BEGUTACHTETE ARTIKEL

The Speeds of Europe – An Analysis of Regional Disparities Across the EU

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1. Introduction

In recent years, the euphoria over the „Project EU" has been dampened. The financial recession, followed by economic stagnation, has overwhelmed European national economies: turning from a private debt crisis into a public debt crisis, it has created unemployment, cutbacks in social spending and discontent with European institutions, especially in peripheral and rural areas. Perceived increases in inequality, as well as uncertainty, have reshaped the narrative of European integration. In order to save the European Union from dissolution in an era where nationalistic interests seem again to prevail, the idea of a multi-speed Europe has recently been re-emphasized. However, that concept conveys different ideas and interests, depending on who brings it to the table.

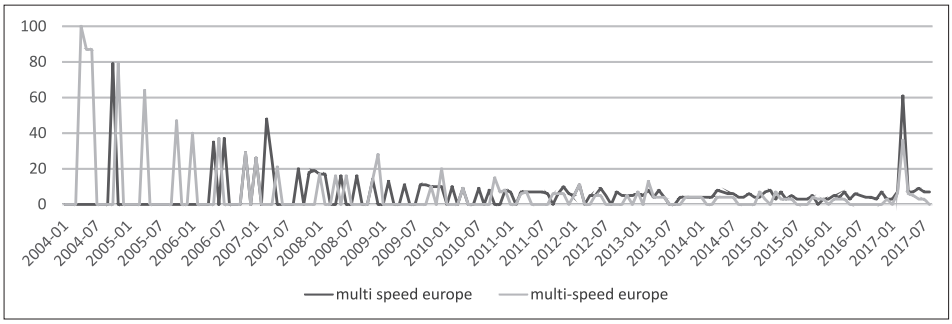
The first section of our paper is dedicated to a short overview of European regional development policies, after which we then turn to a quantitative analysis of regional disparities across Europe and show their evolution over time in terms of regional GVA, labour productivity and employment. We analyse the dispersion of income over time using the Theil index of concentration for different periods of time and regions. We then decompose the index in different ways – looking at differences within and differences between countries as well as regions. Finally, we assess what these disparities are related to and show the extent to which differences in employment and productivity rates contribute to disparities and the different speeds of different regions. Analysis is conducted on a NUTS II level for the time-span 1991-2014, using data from Cambridge Econometrics. Special attention is paid to the different phases of European integration, regional development policies and to the different paths of development of the weakest regions of different countries. Thus, we shed light on the actual multiple speeds of Europe and draw conclusions about what

policymakers should bear in mind when using this concept to underpin their political strategies.

2. „Multi-speed“ Europe

In recent years, the European Union has faced the most severe crisis since its existence. The private debt crisis followed by a public debt crisis has created economic stagnation and high rates of unemployment in many parts of Europe. Serious doubts have been raised about the design and viability of the single currency, and simply keeping the European Union integrated and stable has been a challenge for politicians. In addition to an increasing sense of economic insecurity, recent developments in migration trends have led to a rise in popularity of far-right parties that promote nationalist and protectionist views and Euroscepticism, both in countries that have been part of the EU-project from the beginning and in new Member States. In Britain, this led to the decision to leave the EU.

Figure 1: Frequency of the search terms „multi-speed europe“ and „multi-speed europe“ on Google since 2004



Google Trends data, own representation.

This was the situation when Commission president Jean Claude Juncker put the idea of a Europe of different speeds back on the table in his „White Paper on the Future of Europe – Reflections and scenarios for the EU-27 by 2025“, published in March 2017. The resurgence in interest is reflected in the Google searches of the term (see figure 1). Juncker does not use the term directly but proposes a closer union of „those who want to do more“ as one of five possible scenarios for the future of the European Union (European Commission, 2017).

While such increased cooperation of a smaller number of countries could facilitate policy progress on issues that are blocked by a veto of one or a few countries, the general idea of multi-speed is not supported by all Mem-

ber States. Peripheral countries fear being left behind and do not like the idea of multiple standards. On the other hand, some argue that a „multi-speed Europe“ could encourage cherry-picking and be the first step in giving up the idea of Europe as a single, common project. To some extent, integration at different speeds is already happening. The Eurozone, the Schengen-Area and the European Economic Area represent frameworks of different stages of integration.[1]

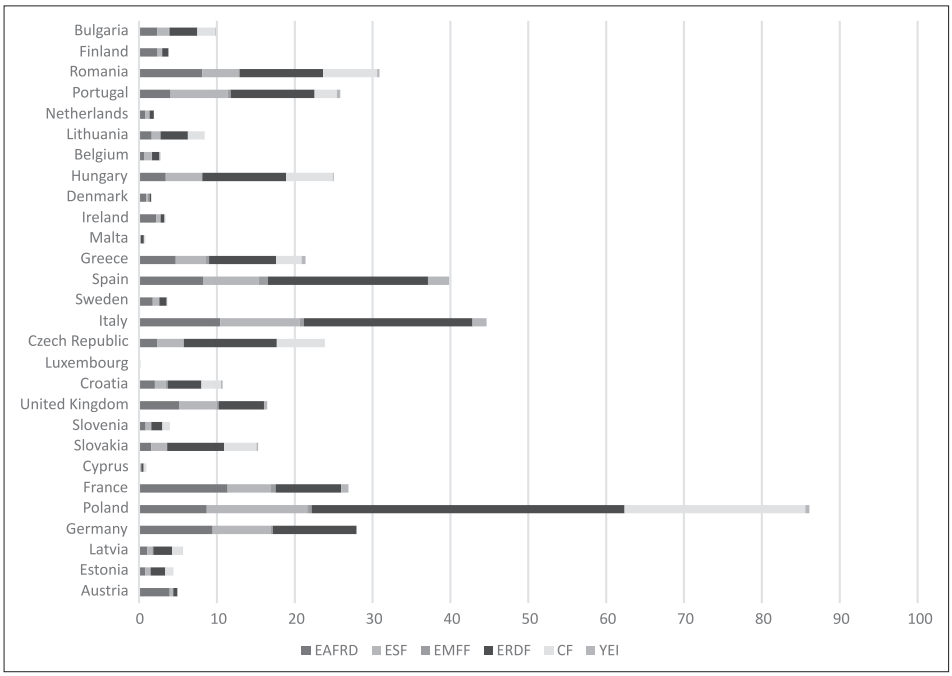
3. EU Regional Development Policies and Convergence

The integration of different markets and policy frameworks is supposed to go hand in hand with economic convergence. However, this is not always the case, which is one reason for the strategic targeting of weaker regions by the EU. In the following section, we will first provide an overview of funds available for EU development policies and examine the recent evolution of EU-wide convergence in order to ground the concept of a „multi-speed Europe“ in economic realities. One of the central goals of the European Union is to create economic cohesion by improving economic well-being and fostering development in all regions. Especially structurally weak and poor regions are supported with the aim of limiting regional disparities. In order for this to be achieved, the European Union relies on targeted policy instruments aimed at levelling economic divergences between countries and regions. Development is measured in terms of GDP per capita, giving rise to three categories of regions: „more developed“ (with GDP per capita over 90% of the EU average), „transition“ (between 75% and 90%), and „less developed“ (less than 75%).

