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## A snapshot of the EU's capitalist diversity between the two recent major economic crises

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### Abstract

This article carries on the research agenda of mapping EU's capitalist diversity by taking an up-to-date snapshot of capitalist types regarding the period between two recent major crises (2014-2019). During the update the research framework has been further improved with more relevant indicators, a further expanded Amablian framework concerning the institutional side, and a coupling with the demand side which was conceptualized by the growth regimes theory. Results of the cluster analyses confirm the persistence of capitalist division with the two clusters of southern and eastern member states separating the most while the countries belonging to the core region are mixing during cluster formation. The article shares the view that capitalist types should be evaluated from a boarder perspective (a competitiveness point of view along economic, social, institutional upgrading channels and dependency perspective). Overall results re-confirm the existence of peripheral capitalist models, whose catching up ability and sustainability are doubtful as they are characterized by permanent resource outflows that could not be solved without a (democratic) reform of the institutional side.

JEL classification: C38, P50

Keywords: Varieties of capitalism, Growth regime, European Union, Cluster analysis

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### 1. Introduction

Comparative economics deals with the comparative study of different economy systems in defined space and time. Two perspectives exist whether the emphasis is on differences or similarities when comparing countries. While country specialists consider each country as a different, separate model; macro-regime scholars, on the other hand, believe that a group of countries can be classified into types, so that its members are similar but simultaneously differ from other groups of countries (Schröder, 2019). Irrespective of whether an incontestable position should be taken in this respect, the monitoring of the development of cluster properties over time can provide useful information (Hay & Wincott, 2012). Among the economic strands within Comparative Capitalism literature, Varieties of Capitalism (VoC) is one paradigm that argues in favour of the clustering of national systems, meaning that capitalism exist in variations (Hall & Soskice, 2001). While a one-dimensional comparison helps identify bottlenecks in a single area, multi-dimensional approaches with their systematic view (such as VoC)

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give insight into the operating pattern that distinguishes capitalist models from each other, hence it enables to create taxonomies of the capitalist system.

From the European Union's point of view, as a research agenda it is a subject of constructive discussion whether different models can co-exist within an economic integration (or even more so within the Eurozone), how much disparateness jeopardize sustainability (Farkas, 2016; Johnston & Regan, 2018; Vermeiren, 2017). Two of the most comprehensive studies about the EU's capitalist models were conducted by Amable (2003) and later by Farkas (2016) as a continuation who examined a later period between 2004 and 2007. An added value of her study was that it included at that time newly joined post-socialist Central Eastern European (CEE) countries hence enlarging the taxonomy of the EU's capitalist diversity.

Around the 2008 Global Financial Crisis (GFC) it was not yet possible to know its concrete effects on EU's capitalist sub-systems. It was expected that significant changes would follow, as should be the case after any major crisis. When the subsequent recession period ended in the EU, it became timely to update the mapping of its capitalist diversity and its change, which was partly reflected on by Rapacki et al. (2020). However, the former study compared the pre- and post-crisis stages based on annual data instead of using time intervals<sup>1</sup>; furthermore, the next major crisis-phase (i.e. Covid pandemic in 2020 and then the Russian-Ukrainian conflict) has assigned the time period to which this research agenda should give focus. In this regard, therefore, there is room for an up-to-date and partially revised empirical analysis.

Given that the topic is too large to present a comprehensive analysis within one article, this paper should be considered as an initial step where cluster analysis is performed. By synthesizing the strengths of the two major VoC literature mentioned above, the article seeks to provide a more general and defensible framework. In addition, by exceeding the sole enumeration of the supply (institutional) side, the demand side (growth regimes) have also been integrated during the creation of the taxonomy in order to get a better picture about the EU's capitalist heterogeneity.

To sum up, the aim of this article is to see which capitalist clusters can be identified during the post-GFC period in the European Union compared to the pre-

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<sup>1</sup> Using data from 2004 and 2015 (or in case of lack of data using the nearest year) respectively to catch pre- and post-GFC periods.

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GFC grouping? Also, by involving the demand side into the scope of the analysis beside the institutional focus, to get a general picture how much the division along the former matches with the institutional division? The empirical results for the 2010s affirm path dependent nature of the existing division. Additionally, results as starting point can appoint several research directions such as any difference within a sub-dimension could start a path creation process within the same capitalist cluster?

