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Institutional diversity in the Euro area: any evidence of convergence?

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Institutional diversity in the Euro area: any evidence of convergence?

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Abstract

The institutional characteristics of the 19 Euro countries, such as Government efficiency or undue influence or corporate ethics, have diverged in the period 2006-2015. This endangers the sustainability of the EMU, as institutional characteristics are an important element of competitiveness. We find that the overall inequality in the state of institutions across the EMU, as measured by the Gini coefficient, increased. The institutional changes across Euro area countries are linked both to the differences in the intensity of the financial and economic crisis (likely to have a two-way causality) as well as the policy responses in terms of fiscal consolidation applied. The empirical findings tend to support the call for structural reforms enhancing institutional quality in order to shorten the institutional gap between ‘core’ and ‘periphery’ Euro area countries.

Keywords: institutions, beta-convergence, inequality, Euro area, competitiveness

JEL codes: O43, O47, O52

1. Introduction

Since the onset of The Great Recession in 2007, the Euro area has been hit by numerous interrelated shocks leading to banking crises and sovereign debt crises in several Euro countries. The Euro zone ran the risk of falling apart. This demonstrated the weakness of the Economic and Monetary Union (EMU): it did not exhibit sufficiently the characteristics of an optimal currency area.

In 2015 the so-called Five Presidents' Report set out ambitious plans on how to deepen the EMU and how to complete it by latest 2025, revived in the “State of the Union” of the President of the European Commission, Juncker, in September 2017. In this address Juncker even went further to suggest that all EU countries ought to be taken into the Euro sometime in the near future.

The EMU would be strengthened through structural change achieving similarly resilient economic structures throughout the Euro area (European Commission 2015) and thus boosting competitiveness. In the past the substantial differences in competitiveness within the Euro area, had not only been a cause of concern for individual Member States, but had also stood in the way of a proper functioning of EMU and for the professed European ideal of an ever deeper integration. This can only be achieved with a certain degree of convergence (Ritzen 2017).

Globalization and increasing economic interdependence have contributed to this strong emphasis on national competitiveness despite the relative ambiguity of this term (see e.g. Boltho 1996; Porter et al. 2008) and the scepticism of some notable economist on the application of this concept to countries (see e.g. Krugman 1994, 1996). The broader concept of competitiveness deals with the role of productivity and the capacity of countries to compete in world markets to improve their economic performance and standards of living (see e.g. Porter 1990, De Grauwe 2010). One of the most widely used competitiveness indicators of a country - among academics and policy-makers- is the Global Competitiveness Index (GCI), produced by the World Economic Forum (WEF) since 2004. This index focuses on both macroeconomic and microeconomic factors of competitiveness. The GCI measures competitiveness as the set of institutions, policies, and factors that determine the level of productivity of a country (see e.g. Schwab 2015). It combines a set of indicators that capture diverse aspects that matter for productivity. These are grouped into 12 areas or pillars.

Our analysis focuses on the first one: the institutional environment and the quality of public and private institutions in the country, like the state of property rights, corruption or

accountability of private institutions. These variables are generally not part of the Country Specific Recommendations originating from the EU's new responsibilities which were developed to safeguard the Stability and Growth Pact (SGP). We use data from 2006 and 2015.

From its inception, the EMU has been viewed as an instrument to achieve real convergence in competitiveness departing from some nominal convergence requirements, defined through the SGP. Gradually convergence in macroeconomic policies was regarded as a prerequisite to accomplish convergence in competitiveness, as expressed in the formal adoption of new provisions and one directive (the "Six Pack") to the SGP, with enhanced surveillance (the "Two Pack"). The European Central Bank (ECB) (2015, 2016) has put the spotlight on the importance of sound institutions for the resilience and the long-term prosperity of the Euro area, highlighting the need for convergence in the quality of national institutions. Institutional diversity partly reflects the singularities of each society. At the same time, increasing cross-country institutional differences undermine the smooth functioning of the EMU. The countries with the lower-quality institutions countries become more vulnerable for adverse shocks and make thereby the Euro area as a whole more susceptible to shocks.

In this paper we first assess whether the changes in the state of institutions show convergence across Euro area countries between 2006 and 2015. Second, we estimate the overall inequality in the institutional quality across the EMU, as measured by the Gini coefficient, and the contribution of each country to overall inequality. We use the benchmark of the country with the highest institutional quality to identify the countries that are the most distant. Finally, according to these country contributions, we analyse possible distinct patterns of convergence between 'core' and 'periphery' Euro area countries. Institutional changes across Euro area countries are also related to both the differences in the intensity of the financial and economic crisis, as well as the policy responses in terms of fiscal consolidation applied by the respective national governments.

The remainder of the paper proceeds as follows. Section 2 discusses expectations on institutional convergence/divergence across Euro area countries in the present case when institutions are not part of EU policies. Section 3 describes the institutional indicators of the GCI framework that we use. Section 4 presents the methodology employed in the study. Section 5 displays and discusses the results. Lastly, some concluding remarks and policy recommendations are offered.

2. Can we expect convergence in institutional quality across EMU countries?

Economic and monetary integration requires a considerable harmonization of policies for economic agents in different countries to operate in. During last decades, the European Commission and the ECB have systematically promoted ambitious structural reforms to achieve this. These were typically associated with regulatory policies aimed at strengthening market-based incentives in domestic product and labour markets. However, sound institutions, such as legal certainty, efficient public administration and judicial systems or the absence of corruption, provide the basis for the appropriate functioning of all specific economic structures, such as labour and product markets, and for attracting investment in human capital and foreign direct investment, and for the creation of new firms and as such should have been part of harmonization as well (ECB, 2015, 2016). This makes institutional convergence an important necessity for the EMU, even if there is no consolidated theory of institutional convergence to be found in the literature (see, for example, Savoia and Sen, 2016).

In analogy with capital accumulation and income convergence (see, for example, Barro and Sala-i-Martin, 1992), the concept of diminishing returns could also be applicable to institutions, as the early ‘units’ of institutional reforms are relatively easier and less costly to attain. Thus, particularly in the case of basic institutions such as the level of protection of property rights, it would be much more difficult and costly to achieve a higher degree of institutional quality from an initially high level than from a low level.

Nevertheless, the theoretical literature on institutional change suggests that the rate of convergence may differ across different types of institutions, so that the equilibrium process for some institutions may remain unchanged, leading to persistence of extractive institutions (Acemoglu and Robinson, 2008). In this line, Acemoglu and Robinson (2012) argue that certain institutional reforms may be hindered by dominant minorities who benefit from existing institutions and do not have incentives to change them, so that low quality institutions may persist.

The impact of business cycle on the assessment of the state of institutions has been also pointed out in the literature. It is known that the state of institutions can be (negatively) affected by economic downturns as has been the case during the Great Recession (Álvarez-Díaz et al.,

2015, Ritzén 2017), while at the same time these institutions might be a cause of the impact of the crisis.

Economic downturn and political dissatisfaction go usually hand in hand. People tend to assess and trust governments that are able to generate economic growth and create jobs (see, for example, Stevenson and Wolfers, 2011, Roth et al., 2011), so it follows that a high level of unemployment would imply a lower political assessment and a decline of trust in public institutions.

Although the Great Recession has affected the entire Eurozone, the fall in economic activity and growth of unemployment were much more intense in some Euro area countries, particularly in certain ‘periphery’ countries that already held lower levels of institutional quality, such as Cyprus, Greece, Spain, Italy or Portugal. This leads us to expect that the financial and economic crisis might have contributed to increase the disparities in the assessment of national institutions across Euro area countries.

Moreover, some peripheral Euro area countries hit hard by the crisis, particularly those countries that needed financial assistance, had to conduct aggressive programs of fiscal consolidation, including the reduction of social spending, which contributed to raise unemployment in the short-term and to increase political dissatisfaction. In this sense, these policy responses in terms of fiscal consolidation of national governments could worsen the assessment of public institutions in these countries, contributing to expand the institutional gap between ‘central’ and ‘periphery’ countries in the Eurozone.

All in all, neither the theoretical nor the empirical arguments discussed above offered any clear and unambiguous answer on what we may expect on institutional convergence or divergence across Euro area countries. Ultimately, it is a matter of empirical debate and of policy. This paper provides evidence on whether EMU countries with lower quality institutions catch up with countries with higher quality institutions over last decade in the absence of a clear EMU or EU policy dedicated to institutions. To the best of our knowledge, this is the first attempt in the literature in which institutional diversity and convergence in the Eurozone are comprehensively addressed from a global competitiveness perspective.