There are five major funds available to different categories of regions, which together account for about one third of the EU budget: the Regional Development Fund (ERDF) and the Social Fund (ESF) can be accessed by all regions, whereas the Cohesion Fund (ECF) makes up an additional source of financing only accessible to less developed and transition regions. There are two supplementary, specialised funds: the Maritime and Fisheries Fund (EMFF), reserved for funding the Common Fisheries Policy of EU MS, and the Agricultural Fund for Rural Development (EAFRD), which makes part of the common agricultural policy and has spatial targets, such as strengthening the competitiveness of the agricultural sector and improving the quality of life in rural areas. Finally, the Youth Employment Initiative fund is designed to offer targeted assistance in regions where unemployment of young people is most acute (exceeding 25%).

In this section, we mostly address the first three funds, which together contribute to the Convergence Objective (previously known as Objective 1) of the Cohesion policy of the EU.

Figure 2: Budget Allocations (Amount of EU contributions only, excludes national contributions) by Fund and Country (2014-2020)

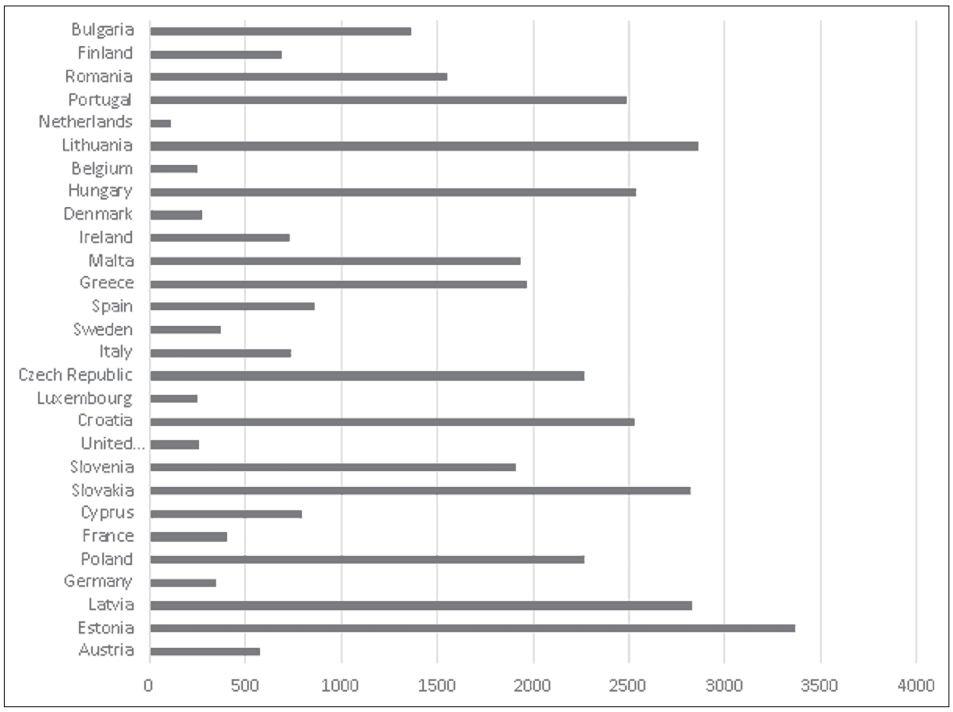


European Commission data (04/05/2018), own representation.

The ERDF contributes to cohesion within the Union by „correcting imbalances between regions".[2] It focuses on four priority areas: the digital agenda, financing the low-carbon economy, innovation and research, and providing support for SMEs. Depending on the development level of the region accessing the Fund, various thresholds (80% for developed regions, 60% for transition regions and 50% in less developed regions) must be allocated to at least two of the aforementioned key areas.

The ESF is available to all regions and focuses on four thematic areas: employment and labour mobility, combatting poverty, investing in education and enhancing institutional capacity.[3] Over € 80 billion are foreseen for the 2014-2020 period, with € 3.2 billion allocated to the Youth Employment Initiative. ESF allocations thus make up 24.8% of the Structural Funds (ESF & ERDF) budget. The Cohesion Fund is available for regions Member States having a GNI that is less than 90% of the EU average („transition" and „less developed"). This includes Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia and Slovenia for the 2014-2020 period.[4] It totals € 63.4 billion and aims to reduce economic and social disparities by focussing on infrastructure (transport) and environmental projects.

Figure 3: Per capita Budget Allocations (Amount of EU contributions only, excludes national contributions) by Country (2014-2020)



European Commission and World Bank data (04/05/2018), own representation.

The effectiveness of these funds is topic of a debate that has been going on for many years. A large number of studies has tried to find out whether the Structural Funds indeed promote regional economic growth and convergence. The findings have been very heterogeneous. Becker et al (2008) find a small, positive growth effect for Objective 1 payments and no effect on employment. They further conclude that the programs are efficient, generating a return approximately 1.2 times higher than the GDP costs associated with them.

Mohl and Hagen (2009) analyse the impact of structural funds on 124 NUTS 1 and 2 regions for the timespan 1995-2005, distinguishing between Objective 1, 2 and 3 payments. The results point towards a positive and significant effect of Objective 1 payments on regional growth rates, both in the short and the long term (up to four years after the payments have been made). Mixed and inconclusive results are obtained for the cumulative effect of structural funds for all objectives. A recent meta-analysis by Dall'Erba and Fang (2017) looks into 17 studies and shows that the contradictory evidence is rooted mainly in differences of the characteristics of the data used, but not the functional form of the estimation that research-

ers apply. A learning effect is observable: seemingly, in recent years the efficiency of funds has increased.

Turning to convergence, a voluminous body of literature has analysed the phenomenon of regional disparities in the past decades. Consistent with various phases of European integration, different studies have identified the presence of increasing national convergence, as well as persistent differences between regions throughout the 1980s and 1990s. Broadly speaking, there are two main approaches to analysing regional convergence: regression-based beta-convergence tests and alternative, non-parametric methods.

Eckey and Turk (2007): up to 2005, most studies find evidence for very limited, slow and diminishing convergence processes with rates often under 1%. A small number of studies find no evidence for convergence whatsoever, while others point towards increasing and significant convergence processes. The sometimes contradictory results can be explained by criticism of conventional beta-convergence approaches, that lies either in the specification of the model (too many controls for diverging factors, misspecification of regions), not taking into account distortionary factors such as commuting when analysing GDP/capita or cyclical effects when analysing growth rates, or the use of inappropriate data (see Cheshire & Magrini, 2000, Petrakos, Rodriguez-Pose & Rovolis, 2005, and Quah, 1996). Studies based on spatial models, measures of inequality and concentration or Markov chains approaches also find weak, if any, evidence towards convergence, although regional mobility can sometimes be observed (Eckey and Turk, 2007). Looking at the recent literature on the topic, the impression persists that there is no clear-cut direction with respect to European convergence. Cuadrado-Roura & Parellada (2013) review existing facts and studies and maintain that convergence is limited in terms of GDP per capita, slightly more significant in terms of productivity and there is a distinction between regions lagging behind and regions with high positive fixed effects (metropolitan areas and large economic activity centres). Petrakos et al. (2011) examine 249 NUTS regions using a beta convergence framework for the timeframe 1990-2003 and find evidence for increased regional divergence that can be traced back to factors such as agglomeration economies, geography, economic integration and economic structure. Bartkowska and Riedl (2012) examine convergence clubs in per capita incomes of European regions. Using data up for 1990-2002, they establish the existence of six different groups of regions with different steady state paths. Roses and Wolf (2018) find a U-shaped evolution of regional inequality between 1990 and 2010. Beugelsdijk et al (2018) show that the large and persistent regional disparities can be traced back to large total factor productivity differences within countries. Borsi and Metiu (2015) find no evidence for EU-wide regional income convergence

but identify convergence clubs based on geographical divides between North/South and Western/Eastern Member States. Finally, looking at determinants of convergence for the timespan 1995-2005, Crespo-Cuaresma et al. (2014) establish that the catching up process of regions in new Member States is driving between-country convergence while within-country convergence mostly takes place in regions of the core Member States. Unsurprisingly, regions with a capital city also grow faster.