The article is structured as the followings: after the introduction a short literature review describes the theoretical and empirical background (Section 2), followed by a presentation of the applied methodology (Section 3). Section 4 consists of the cluster analyses performed, finally Section 5 concludes.

## 2. Theoretical framework

The (mainly) capitalist world system is characterized by dynamically changing diversity wherein one or more countries adhere to a theoretical capitalist variety as an ideal type. The existing distance is caused by the fact that nations are socio-economic formations that we can consider as open systems (Becker, 2017). Within these systems the model-like functioning is influenced by internal (via lobby of social groups (Amable, 2003)) and external (via interdependence in non-autarkic economies) forces. Thus, through the activity of actors a national system<sup>2</sup> can be moved further relative to the theoretical ideal type as reference point. Clearly globalization and regionalization have an impact towards convergence (corporate law, finance, etc.) (e.g. Hansmann & Kraakman, 2001) while governments have the power to give different responses for the same external shocks thereby increasing divergence between clusters and/or within a certain cluster. Taking time into account, both the emergence and development of capitalist models are influenced either by the past (history, culture) and the future (opportunities, threats, individuals' visions) in the present. While capitalist economies on their own would show variations, social peculiarities are responsible for the greater complexity and the dynamic, not timeless feature of capitalist socio-economic models. One consequence is that every taxonomy is a snapshot that capture the taxonomy of capitalist diversity for a specific territory and time.

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<sup>2</sup> Which of course is not homogeneous on the sub-national level in many cases.

Within comparative economics during the previous century, and especially in the 1990s, several new trends appeared addressing the classification of countries such as Regulation Theory by Robert Boyer, or the Business Systems branch where Richard Whitley must be cited (Wood et al., 2013). Of course, there are also categorizations addressing single dimensions (e.g. the grouping made by Esping-Andersen (1990) based on welfare regimes, varieties of entrepreneurship (Chowdhury et al., 2015)). The greatest impact on Comparative Capitalism, however, originated from Hall and Soskice (2001) giving birth to the institutional approached Varieties of Capitalism paradigm, and its extension by Amable (2003) called Diversity of Capitalism (DoC) (Rapacki et al., 2020). These initial pioneering works were followed by many confirmatory or corrective studies (Hancké et al., 2007; Hall et al., 2009; Meelen et al., 2017, etc.). For some of the criticisms against VoC<sup>3</sup> were reflected on by the so-called post-VoC authors who expanded the geographical coverage and integrated more dynamic, historical, sociological and dependency perspectives (Nölke, 2016). Adding these aspects helps to uncover transitions of national capitalist systems or the lack of their resilience by integrating social and political aspects in addition to economic ones. The involvement of the dependency perspective is necessary due to the inclusion of semi-peripheral countries, namely Central Easter Europe (CEE), as they are characterized by, among others, different funding structures or weaker institutional quality compared to core countries (Farkas, 2019; Nölke & Vliegthart, 2009). Also, they can be characterised by different informal environment (i.e. culture) which can result in different outputs of institutions compared to core EU countries whilst the input side is relatively similar (Rapacki et al., 2020). This implies that the transplantation of institutions without taking into account unique, local-specific informal institutions, is leading to non-complementary settings overall that hinder efficient functioning. VoC theory phrases it generally that policy-makers should be aware when implementing a new element to the existing national system as it can be incoherent with the capitalist model's system logic by discouraging institutional complementarity. In empirical works the usage of both input and output measures of institutional architecture have appeared already at Amable (2003), the former notion denotes determinants (e.g. regulatory framework, received

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<sup>3</sup> See for example Fast (2016).

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funding) that affect the contours of the institutional functioning whilst the latter measures the outcome of institutional performance.

In contrast to the supply-side branches of Comparative Capitalism such as VoC, growth regimes theory examines the demand side factors. By using a post-Keynesian framework focusing on macroeconomic drivers of aggregate demand (consumption, investment, government spending, and net exports), we can talk about, for example, debt-financed consumption-driven and export-driven regimes (Stockhammer et al., 2016; Baccaro & Pontusson, 2016, etc.<sup>4</sup>). The analyses of the supply and demand sides can be viewed together in order to obtain a more complex insight of capitalist diversity and growth trajectories, not to mention the research direction that emerges to investigate the interaction effects between the two sides and hence to better understand alteration of a capitalist model (Hope & Soskice, 2016). Growth regimes theory has been given a boost by the euro crisis as a research topic, and it can show several advantages over VoC, for example, change and the interactions of different capitalist types can be better examined (Hall, 2012; Hall, 2018; Nölke, 2016). In addition to the versatile nature of both VoC and growth regimes theory (as they can be combined with other research paradigms), the joint consideration of demand and supply sides can bring us closer to understanding both core and emerging countries (see Bohle (2018) regarding Central Europe and Nölke et al. (2020) for large emerging economies).

