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Large-Scale Transition of Economic Systems – Do CEECs Converge Towards Western Prototypes?[1]

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In order to identify convergence patterns among the group of Central and Eastern European Countries (CEECs) we analyze clusters of traditional OECD countries, i.e. EU-15 plus Norway and Switzerland, Anglo-Saxon non-EU countries plus Japan, and CEECs based on macro data on government regulation and spending instead of micro data on firm relations and market characteristics as is usually applied in Varieties-of-Capitalism (VoC) analysis. This framework is supposed to incorporate some of the critique that has been expressed towards the traditional VoC-approach, especially its ignorance of government spending and performance. We acknowledge for the transition aspect by looking at cluster history and principal component analysis for periods of transition. Our analysis reveals that there is consolidation rather than convergence with CEECs being divided in clusters leaning towards CME and LME prototypes respectively. Overall, there are worlds of redistribution within which clusters differ with respect to their mix of – negatively correlated – regulation and innovation. Interestingly, CEECs do not mix up with Mediterranean MMEs, which indeed provide a kind of worst case setting, while Scandinavian CMEs as well as traditional LMEs provide a kind of role model within their respective worlds of redistribution.

Keywords: Varieties of Capitalism, Worlds of Welfare States, Government Spending, Regulation, Cluster Analysis, Transition, Economic Systems, CEECs

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1. Background and Motivation

After the Soviet Union had collapsed, the research focus of comparative political economy shifted to understanding the differences between the developed market economies. In particular, it was realized that successful market economies were based on conceptually different baskets of institutions. The Varieties of Capitalism (VoC) approach emerged in order to systematically investigate these differences (Hall and Soskice 2001). The literature on economic systems, which traditionally dealt with the comparison of market-type and centrally planned economies, largely neglected the possible convergence of transition countries – such as the Central Eastern European Countries (CEECs) – towards Western prototypes represented within the EU.[2]

The VoC literature has been successfully applied to industrialized countries, often within an OECD context, and helped to distinguish between so-called Liberal Market Economies (LMEs) and Coordinated Market Economies (CMEs). Each type exhibits particular institutional complementarities and particular implications for economic performance. The empirical literature (see, e.g., Pryor 2005, Saint-Arnaud and Bernhard 2003, Visser 2001, Nicoletti et al. 1999) found some varieties of CMEs like Scandinavian or Continental European CMEs and hybrid varieties that are not able to exploit institutional complementarities (Mixed Market Economies; MMEs). In contrast, the application of the VoC approach to less developed and transformation countries has been limited. It was argued that the VoC approach is not suitable to explain the institutional fabric and economic performance of less developed and transition economies (see, e.g., Mendelski 2010) or that these countries constitute a separate cluster defined by external dependence (Dependent Market Economies, DMEs).

Especially for CEECs, which had to adapt to the EU institutional framework, this is far from self-evident. Therefore, we apply a modified VoC framework on this group of countries, in order to identify possible convergence patterns among (some of) them towards established institutional frameworks, namely CME or LME. The identification of convergence paths of these countries could shed some fresh light on traditional results from the VoC literature, namely that clusters of economic systems are stable over time and that other than pure LME/CME models, i.e. hybrid regimes, are bound to be inconsistent and connected with economic inefficiencies. Whether or not this is actually true is highly relevant for policy analysis, because many EU-countries as well as possible accession candidates are in the midst of major institutional and policy reform processes. This necessitates political and economic decisions regarding the sequencing, timing, and pacing of reform steps. Since different institutional arrangements may serve as functional equivalents and hence a great variety of capitalist variations exists, it is difficult to give coherent advice for policy and institutional reform or to take consistent political decisions.

Moreover, even within the framework of the EU's acquis communautaire, different varieties of national political economies exist. Despite structural adjustments, these varieties appear to be stable and do not show a convergence towards a single model (Schustereder 2010). Furthermore neither European CMEs nor LMEs have consistently performed. In Europe (and elsewhere) it appears to be

[2] For notable exceptions to be discussed below, see, e.g., Mendelski (2010) or Nölke and Vliegenthart (2009). An extension to (non-transition) developing countries is provided, e.g., by Pryor (2006).

obvious that the suitability of a distinct institutional framework for a national political economy is context- and time-specific and subject to path dependence, which necessitates that national authorities and populations assume ownership of reforms.

In order to identify convergence patterns among the group of CEEC we developed a modified VoC framework, which allows us to empirically investigate the institutional systems that developed in the region. This framework is additionally supposed to incorporate some of the critique that has been expressed towards the traditional VoC-approach, especially its assumed lack of completeness and methodological rigor (see, e.g., Hancké et al. 2007; Kitschelt 2006; Amable 2003):

- The role of the government in the VoC approach is restricted to implementing the institutional setting but it is neglected as a market participant. This is especially evident when it comes to welfare policies prominently discussed in the literature on Worlds-of-Welfare-Systems (WWS) inspired by Esping-Andersen (1990). Generally, this literature should be integrated into a broader picture of economic systems (see, e.g., Amable 2003).
- The efficiency of a consistent LME or CME setting is often rather assumed than proven. Any evaluation of economic systems should look at what they deliver and recognize the relevant trade-offs between performance, distribution, and stability (Kitschelt 2006). Following the line of argumentation of Hall and Gingerich (2009), government activity, i.e. spending and regulation, has to be consistent ('complementary' in the wording of the VoC literature) in order to achieve innovation and welfare. Pryor (2008) shows that economic systems are causal factors of economic and social performance.

Our analysis of the evolution of economic orders in CEECs is therefore based on a combined VoC and WWS approach with a distinct focus on the institutional systems' outcome in terms of economic performance. We employ cluster analysis for European and OECD countries using broad macro indicators for overall government activity, i.e. regulation and spending, as well as performance variables. In addition, we acknowledge for the transition aspect by looking at cluster history, i.e. cluster analysis for different time spans. Our analysis reveals that there is consolidation rather than convergence with CEECs being divided in clusters leaning towards CME and LME prototypes respectively. Overall, there are worlds of redistribution within which clusters differ with respect to their mix of – negatively correlated – regulation and innovation. Interestingly, CEECs do not mix up with MMEs, which indeed provide a kind of worst case setting, while Scandinavian CMEs as well as traditional LMEs provide a kind of role model within their respective worlds of redistribution.

2. Government Activity and Performance in Transition

As described and analyzed by the Varieties-of-Capitalism (VoC) approach (see, e.g., Hall and Soskice 2001), different market regimes, i.e. capitalist variations, are characterized by different institutional matrices in the economy. These institutional environments and arrangements provide incentive structures for the behavior of firms, households and policymakers. Moreover, different institutional settings reflect, influenced by distinct incentive patterns, different economic and societal preferences with respect to the role of the government in the economy.

The VoC literature classifies market economies into two polar types of capitalism. In Liberal Market Economies (LMEs), coordination is primarily characterized by price signals and formal contracting in competitive markets. In contrast, Coordinated Market Economies (CMEs) are largely driven by specific non-market institutions which play critical roles and influence processes of strategic interaction. This analytical division is conceived as a bipolar continuum on which countries cluster as follows: CMEs include the Scandinavian countries, Continental European countries and Japan. LMEs comprise the USA, the UK, Ireland, Canada, New Zealand and Australia (Hall and Soskice 2001). Despite increased international competition due to globalization processes as well as domestic adjustment pressure due to demographic changes, there has not been a convergence of different economic regimes towards a universal economic order (Schustereder 2010). LMEs and CMEs have adjusted, but not converged. Each regime has largely maintained its peculiarities. This confirms Hall and Soskice's (2001) hypothesis that institutional convergence will be unlikely.

As argued above, this original VoC-approach suffers from several shortcomings, three of which are of significant importance for this analysis: the minor focus on transition, the minor focus on overall government activity, and the minor focus on policy objectives beyond efficiency, i.e. on distribution and stability.

Transition of Economic Systems

Concerning transition towards VoC-prototypes, Mendelski (2010) concludes that this is feasible, but that some reservations should be kept in mind. The reason for constrained feasibility is that developed economies already reached a level of development at which they are only able to improve their performance by exploiting institutional complementarities (efficiency). In contrast, countries in transition may achieve a better economic performance through an increase in the quality (effectiveness) of institutions leading to a hybrid type of market economy possibly converging to an ideal-type market economy with complementary institutions. However, whether or not such a convergence to an ideal type market economy does take place remains an unresolved problem and is still debated in the VoC literature. Due to path dependency and strong political and economic actors who are not interested in giving up their power positions, the emerging market economies may be locked in a suboptimal state. If an economy remains in a such a situation without institutional complementarities, these hybrid systems will ceteris paribus be outperformed by the ideal types, as those are superior in exploiting their institutional advantages (Hancké et al. 2007).

For CEECs, another explanation is provided by Nölke and Vliegenthart (2009). They claim that transition has come to an end for countries like the Czech Republic, Poland, Hungary, and the Slovak Republic and that these countries established a third variety of capitalism characterized as (external) Dependent Market Economies (DMEs). They argue that studies seem to provide the confusing picture that some CEECs lean towards the CME type and others towards the LME type. In addition, an overview over some studies reveals that different conclusions are drawn for the same countries, excluding, e.g. the extreme cases of Estonia – well-known for its liberal transition path, which had even to be reversed for allowing entry into the EU – and Slovenia – clearly the most advanced CEEC (see Table A1 in the appendix).

Nölke and Vliegenthart (2009) argue that the attempt to press CEECs into the well-known clusters of economic systems is futile, because external dependence, i.e. a mix of skilled but cheap labour and a transfer of technology from outside basically by FDI, allows to define an own model. At the same time, they acknowledge that there are varieties of economic systems within the CEEC group, a result also confirmed by Bohle and Greskovits (2012). They distinguish between the Baltic States, which are labelled nation builders and neoliberals, the Visegrád group, based on a manufacturing miracle but already burdened by welfare state problems, and neocorportist, weak states in Southeast Europe. Hence, it is plausible to assume that there are different varieties of capitalism in CEECs, which may or may not converge towards Western prototypes. Furthermore, the landscape of economic systems becomes even more diffuse if the perspective is widened towards (former or present) transition countries (e.g. CIS states).