3. Institutional quality indicators

The GCI is based on a weighted average of many different static and dynamic components, each one measuring a different aspect of competitiveness. These components are grouped into 12 pillars of competitiveness, representing different dimensions, which in turn are classified into 3 sub-indices: basic requirements sub-index (institutions, infrastructure, macroeconomics, environment, health and primary education); efficiency enhancers sub-index (higher education and training, goods market efficiency, labour market efficiency, financial market development, technological readiness, market size); and innovation and sophistication factors sub-index (business sophistication, innovation).

We focus our analysis on the institutional indicators included in the first pillar and examine data for 2006 and 2015.¹ These indicators are rated on a scale of 1 to 7, where 1 represents the worst possible situation and 7 the best. Institutions are measured along the lines of the definition of North (1990, 1994), as ‘the rules of the game of a society’, or more formally, ‘the humanly devised constraints that structure human interaction’ (1990, p. 3). “Institutions” then are an approximation of the incentive structure of a society and, as a consequence, the underlying determinants of economic performance. Two characteristics are present in the analysis of the institutional indicators of the GCI. First, institutions set formal, legally binding constraints –such as rules, laws, and the constitution– along with their associated enforcement mechanisms. Second, institutions include informal constraints such as norms of behaviour, conventions, and self-imposed codes of conduct such as business ethics and norms of corporate governance (Schwab 2016).

The WEF distinguishes between public and private institutions, and assesses the quality of the institutional environment, particularly property rights, ethics and corruption, undue influence, government efficiency, security, corporate ethics and accountability.²

A fundamental role of the state is ensuring the protection of property rights, as a minimal requirement for incentivizing economic activity. As property rights allow excluding legally others from using a property, this affects resource allocation and shapes the incentives of

¹ The first version of the GCI was presented in the 2004-2005 report, and it became the official index of the WEF in the 2005-2006 report. Since then, the GCI has experienced considerable methodological improvements, with a more robust conceptual structure and more rigorous statistical methodology (see, for example, Porter *et al.*, 2008). Nowadays, the WEF provide a comparable and homogeneous dataset from 2006 with a range of indicators for each pillar.

² The World Bank has developed the ease of doing business index (World Bank, 2016a), which includes some similar institutional indicators as measured in the CGI.

individuals to carry out productive activities, involving the use of the good or asset, and to trade or lease it for other uses (Besley and Ghatak, 2009). The component *Property rights* rates the level of protection of property rights, including financial assets, and intellectual property protection.

Two key aspects related to institutional quality are corruption and undue influence on government decisions and the judiciary, as distortionary and detrimental practices for economic performance. Corruption breeds public distrust in government and weakens the state's capacity to perform its core functions. Corruption can distort resource allocation from productive to rent-seeking activities, leading managers to focus less on increasing firms' productivity (see IMF, 2016, on economic and social costs of corruption). In this line, the component *Ethics and corruption* deals with three questions: diversion of public funds to companies, individuals, or groups due to corruption; the ethical standards of politicians; and undocumented extra payments or bribes connected with imports and exports, public utilities, annual tax payments, awarding of public contracts and licenses, and obtaining favourable judicial decisions. Additionally, the component *Undue influence* takes into account to what extent the judiciary is independent from influences of members of government, citizens, or firms, and to what extent government officials show favouritism to well-connected firms and individuals when deciding upon policies and contracts.

Another facet of institutional quality is *Government efficiency*, which assesses five questions:

- i. To what extent the composition of public spending is extremely wasteful or highly efficient in providing necessary goods and services?
- ii. How burdensome is for businesses the compliance with governmental administrative requirements?
- iii. How efficient is the legal framework for private businesses in settling disputes?
- iv. How easy is it for private businesses to challenge government actions and/or regulations through the legal system?
- v. How easy is it for businesses to obtain information about changes in government policies and regulations affecting their activities?

Additionally, as the guaranteeing of the physical security is an essential element for economic performance,³ the component *Security* rates to what extent the threat of terrorism, the incidence of crime and violence, and organized crime (mafia-oriented racketeering, extortion) impose costs on businesses, as well as to what extent police services can be relied upon to enforce law and order.

Corporate ethics and governance standards also contribute to productivity. Two components are addressed in terms of private institutions. First, *Corporate ethics*, which refers to ethical behaviour of companies in interactions with public officials, politicians, and other firms. Second, *Accountability*, which jointly rates various aspects: auditing and reporting standards; efficacy of corporate boards (if management is accountable to investors and boards); protection of minority shareholders' interests by the legal system; and strength of investor protection (it rates transparency of transactions, liability for self-dealing, and shareholders' ability to sue officers and directors for misconduct).

The components and subcomponents of institutional quality which we use here are detailed in Table 1, including their weights (in percentages), while Table 1A of the Appendix shows the descriptive statistics of the indicators. Note that the weights are guesstimates and not based on an empirical analysis of the contribution of that indicator to economic performance. The values are established through opinion surveys and are as a result subjective. Economic up or downturns might sway subjective opinions, even if the objective situation remains the same. In any event, despite their relative subjectivity, how stakeholders perceive institutions matters as it determines their structure of incentives and their decision-making.

³ Some of the potential consequences of the lack of security are the crowding-out of investment and the misallocation of capital and labor (Detotto and Otranto, 2010; Detotto and Pulina, 2013).

Table 1: Components, subcomponents and weights (%) of institutional quality

<i>A. Public institutions (75%)</i>	<i>B. Private institutions (25%)</i>
1. <i>Property rights (20%)</i>	1. <i>Corporate ethics 50%</i>
1.01 <i>Property rights</i>	1.17 <i>Ethical behaviour of firms</i>
1.02 <i>Intellectual property protection ½</i>	2. <i>Accountability (50%)</i>
2. <i>Ethics and corruption (20%)</i>	1.18 <i>Strength of auditing and reporting standards</i>
1.03 <i>Diversion of public funds</i>	1.19 <i>Efficacy of corporate boards</i>
1.04 <i>Public trust in politicians</i>	1.20 <i>Protection of minority shareholders' interests</i>
1.05 <i>Irregular payments and bribes</i>	1.21 <i>Strength of investor protection</i>
3. <i>Undue influence (20%)</i>	
1.06 <i>Judicial independence</i>	
1.07 <i>Favouritism in decisions of government officials</i>	
4. <i>Government efficiency (20%)</i>	
1.08 <i>Wastefulness of government spending</i>	
1.09 <i>Burden of government regulation</i>	
1.10 <i>Efficiency of legal framework in settling disputes</i>	
1.11 <i>Efficiency of legal framework in challenging regulations</i>	
1.12 <i>Transparency of government policymaking</i>	
5. <i>Security (20%)</i>	
1.13 <i>Business costs of terrorism</i>	
1.14 <i>Business costs of crime and violence</i>	
1.15 <i>Organized crime</i>	
1.16 <i>Reliability of police services</i>	

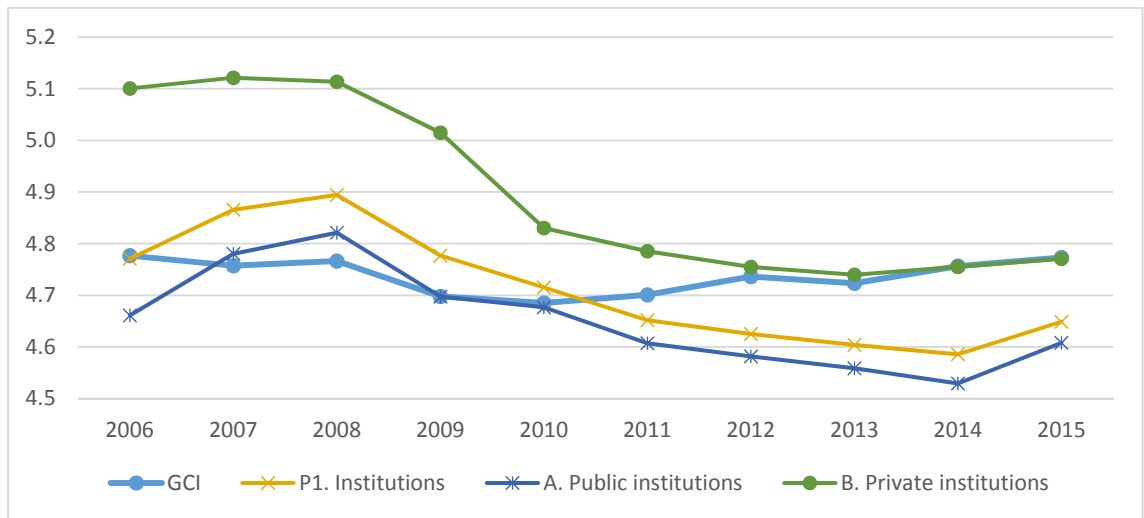
Note: ½ This indicator enters the GCI in two different pillars (Institutions and Innovation) and, in order to avoid double counting, a half-weight is assigned in this pillar.

