countries i and j in t, ($ADIvC_{ijt}$)	1669	0.2839	0.2112	0.0000	1.3055

A.3

Table 2.7: Reestimation of Egger, Eggert and Larch (2014) for 1985-2013 across EU-15 member countries (OECD)

Explanatory variables	(1) β	(1) std	(2) β	(2) std	(3) β	(3) std	(4) β	(4) std	(5) β	(5) std	(6) β	(6) std
(a) Absolute difference in labour endowments: $|\ln L_{it} - \ln L_{jt}|$	-0.2656	0.0403***	-0.2896	0.0416***	-0.2952	0.0417***	-0.2324	0.0412***	-0.2234	0.0414***	-0.2943	0.0329***
(b) Bilateral distance as a proxy for trade costs: $\ln dist_{ij}$	0.3090	0.1215**	0.5403	0.1481***	0.4951	0.1479***	0.4758	0.1472***	—	—	0.7041	0.1297***
(c) Squared demeaned trade costs: $[\ln dist_{ij} - \text{mean}(\ln dist_{ij})]^2$	—	—	0.3669	0.1121***	0.3597	0.1123***	0.3775	0.1144***	—	—	0.6783	0.0935***
(d) Structural funds expenditures as % of GDP in countries i and j	—	—	—	—	0.1456	0.2162	0.7518	0.3253 **	0.3332	0.2397	0.1720	0.1817
(e) Interaction with $|\ln L_{it} - \ln L_{jt}|$	—	—	—	—	—	—	-0.2834	0.1089***	—	—	—	—
(f) Linear trade costs WEF	—	—	—	—	—	—	—	—	-1.1436	0.6719 *	—	—
(g) Quadratic trade costs WEF	—	—	—	—	—	—	—	—	-0.0001	0.0001 *	—	—
R^2	0.5189		0.5245		0.5255		0.5287		0.4977		0.6629	
Estimation Approach	FE		FE		FE		FE		FE		FE	
Country FE (p-value of F-test)	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000	
Time FE (p-value of F-test)	0.0000		0.0000		0.0000		0.0000		0.0070		0.1451	
Observations (country pairs across years)	882		882		878		878		828		804	

Notes: Dependent variable is net bilateral migration between countries i and j in year t. Net bilateral migration is defined as absolute difference of log immigration of i (from j) and log immigration of j (from i). Immigration data are taken from OECD (2016b). Reported standard errors are robust to heteroskedasticity. Fixed effects (FE) are not reported for the sake of brevity. *, **, *** indicates that coefficients are significant at 10%, 5% and 1%, respectively. (5) as Model (3) but using a survey-based annual trade cost index (in logs) from World Economic Forum (WEF) for trade costs instead of log distance. (6) as Model (3) but excluding influential observations according to Hadi (1992). For the countries included in the estimation, see footnote 16 (missing EU-15 countries: France).

Table 2.7 continued...

Explanatory variables	(7) β	(7) std	(8) β	(8) std	(9) β	(9) std	(10) β	(10) std
(a) Absolute difference in labour endowments: $|\ln L_{it} - \ln L_{jt}|$	-0.3060	0.0545***	-0.2724	0.0580***	-0.5934	0.1506***	-0.6790	0.2993 **
(b) Bilateral distance as a proxy for trade costs: $\ln \text{dist}_{ij}|\text{dist}$	0.8843	0.1923***	0.5557	0.2619 **	1.0439	0.1530***	1.0792	0.2520***
(c) Squared demeaned trade costs: $[\ln \text{dist}_{ij} - \text{mean}(\ln \text{dist}_{ij})]^2$	0.6899	0.1489***	0.3684	0.1682 **	0.7723	0.1189***	0.7454	0.2608***
(d) Structural funds expenditures as % of GDP in countries i and j	0.3000	0.2878	0.3583	0.3608	0.1824	0.2279	0.4450	0.4343
(h) Once-lagged net FDI inflows between i and j	—	—	0.0158	0.0531	—	—	—	—
(i) Log capital-labour ratio of countries i and j in t	—	—	—	—	0.3001	0.2565	0.7250	0.4203 *
(j) Absolute difference in log capital-labour ratio of countries i and j in t	—	—	—	—	-0.4524	0.3700	-0.7318	0.6676
(k) Absolute difference in endowment with workers of at least secondary schooling of countries i and j in t	—	—	—	—	0.0123	0.0060 **	0.0017	0.0011
(l) Log investment costs of countries i and j in t	—	—	—	—	-0.7065	0.3637 *	-0.5312	0.5106
(m) Absolute log difference in investment costs of countries i and j in t	—	—	—	—	-0.0600	0.1688	-0.0280	0.3339
R^2	0.4926		0.4880		0.7375		0.4682	
Estimation Approach	FE		FE		FE		FE	
Country FE (p-value of F-test)	0.0000		0.0000		0.0000		0.0000	
Time FE (p-value of F-test)	0.1367		0.0005		0.7378		0.2693	
Observations (country pairs across years)	878		564		465		564	

Notes: Dependent variable is net bilateral migration between countries i and j in year t. Net bilateral migration is defined as absolute difference of log immigration of i (from j) and log immigration of j (from i). Immigration data are taken from OECD (2016b). Reported standard errors are robust to heteroskedasticity. Fixed effects (FE) are not reported for the sake of brevity. *, **, *** indicates that coefficients are significant at 10%, 5% and 1%, respectively. Model (7) contains estimates for estimating Model (3) by least absolute deviations (median regression). Model (8) as Model (3) but including instrumented, once-lagged net foreign direct investment inflows. Instruments are the variables included in Models (9) and (10). The Hausman-Wu F-statistic of testing the exogeneity of FDIs yields a p-value of 0.7740. The instruments do not pass Sargan's test of over-identifying restrictions at a p-value of 0.0633. The F-statistic of testing the joint relevance of the instruments exhibits a p-value of 0.2122. Model (9) shows the result from estimating the reduced-form version of Model (8) but excluding influential observations according to Hadi (1992). Model (10) contains the results from estimating Model (9) by least absolute deviations (median regression). For the countries included in the estimation, see footnote 16 (missing EU-15 countries: France).

A.4

Table 2.8: Reestimation of Egger, Eggert and Larch (2014) for 1985-2013 across EU-15 member countries (Eurostat)

Explanatory variables	(1) β	(1) std	(2) β	(2) std	(3) β	(3) std	(4) β	(4) std	(5) β	(5) std	(6) β	(6) std
(a) Absolute difference in labour endowments: $\|\ln L_{it} - \ln L_{jt}\|$	0.0876	0.0289***	0.0785	0.0297***	0.0681	0.0344**	0.1530	0.0435***	0.1185	0.0325***	0.0839	0.0249***
(b) Bilateral distance as a proxy for trade costs: $\ln dist_{ij}$	0.3479	0.0599***	0.3754	0.0629***	0.4847	0.0778***	0.4703	0.0769***	—	—	0.3463	0.0569***
(c) Squared demeaned trade costs: $[\ln dist_{ij} - mean(\ln dist_{ij})]^2$	—	—	0.0929	0.0788	0.1711	0.0857**	0.1671	0.0860*	—	—	0.1425	0.0678**
(d) Structural funds expenditures as % of GDP in countries i and j	—	—	—	—	-0.6150	0.1745***	0.3006	0.3078	-0.4159	0.1820**	-0.5146	0.1377***
(e) Interaction with $\|\ln L_{it} - \ln L_{jt}\|$	—	—	—	—	—	—	-0.4424	0.1555***	—	—	—	—
(f) Linear trade costs WEF	—	—	—	—	—	—	—	—	-1.8346	0.4514***	—	—
(g) Quadratic trade costs WEF	—	—	—	—	—	—	—	—	-0.0002	0.0000***	—	—
R^2	0.4077		0.4083		0.4689		0.4782		0.4222		0.5300	
Estimation Approach	FE		FE		FE		FE		FE		FE	
Country FE (p-value of F-test)	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000	
Time FE (p-value of F-test)	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000	
Observations (country pairs across years)	1126		1126		953		953		937		890	

Notes: Dependent variable is net bilateral migration between countries i and j in year t. Net bilateral migration is defined as absolute difference of log immigration of i (from j) and log immigration of j (from i). Immigration data are taken from Eurostat (2016b). Reported standard errors are robust to heteroskedasticity. Fixed effects (FE) are not reported for the sake of brevity. *, **, *** indicates that coefficients are significant at 10%, 5% and 1%, respectively. (5) as Model (3) but using a survey-based annual trade cost index (in logs) from World Economic Forum (WEF) for trade costs instead of log distance. (6) as Model (3) but excluding influential observations according to Hadi (1992). For the countries included in the estimation, see footnote 17 (missing EU-15 countries: France).

Table 2.8 continued...

Explanatory variables	(7) β	(7) std		(8) β	(8) std		(9) β	(9) std		(10) β	(10) std	
(a) Absolute difference in labour endowments: $|\ln L_{it} - \ln L_{jt}|$	0.0774	0.0425	*	0.0709	0.0415	*	0.2781	0.0708	***	0.3427	0.0952	***
(b) Bilateral distance as a proxy for trade costs: $\ln \text{dist}_{ij}$	0.3249	0.0852	***	0.4889	0.1008	***	0.3150	0.0756	***	0.3398	0.1076	***
(c) Squared demeaned trade costs: $[\ln \text{dist}_{ij} - \text{mean}(\ln \text{dist}_{ij})]^2$	0.1324	0.1512		0.1278	0.1100		0.0707	0.0765		0.1528	0.1088	
(d) Structural funds expenditures as % of GDP in countries i and j	-0.5630	0.2472	**	-0.5510	0.2123	***	-0.4312	0.1592	***	-0.4498	0.2622	*
(h) Once-lagged net FDI inflows between i and j	—	—		-0.0090	0.0262		—	—		—	—	
(i) Log capital-labour ratio of countries i and j in t	—	—		—	—		0.5854	0.2459	**	0.3372	0.4126	
(j) Absolute difference in log capital-labour ratio of countries i and j in t	—	—		—	—		1.0233	0.3740	***	0.8386	0.5936	
(k) Absolute difference in endowment with workers of at least secondary schooling of countries i and j in t	—	—		—	—		-0.0086	0.0029	**	-0.0121	0.0040	***
(l) Log investment costs of countries i and j in t	—	—		—	—		0.5367	0.2379	**	0.2980	0.3761	
(m) Absolute log difference in investment costs of countries i and j in t	—	—		—	—		0.1519	0.1038		0.0078	0.1869	
R^2	0.4335			0.4301			0.5647			0.3950		
Estimation Approach	FE			FE			FE			FE		
Country FE (p-value of F-test)	0.0000			0.0000			0.0000			0.0000		
Time FE (p-value of F-test)	0.4224			0.0017			0.0000			0.0072		
Observations (country pairs across years)	953			709			638			709		

Notes: Dependent variable is net bilateral migration between countries i and j in year t. Net bilateral migration is defined as absolute difference of log immigration of j (from i) and log immigration of i (from j). Immigration data are taken from Eurostat (2016b). Reported standard errors are robust to heteroskedasticity. Fixed effects (FE) are not reported for the sake of brevity. *, **, *** indicates that coefficients are significant at 10%, 5% and 1%, respectively. Model (7) contains estimates for estimating Model (3) by least absolute deviations (median regression). Model (8) as Model (3) but including instrumented, once-lagged net foreign direct investment inflows. Instruments are the variables included in Models (9) and (10). The Hausman-Wu F-statistic of testing the exogeneity of FDIs yields a p-value of 0.6289. The instruments pass Sargan's test of over-identifying restrictions at a p-value of 0.6016. The F-statistic of testing the joint relevance of the instruments exhibits a p-value of 0.2804. Model (9) shows the result from estimating the reduced-form version of Model (8) but excluding influential observations according to Hadi (1992). Model (10) contains the results from estimating Model (9) by least absolute deviations (median regression). For the countries included in the estimation, see footnote 17 (missing EU-15 countries: France).

A.5

Table 2.9: Determinants of bilateral immigrant flows for 1985-2013 across EU-28 member countries (Eurostat)

Explanatory variables	(1) β	(1) std	(2) β	(2) std	(3) β	(3) std	(4) β	(4) std	(5) β	(5) std
(a) Relative log per worker GDP (destination to origin country)	-12.84	4.54***	-17.69	4.62***	-26.89	4.73***	-27.07	4.70***	-9.97	2.40***
(b) Log per worker GDP (origin country)	-27.34	10.12***	-31.85	10.06***	-37.33	10.40***	-13.63	7.76 *	-27.88	6.16***
(c) Log structural funds expenditure (origin country)	0.77	0.42 *	0.83	0.41 **	0.99	0.48 **	—	—	0.49	0.23 **
(d) Log distance	—	—	-10.61	2.55***	-10.95	2.65***	-11.13	2.51***	-5.63	1.25***
(e) Land border	—	—	2.60	3.60	0.41	3.92	-0.21	3.77	1.74	2.00
(f) Common language	—	—	34.46	5.86***	37.28	6.16***	37.36	6.13***	23.47	3.46***
(g) Unemployment rate (destination country)	—	—	—	—	-1.00	0.30***	-1.16	0.30***	-0.44	0.14***
(h) Unemployment rate (origin country)	—	—	—	—	0.77	0.28***	0.71	0.28 **	0.05	0.13
(i) Log structural funds expenditure (origin country) alternative	—	—	—	—	—	—	0.01	0.41	—	—
R^2	0.2607		0.2983		0.3018		0.3008		0.4873	
Estimation Approach	FE		FE		FE		FE		FE	
Country FE (p-value of F-test)	0.0000		0.0000		0.0000		0.0000		0.0000	
Time FE (p-value of F-test)	0.0731		0.0119		0.0017		0.0186		0.0007	
Observations	5375		5375		4959		5143		4917	

Notes: Dependent variable is the emigration rate of origin country i to destination country j in year t. The emigration rate is defined as the immigrant inflow from origin to destination country [multiplied by 100,000] divided by origin country's population. Thus, it gives the number of incoming immigrants per 100,000 individuals in the origin country's population. Immigration data are taken from Eurostat (2016b). The explanatory variables are described in detail in section 4.1. Reported standard errors are robust to heteroskedasticity. The constant and the fixed effects (FE) are not reported for the sake of brevity. *, **, *** indicates that coefficients are significant at 10%, 5% and 1%, respectively. (4) as Model (3) but using an alternative measure for EU structural funds. (5) as Model (3) but excluding influential observations according to Hadi (1992). For the countries included in the estimation, see footnote 26.