Moreover, the former conclusion that systems which do not fit into the two-dimensional world of the traditional VoC analysis have to be labelled as hybrid regimes likely to produce inefficiencies needs to be revised. Molina and Rhodes (2008), e.g., discuss the trajectories of Italy and Spain, both considered to be a Mixed Market Economy (MME). This country group – mostly containing the Mediterranean countries, i.e. Greece, Spain, Italy, Portugal and at times France – has been introduced to broaden the perspective of the VoC approach. These MMEs are characterized by fragmented production systems wherein characteristics of LME and CME are mixed, which is supposed to lead to inefficiencies due to a lack of institutional complementarity between the different spheres of the economy. In their pre-crisis investigation Molina and Rhodes (2008) concluded that Italy seems to remain in a hybrid state not being able to increase the benefits from exploiting institutional complementarities, whereas Spain appears to move into the direction of an LME, increasing institutional efficiency and hence economic performance. Thus, observed MME-type hybrid regimes may as well provide different stable varieties (like Italy according to this case) or snap shots during transition towards stable varieties (like Spain). Therefore, – considering all European countries – the picture may be much more complex than assumed by the traditional VoC literature. Moreover, widening the sample of countries will help to provide new answers and hints for further research.

The Role of Overall Government Activity

So far, only a few studies focused on the role of the state within a VoC framework. Amable and Azizi (2009) and Schustereder (2010) observe that LMEs usually exhibit more limited social protection, while CMEs and particularly social-democratic (Nordic or Scandinavian) welfare regimes are based on governance structures, which provide significantly more generous social protection both in kind and monetary terms. This suits well the Worlds of Welfare States (WWS) classification by Esping Andersen (1990) who groups countries according to their welfare state characteristics and arrives at results quite similar to the VoC classification. He identifies a strong Welfare state in Scandinavia (*Social Democratic Model*) and Continental Europe (*Conservative Welfare State*), i.e. the CMEs as well as more limited social protection in the Anglo Saxon countries (*Liberal Welfare State*), i.e. the LMEs.

The links between the two strands of literature (VoC and WWS) are quite obvious given the direct link between labor market institutions and the welfare state (Amable and Azizi 2009). The competitiveness of LMEs relies on activities which require workers to acquire general skills. Due to these non-specific skills, workers are conceived to switch relatively easily between jobs. Hence, there is no specific need for protection. On the contrary, the competitiveness of CMEs is typically based on activities which favor the appropriation of firm- or sector-specific skills. In such an environment, a generous social protection system may act (ex-ante) as an incentive for workers to acquire the needed specific skills. Hence, "LMEs (…) sharpened market mechanisms, while … (CMEs) … tended to cushion citizens against the effects of market adjustment, moving more slowly to make changes to social protection …" (Hall and Gingerich 2009).

There is, however, another argument which goes well beyond a narrow focus on the welfare system and related spending for social protection. Lijphart (1999) points out that CMEs usually have a consensus-oriented political system, in which large (at times heterogeneous) coalitions ensure government support. Such regimes provide an institutional setting in which vested interest groups participate in, or indirectly influence, policy making. Thereby, interest groups help to generate a consensus between firms and unions to generate, extend, or at least maintain a developed welfare regime. In contrast, LMEs are often based on majoritarian political regimes which favor two-party political competition as well as a pluralism of interest groups, while a relatively powerful government faces fragmented partners in the social realm. Finally, consensus-based systems with proportional representation may be conducive for a political center-left power which may be more inclined to establish and extend a welfare state regime than a centre-right wing political alliance which frequently exists in systems of majoritarian rule.

Amable and Azizi (2009: 4) conclude that the "consequences for macroeconomic policy, and more particularly for social policy, can be exemplified by the 'common pool' problem (…). Indeed, in countries with coalition governments, each member of the coalition may be prone to make public expenditures in different areas towards the specific groups which are supportive of its political party. Hence the tendency to 'overspend' and to produce 'excessive' deficits because of the given levels of governments' resources (…)".

More generally, the related WWS literature can be integrated into a broader picture of economic systems. This was undertaken e.g. by Amable (2003), who provides a country classification[3] for developed countries which incorporates five institutional domains (among them the welfare state) and thereby goes beyond the narrow focus of the VoC approach on the production system. However, he arrives at mostly similar groups, indicating again that institutional complementarities exist at more levels than captured by the traditional VoC approach. This is in line with the argumentation of Hall and Gingerich (2009) arguing that government activity, i.e. spending on the macro level and regulation at the micro level, has to be consistent ('complementary' in the wording of the VoC literature) in order to achieve innovation and welfare.

Policy and Performance

Given that we aim at a more complete picture on the varieties of capitalism by allowing for transition and macroeconomic issues in our analysis, it is also necessary to discuss the system of political objectives. The traditional VoC analysis concentrates on the efficiency of complementary institutions. As a consequence, some implications for economic growth have been derived:

- The process of innovation is a core characteristic of endogenous growth models. Acemoglu et al. (2012) assume that fluid labor markets, flexible equity markets and the market orientation of firms in LMEs are highly conducive to radical innovation, while training systems and dense networks provide what is required to support incremental innovation in CMEs. They model an asymmetric world equilibrium in which globalization allows CMEs to benefit from innovation in LMEs and to end up with higher welfare. However, empirical studies suggest that the process of innovation follows comparative advantages, with CMEs being advantaged in medium high-tech and disadvantaged in high-tech, as compared to LMEs (Schneider and Paunescu 2012).
- The conduciveness to growth in economic systems is also tested based on political economic models. Hall and Gingerich (2009) implement a growth regression. They detect a u-shaped relationship between regulatory complementarities and growth, with the highest growth effect for the highest and lowest levels of coordination. However, they do not extend this analysis to government spending, nor do they explicitly consider the fact that belonging to a cluster may moderate the growth effects of government activity in general. The empirical literature on VoC is still relatively new, and existing studies offer contradictory results. For example, the study by Kenworthy (2006) finds little support for the growth effect of institutional coherence.

Considering performance as a determining characteristic of economic systems when distinguishing between capitalist varieties allows us to acknowledge – at least to some extent – stages of

[3] Amable's (2003) analysis incorporates the 5 spheres Product Markets, Wage-Labour Nexus, Financial Systems, Social Protection, Education. He arrives at the following classification: Market-based capitalism (Anglo-Saxon countries),Continental European Capitalism, Social Democratic Capitalism (Scandinavians), Mediterranean and Asian Capitalism.

development. Observed characteristics distinguishing new-found non-archetypical classifications (i.e. other than 'pure' LME/CME models, e.g. MMEs or our CEEC-groups) from the traditional VoC groups might be the result of lagging economic development in those groups rather than being a sign of a set of consciously designed institutions. Thereby, it is possible that certain results (especially concerning economic and institutional performance) are not driven by differences in the *types* of institutions but rather by their respective *quality* resulting from those differences in developmental progress. Therefore, any results concerning the classification of countries below leading OECD countries' level of development have to be taken carefully and some efforts to capture different development stages should be included into the investigation.

However, according to the works of e.g. Kitschelt (2006) and Iversen and Wren (1998) this is still insufficient given the fact that the system of policy objectives relevant for the design of economic systems goes well beyond efficiency and growth. Iversen and Wren (1998) first stated the idea that in the post-industrial era for any welfare state regime a trade-off between different aspects of economic performance exists, constituting a so-called trilemma of welfare state objectives. This trilemma comprises of the goals of *employment creation/economic growth*, *income equality* and *fiscal stability* of which any welfare state regime is only able to uphold two at the same time. Following Iversen and Wren (1998) and Wren (2001) the different welfare regimes – as defined by Esping-Andersen (1990) – now react differently to this trilemma according to their societal preferences. The answer of liberal models of capitalism with a residual welfare state is putting emphasis on the goals of economic growth and fiscal stability, thereby accepting a more unequal income distribution. In contrast, coordinated models of capitalism, maintaining either a conservative or social-democratic welfare state regime pursue the societal objective of an equal income distribution and either put less emphasis on fiscal stability (Scandinavian social democrats) or employment creation (continental European conservatives).

Kitschelt (2006) adds the goal of innovative capacity to the trilemma of social policy objectives which is closely linked with employment creation/economic growth. He concludes that the Scandinavian is superior to the Continental European model because redistribution is much more efficient on the macro level allowing for both fiscal stability and a low level of regulation supporting innovation and growth, while still upholding a comparatively equal income distribution.[4] In achieving this, the Nordic countries have managed to escape the trilemma of social policy objectives to a certain degree, whereas the Continental Europeans find themselves in a state requiring reform steps either in a more liberal or social democratic direction.

Considering all this, it is important to look at all aspects of performance, going well beyond mere economic growth when providing conclusions on clusters of policy. This is of particular importance when discussing transition and development and including these thoughts into our investigation

[4] Esping-Andersen and Myles (2009) even conclude that the social democratic welfare state of the Scandinavian outperforms its conservative counterpart in Continental Europe in terms of achieving equal distribution of incomes.

should allow – in addition to a classification of emerging capitalist varieties – for a better evaluation of the performance of the CEECs capitalist models.

Summary and Hypotheses

In general the VoC literature has largely concentrated on leading OECD countries and on micro issues like inter-company relations, corporate governance, training/education, industrial relations. This only touches some issues relevant for the design of welfare states, but gives rather low weight to government interventions (especially spending). In addition, the discussion largely neglects the context of development and transition. In this paper, we analyze the evolution of economic systems in CEECs and European transition countries on the basis of a modified and extended VoC approach. Rather than focusing on the micro level, we argue that economic systems can be well characterized by government activity in spending and regulating the economy and that policy should be evaluated in the context of performance and distinct policy objectives.

3. Cluster Analysis – Do CEECs Converge Towards Standard OECD-type of Capitalism and Welfare State?

3.1. Methodology, Empirical Design, and Data Description

We employ cluster analysis for European and OECD countries using broad macro indicators for policy and performance. In addition, we acknowledge for the transition/development aspect by looking at cluster history, i.e. cluster analysis for different time periods. Finally, principal components analysis for the most recent data as well as for past datasets is being undertaken in order to gain further insights into the determinants of observed clusters.