Source: WEF (2016)

Figure 1 shows the mean values of GCI and the state of institutions (P1), as well as of public and private institutions separately, in the Euro area countries during the period 2006-2015. We observe that, on average, the state of both public and private institutions worsen in the Eurozone, particularly since the onset of the financial and economic crisis in 2008. The good news is that there appears to be a slight recovery from 2014 onwards.

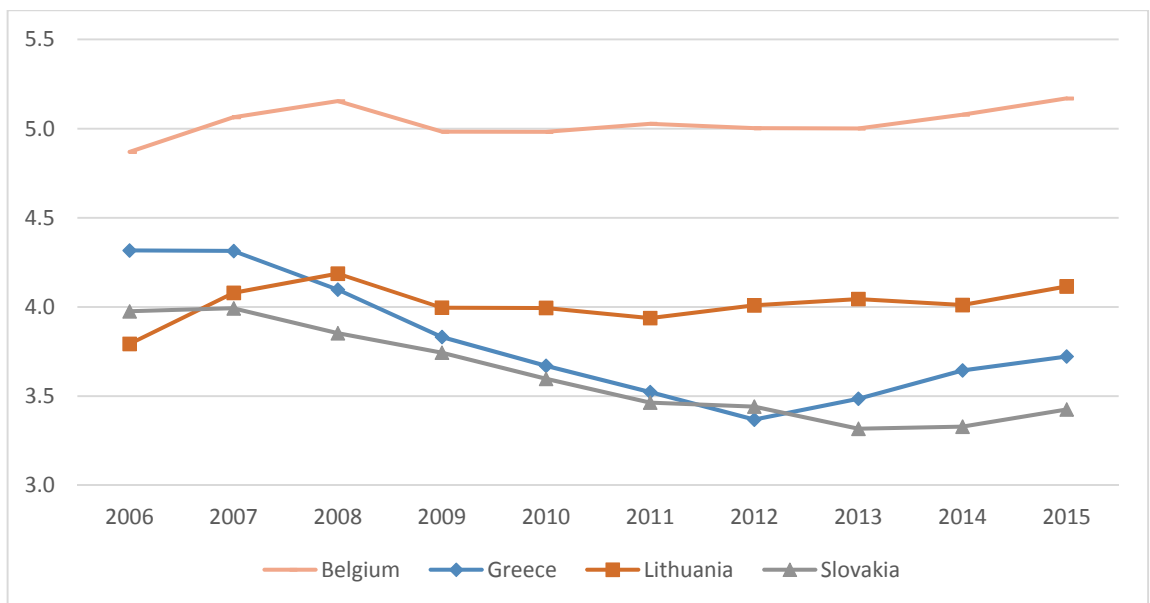
This erosion in public and private institutions in the Euro area countries may also have contributed to increasing distrust in the functioning of the democratic institutions of the states involved. However, the institutional changes differ substantially between countries, as we note in Figure 2 for a sample of four countries, so that potential processes of convergence or divergence across EMU countries require to be examined empirically.

Figure 1. Mean GCI and institutional quality of the Euro area countries



Source: Own construction based on WEF (2016).

Figure 2. Institutional quality (P1) of four Euro area countries



Source: Own construction based on WEF (2016).

4. Methodology

4.1. Convergence

We analyse convergence in the state of institutions across EMU countries using the unified framework proposed by Donghde and Silber (2016). This framework allows for the estimation of measures of distributional change even when the number of observations is limited.⁴ This methodology is particularly useful in the case of relatively small number of observations (19

⁴ This methodology has also been applied in Ayala, Bárcena-Martín and Martínez-Vázquez (2017).

EMU countries). In such a case traditional econometric approaches to convergence analysis cannot be used.

We consider the non-anonymous and the anonymous cases of convergence. In the non-anonymous case, we compare the state of institutions in a country in 2006 with the state of institutions corresponding to the same country in 2015, following Donghde and Silber (2016). Let y_{it} be country i 's ($i=1$ to 19) state of institutions at time t , n the number of countries analyzed and μ_t the mean value of the state of institutions at time t . Then $s_i = \frac{y_{it-l}}{n\mu_{t-l}}$ and $v_i = \frac{y_{it}}{n\mu_t}$ refer to the relative value of the state of institutions in country i ($i=1$ to 19) at times $t-l$ (2006) and t (2015). Let us assume that countries are ranked by increasing values of the shares s_i . Note that i denotes the position of the country when s_i is arranged in ascending order. In this case the index C_N measures the degree of β -convergence across countries in the non-anonymous case.

$$C_N = \sum_{i=1}^n s_i \{ [\sum_{j>i} v_j - \sum_{j<i} v_j] - [\sum_{j>i} s_j - \sum_{j<i} s_j] \} \quad [1]$$

We also compute the index of convergence in the various centiles, the anonymous case, C_A , that assesses the extent of σ -convergence in the state of institutions. The expression for C_A is the same than the one for C_N but this time the shares s_i are ranked by increasing values of the share s_i while the shares v_i are ranked by increasing values of the share v_i . In the anonymous case i denotes the position, and it does not identify a country.

4.2. Country contribution to inequality

For the measurement of the inequality in the state of institutions, we will make use of the well-known Gini coefficient. We omit the subindex t , but the following expression applies both to 2006 and 2015.

$$G = \frac{\sum_{i=1}^n \sum_{j=1}^n |y_i - y_j|}{2n^2\mu} \quad [2]$$

G always between 0 (e) and 1 (maximum inequality). The Gini index can be decomposed to assess the contribution of each country to inequality. The absolute inequality $I_D(y_i, y_j)$, experienced by a country with institutional state y_i , relative to y_j where $y_j \geq y_i$, can be considered to be the differential. That is

$$I_D(y_i, y_j) = \begin{cases} y_j - y_i & \text{if } y_j \geq y_i \\ 0 & \text{if } y_j < y_i \end{cases} \quad [3]$$

The average absolute inequality experienced by a country with outcome y_i over the whole set of countries, $I_D(y_i)$, is

$$I_D(x_i) = \frac{1}{n} \sum_{j=1}^n I_D(y_i, y_j) = \frac{1}{n} \sum_{j=i+1}^n (y_j - y_i) \quad [4]$$

The average absolute inequality of the whole set of countries is I_D :

$$\begin{aligned} I_D &= \frac{1}{n^2} \sum_{i=1}^n \sum_{j=i+1}^n (y_j - y_i) = \frac{1}{n^2} \sum_{i=1}^n \sum_{j=i+1}^n y_j - \sum_{i=1}^n \frac{(n-i)}{n^2} y_i \\ &= \frac{1}{n^2} \sum_{i=1}^n (2i - n - 1) y_i = \mu G \end{aligned} \quad [5]$$

As we want to analyse relative inequality in the state of institutions, and not absolute inequality, we will compute inequality in relative terms. The contribution of each country to overall inequality, considering as benchmark the countries with a highest assessment, is

$$C_i = I_D(y_i) / n I_D \quad [6]$$

This approach adopted is similar to that of Sen (1973), which is also closely related to Pyatt's (1976) interpretation of the Gini coefficient as the expected gain of a game in which each individual is able to compare himself or herself with someone drawn from the total population.⁵

5. Results

5.1. Convergence in institutional quality?

We consider the non-anonymous and the anonymous cases in the analysis of the distributional change as they are connected to two different concepts of convergence. First, regarding the non-anonymous case, in Table 2 (see Table A2 of the appendix for subperiods 2006-2008, 2008-2013, 2013-2015) we find that the estimated values of the indices have a positive sign for the overall indicator of the institutional quality, P1, and for the category of public institutions, A. This may imply that on average the growth rates (in institutional quality) in those countries with greater initial values were higher than that of those with a low institutional quality, signifying divergence. Equivalently, the positive sign may imply that on average the decay rates in those countries with lower initial values are greater than that of those with a high

⁵ In our case, individuals may be interpreted as countries and total population would be all the Euro area countries.

institutional quality, so that there is also divergence. Such cases correspond to what in the literature is characterized as β -divergence. The latter case applies for the overall quality of institutions, and public institutions in particular. That is, there is a reduction in the overall quality of the institutions and particularly of public institutions, but this reduction affects more on average in those countries with lower level of institutional quality, resulting in β -divergence. In the case of private institutions, the result of a negative but small convergence index implies that on average the decay rates were slightly greater in countries with higher than in countries with lower quality of private institutions (modest β -convergence). Concerning the components of institutional quality, there is β -divergence in all components, for both public and private institutions, except in A2 (*Ethics and corruption*), A5 (*Security*) and B2 (*Accountability*), where there exists β -convergence.