A capitalist model, in which economic actors structured within a social context, optimized for a specific development path that result in certain economic and social output (economic growth, income inequality, etc.). Being optimized does not mean such systemic models do not have weaknesses, operational risks. They are challenged by the continuously changing environment (especially when new mega-trend takes place, in times of paradigm changes) eroding the efficient functioning or specific elements of a particular model. Applying a kind of evolutionary perspective, during the emergence of a capitalist model in practice different potential alternatives compete with each other. This process ends with one become dominant. Afterwards this dominant functioning logic is being sustained through path dependency and co-exist with the alternatives, in other words, path dependency and path creation happens simultaneously on different layers (Schienstock, 2011). While the supply side (institutions) change relatively slowly

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<sup>4</sup> For a correction of the initial writing about growth regimes see Hein et al. (2019).

(Williamson, 2000), economic policies (e.g. expansive fiscal policy) can modify the demand side with more ease. As the demand side change more often, it makes the supply side try to adapt, where of course actors, like the state, could be both a facilitator or an inhibitor of change. Morgan et al. (2020) bring together institutions, growth regimes and social blocs (politics) in case of Brazil, arguing that “*creating a growth regime that builds on institutional advantages and provides the dominant social bloc with the ability to distribute benefits to its members and maintain its ideological hegemony is therefore highly complex where internal and external conditions are volatile and institutional settlements embed a particular range of constraints and power relations*” (Morgan et al., 2020, p. 9). Shocks can create mismatches between the institutional and the demand side in a relatively short time, which become a task for the political elite in power to deal with through reforms, otherwise the material reproduction for their power diminishes (economic growth decrease, income inequality increase) leading to replacement by alternative political groups. Along the core-periphery division, nations in a peripheral position are eager to create a model that promote not just growth but development. Peripheral capitalist models are those where neither the supply nor demand sides conducive to upgrade.

Of course, alteration (or convergence) in one institutional area does not necessarily lead to unwinding transformation (or convergence) in other dimensions. While keeping the dominant path, per definition, it provides greater efficiency gains. Also, it can be argued that in the case of an anti-democratic regime the government is not interested in changing the existing model because of its rent-seeking behaviour (Morgan et al., 2020), while otherwise it is also problematic as running old and new path lines simultaneously.

Another output of a social-economic system is its legitimacy, which can be interpreted on different levels (Tarko, 2021). Hence, we can talk about the legitimacy of various stages of capitalism (neoliberal capitalism currently), or the legitimacy of one of its mezzo-level variety, followed by the legitimacy of one element of the latter’s institutional structure. “*There is always a certain distance between people’s views about how society should be and how society actually operates*” which on the one hand means that “*an institutional system as a whole is legitimate if it is widely agreed that it establishes and enforces the correct rights and obligations to various groups, organizations and institutional positions*” (Tarko, 2021, p. 231). On the other hand, illegitimacy can also come from some kind of underperformance in

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terms of economic and social outputs. Inefficiency (increasing costs) and/or ineffectiveness (mismatch between actual results and original expectations when designed, also increases costs (of correction, etc.)) of a capitalist model reduce its legitimacy. In this case legitimacy is contested intellectually by academics and later by the public with strikes. On the other hand, government communication aims to deflect critics and improve positive perception.