Table 2.9 continued...

Explanatory variables	(6) β	(6) std	(7) β	(7) std	(8) β	(8) std	(9) β	(9) std	(10) β	(10) std
(a) Relative log per worker GDP (destination to origin country)	-2.11	0.47***	-25.97	4.91***	-26.40	4.83***	-26.89	7.98***	-8.50	3.49**
(b) Log per worker GDP (origin country)	-1.73	0.85**	-21.70	17.26	-52.68	13.82***	-37.33	9.92***	-10.07	8.75
(c) Log structural funds expenditure (origin country)	0.15	0.03***	-18.38	8.06**	—	—	0.99	0.49**	1.09	0.39***
(d) Log distance	-1.88	0.23***	-11.13	2.81***	-11.10	2.79***	-10.95	7.13	27.55	29.13
(e) Land border	0.24	0.28	-0.78	4.08	-0.80	4.10	0.41	10.10	25.98	25.51
(f) Common language	16.81	1.25***	38.78	6.20***	38.34	6.17***	37.28	16.46**	352.78	23.69***
(g) Unemployment rate (destination country)	-0.07	0.02***	-0.82	0.29***	-0.83	0.29***	-1.00	0.41**	-0.84	0.19***
(h) Unemployment rate (origin country)	0.04	0.02**	0.66	0.28**	0.73	0.28**	0.77	0.36**	0.67	0.17***
(j) SSI (origin country)	—	—	—	—	2.27	0.97**	—	—	—	—
R^2	0.2324		0.2785		0.3034		0.3018		0.7641	
Estimation Approach	FE		FE		FE		FE		FE	
Country FE (p-value of F-test)	0.0000		0.0000		0.0000		0.0000		0.0000	
Time FE (p-value of F-test)	0.0000		0.0004		0.0140		0.0128		0.0249	
Observations	4959		4735		4735		4959		4959	

Notes: Dependent variable is the emigration rate of origin country i to destination country j in year t. The emigration rate is defined as the immigrant inflow from origin to destination country [multiplied by 100,000] divided by origin country's population. Thus, it gives the number of incoming immigrants per 100,000 individuals in the origin country's population. Immigration data are taken from Eurostat (2016b). The explanatory variables are described in detail in section 3.1. Reported standard errors are robust to heteroskedasticity. The constant and the fixed effects (FE) are not reported for the sake of brevity. *, **, *** indicates that coefficients are significant at 10%, 5% and 1%, respectively. Model (6) contains estimates for estimating Model (3) by least absolute deviations (median regression). Model (7) as Model (3) but including instrumented log structural funds expenditures in the origin country. The Durbin-Wu-Hausman χ^2-statistic of testing the exogeneity of structural funds yields a p-value of 0.0330. Instruments are the variables included in Model (8). Sargan's test of over-identifying restrictions cannot be reported, since the model is exactly identified. The F-statistic of testing the relevance of the instrument exhibits a p-value of 0.0000. Model (8) shows the result from estimating the reduced-form version of Model (7). Model (9) [(10)] contains the results from estimating Model (3) with standard errors clustered by country-pairs [with country-pair fixed effects instead of individual country fixed effects]. For the countries included in the estimation, see footnote 26.

A.6

Table 2.10: Descriptive statistics Eurostat migration data

Variables	Obs.	Mean	Std. dev.	Minimum	Maximum
Emigration rate of country i to country j Eurostat, $(\frac{Mig_{ijt}}{Pop_{it}})$	5375	15.1310	49.9147	0.0000	1296.737
(a) Relative log per worker GDP (destination to origin), $(\frac{pwGDP_{jt-1}}{pwGDP_{it-1}})$	5375	13.7458	0.5569	11.7551	15.8220
(b) Log per worker GDP (origin), $(pwGDP_{it-1})$	5375	-3.1408	0.3797	-4.5385	-1.8840
(c) Log structural funds expenditure (origin), (SF_{it})	5375	19.6433	2.9778	5.3962	23.0713
(d) Log distance, $(dist_{ij})$	5375	7.0471	0.6771	4.0879	8.2339
(e) Land border, $(border_{ij})$	5375	0.0956	0.2941	0	1
(f) Common language, $(comlang_{ij})$	5375	0.0365	0.1875	0	1
(g) Unemployment rate (destination), $(unempl_{jt})$	5116	9.1405	4.6139	2.5000	27.3000
(h) Unemployment rate (origin), $(unempl_{it})$	5218	8.5151	3.9907	1.8000	24.8000
(i) Log structural funds expenditure (origin) alternative, (SF_{it})	5375	19.7677	1.9956	7.0632	23.0713
(j) SSI (origin), $(vPower_{it})$	5115	4.8529	3.4421	0.8200	17.3800
(k) NBI (origin), $(vPower_{it})$	5115	4.8440	3.1155	0.9400	15.7700
(l) NUCL (origin), $(vPower_{it})$	5115	4.8481	3.6237	0.0000	25.0000
(m) population (destination)	5375	17030259	22138610	373958	82500849
(n) population (origin)	5375	20552745	23904043	366202	82500849

Part B: The explanation and legitimisation of EU regional policy

Chapter 3

EU regional policy: theoretical foundations and policy conclusions revisited[†]

Abstract

This paper reconsiders the theoretical foundations of EU regional policy as well as its policy conclusions. It calls into question the widely prevalent explanation of EU regional policy in static equilibrium economics. This focuses on market failures as the key underpinning of EU regional policy and is the major toolkit of economists for policy recommendations in this context. The paper argues that an evolutionary non-equilibrium economics perspective on EU regional policy is much more appropriate to provide a realistic understanding of one of the largest policies conducted by the EU. A consideration of the dynamic character of modern market economies allows for a more substantive politico-economic explanation of EU regional policy and provides reliable policy implications for EU regional policymakers. Both issues should be considered by stakeholders involved in EU regional policy making, but have not yet been discussed in the relevant literature in the way presented in this paper. This particularly applies in light of the current discussion about the creation of a "new European industrial policy" in which the regional policy of the EU plays a major role. Otherwise, a misguided, static and corrective regional policy may be pursued which does not account for the dynamic competitive environment with which EU regions must cope in today's globalised world.

[†] This chapter has been invited to revision and resubmission to the *policy debates section* of *Regional Studies.*

3.1 Introduction

Economic activity across the EU is unevenly distributed. The living and working conditions of EU citizens differ tremendously. This has been well known even since before the beginning of the current European financial crisis in 2009. Yet, with the recent economic and financial problems of southern European countries such as Greece, it becomes ever more apparent.

Since its foundation by the Treaty of Rome in 1957, the EU has conducted a regional policy which is supposed to improve and harmonise the living and working conditions of its citizens. The EU defines regional policy as its "main investment policy [which, P.S.] targets all regions and cities in the European Union in order to support job creation, business competitiveness, economic growth, sustainable development, and improve citizens' quality of life" (European Commission 2015a). The main instruments used to execute this policy are the so-called structural funds. In the current planning period 2014-2020, these include the ERDF, the ESF and the ECF.[1] The available budget of the three funds in this period amounts to €352bn. This corresponds to 32.5% of the overall EU budget of €1082bn (European Commission 2014a, p. 2). Thus, the EU's regional policy is one of its largest policy fields, amongst other policies such as the common agricultural policy.

Considering EU regional policy from an economic perspective, it is generally explained and legitimated with reference to instances of market failure within the European single market (see e.g., Holtzmann 1997, pp. 37-85; Krieger-Boden 2002, pp. 3-5; Molle 2007, pp. 104-105; Schindler 2005, pp. 7-38, 91-130; Vanhove 1999, pp. 1-63). Neoclassical economists denote market failures as situations in which the allocative, and thus the distributive, results of market coordination deviate from the neoclassical model of perfect competition and its equilibrium of optimal social welfare. These situations include externalities, indivisibilities and market power, incomplete information and adjustment shortcomings (see e.g., Fritsch 2011, pp. 72-75).

When market failures occur, the state *should* intervene into the market in order to improve the welfare of the society's members. Hence, the neoclassical market failure approach is a normative theory. It specifies the policy goals to be pursued by policymakers and provides a legitimisation for policy interventions into the market. Resting on the idea that the overall goal of production in an economy with scarce

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[1] Recall that the original structural funds are the ERDF and the ESF, while the ECF is a separate fund. See footnote 1 on page 1 in the general introduction.

resources is the optimisation of citizens' welfare, the theory answers the question of "what the state ought to do" in order to achieve this optimum. Yet, the boundaries between instrumental ("what the state could do to achieve a given normative end") and positive ("what the state factually does do") statements in this theory are blurred (van den Bergh and Kallis 2013, p. 296). The market failure theory is indeed regularly used in the literature to recommend policy instruments to EU regional policymakers with which market failures may be tackled. Moreover, it is even employed to positively explain EU regional policy as a means to resolve market failures in the European single market.[2] To summarise it à la Zerbe and McCurdy (1999, p. 560), the normative market failure approach "has developed into a quasi-scientific full-scale diagnostic test with the prescription of cures".

Most of the economic literature on the theoretical foundations of EU regional policy tries to identify market failures within different equilibrium trade, growth and regional economic models. However, through the construction of these theories as constrained optimisation problems, economic outcomes in space are characterised by a stationary state or the absence of further change (Jovanović 2009, p. 7).

As Berger (2009, pp. 1-2) from an evolutionary-institutional point of view remarks, theories of circular and cumulative causation (CCC) claim that thinking about economic development and interactions in terms of static equilibrium and harmony is not compatible with "the real dynamic and self-reinforcing aspects of economic phenomena". Exponents of CCC theories argue that "there is no such thing as a stable equilibrium, neither real nor asymptotical" (Heinrich 2011, p. 528). They emphasise rather the conflict, competition, rivalry, struggle, disequilibrium, disharmony and permanent change of the economic conditions in capitalist economies, i.e. forces that drive the economy constantly away from any envisioned equilibrium. The non-existence of an equilibrium of optimal social welfare implies that market failures, the key underpinning to explain and legitimate EU regional policy interventions in equilibrium economics, do not exist from a non-equilibrium economics point of view. When such phenomena occur in reality, they must be understood as systematic and inherent patterns of market economies and not as deviations from an optimal equilibrium state.

Following the non-equilibrium economics rationale, this paper argues that EU regional

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[2] Holtzmann (1997, p. 41, my translation), e.g., remarks that with regard to a positive explanation of EU regional policy, the advantage of the market failure theory is not primarily "to normatively legitimate public interventions, but rather to positively explain and categorise from an economic perspective the factual public interventions which take place".

policy cannot be explained in terms of market failures as is customary in neoclassical equilibrium economics. An adequate (positive, instrumental and normative) explanation of EU regional policy instead requires a consideration of the dynamic nature of modern market economies. Hence, an evolutionary perspective on EU regional policy is much more appropriate to explain it, to provide policy implications for EU regional policymakers and to analyse the normative policy goals that should be pursued. This is important to understand, because otherwise a regional policy may be conducted which does not pay sufficient attention to the fact that EU regions exposed to international competition need to constantly cope with a changing evolutionary environment. The role of EU regional policymakers thus importantly changes away from a mere corrective and static one to a dynamic, creative and adaptive one. Against the background of the current discussion about the formation of a "new European industrial policy", in which the regional policy of the EU plays a major role, such issues must be taken into account by stakeholders involved in EU regional policy making. Otherwise, the tremendous economic disparities within the EU will persist. This is increasingly recognised in the literature (see e.g. Mazzucato's contribution in Mazzucato et al. 2015). However, even in the literature, market failure thinking is not entirely rejected. It is, therefore, still erroneously dominant in discussions related to public and (EU) regional policy making.

Evolutionary economists have not been silent on economic and regional policy issues, of course.[3] However, as Schubert (2012, p. 593) remarks, "most evolutionary economists, when examining policy-related issues, have tried to remain safely on instrumental ground". Normative and positive questions have thus far been largely neglected. Moreover, these contributions mainly deal with economic and regional policy in general and do not focus on a particular policy. This paper, therefore, attempts to contribute to the existing literature by applying evolutionary economic thinking to the explanation of EU regional policy. To the best of the author's knowledge, there does not yet exist an evolutionary view on this policy. This holds especially true for the positive explanation of EU regional policy given in this paper. In the end, the intention of the paper is to show that an evolutionary and not a neoclassical market failure perspective is much more appropriate to (positively, instrumentally and normatively) explain EU regional policy.