In the anonymous case, we look at the rates of growth in the various centiles (positions, without identification of the country). The convergence index is positive for institutions as a whole and for both, public and private institutions, which implies that on average the improvements in institutional quality are smaller in the lower than in the higher centiles (σ -divergence). By components, there is σ -convergence only in A5 (*Security*) and B2 (*Accountability*), and σ -divergence in the rest of components of public and private institutions.

Table 2. Convergence in institutional quality (2006-2015)

	Differences in means	Non- anonymous convergence	Anonymous convergence
P1	-0.1221	0.0067	0.0163
A	-0.0529	0.0079	0.0185
B	-0.3297	-0.0025	0.0084
A1	-0.3093	0.0059	0.0171
A2	0.2230	-0.0035	0.0136
A3	-0.0788	0.0140	0.0265
A4	-0.1924	0.0313	0.0406
A5	0.0929	-0.0201	-0.0026
B1	-0.3510	0.0096	0.0228
B2	-0.3085	-0.0143	-0.0074

Source: Own construction based on WEF (2016)

Note: P1: overall state of institutions, A: Public Institutions, B: Private Institutions, A1: Property Rights, A2: Ethics and Corruption, A3: Undue Influence, A4: Government Efficiency, A5: Security, B1: Corporate Ethics, and B2: Accountability.

5.2. Country contribution to inequality in institutional quality

We observe in Table 3 that inequality in institutional quality increased, both for public and private institutions, and for each of their components, except for A5 (*Security*) and B2 (*Accountability*).

Table 3. Inequality in institutional quality: Gini index

	P1	A	B	A1	A2	A3	A4	A5	B1	B2
2006	0.080	0.082	0.074	0.08	0.106	0.103	0.071	0.052	0.086	0.062
2015	0.097	0.102	0.081	0.097	0.130	0.127	0.105	0.050	0.108	0.053
Variation Rate (2006- 2015)	21.3%	24.4%	9.5%	21.3%	22.6%	23.3%	47.9%	-3.8%	25.6%	-14.5%

Source: Own construction based on WEF (2016)

Note: P1: overall state of institutions, A: Public Institutions, B: Private Institutions, A1: Property Rights, A2: Ethics and Corruption, A3: Undue Influence, A4: Government Efficiency, A5: Security, B1: Corporate Ethics, and B2: Accountability.

In order to analyse which countries are falling behind in terms of each institutional indicator, we consider as benchmark the value of the country with the highest assessment in each year. Table 4 shows the contribution of each country to overall inequality in the institutional quality and in each of its components for 2006 while Table 5 shows the same information corresponding to 2015.

Let us interpret the Gini index in terms of the expected gain of a game in which each country compares itself with countries in a better position (Pryatt, 1976). We then observe that the contribution of countries to the different outcomes is substantially differing. Nonetheless, the extreme positions regarding the institutional quality in general, public and private institutions, and each of its components are held by almost the same countries regardless of the year analysed.

Table 4. Country contributions to inequality in the institutional quality indicators (2006)

Country	P1	A	B	A1	A2	A3	A4	A5	B1	B2
Austria (AT)	0.56	0.65	0.37	0.51	1.05	1.29	0.89	0.31	0.35	0.47
Belgium (BE)	3.3	3.76	2.07	2.56	3.42	3.05	6.27	4.97	2.57	1.5
Cyprus (CY)	5.17	4.19	8.55	5.43	4.27	4.29	2.83	4.36	8.57	8.33
Estonia (EE)	4.61	4.21	5.82	5.22	5.79	3.91	1.98	4.46	6.99	4.15
Finland (FI)	0	0	0	0.24	0	0	0	0	0	0
France (FR)	2.33	2.67	1.23	1.01	3.19	2.63	3.6	3.84	1.29	1.29
Germany (DE)	0.25	0.27	0.17	0	1.17	0.07	1.03	0.36	0.29	0
Greece (EL)	7.58	7.16	8.79	7.76	7.29	8.07	8.56	2.78	10.15	6.98
Ireland (IE)	1.36	1.67	0.48	0.75	2.64	0.8	1.49	3.81	0.91	0.2
Italy (IT)	14.23	14.38	13.26	8.9	12.92	12.48	19.18	17.26	11.08	15.51
Latvia (LV)	11.43	11.22	11.92	14.37	11.71	10.78	7.54	8.09	12.13	11
Lithuania (LT)	13.47	14.53	9.71	13.87	15.08	14.14	10.72	14.59	8.38	11.34
Luxembourg (LU)	0.66	0.52	1.41	1.34	0.22	0.85	0.71	1.29	0.43	3.28
Malta (MT)	5.22	4.69	7.04	8.01	3.57	5.21	6.82	1.17	9.45	4.02
Netherlands (NT)	0.39	0.36	0.53	0.21	0.35	0	0.29	6.12	0.45	0.73
Portugal (PT)	3.07	2.54	5.16	4.04	2.96	1.59	4.91	0.77	5.42	4.73
Slovakia (SK)	11.24	11.75	9.29	10.54	12.88	12.99	8.95	8.7	9.46	8.8
Slovenia (SI)	8.16	7.85	8.84	9.8	6.37	7.38	8.33	6.16	7.37	11.1
Spain (ES)	6.97	7.58	5.36	5.43	5.14	10.48	5.91	10.97	4.68	6.55

Source: Own construction based on WEF (2016)

Note: P1: overall state of institutions, A: Public Institutions, B: Private Institutions, A1: Property Rights, A2: Ethics and Corruption, A3: Undue Influence, A4: Government Efficiency, A5: Security, B1: Corporate Ethics, and B2: Accountability.

Table 5. Country contributions to inequality in the institutional quality indicators (2015)

	P1	A	B	A1	A2	A3	A4	A5	B1	B2
Austria (AT)	1.41	1.64	0.73	0.84	2.54	2.91	1.88	0.48	0.91	0.43
Belgium (BE)	1.48	1.72	0.73	1.96	1.15	1.2	3.39	2.63	0.77	0.7
Cyprus (CY)	6.29	5.87	7.94	8.2	6.59	6.15	3.57	3.72	8.48	6.89
Estonia (EE)	2.07	1.79	3.17	2.89	2.17	1.58	1.58	1.72	3.12	3.17
Finland (FI)	0	0	0	0	0	0	0	0	0	0
France (FR)	3.3	3.58	2.32	1.49	3.36	2.82	3.56	12.4 8	2.77	1.35
Germany (DE)	1.31	1.33	1.47	1.01	1.52	1.01	0.68	5.95	1.51	1.33
Greece (EL)	11.21	11.0 3	11.6 8	11.9 4	10.7	8.81	11.8 3	10.1 8	10.6 1	13.74
Ireland (IE)	0.54	0.44	0.99	0.36	0.47	0.24	0.7	0.82	0.87	1.22
Italy (IT)	14.37	14.7 5	12.6 9	11.5 3	12.9 2	12.1 5	17.3 9	19.9 5	11.9 8	13.88
Latvia (LV)	7.02	7	7.15	7.19	7.94	7.66	6.2	3.82	7.45	6.56
Lithuania (LT)	7.56	8	6.1	9.84	6.81	7.49	6.26	10.5 1	5.77	6.58
Luxembourg (LU)	0.2	0.18	0.25	0.09	0.08	0.28	0.1	0.54	0.17	0.4
Malta (MT)	4.76	4.63	5.17	5.58	5.33	5.13	3.55	2.43	5.97	3.49
Netherlands (NT)	0.42	0.43	0.39	0.37	0.36	0.15	0.32	2.65	0.35	0.47
Portugal (PT)	5.58	5.13	7.27	6.31	5.15	5.11	7.84	0.9	6.03	10.16
Slovakia (SK)	14.32	14.9	11.9	11.7 2	14.6 1	17.5 3	13.0 3	13.8 4	13.7 1	8.8
Slovenia (SI)	9.12	8.65	10.7 9	8.74	8.09	10.4 3	10.1 9	3.01	9.85	12.53
Spain (ES)	9.04	8.95	9.25	9.95	10.2	9.36	7.93	4.37	9.67	8.29