The mapping of capitalist diversity can be construed in many ways. For example, depending on what we put in the focus of the analysis we can talk about firm-, governance- and state-centred approaches (Feldmann, 2019). Methodologically, we can differentiate between methods conducted deductively from ideal types or inductively from real data (Hay, 2020). Many authors apply an inductive approach by performing multi-dimensional cluster analysis using data collected for the countries examined, then analysing the common contours of the identified country groups. The resulted classification is not universal as it depends on the chosen set of indicators and countries involved in an analysis during the same time interval. In the VoC literature covering the 1990s and 2000s, the EU is typically characterized by five types of market economy by using quantitative methods (Amable, 2003; Farkas, 2016): Continental, Anglo-Saxon, Scandinavian (or Nordic), Mediterranean and CEE types. By reducing the territorial scope and/or by applying additional qualitative approaches, these clusters can be further split. Thus, the Central European region can be further divided into three subgroups (Bohle & Greskovits, 2012). If the aim is comprehensive research, in addition to cluster analysis it is also necessary to rely on qualitative analyses as well (Farkas, 2016) in order to incorporate factors, processes that cannot be really seized with quantitative tools only. This way, the application of a mixed and multilevel methodology would be satisfactory (Schröder, 2019). The integration of comparative economic branches of the supply and demand sides can be fruitful also in such respect that as methodological nationalism is still dominant on the institutional side; the subnational (sectoral, regional) level can be better represented in the case of growth regimes theory.

### **3. Methodology**

There are different statistical methods to create taxonomies. Fuzzy set analysis is a useful tool for mapping theoretical configurations of capitalist types, but it can result in

too many outcomes (see an application for VoC by Judge et al. (2020)). Another option is cluster analysis which is a method for inductive investigation that organizes observations into relatively homogeneous groups where the elements that form a cluster are similar along selected dimensions. Thus, this tool can be used to define taxonomies from real data (despite the small number of elements). Therefore, in VoC and other Comparative Capitalism analyses, it is often used as a tool for grouping countries (see e.g. Amable, 2003; Farkas, 2011; Rapacki et al., 2019; Witt & Redding, 2013; Witt et al., 2018).

Cluster analysis methods used here have been selected following the research tradition and considering the characteristics of each type of cluster analyses. In total, four types of cluster analyses were considered beforehand: the non-hierarchical K-means method, the hierarchical, the two-step and subspace clustering. Features of the K-means method are that it handles larger samples well but less so for outliers, also the number of clusters must be given in advance. Thus, due to the latter this procedure (at least as a starting procedure) is discarded as it is not valid to assume in advance the number of existing capitalist types. The subspace clustering method was discarded here because its use does not seem justified as this method is recommended if the data set has a high dimensionality, which is not the case in the present project (see Table 1)<sup>5</sup>. One of the advantages of the two-step cluster analysis is that it handles outliers well, while its use is the most reasonable if there is a categorical variable or a large number of observations (Trpkova & Tevdovski, 2009). To conclude, the mixed approach used by Farkas (2016) seems to be the most plausible, therefore firstly hierarchical cluster analysis was performed by institutional area (using the Ward method in the first place). Then the dendrogram obtained as the output of the analysis served as a starting point by determining a range in terms of the possible number of clusters. Next, these options were used as an input parameter for K-mean cluster analyses. By applying the K-means method, as opposed to the hierarchical procedure, additional information can be obtained on the distance between clusters regarding each indicator; in other words,

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<sup>5</sup> We speak of a high dimensionality if the number of dimensions is greater than the number of observations. In the case of Rapacki et al. (2019) the knowledge system (R&D and education) institutional area justifies the use of the subspace clustering method due to the definition.



clusters can be characterized<sup>6</sup>. By treating the final cluster numbers by sub-spheres as categorical variables a two-step analysis was performed to determine the aggregate taxonomy on the supply side. The whole analysis was run in SPSS (IBM SPSS Statistics 25.0) and the results obtained for EU23 are presented in the next chapter and in the Appendix (Table A.2). Due to the space constraints of the article, the outputs of the analyses performed for EU26, and the ones of the robustness checks by using other than the Ward-method, are not presented here. A separate cluster analysis was prepared for the demand side which was then merged with the institutional side.

**Table 1: Number of variables used during cluster analyses in empirical works**

	Product market	R&D with Education	Financial system	Labour market	Social protection, welfare	Housing market	Growth regimes
Farkas (2016)	29	29* (10+19)	18	18	18	0	
Rapacki (2019)	23	42	10	19	17	23	
Current analysis (EU23)	19	26* (17+9)	9	15	22	8	20
Current analysis (EU26)	19	18* (10+8)	9	15	18	8	15

*Source: Own elaboration*

*Note (\*): R&D and education were examined separately in case of Farkas (2016) and here. EU26 represents EU28 without Malta and Cyprus, while EU23 is obtained with omitting Romania, Bulgaria and Croatia since data were not always available.*

The article follows the Amablian DoC tradition by utilizing its parameters (i.e. institutional dimensions and indicators). Therefore, the application of institutional dimensions, output and input indicators have not been justified in this article in particular. As the indicators used by Farkas (2016) were not always available for the examined period (2014-2019), where it was possible another data source or alternative indicator was used. Following Rapcki et al. (2019) the housing market was included in this study as well, the former also gave some lead on a few alternative indicators.

