

Institutional quality convergence in the Euro area countries: a note and further evidence

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Abstract: In a recent paper in this journal, Pérez-Moreno *et al.* (2020) examine the presence of convergence or divergence in terms of institutional quality among the Eurozone countries over the period 2008-17. Convergence is a long-term process. Furthermore, it may not follow a smooth and stable course since it can be affected by major episodes such as the recent crisis and the recession that afflicted Eurozone countries. Better insights can be drawn with the use of timeseries spanning over a longer period and by allowing for structural shifts in the process caused by important episodes and major events.

Keywords: convergence, institutions, unit roots, structural breaks, Euro area

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Introduction

The recent paper by Pérez-Moreno *et al.* (2020) examines the presence of an institutional convergence process among Euro-area countries over the period 2008-17. It focuses on a wide range of public and private sphere institutional aspects during and after the recent recession that afflicted many Eurozone countries. It probes into the issue of institutional convergence using two separate sub-periods 2008–14 and 2014–17. Pérez-Moreno *et al.* (2020) offer a comprehensive and in-depth discussion of the importance of institutions in general and for their significant role in the smooth functioning and performance of the Eurozone in particular. Consequently, for reasons of brevity, we refrain from engaging in a fundamentally similar discussion here.

Given that a long-standing pivotal policy objective of the EU is the reduction of disparities and the promotion of cohesion among its members, the implementation of convergence promoting policies in many and wide-ranging spheres, is a distinct and key instrument that underpins its deepening integration and enlargement strategies (*inter alia*: Eftimoski, 2020; Ceylan and Abiyev, 2016; Anagnostou *et al.* 2016; Chapsa and Katrakilidis, 2014). However, a process of convergence may not always follow a smooth and uninterrupted path. In this note we postulate that important episodes and major events have the potential to act as impediments slowing down or even temporarily halting a convergence process. More importantly, convergence is a long-term process. In the case of the EU member states, convergence is actively promoted even at the pre-accession stage. The Copenhagen criteria¹ are the essential preconditions that candidate countries must satisfy to be deemed eligible for membership. The criteria include both economic and political preconditions as well as the “administrative and institutional capacity to effectively implement the *acquis*”. In view of these, in this note we re-examine the institutional convergence hypothesis among the Eurozone countries over a longer period (1996-2019) adopting methodological tools that allow for the presence of shifts and structural changes in the process (*inter alia*: Dawson and Strazicich, 2010; Tsanana and Katrakilidis, 2014). The next section offers a short discussion and

descriptive presentation of the indices used in the empirical investigation that follows in section three where the findings are presented and discussed. Section four concludes this note.

The data: a primer

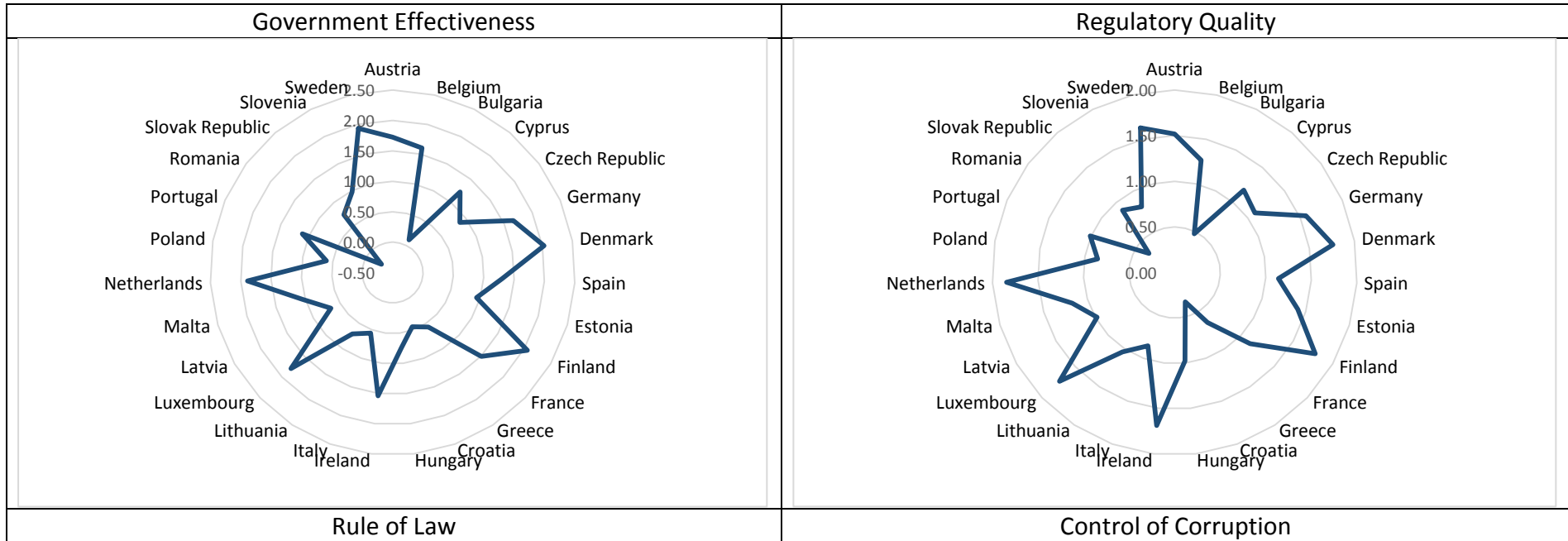
To probe into the issue at hand, we use the World Bank's *World Governance Indicators* (Kaufmann *et al.* 2011). For our purposes here, the advantage of the *World Governance Indicators* (henceforth WGI) data over the *Global Competitiveness Index* dataset used by Pérez-Moreno *et al.* (2020) is that they span a longer period (1996-2019) whereas the latter is available for the years 2004-17². Hence, the indices included in WGI database allow for better insights to be gained from the empirical investigation of convergence over a longer time-horizon. In the analysis that follows, out of the six WGI indicators we opt to use four: *Government Effectiveness*, *Regulatory Quality*, *Rule of Law*, *Control of Corruption*. They are the ones more closely associated with the economy affecting economic agents and business performance³. All are composite indicators that take values between -2.5 to 2.5. Higher values correspond to better institutional functioning and governance. The estimated values for each index are based on surveys that include responses from enterprises, citizens and experts⁴ (Kaufmann *et al.* 2011). Briefly, *Government Effectiveness* (GE) reflects perceptions on the quality of public services, of the civil service, of policy formulation and implementation. *Regulatory Quality* (RQ), encapsulates respondents' perceptions on "the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development". *Rule of Law* (RL) includes perceptions on the quality of contract enforcement and property rights. Finally, *Control of Corruption* (CC) reflects perceptions on public sector corruption.