The paper is structured as follows. The second section of the paper is devoted

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[3] See, e.g., Asheim et al. (2013), Bleda and del Río (2013), Ebert (1999), Koch (1996), Lambooy and Boschma (2001), Metcalfe (1994; 1995; 2003; 2005), Moreau (2004), Pelikán and Wegner (2003) and Witt (2003).

to positively explaining EU regional policy. Based on these insights, the subsequent third section discusses the epistemological deficiencies of the (positive) equilibrium explanation of EU regional policy and substantiates that it can be much better understood from a non-equilibrium economics perspective. The different and arguably more realistic evolutionary understanding of EU regional policy also leads to other policy conclusions that need to be drawn in order to improve and harmonise the living and working conditions of EU citizens. The fourth section of the paper, therefore, analyses why a market failure perspective is not able to provide reliable policy instruments to EU regional policymakers and, instead, what an evolutionary view on EU regional policy brings to the policy table. In the final section, the paper draws its conclusion and makes a few remarks on a normative evolutionary explanation of EU regional policy.

3.2 An alternative positive explanation of EU regional policy

Looking into the history of EU regional policy, its emergence and evolution can be explained as a cumulative politico-economic policy process (see also Heinelt et al. 2005). This process was always closely connected with European integration.

The starting point for the explanation of EU regional policy is the fact that the member states of the EU, as much as any other nation state, strive for political influence and economic power in the context of international competition (Dunn 1994, pp. 304-306). They use their various policies to shape the competitive conditions among labour, capital, land and nation states according to their interests. The policymakers of the member states pursue this special-interest politics not only within their own countries or the European single market but also in relation to the rest of the world.

From a politico-economic point of view, both the foundation and the subsequent deepening and enlargement of the EU by its member states after the Second World War should attain one goal in particular. It is aimed at the creation of an internationally influential and competitive economic as well as currency area mainly vis-à-vis the United States (Thirlwall 2000, p. 9). Internally, this area should enable the current and prospective member states to broaden the market and thus the profit opportunities for firms in their own countries. Externally, the economic and political cooperation of the EU member states should enlarge the economic power and political influence of

these countries throughout the world.

However, the policymakers of the different EU member countries were and are well aware that the political goal of increasing the international competitiveness of the EU and of their own countries is tied to certain economic prerequisites. A successful economic and monetary integration of the member states in terms of international competitiveness requires "a high degree of economic homogeneity amongst the countries making up a currency area" (Martin 2001, p. 54). Besides the maintenance of political agreement over European integration, economic homogeneity across the member countries ensures international confidence in the strength of their economies as well as their common currency. Since monetary integration means surrendering national autonomy over monetary policies and the exchange rate, larger economic disparities undermine this confidence. This would lead to a decline in the international competitiveness of the EU relative to the rest of the world. Yet, a homogenous and internationally competitive European infrastructure which includes the institutions in which the internal market is embedded was and is not given in all member countries to the same degree. Moreover, this infrastructure was and is neither likely to be entirely created by private economic activity nor by the governments of the member states. This is especially true when these states have only limited financial means to invest in such an infrastructure. That is why the member states of the EU already agreed to conduct a common regional policy in the internal European market with the foundation of the EU through the Treaty of Rome in 1957.[4] This regional policy per se is independent of the financial budget of a specific member state and aims at the creation of similar conditions of international competitiveness across the EU. The EU usually terms the latter as "the strengthening and the convergence of their economies" or "the improvements of the living and working conditions of their peoples" in the preambles of its two major treaties, the "Treaty on European Union" (TEU) and the "Treaty on the Functioning of the European Union" (TFEU).

Besides this explanation of the existence of EU regional policy, its development over time needs to be explained as well. The evolution of EU regional policy can also be

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[4] Aptly named, it was not the EU but the European Economic Community (EEC) that was founded by the Treaty of Rome in 1957. Together with the European Coal and Steel Community (ECSC) established by the Treaty of Paris in 1951, however, the EEC and the European Atomic Energy Community (EURATOM) constituted the European Communities (ECs) since the Brussels Treaty of 1967. With the Treaty of Maastricht entering into force in 1993, the ECs were renamed the European Community (EC), which was incorporated into the EU by the Treaty of Lisbon in 2009 as one of its three pillars (besides the "Common Foreign and Security Policy" and the "Police and Judicial Co-operation in Criminal Matters").

explained with the help of the politico-economic competition of the member states. On the external international level, member states decided to cooperate and even conduct a common regional policy. But, internally, member states continue to rival. Therefore, they also compete for the structural funds in order to use them to increase their own degree of international competitiveness. As Figure 3.1 on the following page depicts, member states indeed used and still use EU regional policy and the structural funds as a subject of negotiation in the different phases of the deepening and enlargement of the EU.[5]

With the conclusion of the 1957 Treaty of Rome by Germany, Italy, France and the Benelux countries, the European Investment Bank (EIB), the guidance section of the European Agricultural Guidance and Guarantee Fund (EAGGF-G) and the ESF were founded. These were the first regional policy instruments of the EU. The EIB and the ESF were concessions to Italy which demanded financial support for its Mezzogiorno region (Dedman 2010, p. 93). It was the only region economically lagging behind, apart from otherwise relatively equal regions of the six founding members. Since there had been only minor regional economic disparities between the six founding countries of the EU, which were believed to disappear by the coordination of national economic policies as well as the later establishment of a common market with the free mobility of goods, services, capital and labour, only the EIB was contemplated as a regional policy instrument at that time. It was intended to give cheap loans to economically weaker regions in the EU. The guidance as well as the guarantee section of the EAGGF were both initially designed for a common agricultural policy, and the ESF for an active labour market policy (Axt 2000, pp. 55-57). A discrete common regional policy of the EU did not exist until 1975. The regional policy of the EU at that time was just meant to support the national regional policies of the member states, because they were afraid to lose national policy competences to the EU (Rolle 2000, p. 135).

The introduction of the ERDF in 1975 was due to the enlargement of the EU by the United Kingdom (UK), Denmark and Ireland in 1973. It marked the beginning of a more discrete regional policy of the EU. The UK as well as Ireland and Italy insisted on financial support for their underdeveloped regions. Particularly in the UK, this was

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[5] Several studies prove this "political bartering" thesis. They show that the amount of the EU budget, its distribution among the different policy fields as well as the regional commitments and actual payments of EU regional policy spending are politically determined. They are only to a minor extent aligned with the economic needs of regions in the EU (see, e.g., Blankart and Koester (2009); Bodenstein and Kemmerling (2011); Bouvet and Dall'erba (2010); Dellmuth (2011); Kauppi and Widgrén (2004)).

Figure 3.1: The compensation function of EU regional policy
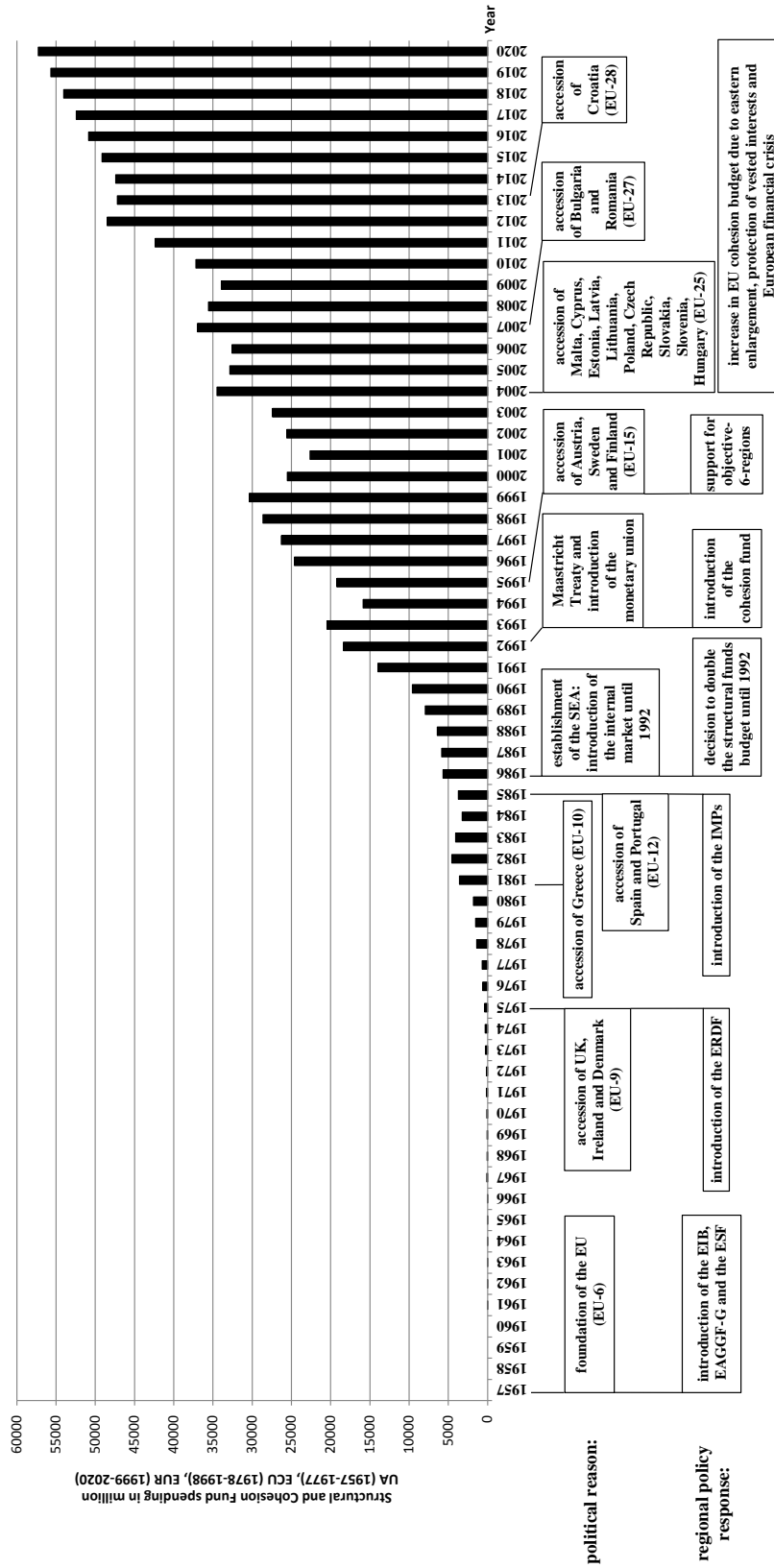
Source: Original depiction following Rolle (2000, p. 146). Structural and cohesion fund data in current prices from the European Commission (2009, pp. 77–82, 2013, 2014c) for 1957–2006, 2007–2013 and 2014–2020.

to overcome domestic political opposition of regions likely to lose from increased competition in the common European market against the accession to the EU (Schindler 2005, p. 36). Beyond that, the UK demanded financial compensation for its relatively high payments into the EU budget after it would have entered into the EU.

As time went on, until the introduction of the Single European Act (SEA) in 1987, the EU's regional policy separated more and more from the exclusive support of the member states' regional policies (Schöndorf-Haubold 2003, pp. 50-55). This inter alia included the introduction of so-called "integrated development operations of the community".[6] One important example of one of these operations, again showing the role of regional policy as a means of compensation in the political bargaining process within the EU, is the "Integrated Mediterranean Programme" (IMP). In the context of the introduction of the IMP, the ERDF budget was heavily increased as a result of Greece joining the EU in 1981. Greece feared increasing competition in its agrarian and manufacturing sectors if Spain and Portugal were to enter the EU, which they did in 1986. Hence, Greece demanded financial compensation in order to agree to the accession of these two countries and was supported by France and Italy which were also aimed at the protection of their agrarian sectors (Rolle 2000, pp. 138-139).

The establishment of the SEA in 1987, which was primarily aimed at completion of the internal European market until 1992, was the first major reform of EU regional policy (Wellenhofer 1997, pp. 64-96). It was the starting point for the discretionary and interventionist type of EU regional policy still prevailing today. With the SEA, the goal of "economic and social cohesion" was contractually fixed and the ESF as well as the EAGGF-G were aligned to regional policy. From now on, the latter two financial instruments were coordinated together with the ERDF, the EIB and other funds yet to be established, in order to pursue certain regional policy objectives within a fixed six-year (since 2000, seven-year) planning period (see also Figure 3.2 on the next page). In the period 1988-1993, the structural funds were once again increased. This was the price for the economically weaker peripheral member states' agreement to the internal market programme. The goal of introducing such a market was accompanied by an in-

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[6] With the first (second) revision of the ERDF in 1979 (1984), it was also decided amongst the member states, the European Parliament and the European Commission, that the Commission could decide on the allocation of 5% (approximately 12%) of the ERDF budget (Schindler 2005, pp. 51-54). The rest of the ERDF money continued to be allocated according to politically determined country quotas. Moreover, the project was replaced by multi-annual programme financing and the Commission was instructed to prepare annual reports about the employment of ERDF resources as well as to regularly report on the socio-economic situation in EU regions.