<sup>6</sup> As an alternative method to K-mean clustering, discriminant analysis is a specific multidimensional PCA (Principal Component Analysis) that helps to identify those relevant indicators that have a role in distinguishing pre-identified clusters (Abdesselam et al., 2020).

Based on the above, separate hierarchical cluster analyses were made for the following areas:

1. product markets
2. labour markets and industrial relations
3. R&D
4. education system
5. financial system
6. social protection system
7. housing market
8. growth regime

Table 1 shows the number of indicators used by areas separately for EU23, EU26 and for two benchmarks from the literature. The period between the two major crises assigns the six years between 2014 and 2019 for which the country averages per indicators provided the data that were processed in SPSS. The purpose of averaging was on the one hand to eliminate the distorting effect of outstanding years, as well as to make up for any lack of data for a given year. Furthermore, the use of hard data was preferred to soft data in the analysis (with one exception in case of the product market in order to display more aspects, thus making the clusters more distinctive from each other). In the case of the growth regimes branch, the selection of indicators was primarily based on Hein et al. (2019) in addition to other authors already cited in the previous section (Baccaro & Pontusson, 2016; Gräbner et al., 2019; Bohle, 2018; Behringer & van Treeck, 2018). The full list of the indicators used can be found in the Appendix (Table A.1).

#### **4. Analysis**

Cluster analysis is a statistical procedure which calculates distances between the elements of a sample based on given dimensions (variables) and classifies them into relatively homogeneous groups, so that an element can only belong to one cluster. This tool can be used by marketers for market segmentation. Although it is utilized in VoC as well, due to certain methodological features the result has to be interpreted with care.

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Among other things, its application is recommended for a sample of at least 100 observations. Also, while the advantage of standardization (z-score) removes the influence resulting from the different units of measure, the disadvantage is that outliers are somewhat distorting. Lastly, the statistical procedure creates groups on a mathematical basis, consequently, there is not necessarily an actual institutional similarity behind similar indicator values. Therefore, cluster analysis should be complemented by qualitative analysis.

During the analysis primarily hard data instead of survey data (soft data) were selected as variables from widely used reliable databases. Values were calculated as an average of annual data for the period 2014-2019, in this way eliminating the problem of outliers and missing values. The first step was to run the hierarchical cluster analyses. Based on the obtained dendrograms a range was determined for each area in terms of the cluster numbers which were the following:

- Product market: 2 - 4
- Labour market: 3 - 4
- R&D: 2 - 4
- Education: 2 - 4
- Financial system: 2 - 5
- Social protection and welfare: 2 - 5
- Housing: 2 - 5
- Growth regimes: 2 - 6

In the next step, these numbers were utilized through K-mean clustering procedures. Table A.1 presents the defined cluster memberships regarding the 23 European countries examined, while Table 2 contains the final cluster number by sub-spheres with the results of similar analyses as benchmarks. The latter have rather an indicative role as a full-fledged comparison cannot be made because of the differences concerning time periods, applied indicators and geographical coverage. Furthermore, it is noted that the results of the analysis may still change as a result of qualitative analyses as borderline cases often occur (e.g. Luxembourg and Denmark (Farkas, 2016), Cyprus (Epaminonda, 2016)).

Table 2: Number of identified clusters in empirical works

	Product market	R&D	Education	Social protection and welfare	Labour market	Financial system	Housing	Growth regimes
Farkas (2016)	5	4	4	4	5	4		
Rapacki et al. (2019)	2		4	3	4	2	4	
Hein et al (2019)								4
Current analysis	3	2	4	5	3	3	2	6

Source: own elaboration, benchmarks are Farkas (2016), Rapacki et al. (2019) and Hein et al. (2019). Time periods analysed accordingly are 2004-2006, 2000-2008, 2015.