The idea of clustering in comparative political economy arises from the different sets of institutions underlying (relatively) successful European, North American, and East Asian countries. In this context, the analysis of clusters has proved to be a useful technique, because it is concerned with the discovery of patterns in the data and the creation of typologies.[5]

Cluster analyses have been only used as an exploratory method and not as a statistical method that is rooted in probability theory. The fact that indicators for economic systems are choosen on an arbitrary basis has been criticized by Ahlquist and Breunig (2009) and Pryor (2006). Hence, results may be determined by the implicit weight given to certain arguments if a range of indicators measure

[5] The goal of a cluster analysis is to identify groups of objects that are 1) as homogeneous as possible within themselves and 2) as heterogeneous as possible between each other with respect to the object characteristics. In hierarchical Cluster analysis one therefore computes a distance matrix applying a certain dissimilarity measure on the (standardized) dataset which contains the distances between all objects. On the basis of these distances the objects are being distributed to different groups using a certain Clustering algorithm. The Distribution starts with all objects forming their own cluster and ends after all objects have been merged into one single cluster.

similar institutions and statistical methods would have to be applied in order to determine the implicit weights of a set of microeconomic indicators. [6]

In line with our arguments developed above, we suggest an alternative approach and refer to macroeconomic indicators measuring broad categories of institutional features. The basic assumption is that the overall design of government intervention is represented by general categories of government activity such as spending (not considered in traditional VoC analysis) and regulation (as a summary measure of microeconomic institutions).

Hence, we provide empirical evidence by analyzing clusters of traditional OECD countries, i.e. EU-15 plus Norway and Switzerland, Anglo-Saxon non-EU countries plus Japan, and CEECs based on macro data on government regulation and spending instead of micro data on firm relations and market characteristics as is usually applied in VoC analysis. As will be seen when discussing the results, emerging clusters are strikingly similar to the traditional ones, suggesting a high correlation between the variables used in traditional micro analyses.[7]

In addition, the use of macro data allows us to include performance variables along the line suggested by Kitschelt (2006) and Iversen and Wren (1998). In addition, this allows better cross-country comparisons because of data availability. The variables used in our analysis are described in detail in Table A2 of the appendix. Basically, we consider three variables measuring government activity, i.e.

- overall *size of government* incl. transfers, government enterprises, tax system, etc.,
- *transfer spending* as a proxy for welfare-related involvement, and
- government *regulation* aggregated on the basis of sectoral regulation in trade, labour and capital markets

as well as three variables measuring economic performance, along the lines of the mentioned trilemma of welfare state objectives, i.e.

- *income equality* as measured by the (reversed) GINI index,
- *income perspective* measured by a variable capturing innovation capacity, and
- *fiscal stability* measured by using fiscal debt (financial stability).

An important issue concerning the CEECs is convergence. This implies that we assume that cluster patterns may change over time with CEECs either forming own clusters or integrating themselves into OECD or Western EU clusters. Hence, different to other studies, we define periods for which we average our variables and provide a cluster history by performing cluster analysis for all periods in order to reveal potential convergence. The time period analyzed is restricted by the availability of data. We use the Economic Freedom of the World data set developed by the Frazer Institute in order to have internationally comparable data on government policy. Therefore, for initial transition

[6] See, e.g., Pryor (2006) for the application of a Minimum Description Length (MDL) approach.

[7] An analysis of the same country sample is currently also being undertaken (Ahlborn/Ahrens/Schweickert [forthcoming]), in which we focus on micro level data representing the different economic spheres of the VoC approach. The results of this analysis support the outcomes of this analysis, reassuring us that our macroeconomic approach is indeed suitable for identifying different capitalist varieties.

positions we use data available for 1995 (after the initial transition recessions) and from the years following 2000, averaged over three periods (2000-03, 2004-06, 2007-09). The latter periods cover pre- and post- EU-accession as well as the period before the global economic crisis. While fiscal data after 2009 is distorted by the specific crisis reactions, innovation capacity data provided by the KAM data set established by the World Bank is also available until 2009 only. Hence, 2009 is the last year, for which we could observe normal patterns based on internationally comparable innovation capacity information.

Concerning the Cluster Methodology the 'Ward Method' was the chosen clustering algorithm. This hierarchical clustering method merges two objects/clusters based on the within-cluster variance. An object is being allocated to a cluster if this allocation causes the smallest increase of the within-cluster (and thereby the overall) variance. This method is widely used in applied cluster analysis, provides robust results and has repeatedly performed well in simulation tests (Eckey et al. 2002).

In addition to the cluster analysis, a principal component analysis offers the possibility to reduce the number of variables of a dataset without facing a severe loss of information. To achieve this, the original data is orthogonally transformed in order to obtain uncorrelated linear transformations of the variables (i.e. principal components [PCs]) that contain as much information as possible. These PCs are correlated with the original variables and thereby can be said to "explain" a certain (quantifiable) amount of the variation among the data. In this paper we use the first two PCs given by the PC-analysis to generate scatterplots on the basis of our cluster results in order to explain these and to additionally reveal hidden structures among the data, which may offer further insights into the determinants of clusters

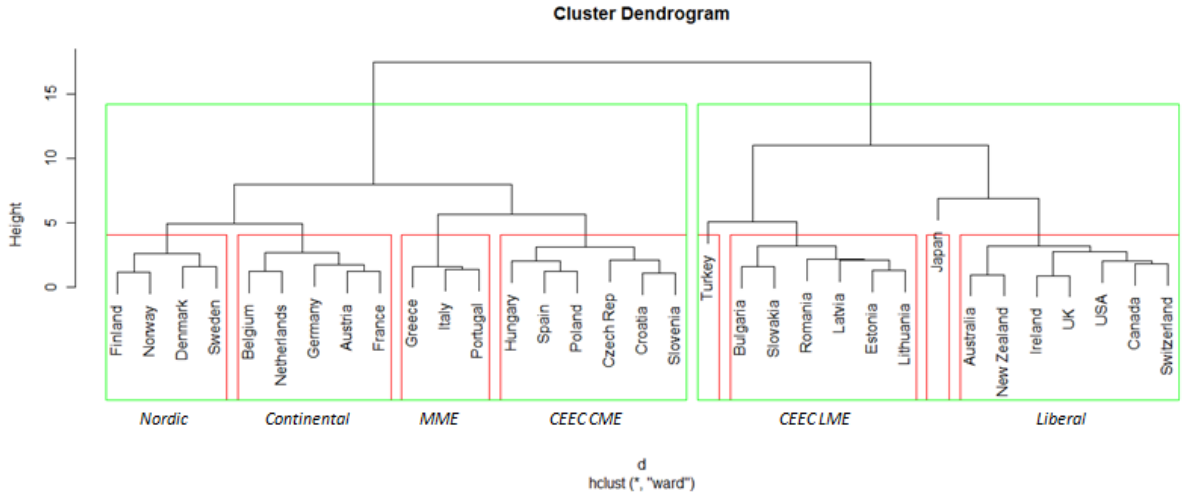
3.2. Empirical Results

Based on the most recent period, Figure 1 provides first answers to the question whether or not there is a specific economic model for CEECs. If one allows for a level of heterogeneity where different varieties of coordinated market economies are to be distinguished, CEECs still form separate clusters and are not integrated into the traditional OECD clusters. It is interesting to note that the macro level analysis is able to reveal the clusters highlighted in VoC and WWS literatures. Hence, there is a distinction between three "traditional" clusters of CEECs: *Nordic*, *Continental*, and *MME*[8]. These clusters are distinct from the *Liberal* cluster of LME countries.

[8] The only exception here is Spain, which does not cluster with the other "traditional" *MME*s, perhaps revealing a certain tendency towards a different model as identified by Molina/Rhodes (2008). When excluding our CEEC sample, thus only clustering among traditional OECD countries, the usual VOC/WWS clusters are reproduced even more clearly, with Spain joining the *MME* cluster.

The macro analysis also reveals, that there are two distinct clusters of CEECs, which cluster either with the CME- (*CEEC CME*) or with the LME-group (*CEEC LME*).[9] At the same time, and this is the second answer to the question about a separate CEEC-model, moving up the cluster tree shows the integration of CEEC-clusters into traditional clusters. Hence, on a level of heterogeneity at which the traditional OECD world is divided into only two groups - CME and LME – CEECs become integrated.

Figure 1 – Clusters of Liberal and Coordinated Market Economies, 2007-09 (period average)



As mentioned above, convergence is an important topic when talking about CEECs. The cluster history for comparable levels of heterogeneity shown in Table 1 reveals some rather stable clusters but also convergence as well as divergence since the mid-1990s. The most stable clusters are the *Liberals*, both traditional LMEs and the *CEEC LMEs*, mainly the Baltic countries. This also applies to a core group of Continental countries – Austria, France, Germany, and, to some extent, Belgium and the Netherlands, and, for most of the time, for the *MME* group consisting of Southern European countries.

[9] The finding that there are two distinct CEEC clusters is also robust to the use of alternative performance variables such as GDPpc or Quality of Institutions. However, the distinction between CEEC CME and CEEC LME is most pronounced when using a forward looking measure of performance, i.e. innovation capacity.