Figure 3.2: Structural funds, policy objectives and cohesion budget 1988-2013

1988-1993 Objectives	Funds	1994-1999 Objectives	Funds	2000-2006 Objectives	Funds	2007-2013 Objectives	Funds
		Cohesion Aid:	ECF	Cohesion Aid:	ECF	Convergence	ERDF, ESF, ECF
Objective 1: to promote the development and structural adjustment of less developed regions	ERDF, ESF, EAGGF-G	Objective 1: to promote the development and structural adjustment of less developed regions	ERDF, ESF, EAGGF-G, FIFG	Objective 1: to promote the development and structural adjustment of regions whose development is lagging behind	ERDF, ESF, EAGGF-G, FIFG		
		Objective 6: to promote regions whose population density is extremely low					
Objective 2: to mitigate industrial decline	ERDF, ESF	Objective 2: to mitigate industrial decline	ERDF, ESF	Objective 2: to support the economic and social conversion of areas experiencing structural difficulties	ERDF, ESF		ERDF, ESF
		Objective 5b: to support rural areas					
Objective 3: to combat long-term unemployment	ERDF, ESF	Objective 3: to combat long-term unemployment	ESF	Objective 3: to promote the development of human resources and support the employment perspectives of the long-term unemployed in regions not eligible under Objective 1	ESF	Regional Competitiveness and Employment	
Objective 4: to facilitate the adoption of workers to industrial change	ESF	Objective 4: to facilitate the adoption of workers to industrial change	ESF				
Objective 5a: to support agricultural sectors	EAGGF-G	Objective 5a: to support agricultural sectors	EAGGF-G, FIFG	Objective 5a/b are now covered under Objective 1-3			
Objective 5b: to support rural areas	ERDF, ESF, EAGGF-G						EAFRD, EDF (do not belong to the Structural Funds)
Community Initiatives	One or more Funds	Community Initiatives	One or more Funds	Community Initiatives	One or more Funds	European Territorial Cooperation	ERDF
Total Budget							
64 bn ECU		168 bn ECU		€235 bn		€347 bn	

tense debate amongst them over its economic divergence effects (Rolle 2000, pp. 139-140).

In 1993, the Maastricht Treaty entered into force. Its main goal was the implementation of a common economic and monetary union (EMU) (Wellenhofer 1997, pp. 96-116). With respect to EU regional policy, the Maastricht Treaty added a sixth policy objective to be pursued by regional policymakers. The structural funds reform of 1993 introduced a new fund with the Financial Instrument for Fisheries Guidance (FIFG) largely corresponding to that objective. As Rolle (2000, pp. 143-144) remarks, the introduction of Objective Six was accomplished by Sweden and Finland, which joined the EU together with Austria in 1995. It was a basic prerequisite for their approval to enter into the EU.[7] In addition, the ECF was established in 1993 as a concession to Ireland, Greece, Spain and Portugal, which threatened to vote against the introduction of the EMU (Schindler 2005, pp. 44-45). The ECF supports member states with less than 90% of the average per capita income of the EU, such that these four countries were the only beneficiaries of the fund at that time. Besides the introduction of the ECF, also the structural funds' resources for the period 1994-1999 were further increased in conjunction with the potential rejection of the EMU and its convergence criteria by Ireland, Greece, Spain and Portugal (Rolle 2000, pp. 141-143).

In 1997, the European Commission submitted the so-called "Agenda 2000" to the European Council which was to improve the efficacy of the increased structural funds appropriations for the planning period 2000-2006. It was also to adjust EU regional policy to the upcoming enlargement of the EU by the Central and Eastern European countries (Schindler 2005, pp. 61-68). The improvement of the structural funds' effectiveness was to be accomplished through the concentration on a smaller number of policy objectives. However, as Figure 3.2 on the preceding page shows, in the planning periods 2000-2006 and 2007-2013, the seven objectives of the planning period 1994-1999 were just summarised. The only thing that changed in terms of concentration of regional policy efforts was that the FIFG as well as the EAGGF-G no longer belonged to the structural funds in the 2007-2013 period.

Since only a few fundamental things changed in the regime of EU regional policy from 2000-2013, as Schindler (2005, p. 67) and Schöndorf-Haubold (2003, pp. 73-76) point out, the growth of the structural funds during that period can be mainly ascribed to three things. Besides the beginning of the European financial crisis in 2009, these

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[7] Objective Six aimed at the promotion of the thinly populated northern regions of Finland and Sweden.

are the eastern enlargement of the EU and the protection of vested interests by the older member states. With the eastern enlargement of the EU in 2004, 2007 and 2013, economic disparities in the EU strongly increased, such that the older EU member states were likely to lose large amounts of structural funds resources.[8] Hence, the financial position of the older member states could only be safeguarded by an increase in the EU regional policy budget (Feld 2004, pp. 28-30).

That older member states are thinking in terms of vested interests also seems to hold true for the current planning period 2014-2020. The cohesion policy budget again has been increased (to €352bn), and the percentage share of total structural funds spending in most member states has remained almost constant (see Table 2.1, last column, in the appendix). Only Germany, Greece, Portugal and Spain have had to accept larger losses of structural funds assignments, while Croatia, Italy, Romania and Slovakia could substantially gain.

To sum up, the positive explanation and reconstruction of the history of EU regional policy given in this section show that the structural funds emerged in a cumulative politico-economic process between the member states in the different periods involved in the deepening and enlargement of the EU. In order to increase their degree of international economic competitiveness and political influence, EU member states decided to found the EU with the internal European market as well as a common currency area. This area politically and economically requires the establishment of similar conditions of international competitiveness which are not given in the internal European market. That is why the EU conducts a regional policy which should create these conditions across the EU. At the same time, the member states compete for the financial means of the structural funds in order to foster the international competitiveness of their own countries. That is why the structural funds have always been a subject of negotiation in the different rounds of the deepening and enlargement of the EU. According to the ongoing, path-dependent, irreversible and unpredictable changes in the political, institutional and economic environment within the EU, the regional policy conducted by EU regional policymakers adapted to these changes. Over the course of time, EU regional policy has thus changed from a passive and regulative kind of policy to the discretionary and interventionist type of policy it is today. What EU regional policymakers did and currently do cannot be understood

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[8] In 2004, Malta, Cyprus, Estonia, Latvia, Lithuania, Poland, the Czech Republic, Slovakia, Slovenia and Hungary joined the EU. Bulgaria and Romania followed in 2007 and Croatia joined the EU in 2013.

without a consideration of this historical process. Hence, only the politico-economic and cumulative policy process and not the curing of market failures can reasonably explain why EU regional policy exists. The next section will further substantiate this finding.

3.3 Why is an evolutionary perspective on EU regional policy needed?

The main reason why the traditional perspective is inappropriate for giving a positive explanation of EU regional policy like the one above is that the market failure approach is a normative theory. It emanates from the idea of an equilibrium of economic interactions in the market. The market failure theory tries to prove this value judgement by showing that the market is the first-best mechanism with which to mitigate the fundamental economic problem of scarce resources on the one hand and infinite human wants on the other. This should be the case, since the market generally allocates the factors of production in the most efficient (optimal) way in terms of a society's wants and distributes the incomes generated by those factors in a performance-linked, socially optimal and just way (marginal productivity theory of distribution). In a nutshell, without central planning, the price mechanism automatically aligns demand and supply on all sub-markets, bringing the numerous different and conflicting plans of rational utility and profit-maximising market participants to coincidence and mutual harmony in the whole economy.

Clearly, from this epistemological point of view, regional policy interventions are only necessary when the market mechanism fails to bring about an optimal allocation of the factors of production or a desirable distribution of income according to marginal factor productivity. Hence, it is hardly surprising that in the dominant economic literature on EU regional policy, different equilibrium trade, growth and regional economic theories are considered which deal with allocative and distributive aspects of economic development in the market. With the help of these theories, potential market failures in the internal European market are identified. According to the policy conclusions drawn from the theories' different models, these failures should be tackled by the regional policymakers of the EU to improve and harmonise the living and working conditions of EU citizens.

Although it occurs regularly in the literature, a positive explanation of EU regional

policy can not be given with such a theory. The reason for this is that the market failure approach violates the fundamental epistemological prerequisite, which is to begin the explanation of a phenomenon from the observable facts (Sälter 1989, p. 7). It does not formulate empirically testable and falsifiable hypotheses about its explicandum. Instead, it compares the existing reality with an ideal norm, and if any discrepancies between them are found, the former is seen as imperfect (Demsetz 1969, p. 1). The allocative and distributive imperfection of reality is then seen as the positive explanation for why the government intervenes into the market. Hence, the regional policy of the EU is conducted in order to bring the imperfect reality of the internal European market closer to the ideal allocative and distributive norm. One can neither verify nor falsify such an aprioristic theory, because its result is fixed and independent of what EU regional policymakers factually do. No matter how the structural funds money is spent by EU regional policymakers in the real world, the reason that EU regional policy is conducted is to tackle market failures. One can either believe or not believe in this theory. However, scientifically positive and empirically testable insights into EU regional policy, such as those presented in section two, cannot be gained in this way.

In contrast to the neoclassical market failure approach, the non-equilibrium evolutionary approach to economics can provide a positive explanation of EU regional policy. It has several advantages over the traditional failure perspective. The most important aspect, though, is that it does not presume a normative value judgement in its method of explanation. The neoclassical notion of an equilibrium of economic interactions in the market is refused by evolutionary economists due to a different understanding of the role of competition and increasing returns in modern market economies.

While increasing returns are a static and partial concept for neoclassical economists only occurring within an individual firm or a specific industry (internal and external increasing returns), evolutionary economists have a dynamic and economy-wide concept of increasing returns (see e.g., Metcalfe 2003, pp. 175-177). In neoclassical economics, increasing returns are usually incompatible with the static concept of competition, except for cases of internal and external increasing returns. Increasing returns undermine the neoclassical "invisible hand theorem", such that some economic actors gain market power and restrict competition. In evolutionary economics, however, increasing returns are the constant and main driver of economic competition, the further division of labour, increasing material and immaterial wealth as well as technological, organisational

and institutional progress. Especially the constant and cumulative changes to the technological, organisational and institutional environment in an economy, factors which are exogenously given in the constrained optimisation problems of neoclassical economics, are the reason why an optimal neoclassical end-state will never be attained in an evolutionary world. This implies that the normative point of reference against which the failure of the market is assessed in neoclassical equilibrium economics falls apart (Kaldor 1972, p. 1245). Phenomena which are termed market failures in neoclassical economics do not exist in a world that is constantly changing. Hence, market failures are not deviations of reality from an optimal state of the economy that should actually be in force. Instead, they are the driving force of the capitalistic mode of production constantly offering new profit opportunities for firms and entrepreneurs in the changing economic environment. As such, they are simply major and systematic phenomena representing how the market mechanism works and evolves (Sälter 1989). Based on this understanding of modern market economies, the evolutionary approach is not obligated to presume a normative postulate to its method of explanation. Thus, a scientifically positive explanation of EU regional policy, one which begins from the observable facts, can be given with the help of an evolutionary approach to economics.

A second advantage of an evolutionary perspective on EU regional policy is that "there seems to be no reason to question or even reject [positive, P.S.] public choice theory's realism with respect to the existence of separate interests in politics and their implications" (Witt 2003, p. 79). In other words, the fact that governments and policymakers pursue their own interests can be considered in a positive explanation of EU regional policy from an evolutionary economics perspective. This was exactly the point of departure of the positive explanation of EU regional policy given in section two above.

However, Witt (2003, p. 79) also remarks that the neoclassical concepts of logical time and perfect information, which are still widely prevalent in (positive) public choice theory, have to be replaced from an evolutionary point of view. Politicians, as well as all other citizens, are in command of only bounded rationality. They are not perfectly informed and have to make decisions under conditions of true uncertainty, i.e. they cannot predict the future. Their knowledge and (political) goals, as well as their norms and values, constantly change. They gather newly available information, learn and adapt to their new environment in real calendar time. In response to these changes, factual policymaking is constantly changing as well. Thus, public policies such as EU

regional policy are not a static and independent phenomenon in which completely informed policymakers optimise their specific objective functions. On the contrary, development of the policy is path-dependent and non-ergodic. Actual and future economic and political outcomes across the European internal market highly depend on the irreversible political decisions made in the past. These decisions rest upon the given social, cultural and institutional environment, as well as the limited factual knowledge of policymakers at the point in time when the decisions were made. That the emergence and evolution of EU regional policy is in fact path-dependent was shown with the explanation of EU regional policy presented in section two above. Specific and irreversible changes in the economic, political or institutional environment of the internal European market induced a certain regional policy response. Depending on the politico-economic circumstances during European integration, EU regional policy was organised by European policymakers in a variety of ways, pursued different policy objectives, encompassed several funds and comprised different financial amounts.