As the next step, cluster membership values by sub-sphere were used as categorical variables in a two-step clustering. In such a case, log-likelihood is the distance measure while the clustering criterion can be either Schwarz's Bayesian (SIC) or Akaike's information criterion (AIC). For the two-step clustering the analyst can specify any range of cluster numbers in advance, otherwise the program proposes an optimal cluster number. In the case of Farkas (2016) the two-step procedure (using AIC) proposed two clusters containing new and old member states respectively. As a next step she gradually increased the cluster number while repeatedly re-performing the two-step clustering, during which first the Mediterranean countries and then a northern cluster (Finland, Luxembourg, Sweden) left the original group of old EU member states. The analysis for the 2010s recommends four clusters when considering the supply side at the EU23 level:

1. Austria, Belgium, Denmark, Germany, Finland, France, Netherlands, Sweden
2. Ireland, Luxemburg, United Kingdom (if using SIC criteria it joins the first group)
3. Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia
4. Italy, Greece, Portugal, Spain

By increasing the number of clusters, the cluster quality is still good. By raising it to 7, the following countries start separating:

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- if  $k=5$ : Luxemburg
  - if  $k=6$ : Denmark, Sweden, Finland
  - if  $k=7$ : the three Baltic states, Hungary, Poland

Despite the outcome being four clusters, overall, there is still an apparent core-periphery division, not only among member states but between capitalist types. Regarding the dendrograms of the hierarchical cluster analyses, 2-2 clusters tend to separate more sharply: in the case of the labour market the continental group without Luxemburg and northern countries versus the rest, in the case of social protection and welfare, education, the housing market and R&D CEE and Mediterranean countries versus the rest. Concerning the product market, the picture is more mixed. Ireland and Luxemburg appear to be separate from the other clusters in terms of product market, welfare and financial systems. From all the areas the dendrogram of the welfare dimension matches the most with the taxonomy known from the literature. By and large, Table A.1 suggests that clusters per area not always appear in line with the theoretical division of capitalist types, indicating some extent of hybridization (Farkas, 2016; Crouch, 2005). The latter is fuelled by the EU in the first place. As an example, in the case of labour migration (whose direction is from CEE to north-western members) Europeanization initially has a liberalizing effect on national policies within the EU. But simultaneously, inverse processes take place with north-western EU member states restricting workers' mobility in the European Union (Laubenthal, 2017).

With respect to the demand side, the UK, Ireland and Luxemburg often emerge as separate one-member clusters differing in attributes from the rest like a relatively large share of services, inward FDI stock and population growth. Meanwhile, Ireland for example is more open regarding net trade whereas the financial sector has a greater role in case of Luxemburg. The CEE subregion shows characteristics of a dependent regime in line with the literature (Myant, 2018) (e.g. the role of external funds or increasing unit labour costs but consumption still only plays a greater role in case of Poland). Among the remaining countries, Germany, Denmark and the Netherlands are distinct by their export-orientation and the positive balance of their non-financial corporate sector from other clusters which can be described with a relatively higher share of general government expenditure. Such a more diverse heterogeneity compared

to Hein et al. (2019) is due to the application of a more detailed approach as the latter takes sectoral balances while this analysis goes into specific components.

In an EU-level analysis the CEE subgroup seems rather homogeneous, as Table A.1 implies that the labour, financing and housing dimensions CEE8 share the same characteristics. Within the CEE8 subgroup, overall, Hungary, Latvia and Lithuania always stay with the majority while Czechia, Slovenia and Estonia separate slightly in most dimensions. Two dimensions must be highlighted because they could potentially contribute to path alteration. The first is education which is generally viewed as a basis for long-term development where only Estonia stands out with higher standards. Secondly, as they are mostly small countries only Poland has the option to follow an alternative growth regime.

Combining the supply and demand sides means searching for all groups which contains countries with identical institutional and growth regimes cluster membership number. Hence Denmark, Germany and Netherlands separate from the north-western institutional cluster and the UK-Ireland-Luxembourg cluster splits. Comparing pre- and post-GFC periods, it is apparent that the demand side changed more in the short term compared to institutions. For example, Hungary shifted from a debt- to an export-led regime after 2010<sup>7</sup>. From the institutional side, Luxembourg transferred from the northern cluster and joined the Anglo-Saxon countries, while Denmark opted out from the continental and joined the northern cluster. But as mentioned before, these two countries are considered as borderline cases, their shifts should be confirmed by additional deeper qualitative analyses. Since cluster analysis is a tool that is not able to provide comprehensive information in terms of change, comparative analyses should be performed as different types of cross-border flows have different effect on various sectors (Dølvik et al., 2018).