Overall, the literature on regional convergence within the European Union is rich in explanations for the catching-up process, or the lack thereof. The main takeaway is that economic disparities are long-lasting and that convergence between countries may not necessarily translate into a catching-up process between regions or evenly distributed gains on a regional level. Nonetheless, as most of the aforementioned studies use data that are at least a decade old, they could not have foreseen the future enlargement waves of the European Union, and the inclusion of Eastern European countries with very different regional levels of development. To the best of our knowledge, our work is one of the very few studies extending the analysis horizon up to 2014 while also taking into account all phases of EU expansion. In this sense, it is interesting to analyse the convergence process for subsequent expansion phases of the EU and verify if the trade-off between convergence on a country level and divergence on the regional level still persists.

4. Empirical Strategy

Our work contributes to and supplements the findings of existing literature by taking into account recent economic developments and providing a combined spatial and economic decomposition of existing disparities. We use data on gross value added (GVA) as a proxy for GDP, employment and population from Cambridge Econometrics and analyse the distribution of economic activity within the European Union for a sample of 189 regions for the time period 1991-2014.

GVA is a measure of economic activity, defined as the regional output less intermediate consumption. The data is deflated to 2005 prices and thus real, the unit being 2005 Euro. For employment and population, it should be noted that employment is measured at the workplace, while population is registered at the residency, which can result in some distortion of the results, as commuting is disregarded. However, as we use quite large regions, the effect should be minor.

In our analysis, we take into account the different phases of European enlargement and simulate the evolution of disparities in economic activity for five different groups of countries: EU-12, EU-15, EU-25, EU-27 and

EU-28. We use data on NUTS 2 level, with a number of exceptions: NUTS 1 data is used for Belgium, Germany, the Netherlands, Greece and the UK. Malta, Luxemburg, Latvia, Lithuania, Cyprus and Estonia enter our calculations on NUTS 0 level. We also eliminate a number of regions, due to their remote geographical positions: Spanish Canarias, Ceuta and Melilla, Portuguese Azores and Madeira, Finnish Aaland and French Departments d'Outre Mer. A complete list of regions can be found in Annex 2.

Our analysis employs the Theil Index of concentration to measure differences in economic activity between groups. The main advantage of the Theil index is its decomposability. Inequality varies not just between countries, but also between regions, which has different policy implications for development (World Bank Poverty and Inequality Handbook, 2009). We first examine the development of GVA disparities over time between and within countries and then build up on Terrasi (2000) and Bracalente and Perugini (2010) to decompose these disparities into the contributions of employment and productivity. Another additional decomposition breaks disparities down geographically into the contributions of differences between countries, and regional differences inside the single countries.

We are thus able to provide both an economic insight into how the evolution of different variables affects inequality in production across the EU, as well as a spatial perspective, by displaying the contribution to inequality of various levels of territorial aggregation.

The Theil index is part of the Generalized Entropy class of inequality indicators. The generic formula is given by:

$$T = \sum_{i=1}^{n} \left[\frac{a_i}{A} \ln \left(\frac{\frac{a_i}{A}}{\frac{b_i}{B}} \right) \right]$$

a_i and b_i being the value of some variable (e.g. GVA or population) for each group, and A and B representing the sum of the respective variables over all the groups. The Theil index is always positive, but the contributions of the groups can be either positive or negative. When a group has an equal share of both variables analysed, then the ratio will be one, and the contribution to inequality will be zero. (Conceicao, Ferreira, 2000) It thus takes values between zero and infinity, with zero representing a perfectly equal distribution of variables. Detailed technical specifications can be found in Annex 1.

We employ the Theil index to measure inequality in terms of economic activity, which has to be clearly separated from personal income inequality across the inhabitants of the EU. We use the term inequality to refer to the disparities between the regions of the EU in terms of economic activity, the share of employed people and productivity, expressed in value added for

each employed person of a region. Inequality is therefore used as a synonym for these disparities or differences in this context.

5. Results

Figure 5 shows how inequalities in regional economic activity in the EU have evolved over time with each subsequent wave of enlargement. We observe a trend of slowly rising disparities in the core Member States (EU-12 and EU-15, corresponding to the enlargement rounds in 1993 and 1995) and a drastic increase in inequality with the addition of new Member States for each phase of European expansion. New Member States appear to catch up – we observe shrinking inequality until the crisis sets in in 2009. Following the recession, this process of convergence is slowed down – however this is due to rising employment disparities in the core Member States, as we will show in the next section.

Now we turn to the decomposition of the Theil index into its geographical hierarchical components: figures 6 and 7 compare the contributions to total inequality of differences between countries with the contribution of regional disparities. We observe very different drivers of disparities: for EU-12, it is differences between regions that drive total disparities, whereas for EU-27, is is differences between Member States. Furthermore, the Theil index for EU-12 has risen quite significantly since 2009, while the Theil for EU-27 is relatively constant, suggesting a different evolution of disparities for different country groups.

Austria, Finland and Sweden joining the EU does not change much in terms of inequality, as EU-12 and EU-15 have an extremely similar evolution and comparable overall level of economic development between countries. As we turn to looking at EU-27 (after the enlargement round of 2007) in Figure 7, however, we see that the substantial jump in total inequality in Figure 5 is mostly due to differences between countries, that seem to be the driver of the trend in the overall Theil index, while within-country contributions are relatively stable. With Romania and Bulgaria joining the EU in 2007, the between-country contribution is further exacerbated, given the currently very heterogeneous levels of development of EU Member States.

To examine the evolution of regional disparities within countries, we calculate individual Theil indexes for selected Member States (Figure 8). We observe shrinking disparities in economic activity for some core countries such as Germany, Austria, Belgium or Portugal. Nevertheless, the tendency is towards increasing levels of regional inequality, which is most dramatic in Eastern European countries such as Romania, Bulgaria, Hungary and Slovakia. Overall, increases in regional disparities are wide-

spread throughout the EU, painting a heterogeneous picture of the Union and indicating a tendency towards polarisation within countries as well.