Table 1 – Cluster History, 1995-2009

	07-09	04-06	00-03	95
Australia	Liberal	Liberal	Liberal	Liberal
Canada	Liberal	Liberal	Liberal	Liberal
Ireland	Liberal	Liberal	Continental	Liberal
New Zealand	Liberal	Liberal	Liberal	Liberal
Switzerland	Liberal	Liberal	Liberal	Liberal
UK	Liberal	Liberal	Liberal	Liberal
USA	Liberal	Liberal	Liberal	Liberal
Japan	Outlier 1	Outlier 1	Outlier 1	Outlier 1
Austria	Continental	Conti/CEEC	Continental	Conti/Nordic
Belgium	Continental	Conti/CEEC	Continental	MME 2
France	Continental	Conti/CEEC	Continental	Conti/Nordic
Germany	Continental	Conti/CEEC	Continental	Conti/Nordic
Netherlands	Continental	Nordic	Continental	Conti/Nordic
Denmark	Nordic	Nordic	Nordic	Conti/Nordic
Finland	Nordic	Nordic	Nordic	Conti/Nordic
Norway	Nordic	Conti/CEEC	Nordic	Conti/Nordic
Sweden	Nordic	Nordic	Nordic	Conti/Nordic
Czech Republic	CEEC CME	Conti/CEEC	CEEC CME	CEEC CME
Slovenia	CEEC CME	Conti/CEEC	CEEC CME	CEEC CME
Croatia	CEEC CME	Conti/CEEC	CEEC LME	
Hungary	CEEC CME	Conti/CEEC	Nordic	Conti/Nordic
Poland	CEEC CME	MME	CEEC CME	CEEC CME
Slovakia	CEEC LME	CEEC LME	CEEC CME	CEEC CME
Estonia	CEEC LME	CEEC LME	Baltics/ESP/PT	CEEC LME
Latvia	CEEC LME	CEEC LME	Baltics/ESP/PT	CEEC LME
Lithuania	CEEC LME	CEEC LME	Baltics/ESP/PT	CEEC LME
Romania	CEEC LME	CEEC LME	CEEC LME	CEEC LME
Bulgaria	CEEC LME	CEEC LME	CEEC LME	MME
Greece	MME	MME	MME	MME
Italy	MME	MME	MME	MME2
Portugal	MME	MME	Baltics/ESP/PT	MME
Spain	CEEC CME	MME	Baltics/ESP/PT	MME
Turkey	Outlier 2	Outlier 2	Outlier 2	

Consistent with reform efforts in the region, the *Nordic* cluster diverged from a joint cluster with *Continentals* after 1995. For the cluster of CEECs, which tends towards a coordinated economic system, some convergence towards the *Continental* group occurred in the context of accession. After the period 2004-06, however, these CEECs separated forming an own cluster. Overall, it seems that the overall distribution into clusters seems to be stabilizing somewhat but it is still too early to conclude that CEEC clusters will remain stable.

Some additional insights are provided by looking at the cluster tree for the different periods (Table 2). Allowing for an increasing degree of heterogeneity of clusters, Table 2 shows which countries cluster first and which clusters finally emerge at the highest level of heterogeneity. Looking at the traditional OECD clusters, a rather stable pattern over time is that *Nordic* and *Continental* clusters merge on a still low level of heterogeneity. They even start as one cluster in 1995, move together first in the following periods, and join second in the most recent period. This confirms the picture in

the literature, which treats these groups either as separate or joint groups depending on the focus, i.e. VoC vs. WWS, and the level of heterogeneity allowed for. In sharp contrast, the *Liberal* cluster is rather separated from other countries. With the exception of merging with outlier Japan in 2007-09, it needs a rather high level of heterogeneity for mergers with *Liberal* and, in the period 2000-03, they even stand alone, forming an own cluster in contrast to all other groups.

Table 2 – Cluster Merging History

Further Clusters: 2007 – 2009		
CEEC LME	+	Turkey
Continental	+	Nordic
MME	+	CEEC CME
Liberal	+	Japan
Conti/Nordic	+	MME/CEEC CME
Liberal	+	CEEC LME
Last 2 Clusters		
Continental/Nordic/ MME/CEEC CME		CEEC LME/Liberal

Further Clusters: 2004 - 2006		
Conti/CEEC CME	+	Nordic
CEEC LME	+	Turkey
MME	+	Japan
MME	+	CEEC LME
Liberal	+	MME/CEEC LME
Last 2 Clusters		
Conti/CEEC CME/Nordic		EEC2/MME/Liberal

Further Clusters: 2000 - 2003		
Continental	+	Nordic
MME	+	Japan
CEEC CME	+	CEEC LME
Baltics/ESP/PT	+	Turkey
Baltics/ESP/PT	+	CEEC LME/CME
Baltics/ESP/PT/CEEC	+	MME
Continental/Nordic	+	CEEC/MME
Last 2 Clusters		
Continental/Nordic/ CEEC/MME		Liberal

Further Clusters: 1995		
Conti/Nordic	+	Japan
MME2	+	MME
Continental /Nordic	+	CEEC CME
Liberal	+	MME
Liberal/MME	+	CEEC LME
Last 2 Clusters		
Continental/Nordic/ CEEC CME		Liberal/MME/CEEC LME

Given these stable core groups emerging in final clusters, the MME and CEEC groups behave rather differently:

- A rather stable pattern is that the more liberal oriented *CEEC LME* clusters at some stage with *Liberal*. This pattern was interrupted in the period immediately preceding entry into the EU. The fact that the groups of CEECs merge rather early compared to other periods would be consistent with some enforced but unsustained convergence due to the accession process.

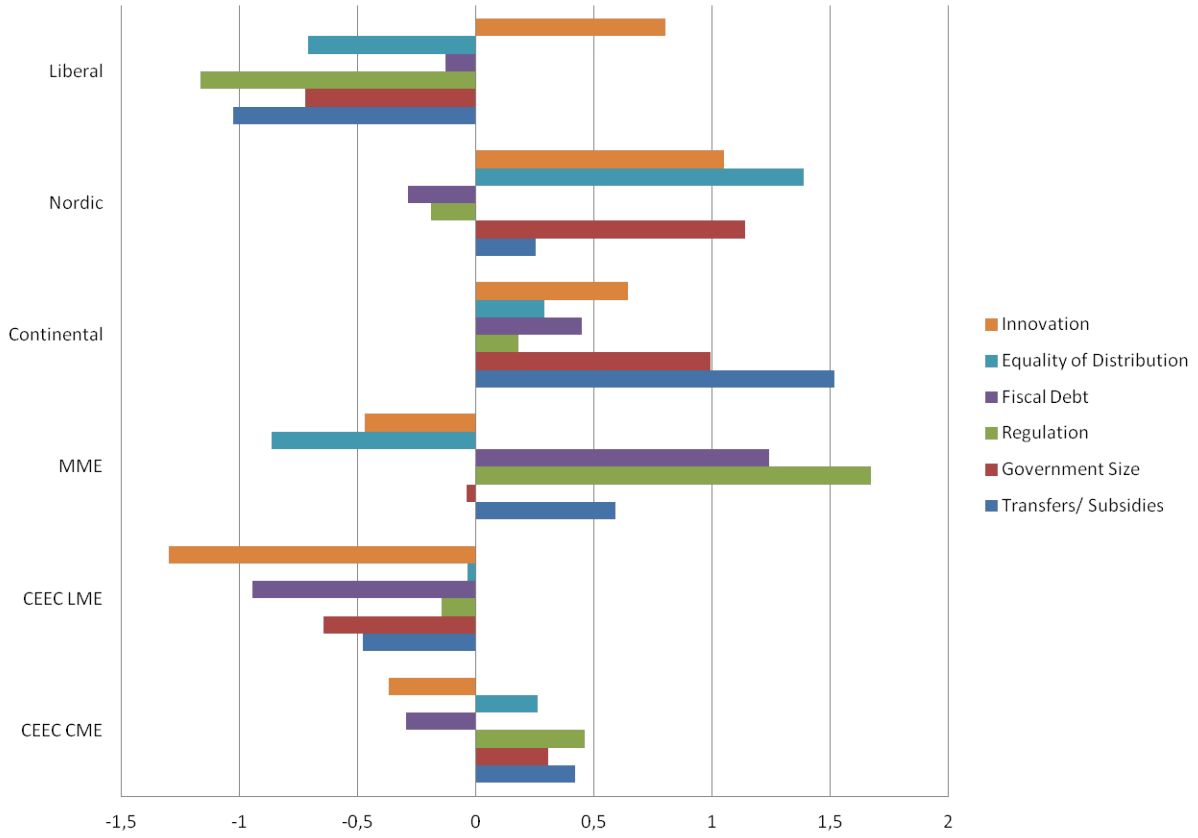
- In contrast, the *CEEC CME* cluster always ends up in the cluster with *Nordic* and *Continental*. Although there is not a clear pattern how they integrate into this group, this confirms the conclusion that there are indeed two separate groups of CEECs with respect to the economic system implemented during transition.
- The most unstable behavior is revealed by the *MME*s mainly formed by Southern European countries. In line with the VoC literature, which argues that these countries suffer from an inconsistent mix of varieties of economic systems, *MMEs* end up in either the large cluster of rather coordinated or in the large cluster of rather liberal countries.

Overall, there is no indication from the cluster behavior of the three groups of countries that CEEC groups show a similar behavior to *MMEs* or can be thought to reveal similar patterns. Hence, from the perspective of our macro analysis of policy and performance, CEECs do not converge towards MME-type economic systems but rather sort themselves into the coordinated or liberal worlds.

The discussion of convergence of clusters during transition seems to indicate that the distribution of countries to clusters and the way how these clusters integrate themselves into the two worlds of economic systems is stabilizing. Hence, we have a deeper look into the structures of the clusters revealed in Table 1 for the period 2007-09.

Figure 2 has the standardized cluster averages for the six clusters. A first insight from this analysis is that, talking about polar cases, these are provided by the *Liberal* and *Continental* clusters. With the exception of the innovation variable, *Liberal* countries figure below average in terms of fiscal spending and regulation as well as in terms of debt and equality, while the opposite is the case for the *Continental* countries. The fact that innovation capacity is somewhat lower in *Continental* countries seems to indicate a trade-off for achieving higher equality by means of higher spending, regulation and debt. However, the figures for the *Nordic* group are considerably different. They reveal the best performance in terms of both innovation and equality. This goes together with a below-average level of debt and regulation and a lower level of transfers and subsidies. Hence, in contrast with the *Continental* group, regulation is rather a substitute than a complement to spending. This quite different policy mix together with the fact that the *Nordic* cluster outperforms both *Liberal* and *Continental* clusters suggests that there may be no inevitable trade-off in being innovative and equal but that there are some costs to the *Liberal* as well as to the *Continental* model.