Besides the opportunity to consider real calendar time and the changing knowledge constraints of policymakers, the non-equilibrium perspective also opens economics up to explanations from other scientific disciplines. Hence, a third advantage of the evolutionary approach to economics is that it allows the study of "real places" (Martin 1999, pp. 77-80). Since it is not tied to the mathematical solution of a constrained optimisation problem, it is able to incorporate social, cultural, geographical and institutional parameters into the analysis of economic activities of regions in the EU. This makes the non-equilibrium perspective a much richer and more realistic approach for thinking about regional economic development and policy in the internal European market. Such issues are often wholly left out of account in equilibrium economics due to the fact that they cannot be expressed in mathematical terms (Martin 1999, p. 75). Again, the positive explanation of EU regional policy above shows that it is important for an explanatory method to be able to consider "real places". The increase in the structural funds budget after 1986, for example, was due to Greece demanding financial compensation for its agrarian and manufacturing sectors in order to agree to the accession of Spain and Portugal. The agrarian sectors of the latter two countries were direct competitors for Greece's agrarian sector. The specific development of EU regional policy at that time depended on the fact that exactly these countries wanted to enter the EU or demanded financial compensation, respectively. The accession of another country with another sectoral composition of its economy would have directed

EU regional policy in another direction.[9]

To sum up, with its explanatory method, the non-equilibrium evolutionary approach is much more appropriate to provide a scientific, positive explanation of EU regional policy. In contrast to the neoclassical market failure approach, it does not emanate from a normative postulate. Thus, it is able to formulate empirically testable and falsifiable hypotheses that can positively explain why EU regional policy is conducted by the policymakers of the EU. Beyond a (mostly comparative-static) public choice approach, an evolutionary perspective adds more realism to the explanation of EU regional policy, because it is able to consider "historical time", "changing knowledge constraints", "path-dependency" and "real places". As the positive explanation of EU regional policy in section two has shown, such concepts are necessary prerequisites for a proper understanding of EU regional policy.

3.4 Evolutionary policy implications for EU regional policymakers

The market failure approach is not qualified to provide a reliable instrumental explanation of EU regional policy, either. No objective and practically applicable policy instruments can be deduced with the help of this theory. Just like the positive explanation of EU regional policy, the policy recommendations for EU regional policymakers derived from the market failure theory rest upon a value judgement. The market failure theory does not simply take this normative judgement or policy objective as given by the political sphere and tries to derive the best policy instruments to achieve this goal. The value judgement is presumed by the approach itself and is used to justify and recommend certain policy instruments to EU regional policymakers. Hence, the theoretical distinction between political means on the one hand and normative ends on the other does not remain intact. The formulated policy recommendations are value-laden and unscientific.[10]

As Albert (1958) remarks, this necessarily leads to a dilemma. On the one hand,

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[9] The introduction of structural funds support for Objective Six regions in 1995 is another example showing that the study of "real places" is important. Sweden and Finland were able to implement this goal and the corresponding fund (FIFG) for their thinly populated northern regions.

[10] Myrdal (1933) and Streeten (1954) have shown that a value-free distinction between policy instruments and normative policy goals is invalid and that policy instruments always have an intrinsic normative value. Thus, the recommendation or justification of policy instruments on the basis of a normative policy goal is always a normative issue and can never be objectively made.

neoclassical economists can openly introduce the value judgement they presume to the deduction of their policy instruments. In doing so, they sacrifice their scientific objectivity. Clearly, the policy instruments derived in such a way are without epistemic value, because they are not intersubjectively comprehensible. The policy measures just reflect the subjective opinion of the economist who derived them regarding what he or she thinks the regional policymakers of the EU should or should not do. Since the subjective value judgement can never be ultimately justified, the policy recommendations derived from this normative theory are unscientific.[11] On the other hand, the value judgement can be kept implicit in order to feign the scientific objectivity of the deduced policy instruments. However, the implicit normative postulate then has to be introduced as an empty formula which is open to every arbitrary interpretation. As a consequence, the policy instruments which are deduced from this normative principle are not practically applicable for EU regional policymakers in the real world. The neoclassical notion of "maximum or optimal social welfare" is one such empty formula. There is no intersubjectively comprehensible definition of this term. Thus, every policy instrument deduced to increase welfare is per se not applicable in the real world, since there exists no clear-cut and objective definition of maximum social welfare. To use in practice a policy instrument derived in such a way, the regional policymaker must render a further value judgement about what exactly is meant by this term. Either way, the dilemma cannot be solved, and scientifically instrumental and practically applicable insights for EU regional policymakers cannot be gained through the market failure theory.

Beyond this methodological argument, there is a second issue which further substantiates the inappropriateness of the market failure theory in terms of an instrumental explanation of EU regional policy. It was shown in section three above that in an evolutionary world, the normative point of reference, which is presumed by the market failure approach, is indeterminable. In a dynamic world, the technological and institutional environment, the factual knowledge, and the norms and values of citizens and policymakers constantly change. Even if one assumes a static world, it is impossible

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[11] Attempts to justify a subjective value judgement necessarily lead to the so-called Münchhausen-Trilemma which leaves the choice between an infinite regress, a logical circle or dogmatism (Mantzavinos 2005, pp. 214). In the market failure theory, dogmatism is used to allegedly solve the justification problem. The maximisation of social welfare is introduced in this theory as a quasi-natural (normative) goal under which production in every economy, independent of the historical context, is subsumed.

to consistently aggregate the different values and norms of all citizens.[12] Hence, a maximum of social welfare cannot be objectively calculated, neither in a static nor in a dynamic world. When a clear-cut normative policy goal cannot be determined within the theoretical framework, however, policy instruments to achieve it cannot be derived. Moreover, even if the normative policy goal could be theoretically determined, constant changes in the policy environment imply that static, once-and-for-all policy recommendations to EU regional policymakers cannot be given. The policymakers, rather, have to constantly react to the changing environment and the newly occurring policy problems. The mere remedy of market failures overlooks the real problems incurred in the process of policy making in a dynamic world. This also implies that, from a theoretical point of view, it cannot be answered a priori when and whether or not the state should intervene into the market. The state is just as good or bad an entrepreneur as private firms are. Since future economic development is truly uncertain, the question of whether the state or the market may have been the better mechanism to achieve a political goal can only be answered ex post and at a certain point in time. The market failure theory, though, pretends to be able to answer this question ex ante and universally.

In contrast to an equilibrium perspective, an evolutionary view of EU regional policy can provide practically applicable and objective policy instruments to EU regional policymakers. Again, the impossibility of determining a normative point of reference in an evolutionary world allows this to be done. The normative policy goal is not presumed by the method of explanation itself. Rather, it can be taken from the political sphere, and the best policy instruments to achieve the normative goal can be scientifically proposed by economists. Thus, the dichotomy between policy means and normative political ends can be maintained (Witt 2003, pp. 87-89). The derived policy implications are value-free and practically applicable in the real world. The value judgements necessary to determine the policy goals that should be pursued and to decide which of the policy instruments proposed by economists shall be applied in practice have to be rendered by EU regional policymakers or their voters in a democratic political process. Given these policy goals, economists can discuss, compare and describe the policy instruments which are best suited to achieving these goals in an intersubjectively comprehensible way. To do this, they can build on existing knowledge

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[12] As Arrow's impossibility theorem shows, with ordinal utility, individual preferences cannot be consistently aggregated (Arrow 1950; 1963). This can only be done when utility is assumed to be cardinal.

and past empirical experience with these policy instruments gathered in comparable regional, social, institutional and political contexts.

This method of deriving policy instruments pays attention to the fact that, in an evolutionary world, the factual knowledge and normative policy goals constantly change. Therefore, the regional policy instruments for achieving these goals need to change as well. This is what (Metcalfe 1994, p. 933) terms "adaptive policy making". EU regional policy making becomes a process of trial and error. The evolutionary policy instruments must always be seen as fallible. They are time-, region- and context-specific and cannot simply be transferred to other situations (Koch 1996, pp. 16-17). Once-and-for-all policy implications cannot be drawn in an evolutionary world. Thus, as Mantzavinos (2005, p. 215, my translation) puts it, "economic policy problems .. [have to be, P.S.] rationally treated, instead of postulating a rational economic order which should serve as the point of reference for economic policy making".

An evolutionary view of EU regional policy also implies that success or failure of the policy measures applied by EU regional policymakers cannot be predicted in advance. The data necessary to do so just accrue in the evolutionary process of EU policy making. At the same time, following Schumpeter (1912), the success or failure of policy measures crucially depends on the behaviour of (entrepreneurial) policymakers who are willing to take economic risks in an uncertain environment. That the state can play a pivotal role in economic development has recently been shown by (Mazzucato 2013). In the end, though, in this feedback process between economic actors and their changing environment, it remains a question of competition in the European single market and the world market whether a regional policy intervention will be successful in terms of the defined policy goals. Economic competition yet "discovers" the degree of success of a regional policy measure. As already mentioned above, it is only possible ex post to determine whether it was the right one to improve and harmonise the living and working conditions of EU citizens.

To sum up, EU regional policy making does not mean that policymakers have to tackle market failures. It is not a static or corrective task. Rather, it is a dynamic, creative and adaptive process in which the policymakers have to cope with a constantly changing world. Economists can scientifically consult EU regional policymakers. However, they must take the normative policy goals as given by the political sphere and have to propose context-, time- and region-specific policy instruments to achieve these goals. Thus, they can help EU regional policymakers to cope with the constantly changing

economic needs of regions in the EU which are exposed to international competition. As was shown in this section, with the help of the market failure theory, such scientific and practically applicable policy advice is impossible.

3.5 Conclusion

In this article, it was argued that the dominant equilibrium explanation of EU regional policy, based on the notion of market failure, is inadequate to understand it. This applies to the positive, instrumental and normative levels of the market failure theory. The main reason for this failure of the market failure theory is that it ignores the dynamic character of modern market economies. Therefore, an evolutionary perspective is much more appropriate for gaining positive, instrumental and normative insights on EU regional policy.

Due to its static comprehension of economic competition, the market failure theory fails to realise on the normative level of the theory that a constant overall goal of production is theoretically indeterminable in a constantly changing world. Normative goals that should be pursued in practice can only be determined outside the realm of the science of economics. In modern market economies, this can be done with the help of the democratic process, in which policymakers or their parties propose their policy programmes. The citizens of the EU then decide about these political goals and programmes through elections. However, this does not mean that economists should refrain from normative economics. To approach normative questions of EU regional policy scientifically, the different normative goals stemming from the political sphere can be described and compared. Their development over time can be analysed as well. As Schubert (2012, p. 588) remarks, the policy objectives should even be proposed by economists themselves, in order to avoid inconsistencies in the analysis of public policy questions within the (evolutionary) framework of economics. Moreover, potential trade-offs between these policy goals can be analysed by economists. However, the whole explanatory approach may not be built on a normative judgement, as it is in the neoclassical market failure approach.

On the positive level, a scientific explanation of EU regional policy cannot be given with the help of the market failure theory, because it does not begin its explanation from the observable facts. It instead emanates from its static, normative value judgement and compares it with the existing reality of the EU internal market. This theory can be

neither verified nor falsified. EU regional policy thus cannot be explained as the path-dependent, cumulative politico-economic policy process that it factually is. In contrast to the market failure theory, an evolutionary perspective on EU regional policy can provide an adequate explanation. The explanation of EU regional policy can start from the observable facts. An evolutionary perspective on EU regional policy can consider the fact that EU regional policymakers and the member states of the EU pursue their own interests. Beyond that, the historical and path-dependent development of EU regional policy can be understood and explained. To use a term introduced by Dopfer (2005, p. 16), "histonomic" statements on EU regional policy can be made with the help of an evolutionary approach to economics. The cumulative and politico-economic nature of EU regional policy can thus be realistically reconstructed. The history of EU regional policy and its theoretical explanation are no longer separated from each other, as is true in the literature which tries to explain and legitimate EU regional policy with the help of market failures.

On the instrumental level, the market failure theory likewise emanates from a value judgement and recommends with it certain policy instruments to EU regional policymakers. The policy instruments derived in such a way are pseudo-objective and inapplicable in the real world, because the underlying value judgement can never be ultimately justified. Moreover, this deduction of policy instruments also does not pay attention to the fact, that in an evolutionary world, citizens' and politicians' norms, values and political goals constantly change. The technological, organisational and institutional environment also changes. Hence, context-, time- and region-independent as well as once-and-for-all policy conclusions cannot be drawn, because the environment and the normative policy goals from which they are derived constantly change. Again, an instrumental evolutionary perspective on EU regional policy offers an advantage over the traditional neoclassical view. It can take the changing normative policy goals from the political sphere. The normative postulate is not assumed by the evolutionary approach itself. Thus, the best policy instruments to achieve a given normative policy goal at a certain point in time and in a certain region can be proposed by evolutionary economists. The question can be discussed in an intersubjectively comprehensible way whether or not a policy instrument is suited to achieve a policy goal to a desired measurable degree. The value judgement which is needed to decide which of the proposed policy instruments shall be applied in practice has to be rendered by the regional policymakers of the EU or by its voters within a democratic process. The

policy instruments proposed in such a way are value-free and scientific. They pay attention to the fact that regional economic policy problems do constantly change, that they need rational solutions and that these solutions must always be seen as fallible.

In a nutshell, EU regional policymakers do not have to bring about an efficient and rational neoclassical economic order that just exists theoretically. Their function is not to correct market failures. They instead have to cope with the constantly changing economic, institutional and political environment in the internal European market and have to adapt their policies to it. They can even have a creative task in terms of fostering the formation of new markets and products, new technologies and processes as well as new institutions. This, however, depends on the normative policy goals they should pursue in the democratic policy process. Whether the policies will be successful in terms of the achievement of the underlying policy goals followed, cannot be predicted in advance. Policymakers as well as private firms and entrepreneurs can fail to achieve their goals in an evolutionary world. The process of economic competition decides the success or failure in modern market economies. Thus, neither the state nor private economic activity can be seen as futile or advantageous a priori.