Figure 4: Development of the overall Theil index in the EU

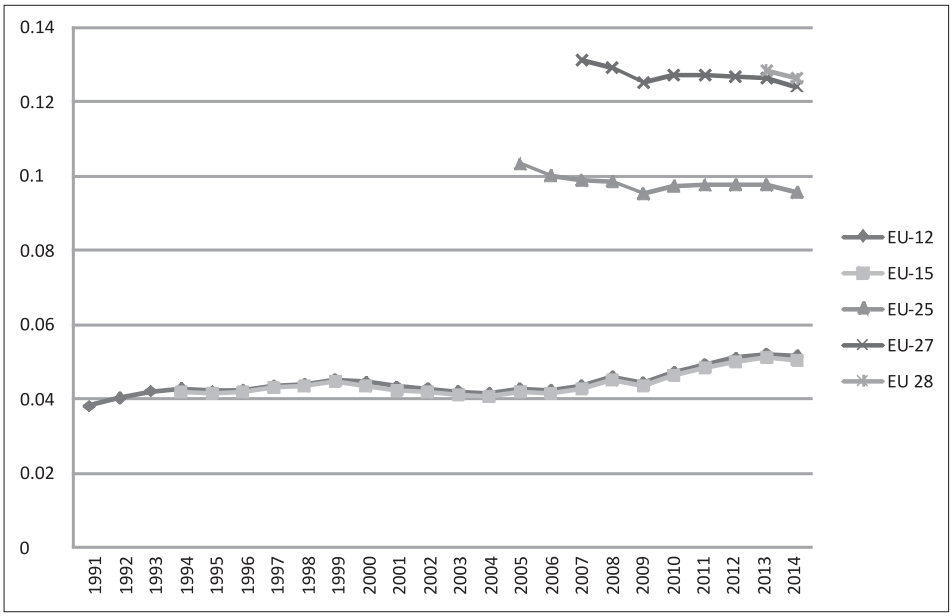


Figure 5: Development of the overall Theil index in the EU-12, shares of contributions by between- and by within-country differences

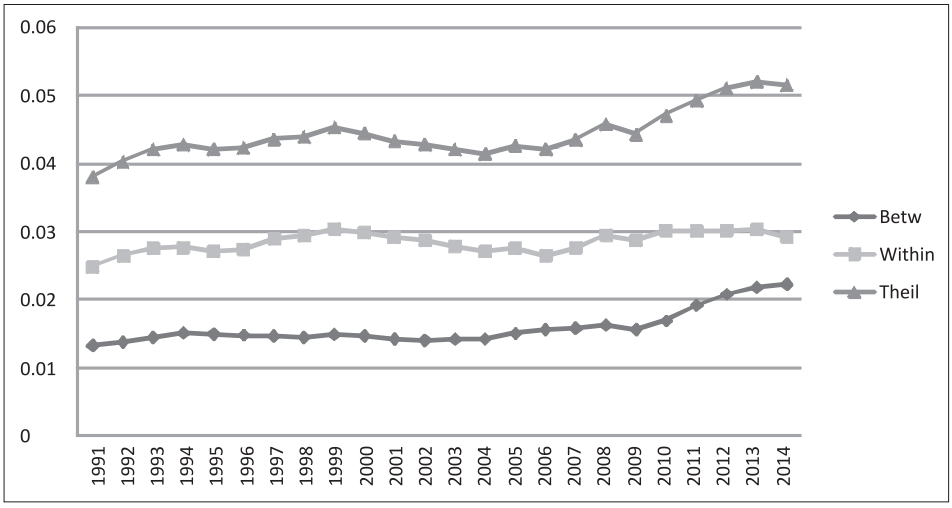


Figure 6: Development of the overall Theil index in the EU-27, shares of contributions by between- and by within-country differences

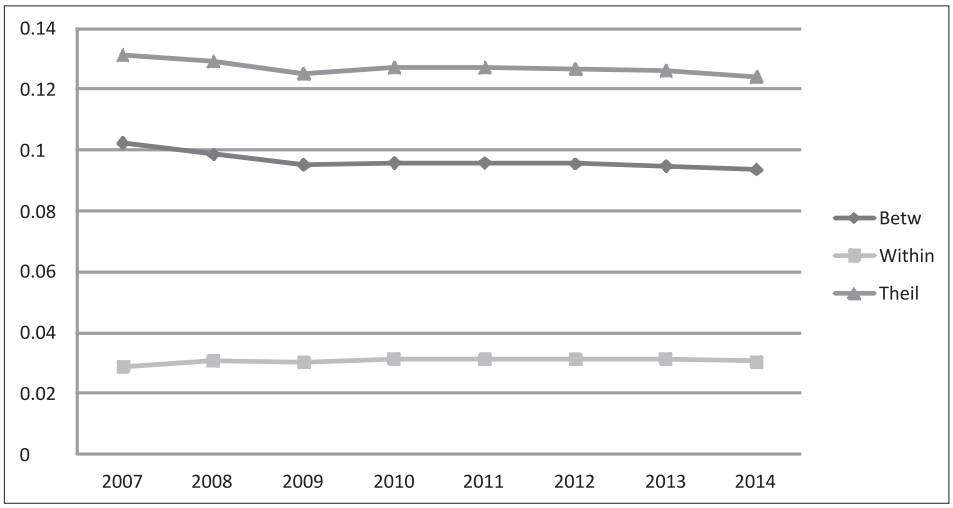
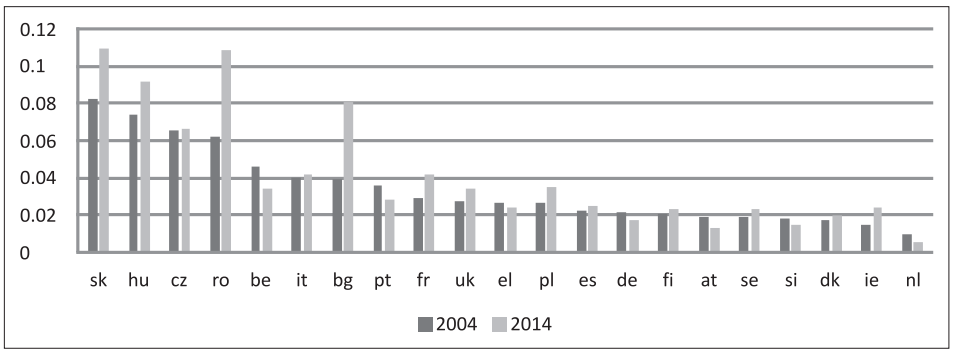
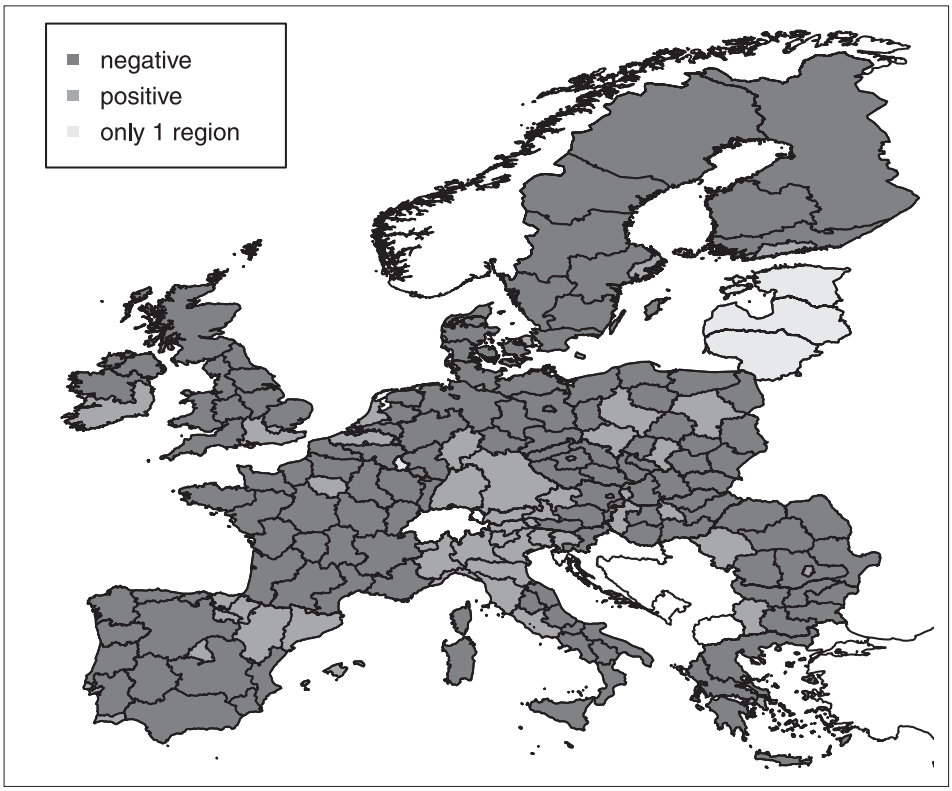