Figure 2 – Cluster Analysis 2007-2009: Cluster-Averages



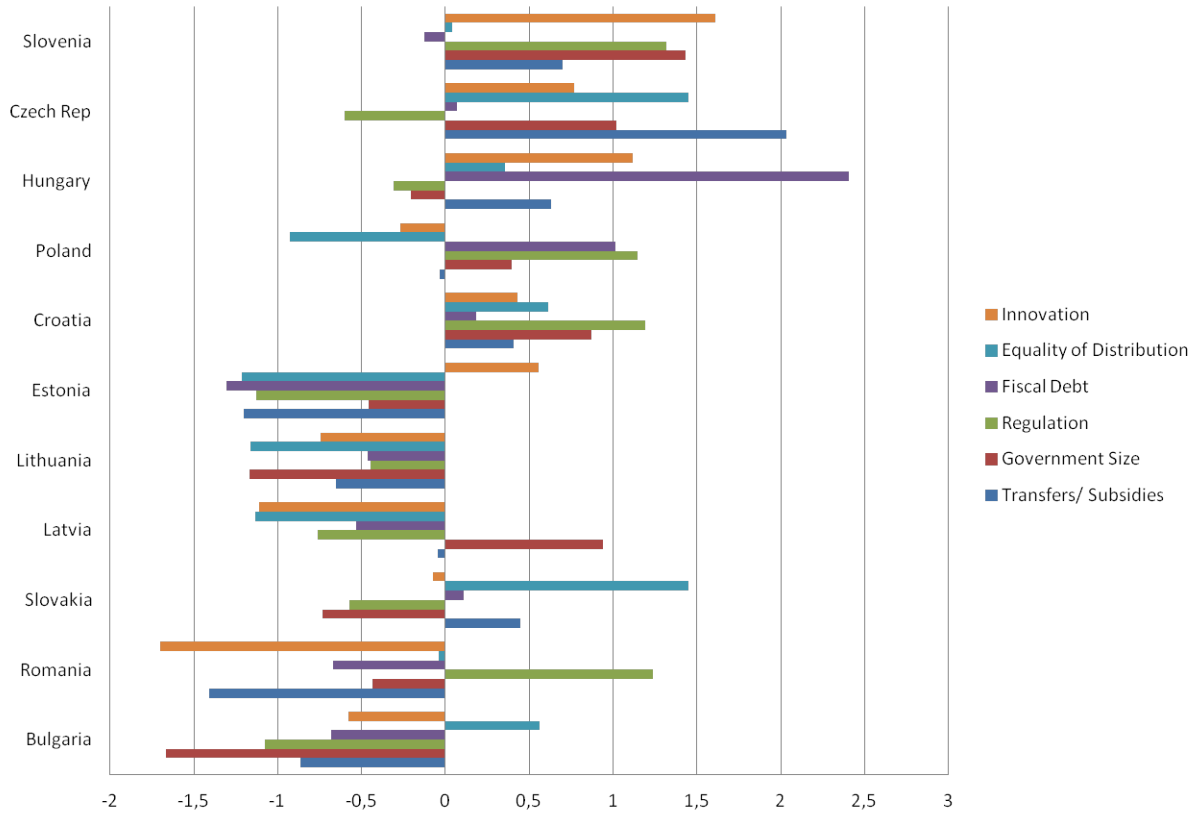
Comparing these advanced groups of countries with *MME* and CEEC clusters confirms the results from the convergence analysis above. The *CEEC LME* cluster shows the most consistent picture with respect to the single variables. With the exception of the innovation variable, which seems to contain a development component, this cluster shows large similarities with *Liberal*. The *CEEC CME* clusters share with the *CEEC LME* cluster a rather low level of innovation and, in addition, a low level of indebtedness. Except for this, the pattern is similar to the *Continental* cluster. Again, the *MME* group reveals the highest degree of inconsistency with respect to policy variables. They show the highest degree of regulation going together with a rather small government size but still above average level of transfers and subsidies. Hence, apart from redistribution and regulation, government is rather small and, overall, government activity results in low innovation capacity and, even compared to the *Liberal* group, low equality.

Figure 3 allows a more detailed look into the CEEC clusters. The countries are grouped according to their allocation into the *CEEC CME* cluster (upper half) and the *CEEC LME* cluster (lower half). The variables have been standardized within this sample. Because the *CEEC CME* cluster is more advanced in terms of income, one would expect this group to show above average values with

respect to the innovation variable but also with respect to the other variables because of belonging to the coordinated world.

This expectation is confirmed with few exceptions. The most clear cut patterns are revealed by Croatia and, except for below average debt, Slovenia (CME) and Estonia and Lithuania (LME), where Estonia even reveals above average innovation capacity. This is exactly the *Liberal* pattern shown in Figure 2. In addition, this evidence for Slovenia and Estonia is the most consensual in the VoC literature. The most heterogeneous case according to expected patterns is Slovakia, which shares the *MME* feature of low government size but large transfers and, at the same time, still has a similar level of regulation as the Czech Republic. Within the *CEEC CME* cluster, Hungary shares the Slovak policy mix but CME characteristics otherwise and Poland provides some exception by showing low levels of innovation and equality. Hence, while the overall picture fits expectations (especially considering the high level of aggregation) deviations might be explained by looking deeper into transition experience.

Figure 3 – Cluster Analysis: Values of CEEC



The analysis of the driving variables for the cluster results also reveals some additional insights. Table 3 shows three main principal components explaining 81 percent of the data variation and thereby a

large part of the results of the cluster analysis. Looking at correlations with our variables above the 50 percent level,

- PC1 is negatively correlated with government spending (overall and transfers) as well as with equality and, to a minor extent, with innovation,
- PC2 is positively correlated with innovation but negatively correlated with regulation, and
- PC3, finally, is negatively related to fiscal debt only.

Table 4 – PC Analysis: correlations and shares of explained variance (2007-2009)

Correlations	PC1	PC2	PC3	PC	explained variance
Transfers and Subsidies	**-0.80**	-0.43	0.07	1	0.38
Size of Government	**-0.82**	-0.17	0.28	2	0.63
Regulation	-0.03	**-0.93**	-0.21	3	0.81
Fiscal Debt	-0.29	-0.004	**-0.93**	4	0.91
Income Equality	**-0.71**	0.19	0.18	5	0.96
Innovation	-0.59	**0.65**	-0.24	6	1.00

This implies that debt is not highly correlated with other performance and policy variables and that the allocation of countries to clusters is not related to indebtedness in the first place. Hence, it is not the case that countries with a high level of government spending do necessarily exhibit a high degree of indebtedness.

When concentrating on the other principal components, there is a positive relationship between government spending on the one hand and equality and innovation on the other (PC1). At the same time, there seems to be a clear trade-off between regulation and innovation (PC2). This is consistent with the fact that the *Nordic* countries are characterized by good performance indicators going together with a low level of regulation but a large size of government otherwise. This is some confirmation for the argument made by Kitschelt (2006) that the redistribution system in *Nordic* countries is more efficient compared to *Continental* countries. The latter, in turn, have complementary high levels of government intervention (in order to secure equality in incomes) with negative effects for innovation and growth.

Figure 2 – Principal Components Analysis, 2007-09 (period averages)