When the evolutionary insights presented in this paper are overlooked, an incorrect, undemocratic and even detrimental regional policy in the EU may be conducted in the future. Scientifically informed regional policy making in the EU requires a realistic and objective understanding of the subject of EU regional policy. In terms of a renaissance of a "European industrial policy", the evolutionary findings of this paper should by all means be considered. Otherwise, the large disparities in economic activity across the EU will continue to persist and may even increase.

Acknowledgements

Appendix

Table 3.1: Total structural funds allocations by member state 2000-2006, 2007-2013 and 2014-2020 (in million €, current prices)

Geo	2000-2006	2007-2013	2014-2020	(A) Share of total budget for 2000-2006 %	(B) Share of total budget for 2007-2013 %	(C) Share of total budget for 2014-2020 %	(B) - (A)	(C) - (B)
Austria (AT)	1,730.2	782.0	1,235.6	0.71	0.38	0.35	-0.33	-0.03
Belgium (BE)	1,989.2	1,204.5	2,283.9	0.82	0.59	0.65	-0.23	-0.06
Bulgaria (BG)	662.7	3,225.3	7,588.4	0.27	1.57	2.16	1.30	0.58
Cyprus (CY)	109.2	322.6	735.6	0.05	0.16	0.21	0.11	0.05
Czech Republic (CZ)	2,776.7	12,973.8	21,982.9	1.14	6.33	6.25	5.19	-0.08
Denmark (DK)	742.6	277.3	553.4	0.31	0.14	0.16	-0.17	0.02
Estonia (EE)	771.2	2,665.4	3,590.0	0.32	1.30	1.02	0.98	-0.28
Finland (FI)	2,080.1	1,050.9	1,465.8	0.86	0.51	0.42	-0.34	-0.10
France (FR)	15,843.9	7,578.4	15,852.5	6.53	3.70	4.51	-2.83	0.81
Germany (DE)	30,121.7	17,570.6	19,234.9	12.41	8.57	5.47	-3.84	-3.11
Greece (GR)	25,143.8	13,973.1	15,521.9	10.36	6.82	4.41	-3.54	-2.41
Croatia (HR)	49.3	201.6	8,609.4	0.02	0.10	2.45	0.08	2.35
Hungary (HU)	3,205.9	14,584.9	21,905.9	1.32	7.12	6.23	5.80	-0.89
Ireland (IE)	3,698.9	508.2	1,188.6	1.52	0.25	0.34	-1.28	0.09
Italy (IT)	30,245.3	13,535.9	32,823.0	12.46	6.61	9.33	-5.86	2.72
Latvia (LV)	1,279.3	2,965.8	4,511.8	0.53	1.45	1.28	0.92	-0.16
Lithuania (LT)	1,639.7	5,277.5	6,823.1	0.68	2.58	1.94	1.90	-0.64
Luxembourg (LU)	75.5	32.0	59.7	0.03	0.02	0.02	-0.02*	0.00
Malta (MT)	84.0	409.0	725.0	0.03	0.20	0.21	0.16	0.01
Netherlands (NL)	2,768.1	1,023.3	1,404.3	1.14	0.50	0.40	-0.64	-0.10
Poland (PL)	13,301.4	44,784.4	77,567.0	5.48	21.85	22.05	16.37	0.19
Portugal (PT)	23,426.6	16,751.9	21,465.0	9.65	8.17	6.10	-1.48	-2.07
Romania (RO)	1,750.9	7,055.9	22,993.8	0.72	3.44	6.54	2.72	3.09
Slovakia (SK)	1,797.1	5,523.6	13,991.7	0.74	2.70	3.98	1.95	1.28
Slovenia (SI)	486.6	2,539.2	3,074.8	0.20	1.24	0.87	1.04	-0.37
Spain (ES)	58,108.0	21,413.5	28,559.5	23.94	10.45	8.12	-13.49	-2.33
Sweden (SE)	2,075.5	1,116.9	2,105.8	0.86	0.55	0.60	-0.31	0.05
UK	16,719.0	5,576.6	11,839.9	6.89	2.72	3.36	-4.17	0.64

Source: Original calculations according to structural funds data from European Commission (2015b).
*Note: * This result is due to rounding. The structural funds data for 2014-2020 do not include the financial commitments for "interregional cooperation", "urban innovative actions" and "technical assistance", because the financial means are not directly allocated to specific member states. That is why the values in column (C) do not add up to 100%.*

Chapter 4

Market failure vs. system failure as a rationale for economic policy? A critique from an evolutionary perspective[†]

Abstract

This paper reconsiders the explanation of economic policy from an evolutionary economics perspective. It contrasts the neoclassical equilibrium notions of market and government failure with the dominant evolutionary neo-Schumpeterian and Austrian-Hayekian perceptions. Based on this comparison, the paper criticises the fact that neoclassical failure reasoning still prevails in non-equilibrium evolutionary economics when economic policy issues are examined. This is more than surprising, since proponents of evolutionary economics usually view their approach as incompatible with its neoclassical counterpart. In addition, it is shown that this "fallacy of failure thinking" even finds its continuation in the alternative concept of "system failure" with which some evolutionary economists try to explain and legitimate policy interventions in local, regional or national innovation systems. The paper argues that in order to prevent the otherwise fruitful and more realistic evolutionary approach from undermining its own criticism of neoclassical economics and to create a consistent as well as objective evolutionary policy framework, it is necessary to eliminate the equilibrium spirit. Finally, the paper delivers an alternative evolutionary explanation of economic policy which is able to overcome the theory-immanent contradiction of the hitherto evolutionary view on this subject.

[†] This chapter is based on the paper "Market failure vs. system failure as a rationale for economic policy? A critique from an evolutionary perspective", *Papers on Economics and Evolution 2015-04*, Philipps University Marburg, Department of Geography, https://www.uni-marburg.de/fb19/fachgebiete/wirtschaftsgeographie/wps_ag/archiv_evoec/2015/2015_04.pdf, (Schmidt 2015). It has also been invited to revision and resubmission to the *Journal of Evolutionary Economics.*

4.1 Introduction

The task of economics as a science with regard to economic policy is usually seen as a threefold one (see Witt 2003). First, economics should provide a positive explanation of economic policy. Second, this positive knowledge should be used for practical policy purposes, i.e. it should help economists formulate policy instruments in order that given normative policy goals may be achieved. This is the so-called 'prescriptive' or 'instrumental' dimension of economics. Third, the normative dimension of economics determines the policy objectives which policymakers should pursue, and delivers a legitimisation for economic policy. Whether economists should do normative economics is disputed, however, because it requires subjective value judgements. The latter are not objectively or intersubjectively comprehensible, which is why some economists regard these approaches as unscientific. Hence, the lowest common denominator among most economists is the tendency to sharply distinguish positive and instrumental from normative economics and to explicitly reveal value judgements in economic theories.

As depicted in Figure 4.1 on the next page, economic policy is positively and normatively explained in different ways in neoclassical equilibrium and evolutionary non-equilibrium economics. This usually includes the prescription of policy instruments. In the neoclassical strand, economic policy is explained by resorting to allocative and distributive market failures. In different static trade, growth and regional economic theories, such market failures are identified. These should then be tackled through public interventions in order to improve and harmonise citizens' living and working conditions. Depending on their belief in the government's ability to efficiently correct market failures, more state-oriented neoclassical economists opt for economic policy interventions in the market. More market-oriented neoclassical economists believe in government failure as well as the state's inability to make corrections. Such economists consequently take a critical attitude towards economic policy.

In contrast to that, Figure 4.1 distinguishes between a (neo-)Schumpeterian and an Austrian-Hayekian strand of non-equilibrium evolutionary economics. The two hold opposing views on economic policy (Wegner and Pelikan 2003, p. 3). Hayekians disapprove of state interventions altogether, due to the "Impossibility Theorem", a term coined by Wegner (1997, p. 485). According to this theorem, "the state has no privileged knowledge ... [and is therefore no, P.S.] better informed than private agents on the optimal nature of market outcomes" (Moreau 2004, p. 872). Neo-Schumpeterians opt for an active role of the state and can be further divided into two different camps

Figure 4.1: Rationales for and against economic policy in neoclassical and evolutionary economics

	positive role of government because of	negative role of government because of
neoclassical economics	market failures	government failures
evolutionary economics	Neo-Schumpeterian: *market failures and system failures or system failures only*	Austrian-Hayekian: *"Impossibility Theorem"*

Source: Own depiction.

(Bleda and del Río 2013). They either explicitly accept the market failure notion of neoclassical economics and extend it with a system failure rationale for economic policy, or the market failure rationale is rejected and substituted by the system failure concept. Evaluating these evolutionary explanations of economic policy, especially the former neo-Schumpeterian view, appears to be a surprising and contradictory undertaking. It explicitly accepts the neoclassical notion of market failure, although evolutionary economists generally see their approach as incompatible with and separate from this strand of economics.[1] In contrast, the latter neo-Schumpeterian approach appears, at least at first glance, to be consistent when market failures are seen as part of the rejected equilibrium economics. However, as this paper argues, neither of these two rationales is compatible with a truly evolutionary perspective on economic policy. Both rationales, the one accepting the market failure concept and the one rejecting it, still represent the spirit of neoclassical (optimal) equilibrium economics that evolutionary economists reject. This critique also applies to the recent attempt of Bleda and del Río (2013) who integrate the two neo-Schumpeterian explanations in an evolutionary "functional technological innovation systems (TIS) approach". Thus, the

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[1] A good example of this discrepancy can be found in Boschma (2009, pp. 14-16) who, as an evolutionary economist, does not claim market failures to be irrelevant but rather complemented by system failures. At the same time, in another publication together with Ron Martin (2010, p. 31, note 2), they claim the combination of neoclassical and evolutionary economics undertaken by Jovanović (2009) to be "a rather forced and - incompatible - marriage of perspectives".

widely prevalent evolutionary economic policy rationales provide just slightly better and more realistic insights than their neoclassical counterparts in terms of a positive as well as prescriptive and normative explanation of economic policy.

To substantiate this point of view, the second section of the paper analyses the origins of failure thinking in neoclassical economics. It also elaborates why the evolutionary concept of system failure extends but is still rooted in the neoclassical notions of market and government failure, respectively. Beyond that, it argues that the Austrian-Hayekian standpoint on evolutionary economic policy is also too narrow a view when "unsatisfactory courses of economic development ... [are seen as, P.S.] the unavoidable price of market evolution or the consequence of detrimental economic policy" (Wegner and Pelikan 2003, p. 3). This negative attitude towards public policy also emanates from the notion of an optimal state of the economy against which government failure is assessed, although Austrian-Hayekians themselves actually reject this idea. Section three is devoted to showing why all the current evolutionary policy rationales just mentioned are not in line with truly evolutionary economic thinking. It argues that the "fallacy of failure thinking" is a problem of internal consistency for this fruitful strand of economics, one which needs to be eliminated. This would not only make the evolutionary approach unambiguous and explicitly set it apart from its unrealistic neoclassical counterpart. It would also strengthen its scientific validity and its usefulness for an explanation of economic policies observable in the real world. This would in turn offer objective and practically applicable evolutionary policy implications to economic policymakers which the prevailing approaches do not provide. Section four discusses the general positive, instrumental and normative consequences that can be drawn from the previous analysis for a proper evolutionary economics explanation of economic policy. Finally, the paper draws its conclusion.

4.2 The origins of neoclassical failure thinking and its application in evolutionary economics

To understand why the customary evolutionary explanations of economic policy are rooted in neoclassical economic thinking, it is necessary to understand how the latter approach conceives the modern market economy.

The neoclassical approach is based on the ahistorical idea of a "natural order" of economic interactions in markets, in which "consumption is the sole end and purpose

of all production" (Smith 1776, Vol. II, Book IV, Chapter VIII, p. 179). Accordingly, the natural aim of every citizen is to maximise the satisfaction of its needs. Thus, neoclassical economics assumes that both the social economic goal and the goal of public policy is to maximise the welfare of all members of society. To put it differently, pleonexia as a social principle is the ideological basis of (neo)classical economic theory (Kramm 1975, p. 97). As Gunnar Myrdal (1953) has shown, this normative postulate emanated from the theory of natural law and was influenced by utilitarian thinking in political economics in the 18th and 19th century.

In the standard neoclassical general equilibrium model of perfect competition which can be traced back to "Smith through Ricardo, Walras, Marshall, right up to Debreu and the most sophisticated of present-day Americans" (Kaldor 1972, p. 1241), a decentralised market economy is led by an invisible hand. Without central planning by a public authority, the price mechanism automatically aligns supply and demand in the market. It brings the various opposing plans of rational utility and profit maximising market participants into congruence and harmony. In this model, the market is understood as the first-best mechanism for solving the alleged "economic problem" of scarce resources on the one hand and infinite human needs on the other. It not only allocates the factors of production (capital, labour, land) to the most efficient utilisation with respect to societal desires. It also distributes the output generated by those factors in a Pareto-optimal and fair way according to marginal factor productivity.