Figure 7: Evolution of regional disparities



The figure below shows the contribution of each region to the respective country's Theil index for EU-27. Regions in dark gray contribute positively to the index, that is, the regional share of total country GVA is higher than the population share. Regions in light grey contribute negatively and have a higher share of population relative to their share of GVA. It becomes apparent that production activities are thus rather concentrated spatially in a small number of regions within most countries (frequently the capital), where the share of gross value added exceeds the region's share of total population. This is the case for France, the UK, Bulgaria, Greece, the Czech Republic, Denmark, Sweden and Finland for example, while Germany, Italy, Spain, Poland and Austria have a less spatially concentrated distribution of production activities, over a larger number of regions.

Figure 8: Regional contributions to each country's Theil index (2014 data)



5.1 Employment and productivity

The distribution of inequality in the European Union can also be decomposed into an employment and a productivity effect. Some interesting conclusions arise. In Figure 10, we observe an ascending trend in inequality for countries belonging to the old EU „core", which is most pronounced for EU-12, and to a slightly lesser extent, EU-15.

The traditional driver of total inequality between countries and regions is productivity. However, the gap between productivity and employment has narrowed significantly in recent years, and has even been closed for EU-12 and EU-15 countries, with employment effects becoming the main source of inequality. This indicates that the countries belonging to the old EU core have been affected most by employment effects, in particular following the financial crisis of 2007. While disparities in productivity are decreasing in recent years for EU-12 and EU-15 regions, they have remained almost unchanged, whereas the distribution of employment is becoming more unequal, in a manner significant enough to drive total inequality to rise.

Figure 9: Evolution of the labour productivity and the employment components of the Theil index for EU-12 countries

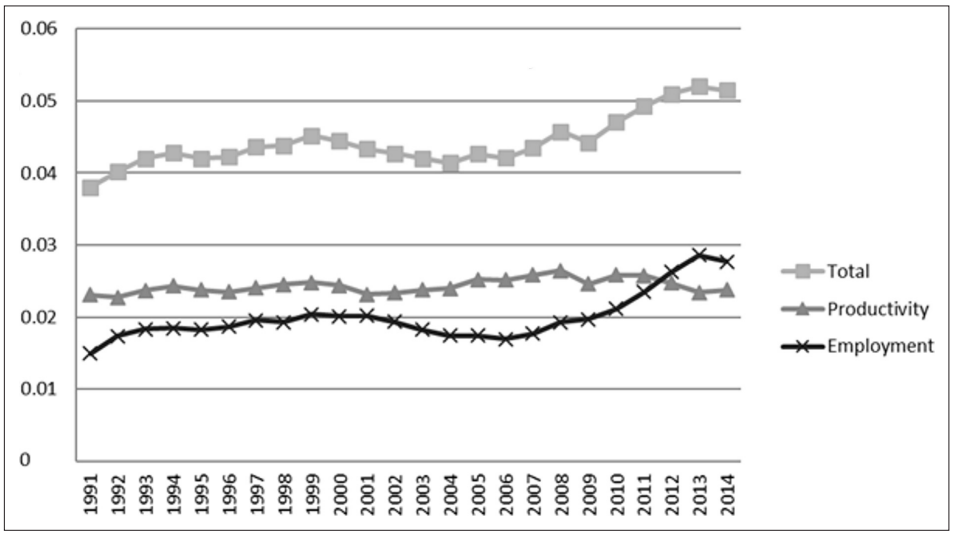
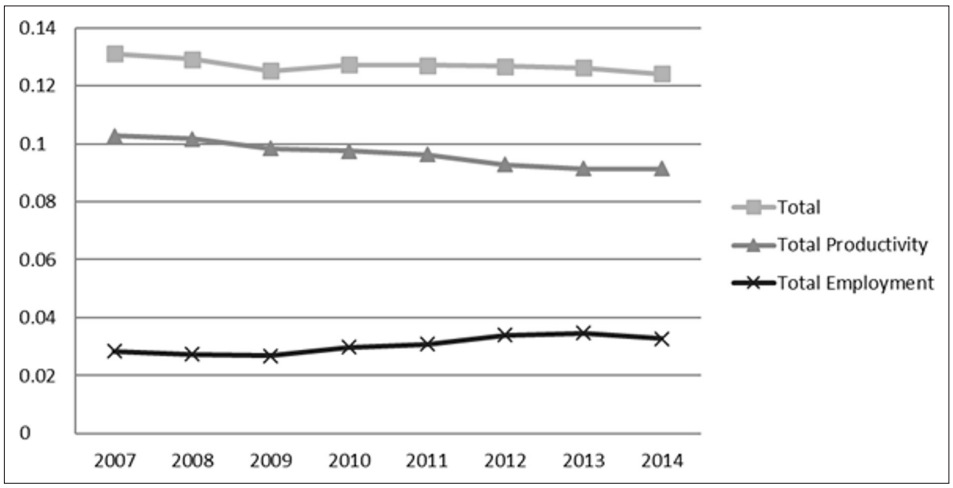