Source: Own construction based on WEF (2016)

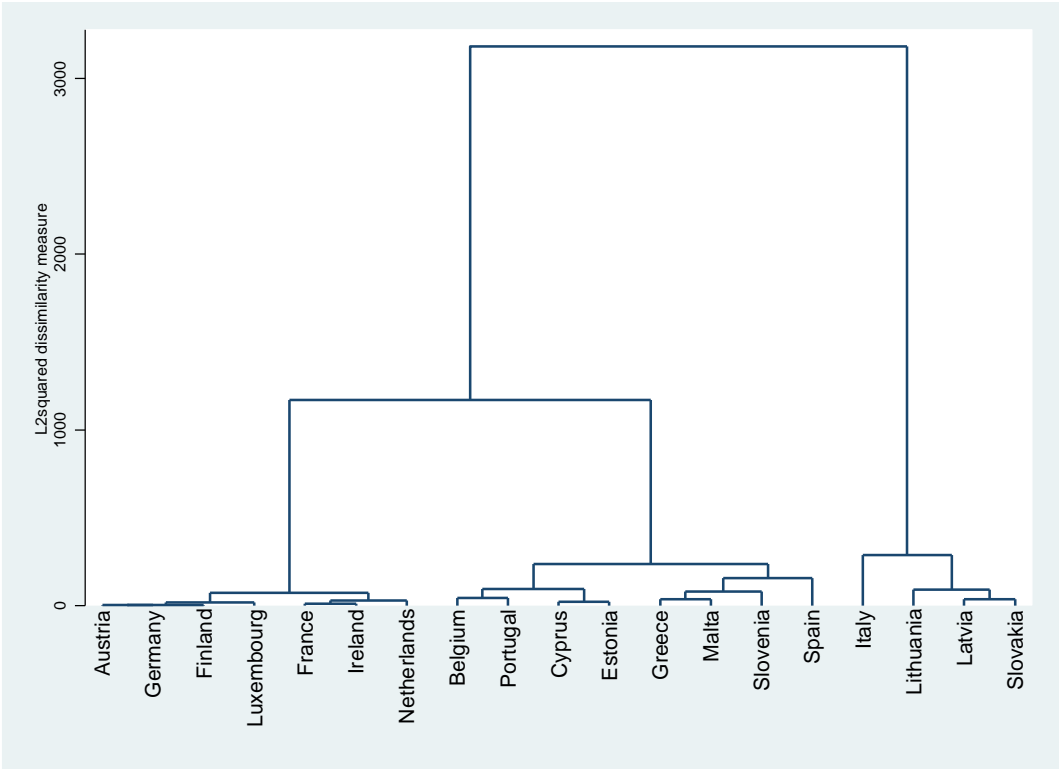
Note: P1: overall state of institutions, A: Public Institutions, B: Private Institutions, A1: Property Rights, A2: Ethics and Corruption, A3: Undue Influence, A4: Government Efficiency, A5: Security, B1: Corporate Ethics, and B2: Accountability.

Those countries with zero contribution in Tables 4 and 5 are the ones with the highest value of the corresponding indicator in the respective year. We observe that Belgium, Estonia, Latvia, Lithuania and Luxembourg shortened the relative distances with respect to better countries in all institutional indicators, while some southern and eastern countries such as Greece, Italy, Portugal, Slovakia and Spain, as well as some central European countries such as Austria, France and Germany, increased the relative distances to the benchmark for most institutional indicators.

The computation of relative distances allows us to identify homogenous groups of countries according to their similarities or dissimilarities regarding the contribution of each

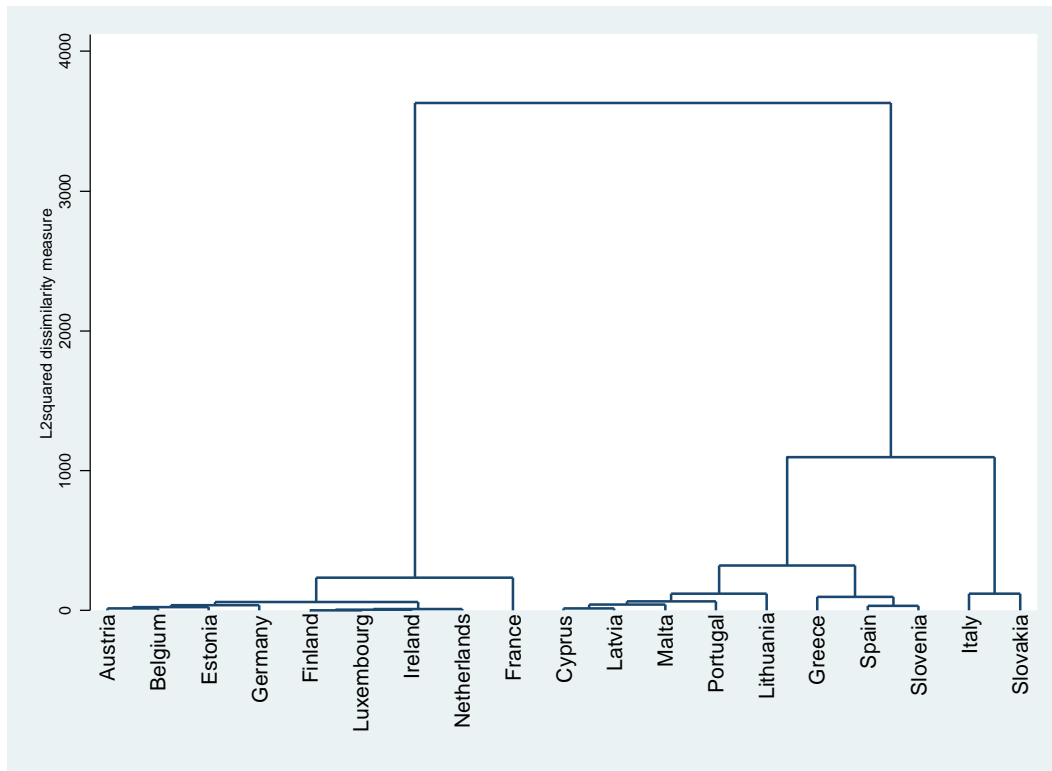
country to inequality in the diverse institutional components. We make a cluster analysis for 2006 and another for 2015 in order to identify relevant differences in the composition of clusters and distances between them. A hierarchical cluster analysis using the Ward's linkage method and the squared Euclidean as dissimilarity measure yields the dendrograms of relative similarity of countries for years 2006 and 2015 of Figures 3 and 4.

Figure 3. Dendrogram (2006)



Source: Own construction.

Figure 4. Dendrogram (2015)



Source: Own construction.

In Figures 3 and 4 the height of the vertical lines and the range of the dissimilarity axis give visual clues about the strength of the clustering. Long vertical lines at the top of the dendrogram indicate that the groups represented by those lines are well separated from one another. Shorter lines indicate groups that are not as distinct.

The dendrograms indicates the presence of three groups of countries in 2006 and 2015. In 2006 Austria, Germany, Finland, Luxembourg, France, Ireland, and The Netherlands form a first group (G1) on the left. On the right, we observe a small group of four countries (G3: Italy, Lithuania, Latvia and Slovenia). The rest of the countries belong to G2: a group in the middle of the dendrogram.