It is clear that in this optimal neoclassical world economic policy is conceived as an intervention into the basically harmonious market. It is only legitimate when the price mechanism fails to allocate capital, land and labour to production efficiently or fails to distribute the generated incomes in a socially just or politically desirable way. Depending on their view, neoclassical economists either approve or disapprove of policy interventions in the market. Based on insights from public choice theory, the latter usually argue that government failures regularly occur and that economic policymakers do not manage market failures with taxpayers' money efficiently. Hence, no economic policy ought to be conducted by the state. The former believe that the government is "able to correct market failures efficiently and to lead the economic system to a Pareto-optimal equilibrium" (Moreau 2004, p. 850). In a nutshell, in neoclassical economics, economic policy is discussed against the background of an unsolvable a priori "state versus market debate" (Sälter 1989, p. 18).[2]

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[2] To put it in Dahlman's (1979, p. 156) words: "You cannot show analytically that the government, in principle and in all cases, handles externalities better than the market; nor can you prove the

Examining the prevailing evolutionary rationales for economic policy, it turns out that they seem to assume the same optimal "maschine model" (Koch 1996, p. 16) as neoclassical economics. Both neo-Schumpeterian economic policy rationales, i.e. acceptance and rejection of the concept of market failure, augment the neoclassical market failure idea with a concept of system failure. The latter "builds on the notion that innovation processes are social learning processes that take place in a context of networks and institutions ... [which, P.S.] implies that public intervention is legitimate and needed if the complex interactions that take place among the different organisations and institutions involved in innovation do not function effectively" (Asheim et al. 2013, p. 7).[3]

Similar to neoclassical economics, the concept of system failure presumes a normative yardstick against which the effectiveness of a local, regional or national system of innovation can be assessed. In evolutionary economics, such a benchmark does not only have to be the effective or optimal maintenance of innovation itself. It could also be the encouragement of evolution, the generation of new variety and technological diversity, experimentation and new knowledge, the extension of the division of labour, the promotion of learning, maximum social welfare like in the traditional neoclassical approach, or even a mixture of these normative goals (van den Bergh and Kallis 2013, pp. 285-287). Hence, both neo-Schumpeterian versions of the system failure rationale for economic policy emanate from the same notion as do the neoclassical market and government failure explanations. Again, the idea persists that the modern market economy works as if an optimal societal plan existed under which the production and distribution of material and immaterial wealth are subsumed (Sälter 1989, p. 70). This time, however, not only the market but also the organisations and institutions in which the market is embedded fail to bring about the optimal amount of experimentation, new variety, learning, new knowledge and so on. Clearly, the market failure concept is extended by means of an institutional or systems component. This definitely is a very important amendment to explain phenomena such as economic policy and should not be criticised here. What still remains to be criticised, however, is that the

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opposite: it all depends on what point of reference you choose. And that is not a question of positive economics. By choosing the appropriate point of reference, the "conclusion" is reached that government intervention (or no government intervention) is optimal."

[3] Tödtling and Trippl (2005) suggest distinguishing between three different types of system failures, i.e. "organisational thinness", "lock-in" and "fragmentation". For a more detailed explanation of these and other types of system failures, see e.g., Boschma (2009, pp. 15-16) and Asheim et al. (2013, p. 6).

neo-Schumpeterian evolutionary rationales for economic policy remain deeply rooted in neoclassical optimality thinking.

Optimality or failure reasoning can also be discovered in the Austrian-Hayekian Impossibility Theorem. Just like state-oriented neoclassical economists, neo-Schumpeterians seem to believe in the possibility that the economy can attain a conceived optimum. Similar to the neoclassical idea of government failure, the "model Platonic" (Albert, Arnold and Maier-Rigaud 2012; Kapeller 2013, pp. 208-212) analogue to this view in the current evolutionary approach is the Austrian-Hayekian rejection of government intervention. The Hayekian Impossibility Theorem simply assumes that the state is not able to bring about a better economic result than the market. Just like in neoclassical economics, the state is seen as an interventionist evil that exists outside of the optimal economic world.[4] In case a policy measure fails to achieve its goals, the government is judged against a more or less optimal market.[5]

To sum up, in the dominant evolutionary approach to economics and economic policy, one is left with the same unsolvable a priori state vs. market debate as in traditional economics. Depending on the normative point of reference, economic policy may or may not be optimal. This is more than surprising, since neoclassical economic thinking is rejected by evolutionary economists who conceive their strand of economics as unique and separate from it.

4.3 The "fallacy of failure thinking" in neoclassical and evolutionary economics

This section examines why neoclassical failure thinking is a logical caveat for the evolutionary strand of economics. It is therefore a problem of internal consistency for this approach and needs to be eliminated. Two arguments substantiating this view are put forward in this section.

To begin with, following Chandra (2004), Kaldor (1972, pp. 1240-1242) and Richardson (1975, p. 351), the source of the distinction between neoclassical and evolutionary

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[4] As Gallas (2015) argues, this reasoning might be due to Hayek's anti-socialist eclecticism stemming from contradictory moral philosophy approaches, namely evolutionism, utilitarianism and deontology, which characterise the normative dimension of his work.

[5] More or less optimal because "Hayekians interpret unsatisfactory courses of economic development to be either the unavoidable price of market evolution or the consequence of detrimental economic policy" (Wegner and Pelikan 2003, p. 3).

economics can be localised in the first seven chapters of Vol. I, Book I of Adam Smith's (1776) *Wealth of Nations.* This is where Smith develops a theory of economic equilibrium and a dis- or non-equilibrium theory of economic evolution.[6] The equilibrium part has developed into the strand of traditional neoclassical economics, while the non-equilibrium part has differentiated into a variety of rather heterodox economic theories. The latter include, e.g., theories of circular and cumulative causation, Post Keynesian Economics, Austrian Economics, Institutional and Evolutionary Economics and Complexity Economics (see Berger 2009, pp. 2-3 and Tieben 2009, p. 422).

The most important and fundamental difference between the equilibrium and non-equilibrium theories is the understanding of the market economy as either a static or dynamic system. This in turn mainly depends on how these two strands understand the role of increasing returns to scale for the economy (see also Metcalfe 2003; 2005). In neoclassical economics, increasing returns to scale are mainly a technical, static and partial concept (Toner 1999, pp. 8-11 and 29-38). Since Alfred Marshall's (1890) *Principles of Economics*, increasing returns to scale are examined via the concepts of internal and external economies to scale, i.e. declining unit costs on the level of the individual firm or the industry to which this firm belongs. This is due to the fact that only these two conceptions of increasing returns to scale are compatible with a static concept of economic competition. According to the invisible hand theorem, only the latter implies an efficient allocation of production factors, as well as a just and harmonic distribution of incomes in accordance with marginal factor productivity.

With Allyn Young's (1928) influential paper, the Smithian idea was revisited that increasing returns are an economy-wide phenomenon occurring not only within firms and industries but also between industries. The latter in particular comprises the idea that the technological environment, which is exogenously given in the constrained optimisation problems in neoclassical economics, is constantly changing over time. Hence, modern market economies will never attain the static equilibrium situation which neoclassical economists have in mind and in which the plans of all economic agents necessarily coincide. Moreover, in Young's world of circular and cumulative causation, increasing returns to scale are not a problem for the maintenance of economic competition. It is rather competition which is the constant and main driver for the

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[6] It might be better to speak of a non-equilibrium instead of a disequilibrium theory in this context. There are also neoclassical economists who are interested in disequilibrium situations but who share the idea of the existence of an equilibrium. Evolutionary and institutional economists, however, usually reject the notion of an equilibrium altogether, since they view the economy as a dynamic and constantly changing system (see also Tieben 2009, pp. 421-535).

exploitation of economies of scale and specialisation by firms in the production process (Richardson 1975, p. 354).

Constantly changing economic conditions and the non-existence of an equilibrium in the neoclassical sense imply that something like an optimal allocation of the factors of production and a just distribution of incomes according to marginal factor productivity does not exist (Schubert 2012, pp. 592-593). From an evolutionary perspective, the normative point of reference against which phenomena like market and government failures are assessed in neoclassical economics falls apart. This reveals that both neoclassical types of failures are terms bound to a specific understanding of market economies as static systems mainly concerned with the optimal equilibrium allocation of scarce resources.

The same applies to the concept of system failure and the Austrian-Hayekian Impossibility Theorem. A static, optimal system with optimal organisations and institutions which are subsumed under a societal plan is a fiction not existing in an evolutionary world. The institutions and organisations in which markets are embedded are constantly changing as well. This last point also holds true for citizens' values and norms. A social objective function does not exist. As Arrow's paradox (1950, 1963) shows, even in a static, neoclassical world, individual preferences cannot be consistently aggregated into a social objective function. Therefore, it is even less feasible in a constantly changing evolutionary world. Moreover, the Austrian-Hayekian idea of an optimal state of the economy on which the state should not be better informed than private agents is meaningless. In an evolutionary world, such an optimum cannot be determined. Austrian-Hayekians themselves repeatedly stress this last issue (Moreau 2004, p. 872). To blame economic policy as detrimental a priori, however, necessarily presumes the idea that the market is the better or optimal mechanism with which to achieve a certain normative goal. Failure or optimality reasoning is thus reintroduced through the back door in the Impossibility Theorem. Yet, from a proper evolutionary angle where such an optimum is not identifiable, neither economic policy nor the market can be blamed as futile or harmful a priori.

What remains is the need to switch the perspective on market, government and system failures away from deviations from an optimal equilibrium case to inherent and systematic patterns of capitalism.[7] The alleged failures are rather the driving force of modern market economies. Without them, no economic development and progress

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[7] See also Sälter (1989) who explains this view at length for the case of market failures.

would exist. Optimality or failure thinking is intrinsically incompatible with a proper evolutionary economics point of view.

The second argument for the necessity of eliminating the fallacy of failure thinking from the evolutionary approach to economics is linked to the remarks just made above. The normative yardstick is not only indeterminable in an evolutionary world. Its a priori introduction in order to explain economic policy has no epistemological value at all. Following the research programme of Keynes (1904), a theory derived in such a way is unscientific, pseudo-objective and has no relevance for practical public policy.

As far as the positive explanation of economic policies is concerned, the "failure approaches" are unscientific because they do not emanate from the observable facts. They rather a priori presume an optimal world and compare it with the economic reality. Whenever the reality deviates from that optimal world, this is not an objection against the theory, but against the suboptimal reality (Sälter 1989, pp. 7-8). Accordingly, economic policy must be positively explained as an instrument with which to approach the optimal state of the market or the system, i.e. as a means to correct market and system failures. Such a theory can be neither verified nor falsified. It is impossible to empirically show that economic policy was used by policymakers to correct market and system failures, because these failures are concepts bound to what Demsetz (1969) terms a "nirvana theory". The theory is thus immunised against experience (Albert, Arnold and Maier-Rigaud 2012). The same holds true for the notion of government failure and the Impossibility Theorem. It can always be asserted, but neither verified nor falsified, that the state failed to achieve the fictitious optimum. It all depends on the point of reference. No objective positive insights can be gained from such a theory.

One objection to this argument sometimes arises that the failure approaches are normative theories which do not claim to factually explain economic policy. In the literature, however, these normative theories are indeed continuously used to positively explain economic policies (see, e.g., Holtzmann 1997, pp. 41-42, who frankly admits this for the application of the neoclassical market failure approach to the explanation of EU regional policy). This is probably due to the fact that the theories combine positive, prescriptive and normative elements, such that the boundaries between these three dimensions are blurred.[8]

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[8] The following quote of Zerbe and McCurdy (1999, p. 560) with regard to neoclassical market failure theory again confirms this statement: "What began as a simple attempt to provide a normative explanation for the existence of government expenditures has developed into a quasi-scientific full-scale diagnostic test with the prescription of cures."

The lack of epistemological value also applies to the justification of economic policy and thus to the practical application of the aprioristic failure approaches to economic policy goals. The policy recommendations for economic policymakers derived from such theories are pseudo-objective and inapplicable in the real world. As Mantzavinos (2005, p. 212, own translation) puts it, they have "a crypto-normative character, since the .. value judgements [presumed to the deduction of policy recommendations, P.S.] are most often not explicitly reconstructed."

Albert (1958, p. 35) points out that the implicit, underlying normative postulate in the failure approaches must be designed as an empty formula in order to keep up the scientific appearance of the theory. The problem with such an empty formula is that it is open to every arbitrary and subjective interpretation. No one can objectively and scientifically determine the exact optimal amount of evolution, innovation, learning, new knowledge, new variety or maximum social welfare that policymakers should try to approach. Any attempt to do so depends on the point of reference. In other words, an additional value judgement must be rendered by economic policymakers before the policy instruments derived from these theories can be applied in practice. Hence, the neoclassical as well as the prevalent evolutionary economic policy rationales face a dilemma (Albert 1958, p. 35). They either have to obviously sacrifice their scientific objectivity by explicitly introducing their presumed value judgements, or they formulate normative principles without any practical content for economic policymakers in the real world.