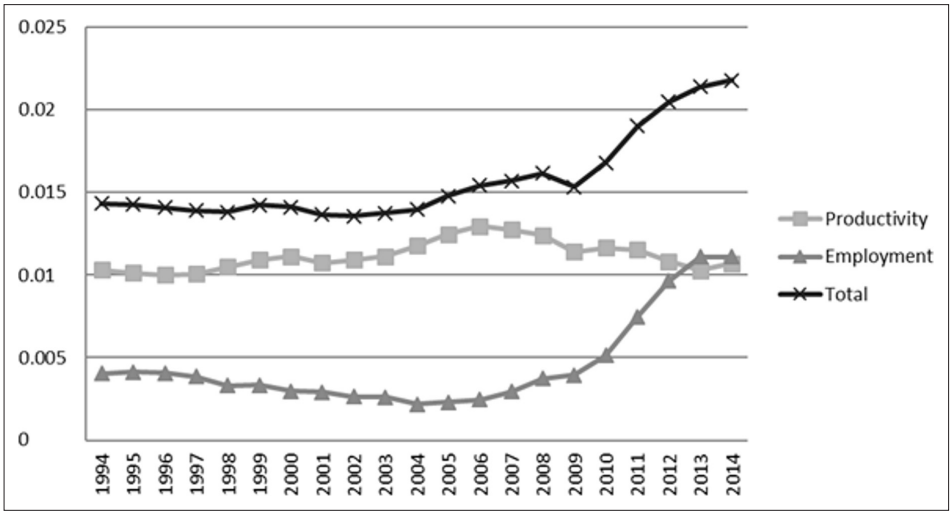
Figure 10: Evolution of the labour productivity and the employment components of the Theil index for EU-27 countries



If we analyse inequality for EU-25 and EU-27 countries (Figure 11), we can observe a very different trend in the evolution of inequality. With the ascension of former Communist countries, total inequality rose significantly, only to immediately start decreasing until 2009. Employment effects are gaining significance and driving inequality upwards, but the main source of disparities is still productivity, highlighting the large differences

between Eastern Europe and the core. We can see that Romania and Bulgaria joining the EU had an immediate effect on productivity disparities, which increased in absolute terms and are now still thrice as large as the employment component. As it is apparent from subsequent years, there is a pronounced tendency for convergence in productivity levels and increasing divergence in employment.

Figure 11: Contributions of productivity and employment components to the between-country Theil index for EU-15 countries



5.2 Employment and productivity trends between and within countries

Productivity differences between countries used to be the main drivers of inequality, and until 2007, they have increased among the EU-15 members, as seen in Figure 12. After 2007, differences in productivity slowly decrease, while the contribution of employment increases dramatically, driving the rise of overall inequality between EU-15 member states.

Within-country inequality in EU-15 states is driven by employment differences, followed closely by productivity. Regional inequalities tend to decrease from 1999, only to begin rising in 2006. This trend is mainly due to developments in employment disparities, while the productivity contribution has been fluctuating around a relatively stable level.

Inequality between the EU-27 countries is mainly driven by differences in productivity, as seen in Figure 13; nevertheless, its share is decreasing, while employment played an increasingly significant role in recent years, cancelling out the productivity catching-up effects. Within-country inequali-

Figure 12: Contributions of productivity and employment components to the within-country Theil index for EU-15 countries

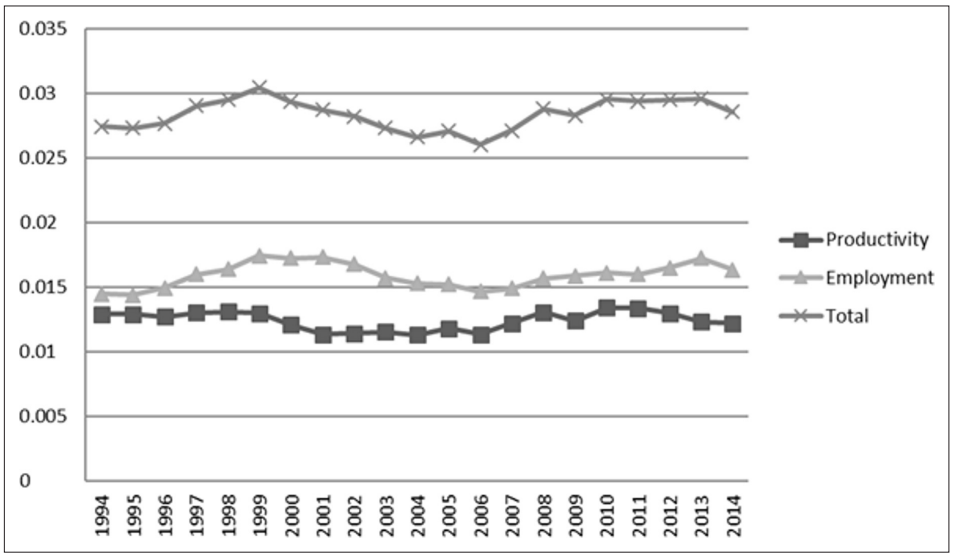
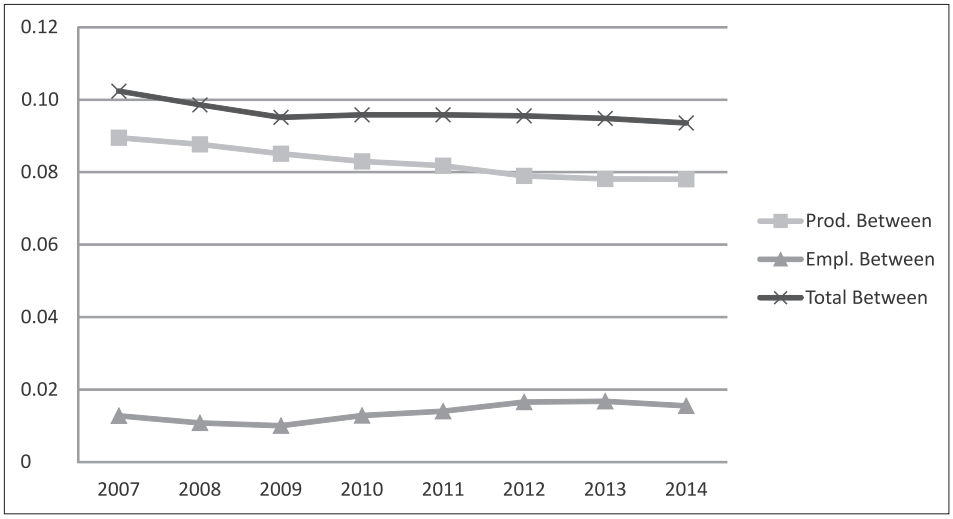


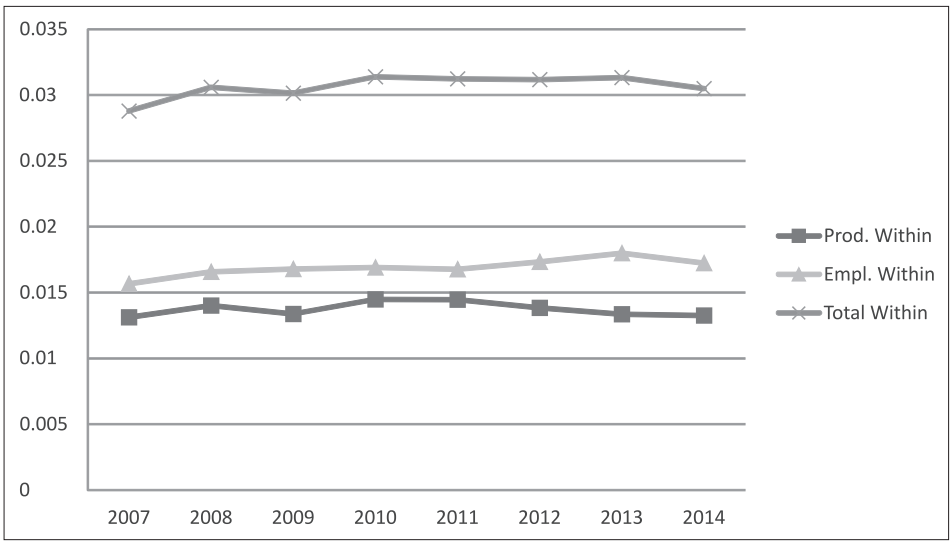
Figure 13: Contributions of productivity and employment components to between-country for EU-27 countries



ties (Figure 14) are much smaller than between-country inequalities in terms of the Theil-index, and, similar to what we observed for EU-15, employment and productivity contribute to a comparable extent – employment explains more of within-country inequalities than productivity gaps, with its role recently gaining importance. The crisis and rising employment