The composition of groups is rather stable across years. Nonetheless, in 2015 Belgium and Estonia join G1 and Lithuania and Latvia join G2. Consequently, G3 has only 2 countries (Italy and Slovakia) left in 20015. Nonetheless, this time the distance between G1 and G2 increases and G2 is now closer to the rear group (G3). In this way the dendograms highlight the increase in the gap between the group of countries with higher-quality institutions and the others.

Table 8 displays the estimated values of the non-anonymous convergence indices in the state of institutions among the countries belonging to the leading group (G1) and the other countries (G2 and G3) according to dendrogram for 2015. For both groups of countries public institutions diverge and private institutions converge. However, the major difference arises in relation to public institutions: in the leading group of countries there is upward divergence (on average the institutional quality improves) and in the other group downward divergence (on average the institutional quality declines). This finding demonstrates the increasing institutional gap between ‘central’ and ‘periphery’ countries in the EMU.⁶

Table 8. Convergence of institutions by group of countries (2006-2015)

	Leading group of countries: AT, BE, EE, FI, FR, DE, IE, LU, NT)		Other countries: CY, EL, IT, LV, LT, MT, PT, SK, SI, ES	
	Differences in means	Non- anonymous convergence	Differences in means	Non- anonymous convergence
A	0.0020	0.0026	-0.0928	0.0060
B	-0.3097	-0.0071	-0.3442	-0.0096

Source: Own construction based on WEF (2016).

Finally, we want to shed some light on the changes in the institutional pillar of the CGI relating them to the intensity of the crisis across Euro area countries. With this end, we analyse the relationship between the differences in country contributions to overall institutional inequality and some variables related to economic performance: the annual average economic growth rate, the variation rate of unemployment rate, and the variation rate of in-work at-risk-of-poverty rate (2015 compared to 2006) (Figures A1-A3 of the Appendix).⁷ We find that the impact of the financial and economic crisis on the economic performance and institutional quality are associated (without expressing causality).

⁶ To verify the robustness of the results, we use as a proxy for institutional quality of public institutions an aggregate indicator as an average of the six governance indicators computed by the World Bank (2016b), namely: *Voice and Accountability*, *Political Stability and Absence of Violence/Terrorism*, *Government Effectiveness*, *Regulatory Quality*, *Rule of Law*, and *Control of Corruption*. In Table 3A of the Appendix 8 we can check that governance indicators tend to diverge for both groups of countries, even though in the ‘periphery’ countries on average the institutional quality worsen more than in the leading group of countries.

⁷ Let us recall that in an economic downturn spending-to-GDP ratios can rise for two reasons: i) because public spending goes up to address the need for social support, such as unemployment or housing benefits; and/or ii) GDP grows slowly. In our case, in all the spending-to-GDP ratios we consider GDP in 2006 and in Figure A5 of the Appendix we exclude unemployment spending.

Likewise, we consider the variation rate of the expenditure in social protection benefits⁸ (as a percentage of GDP in 2006), including and excluding unemployment spending (Figures A4 and A5 of the Appendix). They suggest that the policy responses in terms of fiscal consolidation applied by the respective national governments also seem to be associated with changes in the institutional quality across countries, so that larger fiscal consolidations affecting social spending seem to go hand in hand with a higher loss of institutional quality.

Although these findings are preliminary and require further research, they offer new insights on possible underlying factors explaining the institutional disparities across the Euro area countries that should be taken into consideration by academics and policy makers.

6. Concluding remarks

Institutional quality worsened in the EMU between 2006 and 2015 in general terms, despite some countries experiencing improvements. We find β -divergence (and σ -divergence) in the state of institutions across Euro area countries, so that on average the decay in the institutional quality in 2015 compared to 2006 has been greater for those countries with lower quality than for high institutional quality countries. Public institutions are observed to diverge (except the – perhaps very important– institutional components related to ethics and corruption and security), while private institutions slightly converge (particularly accountability, not so corporate ethics).

Inequality in the state of institutions increased during the period 2006-2015, both for public and private institutions, as for each of their components, except for security and accountability, with government efficiency as the institutional component where inequality increased the most.

The contribution of each country to the overall inequality in the state of institutions, differs across countries and among the institutional indicators. Lithuania, Latvia, Estonia and Belgium show the higher reductions in the relative distance to the benchmark for different institutional components, while Greece, Slovakia, Portugal, and Spain display higher increments.

We have identified clusters of countries with similar properties in the development of institutions. The composition of these clusters is rather stable in both years, even though in 2015 the gap between the leading group of countries with higher quality institutions and the

⁸ Social protection benefits are transfers to households, in cash or in kind, intended to relieve them of the financial burden of several risks and needs. These include disability, sickness/healthcare, old age, survivors, family/children, unemployment, housing and social exclusion not covered elsewhere.

others broaden. Both groups of countries diverge in public institutions and converge in private institutions. However, –to make matters worse–, the leading group, on average, improves the quality of their public institutions while the other countries see their public institutions deteriorating. This increasing disparity in the institutional structure between both groups of countries highlights the divergence in competitiveness between ‘core’ and ‘periphery’ Euro area countries.

The deterioration of institutions particularly in some Euro area countries is associated with the intensity of the impact of the financial and economic crisis in terms of economic growth and employment. Nevertheless, the causality of this association is not easily established. There may be a measurement explanation. Institutional quality is measured through questionnaires. Perhaps the subjective answers depend to some extent on the external economic environment. We also find an association between institutional quality and the policy responses in terms of fiscal consolidation. The intense and rapid pace of fiscal consolidation carried out in some countries may have also contributed to widen the disparities across EMU countries in terms of institutional quality.

The overall finding is that the sustainability of the EMU is in serious danger as a result of the divergence in institutional quality and the corresponding divergence in competitiveness. Given that in a monetary union there are many channels through which the national economic performance may affect other member countries and the Euro area as a whole, low quality national institutions may increase the vulnerabilities of the countries in question and undermine the smooth functioning of the EMU. This begs the question of how to recreate convergence through the combination of European and national actions. The institutional environment is mainly a national responsibility. Nevertheless some structural reforms enhancing the quality of institutions at the national level should be introduced and coordinated at the European level, particularly in areas such as government efficiency or undue influence. Both EU-wide and domestic policies must improve public institutions and create the conditions for firms to operate smoothly and efficiency, taking into account that a certain convergence in basic institutions is essential to accomplish an effective and competitive EMU.

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Appendix

Table A1. Descriptive statistics

Variable	2006				2015			
	Min.	Max.	Mean	Standard deviation	Min.	Max.	Mean	Standard deviation
GCI	4.121	5.505	4.777	0.440	4.024	5.529	4.773	0.483
P1. Institutions	3.734	6.026	4.771	0.687	3.422	6.096	4.649	0.806
A. Public institutions	3.574	5.957	4.661	0.708	3.264	6.121	4.608	0.852
B. Private institutions	4.182	6.232	5.101	0.663	3.850	6.021	4.771	0.688
A1. Property rights	4.295	6.576	5.374	0.709	4.026	6.387	5.064	0.828
A2. Ethics and corruption	2.640	6.001	4.142	0.954	2.665	6.229	4.365	1.098
A3. Undue influence	2.966	5.641	4.315	0.899	2.223	5.998	4.237	1.086
A4. Government efficiency	2.741	5.357	4.037	0.650	2.201	5.320	3.845	0.893
A5. Security	4.416	6.538	5.437	0.565	4.380	6.672	5.530	0.559
B1. Corporate ethics	4.034	6.451	5.032	0.792	3.350	6.298	4.681	0.920
B2. Accountability	4.239	6.016	5.169	0.565	4.173	5.745	4.860	0.471

Source: Own calculations based on WEF (2016)

Table A2. Convergence of institutions by subperiods (2006-2015)