What economists usually do to circumvent this dilemma is to fall back on the instrumental dimension of economics. All value judgements are put into the given normative policy goal, and allegedly value-free policy instruments with which these goals could be achieved are formulated. Witt (2003, pp. 87-89) rightly argues that, on the prescriptive level, the dichotomy between factual means and normative ends per se can be maintained. It can be objectively analysed whether a statement about the means-ends relationship is true or false. Thus, on the instrumental level, economists can scientifically derive policy implications from normative policy goals and present alternative opportunities for economic policy action to policymakers. However, as Myrdal (1933, 1953) and Streeten (1954) show, such an attempt can easily become a "teleological fallacy". As soon as the prescriptive dimension of the theory is left behind and the deduced policy instruments are justified or recommended with the help of the normative policy goal, they are value-laden and therefore pseudo-objective. Such a

procedure already forestalls the subjective value judgements which are required for every application of science to practical policy problems (Albert 1958, p. 36). To put it as Dahlman (1979, p. 156), "this is not science; it is metaphysics".[9]

Since the evolutionary failure approaches recommend and justify policy interventions (or no policy interventions) with market and system failures (or government failures and the Impossibility Theorem) and do not stick to the instrumental level of economics, they end up with the same dilemma that was mentioned above.[10] The policy instruments derived in such a way must either be based on an explicit value judgement or they must be designed as empty formulas with no practical value for economic policymakers. To give an example of the latter case, Bleda and del Río (2013, pp. 1049-1051) recommend on the basis of their "TIS approach" that evolutionary policymakers should "assure an adequate education system", that they should "encourage creativity, exploration, experimentation and failure" and that they should "intervene at the level of constitutional rules in order to provide the adequate underlying structure of regulations, financial institutions, and public infrastructure".[11] All these policy recommendations have in common the fact that their practical content is not specified. How exactly should policymakers encourage creativity? What is an adequate education system in detail and what are adequate financial institutions or public infrastructure? These policy recommendations have no practical value at all. To use them for practical policy purposes, economic policymakers must render a further value judgement.

It follows from the foregoing considerations that evolutionary economists must take the origins of their own theory more seriously if they really want to provide a consistent and scientific alternative to neoclassical economics. This is especially true when it

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[9] When value judgements are used in the way mentioned here, they cannot be the subject of scientific analysis. They lack the opportunity for an ultimate justification. Any attempt to justify a value judgement necessarily leads to the so-called "Münchhausen Trilemma" which leaves three options for allegedly providing a proof of the value judgement: dogmatism, a circular argument or an infinite regress (Albert and Rorty 2014, pp. 16-20). The market and system failure approaches use dogmatism for the justification of their policy recommendations, because the normative postulate presumed (innovation, new variety, maximum social welfare, etc.) is presented as a quasi-natural and self-evident goal (see also Mantzavinos 2005, p. 214).

[10] Thus, the appraisal of Schubert (2012, p. 593) "that most evolutionary economists, when examining policy-related issues, have tried to remain safely on instrumental ground" cannot be shared here.

[11] These are typical policy recommendations by evolutionary economists who recommend or justify economic policies on the basis of a normative postulate. They are not only given by Bleda and del Río (2013). They can also be found, e.g., in Asheim et al. (2013), Boschma (2009), Dodgson et al. (2011), Lambooy and Boschma (2001), Metcalfe (2003; 2005) and Tödtling and Trippl (2005). The only difference between these papers is the varying degree of policy instruments designed as empty formulas and the justification of certain policy instruments on the basis of a (mostly implicit) subjective value judgement.

comes to the development of an evolutionary policy framework. As shown above, optimal economic situations in a neoclassical sense do not exist if one conceives the economy as a complex evolutionary system. In that sense, the "optimum optimorum" in an evolutionary world is always the path-dependent current economic situation. Phenomena identified as market, government and system failures in neoclassical and evolutionary economics appertain to that current situation. They are not an economic evil which needs to be tackled through government or non-government interventions. When the dominant evolutionary economic policy rationales draw on notions of market, government and system failure or the Impossibility Theorem, they fall back into neoclassical reasoning. A failure of the government, the market or the system necessarily presumes a belief in the existence of an optimal end-state of the economy. As this section has shown, the latter is rightfully rejected by proper evolutionary economists when increasing returns are understood as an economy-wide phenomenon. In addition, neither fruitful positive nor practically applicable and scientific instrumental insights on economic policy can be gained with the help of these normative theories. This must be reason enough for the evolutionary approach to economics to get rid of the fallacy of failure thinking. An analysis of the origins of evolutionary thinking and the general logic of the sciences permits no other option. This would clearly make the evolutionary approach to economic policy consistent and separates it from its neoclassical counterpart. Beyond that, it offers an alternative to deliver a better and scientifically positive explanation of economic policies in the real world and to provide objective policy implications with practical content for economic policymakers.

4.4 A proper evolutionary economics explanation of economic policy

In light of the preceding sections, the question remains as to which consequences have to be drawn in order to provide a proper explanation of economic policy from an evolutionary point of view. The answer is unequivocal. What is required from a proper evolutionary economics standpoint on economic policy is the strict separation of the positive, prescriptive and normative dimensions of an economic theory.

A scientifically positive explanation of economic policies conducted in the real world must depart from the observable facts and not from a normative postulate. To formulate a theory about why a certain policy is undertaken by policymakers in reality, falsifiable

and intersubjectively comprehensible hypotheses must be postulated. These hypotheses can be critically discussed and empirically tested by economists. They must always be seen as fallible, and as long as they have not been falsified, they count as the provisional truth. With regard to a positive explanation of economic policies, the evolutionary approach to economics offers a crucial advantage in comparison to a neoclassical and public choice perspective on economic policy. As Witt (2003, p. 79) argues, it "suggests enhancing realism by adding the dimension of historical time to the picture, a dimension that allows the consequences of changing knowledge constraints to be accounted for". Evolutionary concepts like bounded rationality, imperfect information and social learning clearly enhance the epistemological opportunities to positively explain factual economic policymaking.

On the instrumental level, it became evident from the above analysis that in an evolutionary world in which an optimal end-state of the economy does not exist, it cannot be determined whether the state or the market is the better "mechanism" to achieve a political goal. The aprioristic state vs. market debate of the failure approaches is irrelevant. In market economies, it is in the nature of the process of economic competition to discover the most effective and efficient investments. This is per se independent of the fact that they have been privately or publicly undertaken.

A second instrumental insight is that, in an evolutionary world with true uncertainty, it is simply impossible to predict the success or failure of a policy measure ex ante. It is only feasible to identify ex post and at a certain point in time whether an economic policy measure was effective and efficient in accomplishing a certain normative policy objective. Moreover, in a constantly changing world with technological improvements and changing institutions, the effectiveness and efficiency of policy measures is time-specific, i.e. it can also change over the course of time. A public policy investment might not immediately deliver the expected economic returns, but in the future it might be a strategic and important economic asset which shapes economic development on the local, regional or national level. Contrariwise, a policy measure that is effective and efficient today might become the worst investment in the future. Hence, economic policymaking is not a static true-or-false decision. Instead, it is a dynamic process in which economic policymakers constantly react to changes in the evolutionary policy environment. The policymakers and economists always have to find new solutions to newly occurring policy problems in light of the already existing knowledge which was gained in an evolutionary process of collective learning.

A third prescriptive implication is that it is impossible to objectively recommend or justify certain policy instruments to economic policymakers a priori. As was shown in section three, any attempt to use economic theory in practice requires a subjective value judgement. On the one hand, these value judgements themselves are subject to constant change in an evolutionary world. Thus, it is impossible to deduce from them once and for all the policy implications for economic policymakers. On the other hand, objective and scientific policy advice is only possible when the evolutionary economist remains safely on instrumental ground. Evolutionary economists can therefore only present alternative opportunities for economic policy action. This implies that policy instruments should no longer be ultimately justified with the help of a normative policy goal. The policy instruments must rather be deduced in a context-, time- and region-specific manner against the background of available knowledge and experience with other policy measures in the past. They must be subject to ongoing critical discussion and improvement in light of newly occurring economic problems that need to be solved. Thus, the policy instruments derived in such a way always have to be seen as fallible. Only in that sense must economic policymakers be seen as adaptors and not as optimisers. They do not adapt to an optimal system or state of the economy, but to constantly changing economic situations. Conducting economic policy is a trial-and-error process in which policymakers and economists can learn and gather new experiences for future policymaking. Proper evolutionary economists do not have to answer the questions of "what ought to be done" and "how a rational economic system can be achieved". They must instead cope with economic problems in a rational way. This implies that the question to be answered is "what can be done if a specific economic problem needs to be solved" (Mantzavinos 2005, pp. 215-216, own translations).

The value judgements necessary to decide which of the different alternative policy instruments deduced from different normative policy goals should be applied in practice must be gained in a democratic policy process. As Wohlgemuth (2003, p. 120) rightly argues, "democracy and the competition of political ideas can .. be regarded as a procedure for the generation and critical assessment of political hypotheses ... [which, P.S.] is most useful and effective when political opinions are neither fixed nor 'given', but in the process of being formed and open to adapt to new circumstances and experiences". The democratic decisions made by citizens and political parties might turn out to be economically good or bad in the future. This depends, however, on the prospective economic situation and how the values and norms of citizens themselves

change over the course of time. Both are unknown to the policymakers as well as the (instrumental) economist at the time the decision for or against the policy has to be made.

On the normative level, different policy goals, their advantages and disadvantages, as well as their relationship to each other can be scientifically analysed (see also Schubert 2012, pp. 594-596). Potential synergies and trade-offs between these goals can be described. It can also be examined how normative policy goals change over the course of time. This includes an analysis of the direct and indirect side-effects of the policy instruments derived from a certain normative policy objective on other normative policy goals. As was already outlined in the introduction to this paper, normative economic theories can also be used to justify economic policies. However, economists and policymakers must be aware of the fact that justifications rest on subjective value judgements which cannot be ultimately proven. That is why normative theories are not objective and cannot be used to scientifically recommend or justify specific policy measures. Compared to the positive and prescriptive level of economics, normative discussions can never be objectively solved because they always depend on a subjective point of reference.

4.5 Conclusion

As this paper has shown, the prevailing evolutionary neo-Schumpeterian and Austrian-Hayekian approaches are as inadequate as the neoclassical notions of market and government failure to provide an explanation of economic policy. They barely offer alternative insights of a positive, instrumental and normative nature. This is due to the fact that all these explanations mix positive, instrumental and normative elements in a scientifically inadmissible way.

As their neoclassical counterparts, the customary evolutionary approaches likewise begin their explanation of economic policy by introducing a normative optimality principle against which the effectiveness of the market, the government and the local, regional or national systems of innovation is assessed. Hence, one is left with the same unsolvable a priori state versus market debate as in neoclassical economics.

That is why the "fallacy of failure thinking" must be removed from evolutionary economics, namely, for two reasons: First, neoclassical failure thinking is incompatible with a truly evolutionary perspective on economics. In a constantly changing

evolutionary world, a normative principle under which production and distribution of material and immaterial wealth are subsumed does not exist. Phenomena identified as market, government and system failures are inherent characteristics of modern market economies which are embedded in a constantly changing system of organisations and institutions. Economic policy can no longer be seen as an intervention into the system and its markets which has to correct market and system failures. Beyond that, economic policy itself cannot be judged against a perfect end-state of the economy. The notions of government failure and the Impossibility Theorem are meaningless. Second, a theory which presumes a normative principle in the explanation of an economic phenomenon has no epistemological value. Such a theory is pseudo-objective and unscientific. It can never provide a scientifically positive explanation of economic policies undertaken in the real world. In addition, policy recommendations derived from such theories are unscientific and without any practical content for economic policymakers.

A proper evolutionary policy framework, therefore, needs to sharply distinguish the positive, prescriptive and normative elements of a theory. Only this can provide scientifically positive statements about economic policies conducted in the real world. This also permits the scientific deduction of policy instruments from a given normative policy goal on the instrumental level of an economic theory. Another advantage of the policy instruments derived in such a way is that they are practically applicable. They are value-free and no longer have to be designed as empty formulas. On the normative level, different policy goals and their transformation over time can be scientifically described. Moreover, trade-offs between different policy objectives and the policy instruments deduced from them on the instrumental level can be analysed. This helps to show economic policymakers the potential consequences of their choice for or against the pursuit of a certain normative policy goal and may facilitate decision making in the political arena. In the end, though, the decision for or against a certain economic policy can only be solved with the help of a democratic process. The latter is a competitive discovery process by means of which the necessary value judgements for the practical application of economic policies can be gained. However, this does not ensure that a policy measure chosen in this way will definitely be successful in delivering the expected economic returns. No one is able to predict the future in a truly uncertain evolutionary world. The process of economic competition will eventually reveal whether the policy decisions made at a certain point in time will turn out as the right or wrong ones in terms of the policy goals pursued.

The dominant evolutionary approaches to economic policy which fall back on neoclassical reasoning are a step backwards from the actual findings of evolutionary economics. Therefore, the fallacy of failure thinking needs to be removed from this otherwise fruitful strand of economics in order to provide a scientific, realistic and practically applicable explanation of economic policy. This would explicitly set apart the evolutionary approach to economics from the unrealistic and pseudo-objective neoclassical understanding of economics and economic policy.

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Eidesstattliche Erklärung

Ich versichere an Eides statt, dass meine hinsichtlich der früheren Teilnahme an Promotionsverfahren gemachten Angaben richtig sind und, dass die eingereichte Arbeit oder wesentliche Teile derselben in keinem anderen Verfahren zur Erlangung eies akademischen Grades vorgelegt worden sind. Ich verischere darüber hinaus, dass die Dissertation selbstständing und ohne fremde Hilfe verfasst wurde, andere als die von mir angegebenen Quellen und Hilfsmittel nicht benutzt worden sind und die den benutzten Werken wörtlich oder sinngemäß entnommenen Stellen als solche kenntlich gemacht wurden. Einer Überprüfung der eingereichten Dissertation bzw. der an dieser Stelle eingereichten Schriften mittels einer Plagiatssoftware stimme ich zu.

Potsdam, 12. Mai 2016

Peter Schmidt