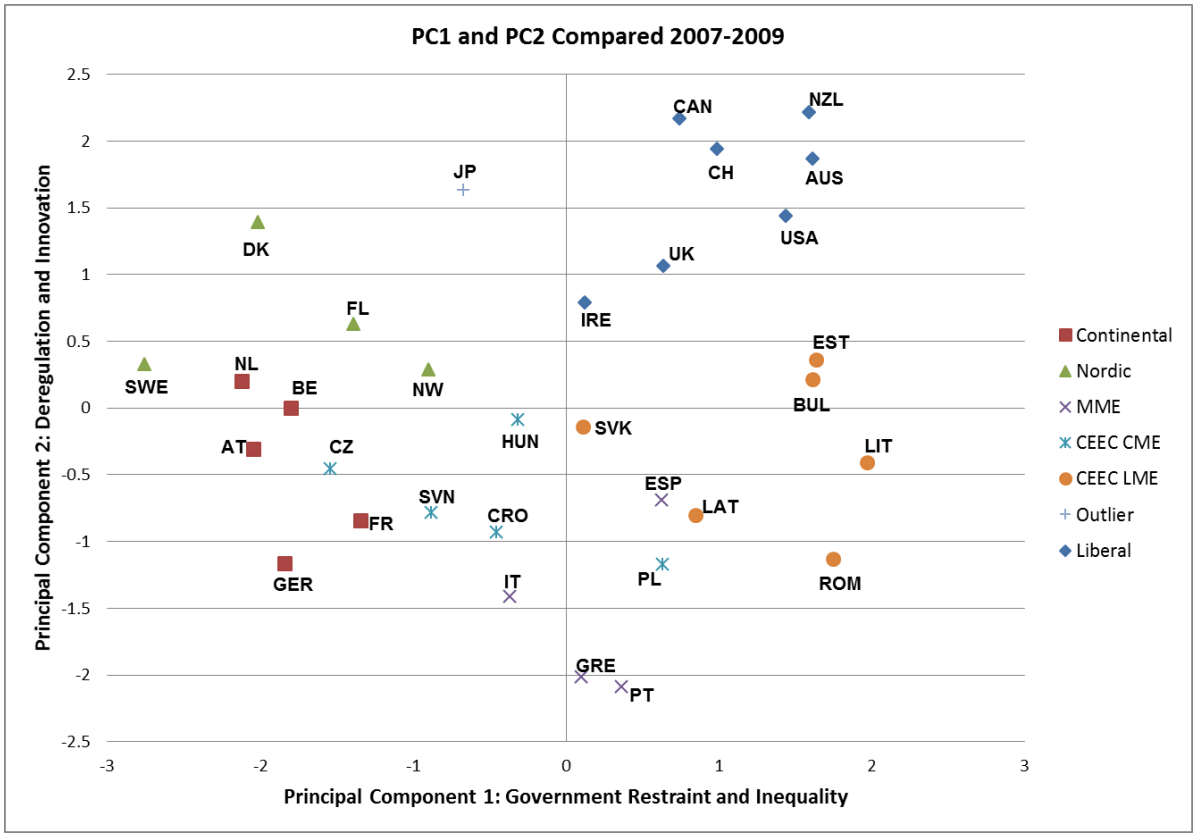


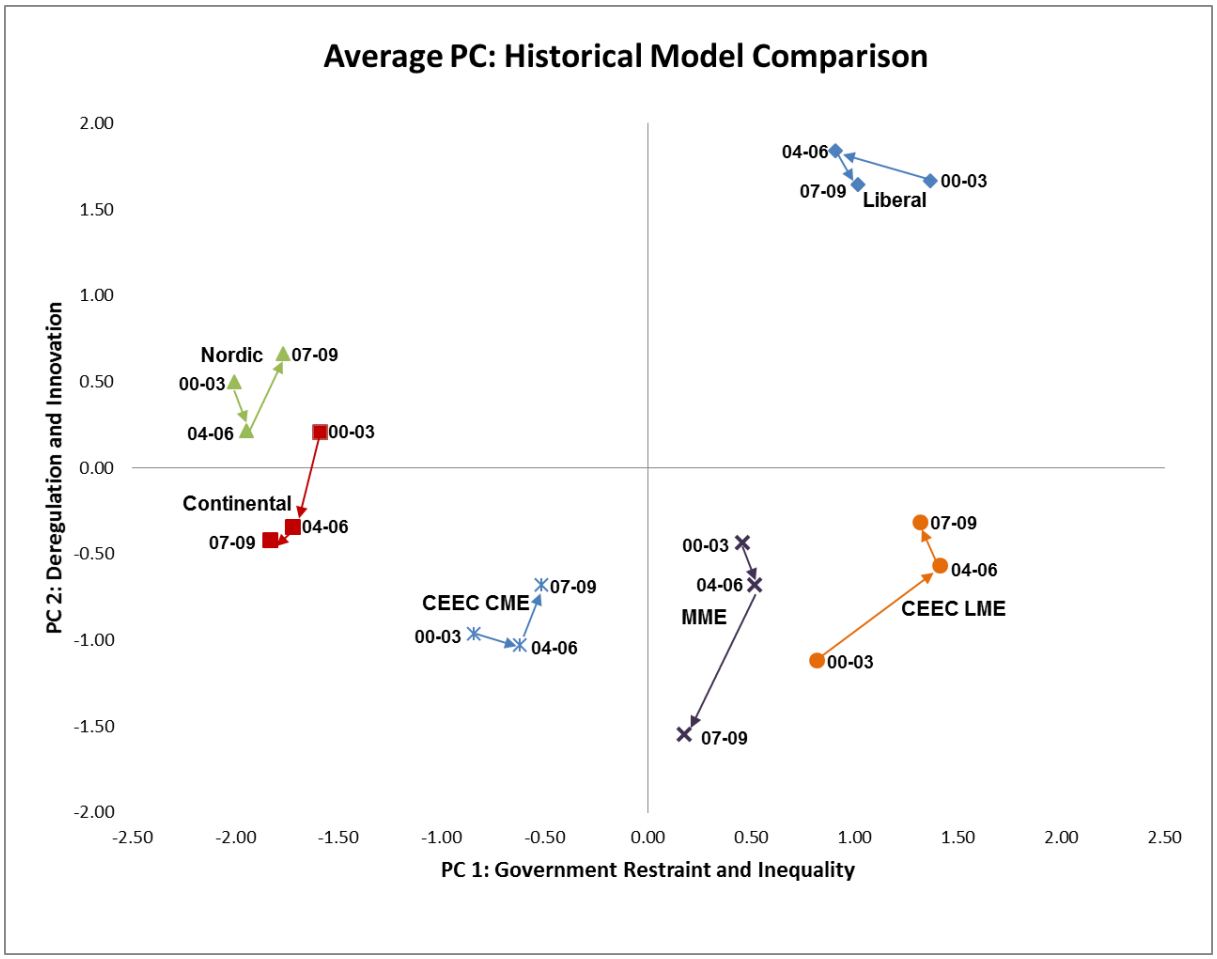
Figure 2 sorts the clusters revealed in Figure 1 into the PC1/PC2-space. This reveals some interesting insights:

- There are two "worlds of redistribution": the traditional LMEs joined by the more liberal CEECs, which spent less and have a higher degree of inequality compared to all the other groups. This confirms a positive interdependence between spending and distribution and that some groups of countries have a preference for equality and others do not.
- At the same time, there is also a distinction according to a regulation/innovation mix within these two "worlds of redistribution". Clearly, the *Nordic* countries are distinct from the other CMEs by revealing a rather low degree of regulation going together with a high degree of innovation. While this is not an analysis of causality, it fits to the argument made by Kitschelt that it is especially the *Continental* group of CMEs facing a problem of inefficiency. Regulation and spending constitute rather complements than substitutes. On the contrary, *Nordic* countries are running large (redistributive) welfare states but increasingly liberal regulation regimes. If we assume some causality for lower regulation allowing for higher innovative

capacity, comparing *Nordic* and *Liberal* clusters in Figure 2 seems to reveal some kind of "unavoidable trade-off" involved in having (efficient) redistribution by a welfare state.

- While the CEEC countries on the left hand side are distributed somewhere in the area of the *Continental* group, the Southern Europeans again are quite distinct. Except Spain, the *MMEs* seem to represent the worst mix of high regulation/low innovation together with a rather undetermined spending/equality mix. As was revealed by the cluster analysis in general, CEECs do not mix up in such a scenario.

Figure 3 – PC Averages: Historical Model Comparison



In addition to this PC-analysis of the most recent time period, PC-analyses for the two previous periods[10] allow an integrated examination of cluster movements in time, because correlations

[10] For the first period (1995) PC analysis was undertaken as well. As is shown in Figure A3 in the appendix, results of this principal component analysis for the mid-1990s have been strikingly different. In this period, CEECs still constituted extreme cases of redistribution positively correlated with both spending and regulation. At the same time innovation has been positively correlated with transfers. Arguably, early transition of the CEECs in the mid-1990s after the disintegration of the Eastern Bloc distorted the result to a great extent because economic systems were not comparable at that point in time.

between PCs and original variables remain remarkably stable for all three periods (See table A3 in appendix). For all these time spans PC1 shows a high negative correlation with the variables *Government Size*, *Transfers and Subsidies* and *Equality* while PC2 indicates a mix of low *Regulation* and high *Innovative Capacity* within the economy. This enables us to depict the movement of the respective 2007-09 clusters over the three latest periods in one integrated graph. For all six clusters the average values of the first two PCs have been computed for all three periods and are depicted in Figure 3, to reveal cluster movements in the PC1/PC2 space and to allow inference concerning convergence or divergence patterns of clusters in the last decade.

For the traditional OECD clusters, one can discover a certain institutional stability as predicted by Hall and Soskice (2001). Especially the *Liberal* and the *Nordic* cluster move hardly, while the *Continental* European cluster shows a rather clear movement in the direction of a less favorable mix of more regulation and/or less innovation between the periods 2000-03 and 2004-06. The clear cut pattern indicated by the cluster analysis with the *Nordic/Continental* model, i.e. the CMEs on one the end of the spectrum and the *Liberal* or LME countries on the other is again confirmed here. The *Liberal* countries form the most distinct group with a stable mix of government restraint/inequality (PC 1) with low regulation/high innovative capacity (PC 2). The CMEs possess a more active government and less inequality, indicated by low values of PC 1, while within this group, especially since the time period 04-06, there seems to be a distinction between the *Nordic* and the *Continental* European countries along the lines of PC 2: the *Nordics* possess a more favorable mix of low regulation/high innovation than their Continental European counterparts, outperforming that model in this respect.

A certain degree of institutional stability can also be discovered for the *CEEC CME* cluster, where -if anything- a step towards a more *Liberal* model is revealed, which could be asserted to the effects of EU accession. While this movement is rather small for the *CEEC CME* cluster, the movement pattern of the *CEEC LME* cluster is much clearer: There seems to be a clear step into the direction of more restraint of government and less regulation/more innovation, i.e. a more *Liberal* model after the pre-EU period 2000-03. Hence, our data indicates that the CEECs have established a more liberal type of capitalism after they joined the European Union, which remained fairly stable in the following periods. This is especially apparent for the *CEEC LME* cluster which quite clearly converged towards a more liberal type of capitalism after EU accession. Nevertheless there still is a clear dichotomy among the CEECs with the *CEEC CME* cluster being close to the *Continental* or CME model as opposed to their neighbors of the *CEEC LME* cluster and their more *Liberal* types of capitalism. The future development of these clusters is unclear. For now one could conclude a halt in the convergence of the *CEEC LME* countries (no clear movement from 2004-06 to 2007-09), but it remains to be seen if

(maybe after the end of the global financial crisis) convergence will continue or if a stable consolidation of institutional design has been reached among these countries.

The Mediterranean countries of the *MME* cluster show a certain institutional stability concerning the values of PC 1. This suggests that these countries have indeed implemented a rather inconsistent pattern concerning the role of the state in their economy, i.e. a fairly big government not leading to a comparable level of equality (see Figure 2 for 2007-09). While this characteristic seems to remain stable throughout the three different time periods, the values for PC2 for the latest period reveal a large step towards a very unfavorable mix of low innovation and high regulation, which could be one reason for the economic crisis which troubles these countries since 2008.

Concerning a comparison of the CEECs' models with their Mediterranean counterparts, this analysis also reveals that the CEECs have established rather distinct types of capitalism which show a certain degree of convergence towards the institutional patterns of the developed countries, but not towards a mixed *MME*-type of model as in the Mediterranean countries, which seem to constitute their own (underperforming) type of institutional configuration.

4. Summary

In this paper, we suggested a macro cluster approach in order to deal with at least some criticism concerning empirical results on varieties of capitalism. It allows to better integrate the strands of literature on Varieties of Capitalism (VoC) and Worlds of Welfare States (WWS) as suggested by Amable (2003). At the same time, it recognizes the relevance of performance and the trinity of innovation, equity and stability as macroeconomic targets of any economic system as suggested by Kitschelt (2006). Finally, aggregate macro indicators on government activity and performance reduce to some extent the arbitrariness in selecting indicators out of a wide variety of micro indicators as demanded by Pryor (2006).