Identification of clusters and discovering their capitalist systemic dynamics as objects of a research are bounded by time (etc.). Longer term examination focuses on

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<sup>7</sup> With the ruling party Fidesz gaining two-third majority in the Parliament in 2010 and the following elections since then, there were significant institutional changes (party-led economic nationalism, deterioration of governance of quality such as rule of law, corruption and voice & accountability), but all in all for the examined 2010s from a broader VoC perspective Hungary remained neoliberal FDI-dependent regime and preserved the Central European features.

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the change of clusters<sup>8</sup> and their developmental trajectories. The latter is used to evaluated from the economic performance perspective measured by GDP growth, while recently other aspects appear like inequality (Hall & Soskice, 2001; Hall & Gingerich, 2009; Judge et al., 2020). Transition economics also argues the importance of integrating other perspective putting the focus of analysis in a wider social and political dimension (Loewen, 2022). In addition to economic and social upgrading, institutional quality is also a key determinant of economic growth and development (Acemoglu & Robinson, 2008). In fact, institutional quality also shows significant division within the EU (Farkas, 2019). Thus, capitalist clusters should be compared along (economic, social and institutional quality) upgrading channels<sup>9</sup> which are required to move up along the core-periphery nexus. These upgrading channels are interconnected in a way that they are representing constraints to an extent as one channel is not able to upgrade freely, by ignoring the characteristics of the other dimensions (McDermott & Ruiz, 2014). The final evaluation framework is complete by complementing the three horizontal dimensions with a vertical one, i.e. movement along a core-periphery scale (within the world economy or an economic integration such as the EU). In the multi-speed EU, where member states have different dynamics and capacities, the core-periphery division showed permanence. Notable movement regarding the upgrading channels occurred only between the two peripheral clusters (Southern and Central Europe). Another, a short-term assessing approach is to identify operational risks that potentially affect a model's sustainability. These risks may arise from internal inconsistencies in an institutional model.<sup>10</sup> Also, changes in the external environment can cause shifts in the

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<sup>8</sup> This article does not address detailed presentation of change per different dimensions or cluster properties. Farkas (2016) used MDS (multidimensional scaling or principal coordinated analysis) to visualize clusters by institutional area. The plot displayed by MDS can represent two dimensions in an interpretable way. Here, the selection of two groups of indicators could be a solution with factor analysis but it would mean focusing on certain aspects and neglecting the rest, such loss of information would lead to simplification. On the other hand, Rapacki et al. (2019) by applying sub-clustering method they focused on convergence/divergence of Central European countries, showing how much and in what direction the standardized values (distances) varied between 2005 and 2014.

<sup>9</sup> Availability of statistical data for several years makes their developmental paths traceable. An additional task could be for future research to investigate multi-directional links between them using Vector Error Correction Model (VECM) analysis.

<sup>10</sup> Hall & Soskice (2001) argued that mixed market economies, which are located between liberal and coordinated market economies, are characterized by lower economic performance due to weaker institutional coherence. Several empirical analyses were later performed to test this statement of VoC that can ultimately show mixed results (see e.g. Malik (2017)).

usefulness of production factors. General (meaning less time and spatial specific) risks are linked to long-lasting population decline and net income outflow. Negative trends of outflow of resources implies general inefficiency of the two peripheral capitalist models.<sup>11</sup>

In conclusion, the division identified in the VoC literature by and large remained valid for the inter-crisis years. Compared to previous similar supply side analyses, the holistic picture at first glance seems to show that this diversity of capitalist models in the EU has somewhat diminished with each model mixing. Based on the examined one and a half decade time horizon the performances and fundamental risks associated with the two peripheral models are worse off than those of the core area. The core-periphery effect is still considerably relevant. While on the supply side both peripheral types carry many risks, the recent realignment between the two is rather due to demand side factors. Policymakers of these subgroups should be aware of that the former is more changeable in the current hyper-globalized world economy. Therefore, for a catching-up strategy it is needed to reform proactively the supply side of their capitalist models.