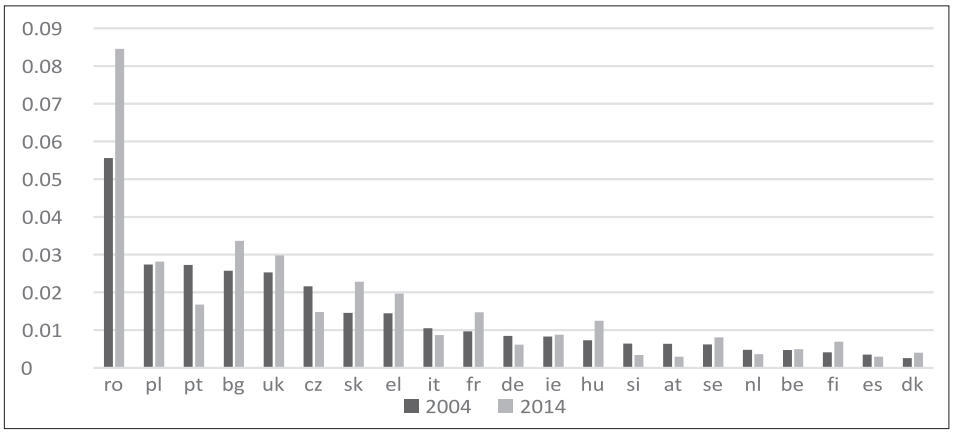
disparities have not affected countries equally, and neither the regions within single countries. It remains to be seen if this will change again as economies recover from the crisis, or if it represents a change in trends. Overall, looking at the EU-27, disparities between countries are still mostly driven by differences in productivity, while within-country inequality seems to remain relatively constant over time (slightly higher values for EU-27 than for EU-15, yet both ranges of values remain comparable over time).

Figure 14: Contributions of productivity and employment components to within-country differences for EU-27 countries



Despite the share of productivity-induced inequality decreasing in recent years, it is worth taking a closer look at the evolution of productivity disparities on a regional level. In Figure 15, we calculate the Theil index for selected countries and find a dramatic increase of the already high regional disparities in Romania. Significant increases in inequality also took place in Slovakia, Bulgaria, Hungary, the UK and Greece. Furthermore, regional productivity disparities have increased in Ireland, Denmark, Sweden and Finland as well, although to a lesser extent. Only a few countries have more evenly distributed productivity values now than in the past: The most drastic decrease in inequality took place in Portugal, followed by Czech Republic, Italy, Germany, Slovenia, Austria and the Netherlands. This suggests that the evolution of regional productivity disparities within countries has been very heterogeneous across the EU, and that similar or neighbouring countries did not necessarily develop in the same way. The catching-up process of regions with low levels of productivity is not uniform, but rather fragmented and follows diverging trajectories.

Figure 15: Labour productivity differences within selected countries in 2004 and 2014



6. Conclusions

Our research highlights the strong increase in economic activity accompanying each EU enlargement wave (with the exception of the EU-15 1995 enlargement). It is clear that the European Union nowadays is a much more fragmented, heterogeneous political and economic entity than it would have been, had it maintained the same Member State composition as in the 1990s. Nevertheless, we observe a decreasing trend in overall inequality following each EU enlargement phase, a trend that is not apparent for the core countries. This descending trend however cannot keep pace with the EU expansion process; convergence may be happening, but at a comparatively much slower speed and in many cases at the cost of rising inequality within countries.

Existing research generally points towards convergence on a between countries level, and increasing divergences between regions within countries. We verify this hypothesis and find this to be the case for core countries (EU-12 and EU-15), where within-country inequality is responsible for a higher share of total inequality than the between-country component. Nevertheless, differences between countries are also increasing, pushing total inequality upwards. We find this to be mainly driven by rising disparities in the employment rate. As regards subsequent EU enlargement waves, we find a reversed relationship, with disparities for total EU-25 and EU-27 inequality being mainly explained by the between-country component and large variations in productivity levels between countries.

In terms of regional inequality within countries, we find that on an aggregate level, employment effects are to a larger extent responsible for re-

gional disparities than productivity effects. This is the case both in core countries and in the actual EU composition of nowadays. Still, if we separately analyse the distribution of productivity within selected countries, we find startling increases in inequality, especially in Eastern Europe, suggesting that the catching-up process is spatially concentrated in selected regions with a high level of production activities, whereas the remaining regions are lagging behind.

As this paper is based on the ex-post analysis of a limited numbers of indicators, we cannot make a claim about what the causal relationship behind the development of inequalities is. Another caveat is the likely overestimation of income concentration in our analysis, as through commuting, some of the income gained in capital cities will benefit other regions as well. This problem is attenuated but not eliminated by using regions of a reasonably large size.

Overall, we can still draw differentiated policy implications from our results. We observe a dramatically increased importance of the employment component, particularly in core countries, and a reversal of the convergence process, whereas newer Member States are still defined by a descending trend in inequality and large productivity disparities. This suggests there is a need for separate policy-making, focussing on a more equal distribution of employment across regions in older Member States, as opposed to focussing on the productivity catching-up process in EU-27. If we further look at the distribution of production activities on a regional level, we verify the existence of so-called developmental hubs with a high share of GVA relative to the population share, which seem to exist in isolation from the rest of the country and show only limited trickle-down effects. These developments emphasise the increasing importance of regional policy, so as to prevent further urban-rural and regional polarisation in the future.

The discourse on the speeds of Europe must be more nuanced, since the implications for development often go beyond the level of the national state and need to take into account significantly different trends at the regional level. We must be aware that lived realities in the EU are extremely diverse and it is clear that this will shape the political agenda differently across Member States. It can be dangerous to use the speeds of Europe discourse to create a politically united and economically strong inner club that dictates the direction of EU development, since this group of countries faces different challenges than other Member States and thus runs the risk of excluding poorer countries/regions from actively shaping the policy-making process.

Annex 1

The Theil Index

The generic formula for the Theil index is given by:

$$T = \sum_{i=1}^{n} \left[\frac{a_i}{A} \ln \left(\frac{\frac{a_i}{A}}{\frac{b_i}{B}} \right) \right]$$

a_i and b_i being the value of some variable (e.g. GVA or population) for each group, and A and B representing the sum of the respective variables over all the groups.