Indeed, we are able to reproduce earlier results about traditional OECD clusters but, at the same time, add insights into the transition experience of Central and Eastern European countries (CEECs):

- Our integrated approach reveals that among (traditional) OECD countries stable clusters of countries exist which constitute the ideal types LME (*Liberal*) and CME (*Continental, Nordic*) identified by the respective theories. These ideal types offer the expected institutional mix with the corresponding tradeoff in performance for the *Liberals* (small government, low regulation, more innovative capacity and inequality) and *Continentals* (big government and high regulation, less inequality and innovative capacity). The *Nordics* however seem to have escaped this tradeoff, since their model (big government, low regulation) allows the best performance both in terms of high innovative capacity and less inequality. Fiscal Stability

does not seem to be a characteristic that clearly distinguishes these clusters, which is confirmed by the result of our PC-analysis.

- In the same vein, Italy, Greece, and Portugal form an own group usually labeled *MME* (Mixed Market Economies) in the literature, while Spain at times clusters with CEECs. This cluster shows an inconsistent and underperforming (in terms of inequality, low innovation and fiscal instability) institutional mix.
- Comparing the most recent periods, i.e. 2007-09 (crisis) and 2004-06 (before crisis), clusters remain surprisingly stable with few exceptions, among them Hungary.
- For the CEECs two distinct models could be identified, which share characteristics with the respective ideal types LME and CME. Cluster analyses for four periods (95, 2000-03, 2004-06, 2007-09) reveal that one group of the CEECs (the *CEEC CME* cluster) cluster leans towards a *Continental* or CME type of Capitalism while other CEECs (*CEEC LME* cluster) seem to have converged towards a much more *liberal* LME type of capitalism. There is little evidence that the CEECs constitute a hybrid model similar to the Mediterranean or *MME* type of capitalism.
- Cluster and PC-analyses for the three latest time periods revealed a large degree of institutional stability among developed countries. The *Liberal* countries form a stable group with a mix of government restraint/inequality and low regulation/high innovative capacity while the CMEs are characterized by more active government and less inequality. The PC analyses additionally confirmed the result of the cluster analysis: at least since the mid of the 2000's the CMEs split up into two distinct groups, with the *Nordic* countries outperforming the *Continental* Europeans with a more favorable mix of low regulation/high innovative capacity.
- The PC analysis also confirmed the results concerning the CEECs. They were revealed to offer two distinct models of capitalism: one close to the CME model and one which shares more characteristics with the *Liberal* cluster. While for the *CEEC LME* cluster a large step towards convergence to the liberal model in the course of EU accession was identified, incidence for liberalization of the *CEEC CME* cluster was present but much more limited.
- Finally, the Mediterranean countries of the *MME* cluster were shown to offer an incomprehensive mix of institutions. They run rather large governments but nevertheless possess the most unequal income distribution of the sample. This inconclusive institutional composition is, especially since the latest period 07-09, accompanied by a very unfavorable mix of high regulation and low innovative capacity. This allows the conclusion that these countries indeed offer a disadvantageous pattern of institutions which lacks complementarity and thereby leads to underperformance of the Mediterranean model. We found little evidence for the claim that the CEECs converge towards such a model, they were

rather shown to converge towards developed models or to form their own types of capitalism.

Overall, our results show that in Central and Eastern Europe two quite different clusters of capitalism have emerged which are not integrated in any other cluster but are oriented at polar LME/CME clusters. We identified a *CEEC LME* cluster (Baltics, Romania, Bulgaria and since the latest period Slovakia) leaning towards a LME-type model and a *CEEC CME* cluster (Slovenia, Czech Republic, Poland, Hungary, Croatia) sharing a large deal of institutional characteristics with the CME prototypes. We did not find evidence of convergence towards a hybrid Southern European *MME* model, which exhibits the most unfavorable mix of institutions, leading to economic inefficiency due to lacking institutional complementarity, which could be one driver for the current crisis in these countries. These stylized facts imply that future research in this area should focus in more detail on the developments and institutional characteristics that separate the institutional configuration of CEECs from that of their Mediterranean counterparts.

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Appendix

Table A1 – Previous Analyses

Country	Author(s)/Classification
Slovenia	Feldmann (2006), Feldmann (2008), Buchen (2007): CME Bohle/Greskovits (2007): Distinctive model (CME type) Crowley (2008): CME-type Industrial Relations Knell/Srholec (2007): CME Babos (2010): CME Farkas (2011): CME
Estonia	Feldmann (2006), Feldmann (2008), Buchen (2007): LME Bohle/Greskovits (2007): Baltic Model (LME type) Crowley (2008): LME-type Industrial Relations Babos (2010): LME Farkas (2011): Mixed Type (Tendency towards LME)
Czech Republic	Bohle/Greskovits (2007): Visegrad-Model (Mixed) Crowley (2008): LME-type Industrial Relations Knell/Srholec (2007): CME Myant (2007): Mixed type Babos (2010): Mixed type Farkas (2011): Mixed type (Tendency towards CME)
Poland	Bohle/Greskovits (2007): Visegrad-Model (Mixed) Crowley (2008): LME-type Industrial Relations Knell/Srholec (2007): LME Babos (2010): LME King (2008): Mixed type Mykhnenko (2007) MME Farkas (2011): Mixed type (Tendency towards CME)
Hungary	Bohle/Greskovits (2007): Visegrad-Modell (Mixed) Crowley (2008): LME-type Industrial Relations Knell/Srholec (2007): LME typische Ausprägung Babos (2010): Mischform King (2008) Mischform Farkas (2011): Mixed type (Tendency towards LME)
Slovakia	Bohle/Greskovits (2007): Visegrad-Modell (Mixed) Crowley (2008): LME-type Industrial Relations Knell/Srholec (2007): LME Babos (2010): Mixed type Farkas (2011): Mixed type (Tendency towards LME)
Lithuania	Bohle/Greskovits (2007) Baltic Model (LME type) Crowley (2008) LME-type Industrial Relations Knell/Srholec (2007) LME Babos (2010) LME Farkas (2011): Mixed type (Tendency towards LME)
Latvia	Bohle/Greskovits (2007) Baltic Model (LME type) Crowley (2008) LME-type Industrial Relations Knell/Srholec (2007) LME Babos (2010) LME Farkas (2011): Mixed Type (Tendency towards LME)
Croatia	Knell/Srholec (2007) CME Bartlett (2007): Mixed type
Bulgaria	Knell/Srholec (2007) LME Farkas (2011): Mixed type (Tendency towards CME)
Romania	Knell/Srholec (2007) CME Cernat (2006): very inefficient mixed type Farkas (2011): Mixed Type

Table A2 – Macro Cluster Analysis for OECD and CEEC – Variables, Sources, and Definitions

Indicator	Source	Description
Size of Government	EFW	Indicator for the EFW Report‘s first Section: ‘Size of Government’ Components: General Government Consumption Spending; Transfers and Subsidies; Government Enterprises and Investment; Top Marginal Tax Rate Various Sources: World Bank; IMF; UN; World Economic Forum; PriceWaterhouseCoopers Gives a “rating” for Government Size: From 0 (Big) to 10 (small) Transformation: ([Government Size]-10)*-10 Gives scale: from 0 (small Government) to 100 (big Government)
Transfers and Subsidies	EFW	Gives a “rating” for ‘Transfers and Subsidies as a percentage of GDP”: From 0 (a lot) to 10 (few) Transformation: ([Transfers and subsidies]-10)*-10 Gives scale: from 0 (few) to 100 (a lot) Sources: World Bank; IMF; UN
Regulation	EFW	Indicator for the EFW Report‘s fifth Section: ‘Regulation’ Components: Credit Market Regulations; Labour Market Regulations; Business Regulations (several subcomponents) Gives a “rating” for Regulation: From 0 (few) to 10 (a lot) Transformation: ([Regulation]-10)*-10 Gives scale: from 0 (few) to 100 (a lot) Sources:
GINI Index	WDI; World Bank	Taken from World Development indicators Transformation: GINI index is ‘reversed’: ([GINI]-100)*-1 Gives scale: from 0 (unequal income distribution) to 100 (equal income distribution)
Innovation	KAM, World Bank	World Bank Knowledge Assessment Methodology (KAM) measures: “An efficient innovation system of firms, research centers, universities, consultants and other organizations to tap into the growing stock of global knowledge, assimilate and adapt it to local needs, and create new technology” Transformation: [Innovation]*10 Gives scale: from 0 (non-innovative economy) to 100 (very innovative economy)
Fiscal Debt	World Economic Outlook ; IMF	„General government gross debt“ as a percentage of GDP

Figure A1 – Principal Components Analysis, 2004-06 (period averages)