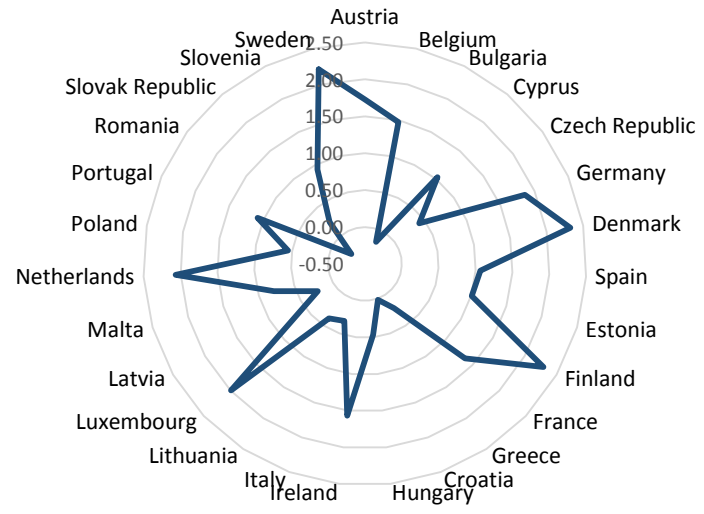
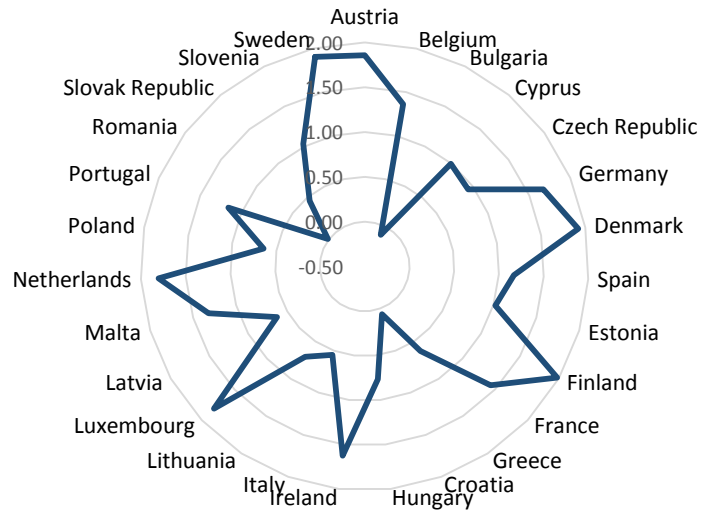
Evidently, the indices employed by Pérez-Moreno *et al.* (2020) in their comprehensive empirical analysis offer a more detailed insight into institutions and institutional quality. Thus, they allow the investigation of the presence (or not) of a convergence process in many different spheres and from various perspectives. By comparison, the WGI data use herein offer a more aggregate and general

perspective on institutional quality. On the other hand, however, they have the advantage that they span over a longer period (1996-2019)⁵ that includes the recent financial and economic crisis. As pointed out in the introduction, such important and major episodes can impede and slow down a long-term convergence process and exert a statistically traceable effect on it. Hence, the empirical methodology should allow for the possible presence of such exogenously generated shifts and structural changes on a process of convergence, in this case of institutional convergence among the Eurozone countries.