	2006-2008			2008-2013			2013-2015		
	Differences in means	Non-anonymous convergence	Anonymous convergence	Differences in means	Non-anonymous convergence	Anonymous convergence	Differences in means	Non-anonymous convergence	Anonymous convergence
P1	0.1234	-0.0008	0.0018	-0.2904	0.0096	0.0131	0.0448	0.0002	0.0015
A	0.1602	-0.0022	0.0014	-0.2625	0.0113	0.0155	0.0494	0.0000	0.0018
B	0.0131	-0.0013	0.0015	-0.3739	0.0015	0.0057	0.0311	-0.0003	0.0013
A1	0.0975	-0.0068	-0.0046	-0.4792	0.0149	0.0211	0.0725	-0.0018	0.0008
A2	0.1098	0.0075	0.0126	-0.0264	-0.0075	0.0032	0.1396	-0.0053	-0.0020
A3	0.2322	0.0068	0.0100	-0.4054	0.0038	0.0135	0.0944	0.0004	0.0030
A4	-0.0082	0.0002	0.0043	-0.2347	0.0298	0.0363	0.0505	-0.0011	0.0001
A5	0.3698	-0.0184	-0.0131	-0.1670	-0.0029	0.0055	-0.1099	0.0029	0.0050
B1	-0.0243	0.0072	0.0106	-0.2444	0.0069	0.0097	-0.0823	0.0001	0.0024
B2	0.0504	-0.0096	-0.0084	-0.5034	-0.0055	0.0011	0.1445	-0.0026	-0.0002

Source: Own construction based on WEF (2016)

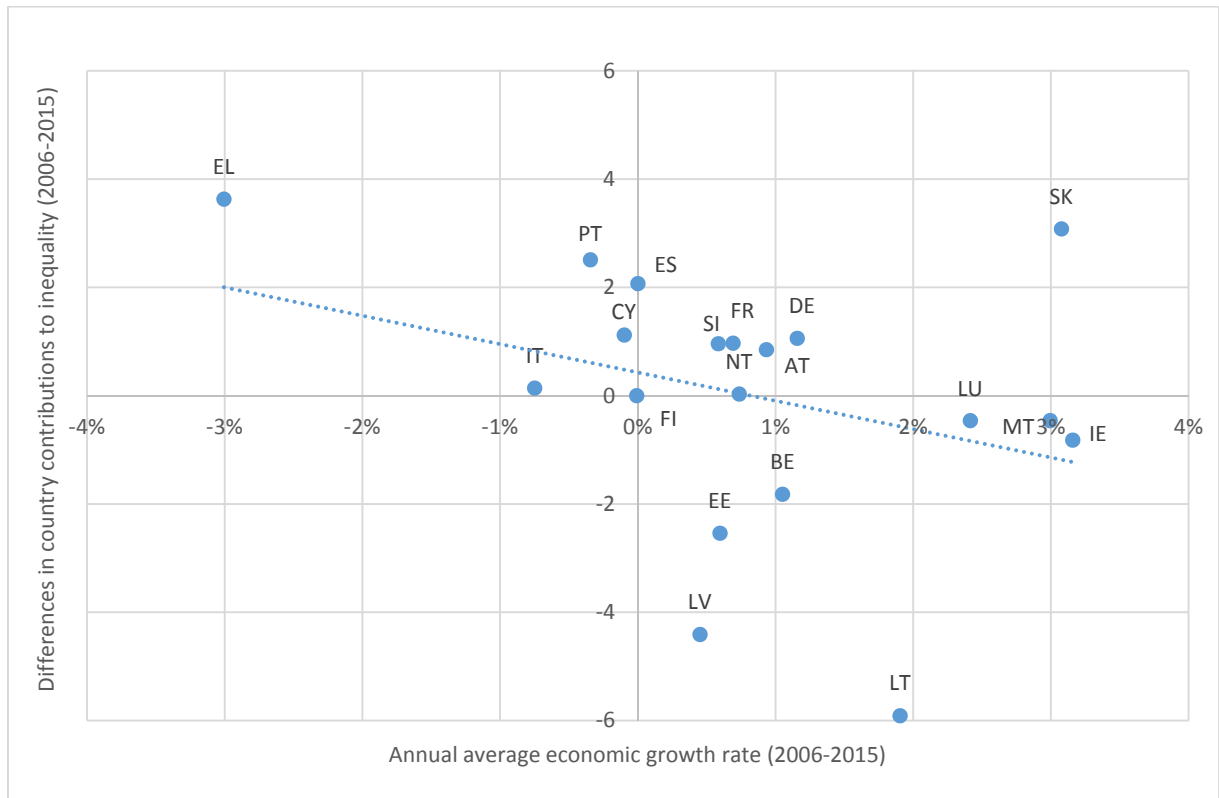
Note: P1: overall state of institutions, A: Public Institutions, B: Private Institutions, A1: Property Rights, A2: Ethics and Corruption, A3: Undue Influence, A4: Government Efficiency, A5: Security, B1: Corporate Ethics, and B2: Accountability.

Table A3. Sensitivity analysis: convergence of governance indicators by group of countries (2006-2015)

	Leading group of countries: AT, BE, EE, FI, FR, DE, IE, LU, NT)		Other countries: CY, EL, IT, LV, LT, MT, PT, SK, SI, ES	
	Differences in means	Non-anonymous convergence	Differences in means	Non-anonymous convergence
Voice and Accountability	-0.2121	0.0135	-0.0806	0.0088
Political Stability and Absence of Violence/Terrorism	-0.1441	0.0227	-0.0108	0.0099
Government Effectiveness	-0.4161	0.0011	-0.2898	-0.0040
Regulatory Quality	-0.3078	-0.0005	-0.3099	0.0020
Rule of Law	0.0718	0.0165	0.2928	-0.0015
Control of Corruption	-0.0799	0.0206	-0.0784	0.0142
Aggregate indicator	-0.1239	0.0328	-0.2240	0.0253

Source: Own construction based on World Bank (2016b).

Figure A1. Country contributions to inequality in institutional quality and economic growth



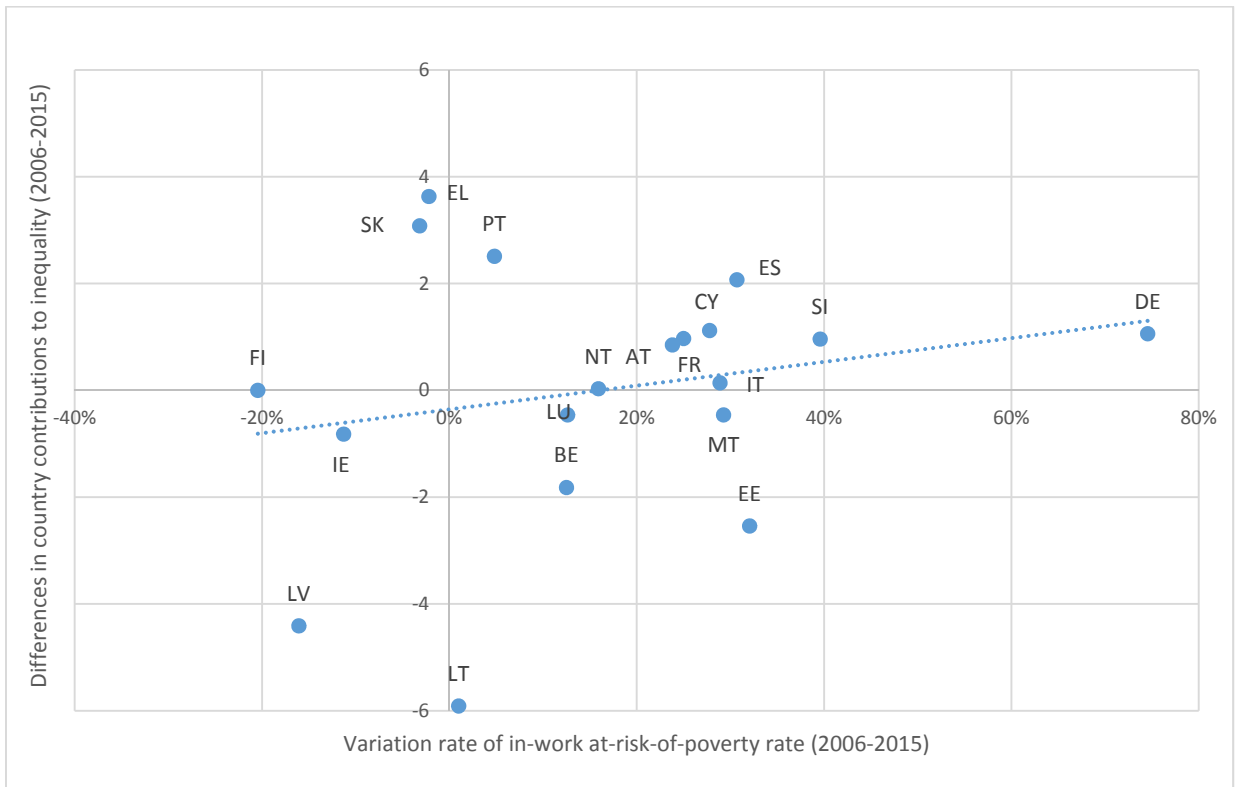
Source: Own construction.