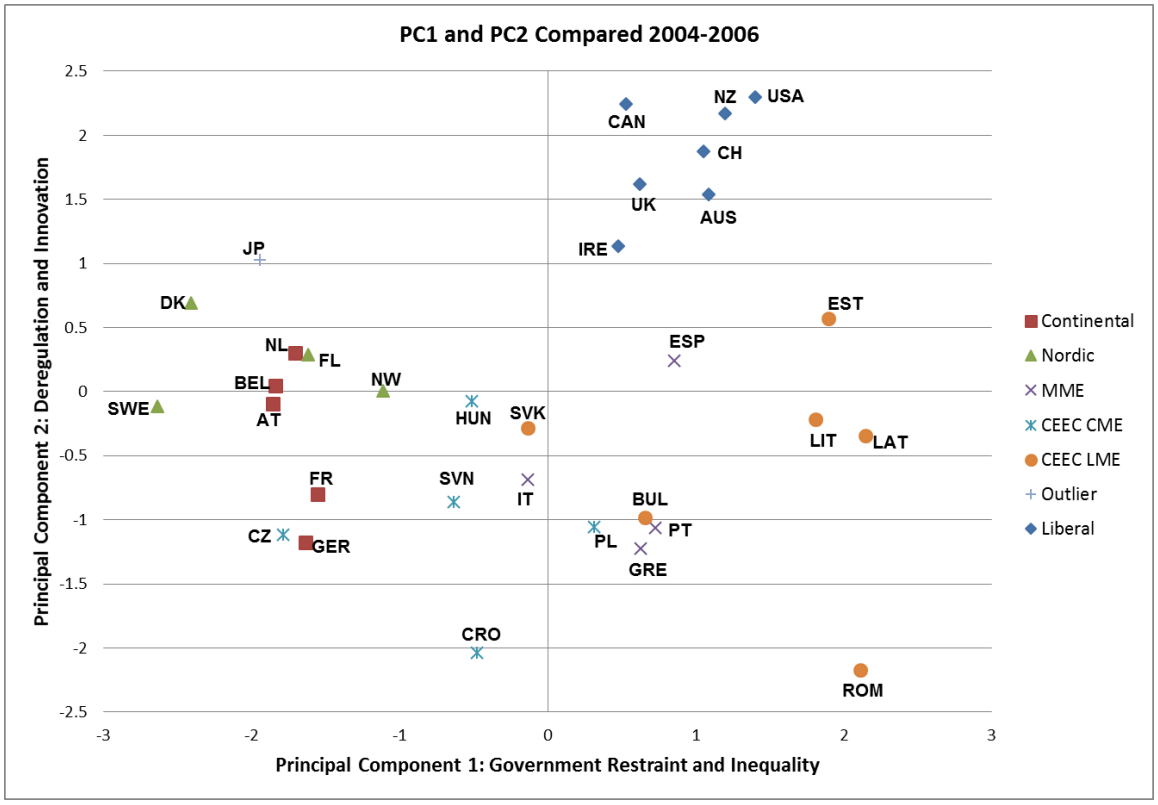

Figure A2 – Principal Components Analysis, 2000-03 (period averages)

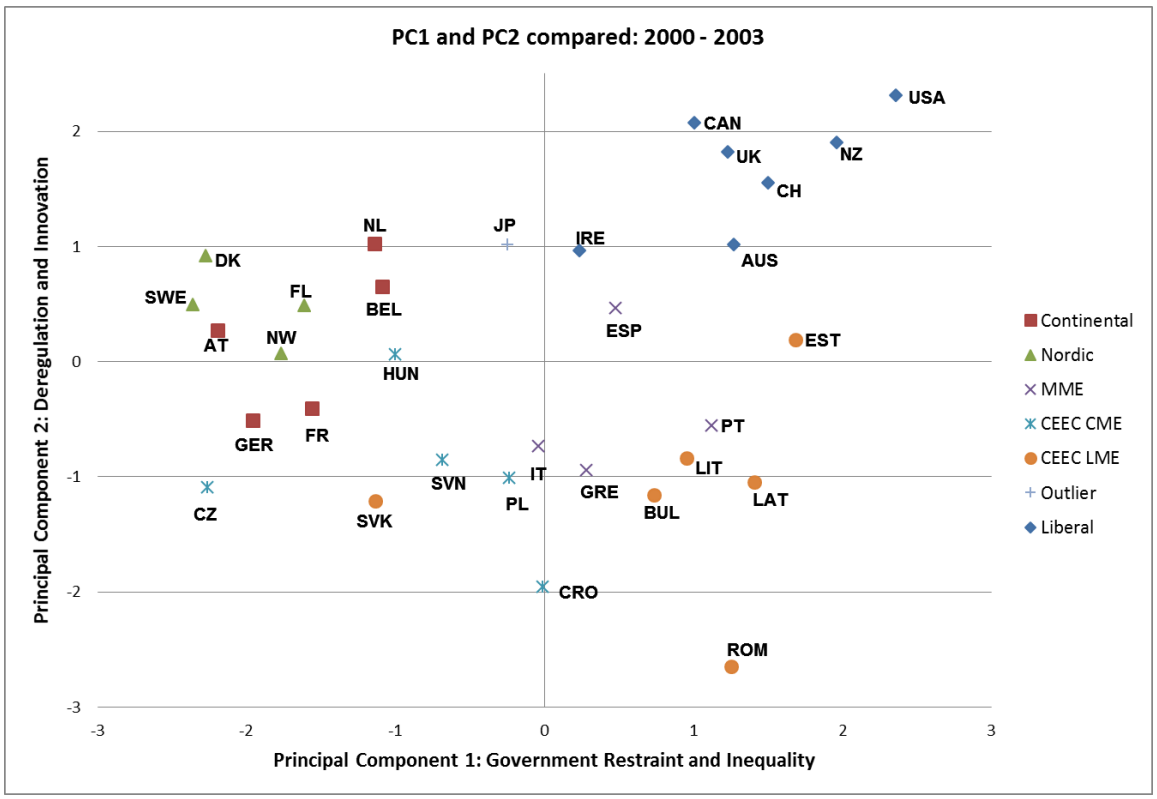

Figure A3 – Principal Components Analysis, 1995

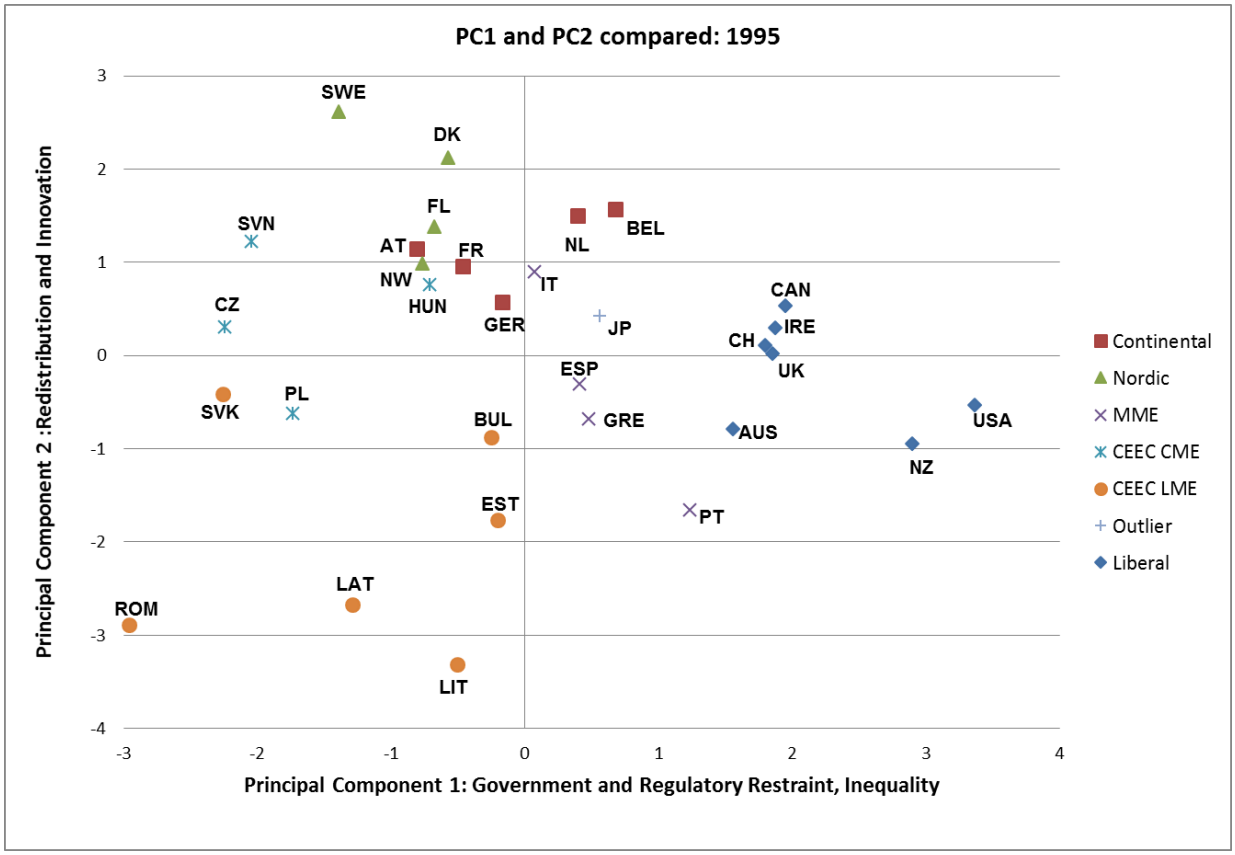

Table A3 – PC Correlations and shares of explained variance

2004 -2006						
Correlations	**PC1**	**PC2**	**PC3**		**PC**	**explained variance**
Transfers and subsidies 04-06	**-0.89**	-0.32	0.04		1	0.44
Size of Government 04-06	**-0.84**	-0.28	-0.26		2	0.69
Regulation 04-06	0.21	**-0.90**	0.27		3	0.86
Fiscal Debt 04-06	-0.36	0.08	**0.91**		4	0.94
GINI-Index 08	**-0.79**	-0.13	-0.20		5	0.98
Innovation (Average 2009/2000)	-0.58	**0.71**	0.12		6	1.00
2000 - 2003						
Correlations	**PC1**	**PC2**	**PC3**		**PC**	**explained variance**
Transfers and subsidies 00 -03	**-0.89**	-0.06	0.08		1	0.42
Size of Government 00-03	**-0.92**	-0.23	0.09		2	0.69
Regulation 00-03	-0.05	**-0.90**	-0.28		3	0.86
Fiscal Debt 00-03	-0.13	0.16	**-0.97**		4	0.94
GINI 2000	**-0.84**	-0.04	0.01		5	0.98
Innovation (2000)	-0.38	**0.84**	-0.08		6	1.00
1995						
Correlations	**PC1**	**PC2**	**PC3**		**PC**	**explained variance**
Transfers and subsidies 95	-0.45	**0.76**	0.09		1	0.40
Size of Government 95	**-0.84**	0.45	0.06		2	0.74
Regulation 95	**-0.72**	-0.49	0.46		3	0.88
Fiscal Debt 95	0.41	0.50	**0.71**		4	0.96
GINI-Index 95	**-0.72**	0.37	-0.30		5	0.99
Innovation 95	0.54	**0.79**	-0.15		6	1.00