Turning to the four indices used here, a visual inspection of the graphical representation of the average score during 1996-2019 in Figure 1 reveals a noteworthy and significant variation both among the EU27 as well as the Eurozone countries. Focusing on the latter, some countries such as for instance Austria, Finland, the Netherlands systematically exhibit higher scores and ranking in each of the four indices used here. Others, such as for example Greece, Slovakia, Italy systematically score values below the group's average. For the period in question, the Eurozone average scores for each of the three indices are as follows: GE 1.24, RQ 1.25, RL 1.22 and CC 1.14. Of course, Figure 1 offers only a statistic snapshot of the average score in each of the four indices during 1996-2019. Hence, it cannot be used to draw inferences on the intertemporal dynamics and the presence (or not) of a convergence process. To this investigation we now turn in the next section.

Figure 1: Average score 1996-2019





The methodology: a bird's eye view

In the relevant literature, different methodologies ranging from σ and β -convergence to unit root tests have been used to test for convergence. The latter have emerged as a prevalent tool in empirical studies that examine convergence hypotheses (*inter alia*: Ceylan and Abiyev, 2016; Lau *et al* 2016; Beyaert *et al.* 2019; Kollias and Messis 2020). Several different unit root tests are available and have been used to test for convergence. For our purposes here, following the methodological approach adopted by Tsanana and Katrakilidis (2014), we opt to use the panel Lagrange Multiplier (LM) unit root test proposed by Im *et al.* (2003, 2005). This test allows for the presence of structural breaks in the panels examined (Amsler and Lee, 1995). The test is calculated by averaging the univariate LM unit root *t*-test statistics. The univariate LM unit root test determines the breaks endogenously (i.e. $\lambda_i = TB_i / T$, $i=1,2$ with TB_i to denote the time period of breaks and T being the number of years) through a grid search utilization. The choice of lag length (k) selection has been done through the general to specific procedure as in Perron (1989), Zivot and Andrews (1992) and Lee and Strazicich (2003). Hence,

$$\overline{LM}_{NT} = \frac{1}{N} \sum_{i=1}^N LM_i^T . \quad (1)$$

After normalization, we get the following:

$$\Gamma_{NT} = \frac{\sqrt{N}(\overline{LM}_{NT} - E(LM_i^T))}{\sqrt{V(LM_i^T)}} \Rightarrow N(0,1), \quad (2)$$

where $E(LM_i^T)$ and $V(LM_i^T)$ denote the expected value and variance of LM_i^T statistic respectively under the null hypothesis. Details of the simulated values of means and variances for different time periods, starting from $T=10$, can be found in Im *et al.* (2005). The asymptotic distribution of the test is not affected by the presence of structural breaks and is standard normal. The empirical findings of the tests are presented and discussed in the next section. Perhaps, at this point it should be noted that although the entire period for which the four indicators are available (i.e. 1996-2019) is used in the estimations, the short period of time analyzed presents an inherent limitation when the presence of structural shifts in time-series is examined.

Findings and discussion

The findings from applying the methodology briefly outlined above are reported in Table 1. For each of the four indicators we report the findings from three different panels: Eurozone countries, the EU27 group (given Brexit), and the EU28. As a first general observation from the inspection of the results, it is evident that they are quite consistent across all panels and no noteworthy differences between the three groups of countries emerge. As can be seen, with the exception the *Rule of Law* index, the unit root test results that do not allow for the presence of structural breaks in the panels do not support the convergence hypothesis. However, this finding alters once structural breaks in the panels are allowed for. For three out of the four indices used here, namely *Government Effectiveness* (GE), *Regulatory Quality* (RQ) and *Rule of Law* (RL), the findings reported in Table 1 point to a process of convergence among the countries included in the three groups. *Control of Corruption* (CC) is the only index for which no evidence supporting a convergence hypothesis emerges from estimating the Im *et al.* (2005) LM unit root test. In neither of the three panels is the convergence hypothesis in terms of this index supported by the results irrespective of whether structural breaks are allowed for or not. The uniformity of the findings strongly supports the inference of a convergence process that however includes statistically traceable breaks during the period under scrutiny herein (i.e. 1996-2019).