Figure A2. Country contributions to inequality in institutional quality and unemployment rate



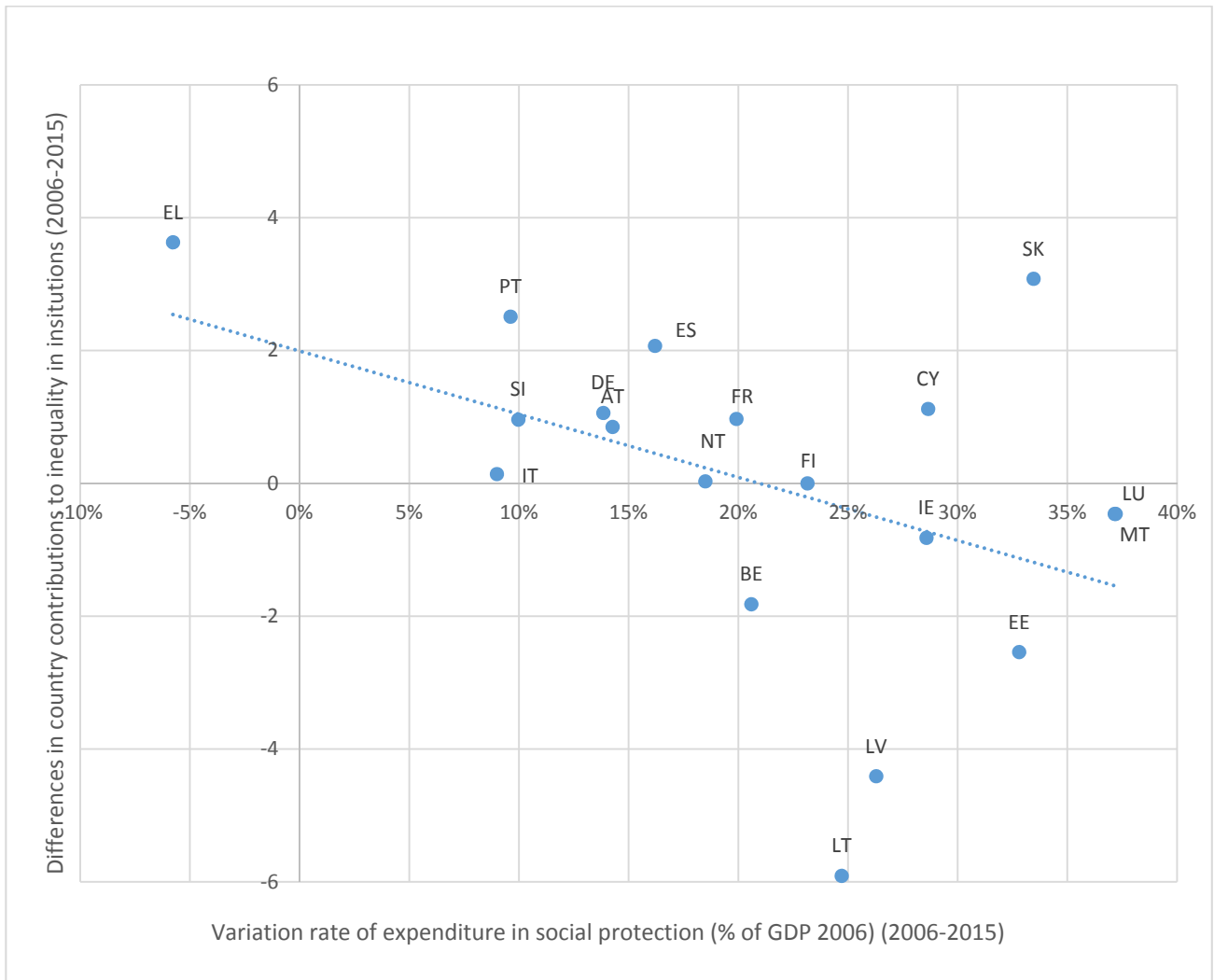
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Figure A3. Country contributions to inequality in institutional quality and in-work at-risk-of-poverty rate



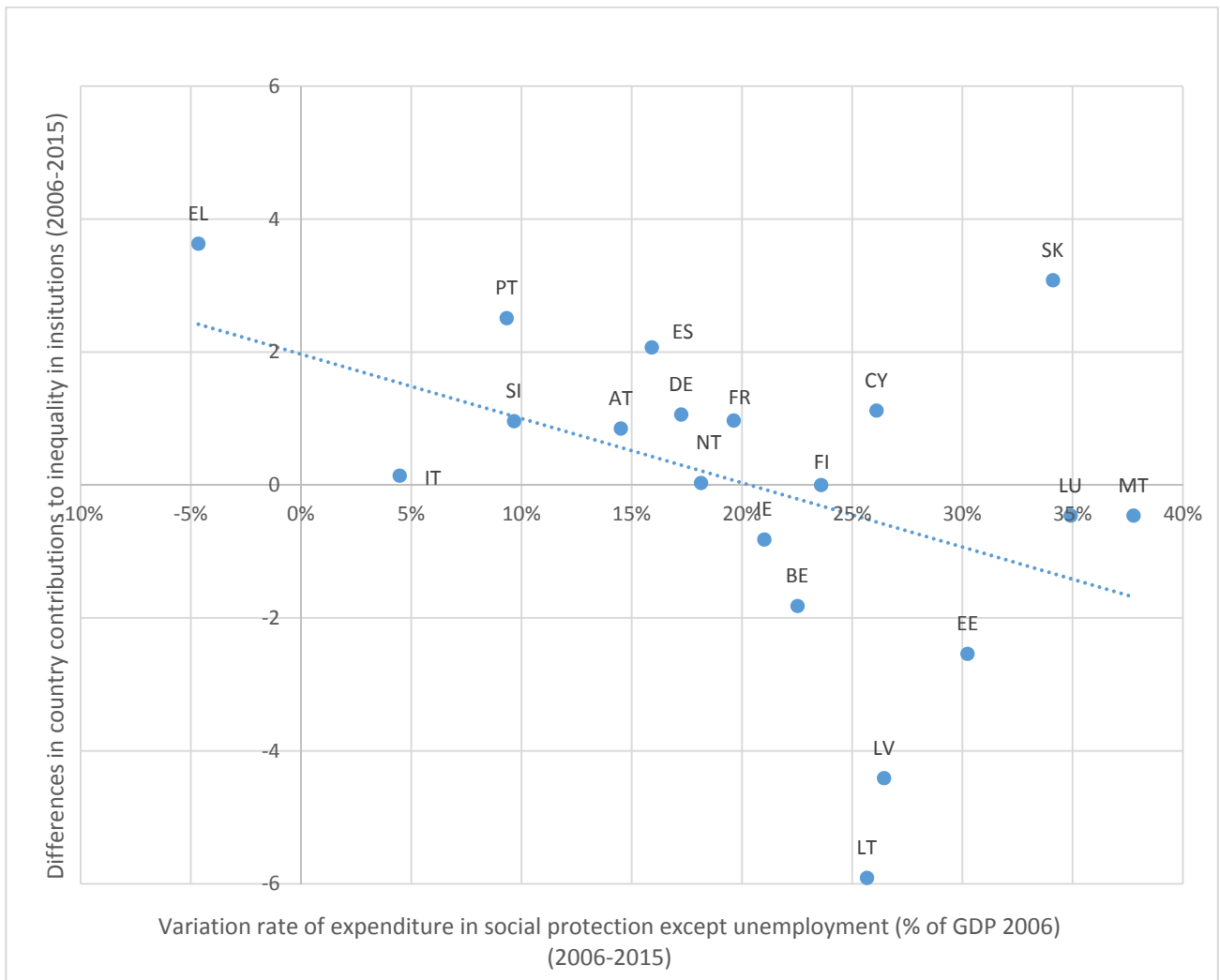
Source: Own construction.

Figure A4. Country contributions to inequality in institutional quality and expenditure in social protection



Source: Own construction.

Figure A5. Country contributions to inequality in institutional quality and expenditure in social protection (except unemployment)



Source: Own construction.

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