Since in our case, we work with income and population shares most of the time, we use y_i to denote regional GVA and n_i for regional population. Y_c and N_c denote the total income or population in a country, while Y_{EU} and N_{EU} are the respective totals for the whole EU.

The following formulas apply:

$$T = T_{between} + T_{within}$$

$$T_{between} = \sum_{c=1}^{m_{countries}} \left[\frac{Y_c}{Y_{EU}} \ln \frac{\frac{Y_c}{Y_{EU}}}{\frac{N_c}{N_{EU}}} \right]$$

$$T_{within} = \sum_{c=1}^{m_{countries}} \left[\frac{Y_c}{Y_{EU}} T_{country} \right]$$

$$T_{country} = \sum_{i=1}^{m_{regions}} \left[\frac{y_i}{Y_c} \ln \frac{\frac{y_i}{Y_c}}{\frac{n_i}{N_c}} \right]$$

We can also decompose the Theil index by splitting it into shares of productivity and employment:

$$\frac{y_i}{n_i} = \frac{y_i}{l_i} * \frac{l_i}{n_i}$$

where l_i is the active labour force in a given region, y_i is regional GVA and n_i is regional population.

The following formulas apply:

$$T = T_{prod} + T_{emp}$$

$$T_{emp} = \sum_{i=1}^{n} \left[\frac{y_i}{Y_c} \ln \frac{\frac{l_i}{L_c}}{\frac{n_i}{N_c}} \right]$$

$$T_{prod} = \sum_{i=1}^{n} \left[\frac{y_i}{Y_c} \ln \frac{\frac{y_i}{Y_c}}{\frac{l_i}{L_c}} \right]$$

L_c is the total labour force of a country, the rest of the notation was explained above. We combine the within-between decomposition with the productivity-employment decomposition in order to find out where the sources of disparities lie.

Annex 2

Regions analysed

be1	de6	el3	es51	fr41	fr83	itg1	nl2	ukh	at32	se33	mt	sk04	bg41	pl51
be2	de7	el4	es52	fr42	ie01	itg2	nl3	uki	at33	cz01	hu1	ro11	bg42	pl52
be3	de8	es11	es53	fr43	ie02	ith1	nl4	ukj	fi19	cz02	hu21	ro12	pl11	pl61
dk01	de9	es12	es61	fr51	itc1	ith2	pt11	ukk	fi1b	cz03	hu22	ro21	pl12	pl62
dk02	dea	es13	es62	fr52	itc2	ith3	pt15	ukl	fi1c	cz04	hu23	ro22	pl21	pl63
dk03	deb	es21	fr1	fr53	itc3	ith4	pt16	ukm	fi1d	cz05	hu31	ro31	pl22	hr03
dk04	dec	es22	fr21	fr61	itc4	ith5	pt17	ukn	se11	cz06	hu32	ro32	pl31	hr04
dk05	ded	es23	fr22	fr62	itf1	iti1	pt18	at11	se12	cz07	hu33	ro41	pl32	
de1	dee	es24	fr23	fr63	itf2	iti2	ukc	at12	se21	cz08	si01	ro42	pl33	
de2	def	es3	fr24	fr71	itf3	iti3	ukd	at13	se22	ee	si02	bg31	pl34	
de3	deg	es41	fr25	fr72	itf4	lu	uke	at21	se23	cy	sk01	bg32	pl41	
de4	el1	es42	fr26	fr81	itf5	iti4	ukf	at22	se31	lv	sk02	bg33	pl42	
de5	el2	es43	fr3	fr82	itf6	nl1	ukg	at31	se32	lt	sk03	bg34	pl43	

Notes

1 See figure 2, Annex.
2 http://ec.europa.eu/regional_policy/en/funding/erdf/
3 http://ec.europa.eu/regional_policy/en/funding/social-fund/
4 http://ec.europa.eu/regional_policy/en/funding/cohesion-fund/

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Abstract

This paper aims to shed light on the evolution of regional disparities with respect to economic activity, productivity and employment across the European Union. While the „multiple Speeds of Europe“ are a buzzword often quoted to underpin different political strategies and visions, they are usually not connected to an analysis of the actual inequalities and the existing trends. We employ the Theil-index of concentration to conduct such an analysis for 191 EU regions from 1991 to 2014, showing the evolution of disparities in terms of regional GVA, labour productivity and employment, both on the between country and within country level.

We find a descending trend in disparities following each enlargement period after 2004, which has however slowed down in the wake of the recession and has since been outpaced

by the speed of EU enlargement. The differences in economic activity across Europe are driven by labour productivity disparities between EU-27 Member States; however, across the core Member States, we observe a dramatic increase in employment disparities that have been pushing inequality upwards over the last decade. On a regional level, aggregate within-country inequality is determined by employment differences between regions. Nevertheless, there are large increases in inequality as regards the distribution of regional productivity in selected Member States, which fit the hypothesis of spatially concentrated productive hubs against a backdrop of regional polarisation. In order to reflect the socio-economic reality across the European Union, both the discourse on development and the policies aiming at convergence need to become more nuanced.

Zusammenfassung

Dieser Beitrag untersucht die Entwicklung von regionalen Ungleichheiten der ökonomischen Aktivität, Produktivität und Beschäftigung in der EU. Der Ausdruck „Europa der veschiedenen Geschwindigkeiten“ wird in unterschiedlichen Kontexten verwendet. Eine konsistente Interpretation dieses Ausdrucks fehlt in den meisten Fällen, ebenso wie eine Analyse des Status quo, was Ungleichheiten und deren Entwicklung angeht. In diesem Paper verwenden wir den Theil-Index, um eine solche Analyse für 191 Regionen der EU von 1991 bis 2014 durchzuführen.

Wir zeigen, wie sich die Ungleichheit zwischen den Europäischen Regionen in Hinblick auf die regionale Bruttowertschöpfung (GVA), die Arbeitsproduktivität und die Beschäftigung entwickelt hat. Wir stellen einen Trend hin zur Angleichung fest, allerdings hat sich dieser Trend nach der Rezession verlangsamt und ist keinesfalls stark genug, um den Zuwachs an Ungleichheit innerhalb der EU, der durch die Erweiterungen entstanden ist, auszugleichen. Der Grund für die Unterschiede in regionaler ökonomischer Aktivität in der EU-27 sind vor allem die großen Produktivitätsunterschiede zwischen den Staaten. In den Staaten der „alten EU“ (EU-12/EU-15) findet sich andererseits ein dramatischer Anstieg der Beschäftigungsunterschiede, die die Ungleichheit zwischen diesen Staaten im letzten Jahrzehnt steigen haben lassen. Auf regionaler Ebene zeigt sich, dass die Ungleichheiten in Staaten stark von Disparitäten im Beschäftigungsniveau getrieben sind. Allerdings gibt es innerhalb von einigen Staaten auch sehr große Unterschiede zwischen den Regionen, weil Produktivitätsteigerungen in regionalen Clustern konzentrieren, während manche Regionen zurückbleiben. Um die sozioökonomischen Realitäten widerzuspiegeln müssen insgesamt sowohl der Diskurs über die Entwicklung Europas als auch die Regionalpolitik nuancierter werden.