Table 1: Panel LM unit root test statistic and structural breaks

Panel A: Eurozone Countries								
Variable	No Break		One Break			Two Breaks		
	LM t-stat	Lags	LM t-stat	Lags	Break point	LM-stat	Lags	Break points
Government Effectiveness	-0.123	(2)	-2.617***	(0)	2006	-2.436***	(0)	2003 2006
Regulatory Quality	-0.805	(3)	-2.534***	(0)	1998	-2.359***	(0)	1998 2016
Rule of Law	-3.405***	(1)	-4.053***	(2)	2010	-2.586***	(0)	2003 2007
Control Corruption	-0.863	(0)	-1.119	(0)	2017	-1.041	(0)	2014 2017
Panel B: EU27								
Variable	No Break		One Break			Two Breaks		
	LM t-stat	Lags	LM t-stat	Lags	Break point	LM-stat	Lags	Break points
Government Effectiveness	-0.080	(2)	-1.563*	(0)	2017	-1.455*	(0)	2014 2017
Regulatory Quality	-0.577	(3)	-1.755**	(0)	2000	-1.634*	(0)	2000 2019
Rule of Law	-2.466***	(0)	-4.051***	(2)	2000	-2.574***	(0)	2000 2016

Control Corruption	-0.844	(0)	-1.057	(0)	2000	-0.983	(0)	2000	2016
Panel C: EU28									
	No Break		One Break			Two Breaks			
Variable	LM t-stat	Lags	LM t-stat	Lags	Break point	LM-stat	Lags	Break points	
Government Effectiveness	-0.095	(2)	-0.308	(2)	2018	-1.439*	(0)	1998	2018
Regulatory Quality	-0.633	(3)	-1.755**	(0)	2000	-1.634*	(0)	2000	2008
Rule of Law	-2.490***	(0)	-4.048***	(2)	2000	-2.575***	(0)	2000	2003
Control Corruption	-0.851	(0)	-1.056	(0)	2000	-0.983	(0)	1998	2000

The critical values for the panel LM test for 1 percent, 5 percent and 10 percent are -2.326, -1.645 and -1.282 respectively. ***, **, * represent the 1 percent, 5 percent and 10 percent levels of significance.

Focusing on the Eurozone countries (Panel A in Table 1), the break years identified by the test differ between the three indices for which convergence is established (i.e. GE, RQ and RL). In some cases, they can be tentatively associated either with the onset and evolution of the recent financial crisis (such as the breaks in 2006, 2007 and 2010 for the GE and RL indices) or the recovery period as identified by Pérez-Moreno *et al.* (2020). Such a case is the 2016 break in panel of the RQ index. In a similar vein, the break in 2003 (in the case of the GE and RL indices) can be tentatively associated with the 2004 EU enlargement in which several of the current Eurozone countries joined the EU⁶. In any case, irrespective of the cautious interpretation of the explanatory factors for the break years identified by the Im *et al.* (2005) unit root test, the overarching inference that can be drawn is that convergence is a long-term process that may exhibit statistically traceable breaks that need to be allowed for in the empirical investigation of the convergence hypothesis.

Concluding remarks

This short note re-visited the institutional convergence hypothesis among the Eurozone countries. The issue was investigated by Pérez-Moreno *et al.* (2020) for 2008-17, focusing on two specific sub-periods: the crisis period (2008–2014) and the subsequent recovery period (2014–2017). This note argued that convergence among any group of countries is a long-term process that can be affected by important episodes and major events. From the convergence process perspective, the recent economic recession could be treated as an exogenous shock that has the potential to

impact such a process if indeed present. To allow for the long-term nature of convergence as well as for the possible presence of shifts and breaks in the process this note employed the Im *et al.* (2005) unit root test. To this effect, four of the six *World Governance Indicators* were used in the empirical analysis. The results reported above seem to confirm an institutional convergence process once structural breaks are allowed for in three out of the four indices used. Namely *Government Effectiveness*, *Regulatory Quality* and *Rule of Law*. No convergence was established in the case of the *Control of Corruption* index.

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Notes

1. Defined and adopted by the 1993 European Council in Copenhagen. https://ec.europa.eu/neighbourhood-enlargement/policy/glossary/terms/accession-criteria_en
2. https://govdata360.worldbank.org/indicators/gci?country=BRA&indicator=632&viz=line_chart&years=2007,2017 Pérez-Moreno et al. (2020) use 2008, the year that the global financial crisis emerged, as the starting point of their analysis.
3. The other two WGI indices being Voice and Accountability, Political Stability and Absence of Violence
4. <http://info.worldbank.org/governance/wgi/>
5. The WGI indices' values for the years 1997, 1999 and 2001 are not available. For our purposes here, they were estimated by averaging the value of the preceding and the following year. These imputations do not affect the trend exhibited by each of the four series.
6. These countries are: Cyprus, Estonia, Malta, Latvia, Lithuania, Slovakia and Slovenia

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