## 5. Conclusion and discussion

The research topic of capitalist varieties is broad and complex that provide several research agendas where both quantitative and qualitative analyses are needed to complement each other. In the third generation of Comparative Capitalism many paradigms and aspects became integrated besides the institutional side, for instance demand side factors or the dependency paradigm (Nölke, 2016). This article, by continuing this research agenda, created a more comprehensive taxonomy of capitalist diversity within the EU by combining VoC and growth regimes theories, the two major paradigms that analyse the supply and demand side respectively of contemporary capitalism. An occurring major crisis helps appoint the time interval needed to be

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<sup>11</sup> In this regard, the population loss of Central Europe was the most significant (between 1996 and 2019, World Bank data). In case of the Mediterranean cluster the preceding increasing trend turned into a decline with the GFC. The average annual outflow measured in annual difference between GNI and GDP per capita (PPP, current international USD) in case of the Central European sub-region was about 3% with the Czech Republic averaging more than 6% and Latvia as the other extreme showed an average annual outflow of 0.5% (between 2004 and 2019, World Bank data: <https://data.worldbank.org/indicator/SP.POP.TOTL?view=chart>).



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studied; thus, this article created a snapshot for the period between the early 2010s and 2020 when the Covid pandemic wound its way into Europe.

In the years following the 2008 crisis, the four Mediterranean EU member states experienced a protracted recession which led to a relative departure from the EU average, while Central Europe converged towards it in terms of income (Cseres-Gergely & Kvedaras, 2019). However, these years also provided room for national responses which could even lead to lasting institutional divergence where country-specific path dependencies had great influence.

Farkas (2016), as the most comprehensive study on the given topic, provided the basis for the conducted analysis. To define capitalist types within the EU in line with the empirical literature, a cluster analysis statistical tool was utilized in this paper. When comparing the results with previous similar analyses, it can be concluded that the capitalist models formed by the countries belonging to the core and the clusters formed by the (semi-)peripheral countries<sup>12</sup> converged respectively to their sub-groups. The term peripheral capitalism expresses that asymmetric interdependency is enhanced institutionally, thus this division become long-lasting. Although scholars drew attention to the institutional shortcomings in cases of the Mediterranean and FDI-dependent market economy (CEE) capitalist types, the recent period showed that growth regimes on the demand side eventually could either be disadvantageous, bringing forward or advantageously contributing to postpone these models' unsustainability. The literature analysing the Euro crisis argue that the debt-led model of southern EU was a mismatch for the export-led northern regimes under the frame of the common currency (Hall, 2018), whereas the Visegrad Four successfully took on that role and became the subject of German TNCs' nearshoring strategies (De Ville, 2018). Beside institutions which are historically and geographically rooted, technological capabilities and sectoral specifications make development trajectories of a country path dependent (Gräbner et al., 2019). In other words, altering courses is very difficult. The fact that CEE is an emerging area is mainly a consequence of its low initial position, while the 2021 European Innovation Scoreboard still shows a clear core-periphery split where Central- and Southern-European member states<sup>13</sup> belongs to the emerging and moderate

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<sup>12</sup> For more information on the division of the EU's core-periphery division see Weissenbacher (2020).

<sup>13</sup> With one exception is Estonia.

innovators, more or less in that order.<sup>14</sup> Gyórfy (2022) analysed convergence paths of CEE11 during the 2010s in her comparative study showing that behind the convergence in terms of GDP to the EU27 average, there are diverging state-led strategies, namely upgrading to a knowledge- and quality-base model versus reinforcing further the elements of a cost-base growth model with the deterioration of institutional quality.

Subsequent to the core-periphery nexus, the influence of welfare regimes prevails during the formation of taxonomy. Of course, data availability is a constraint, especially in the cases of the product market and financial system sub-spheres; thus, not all aspects are covered perfectly. Although it is less a problem as convergence has taken place to the greatest extent in the latter two areas as a result of the Europeanization process (Farkas, 2016; Rapacki et al., 2020). The statement of Rapacki et al. (2020) is also valid according to which the countries belonging to the core are mixing during the formation of clusters in the cases of several sub-spheres, where convergence might continue in the cases of the Nordic and continental clusters after Brexit. Nevertheless, cluster analysis methods performed here do not provide information on the cluster heterogeneity or how institutional complementarities evolved in each model. For the former, the sub-clustering method can be a solution to examine the change of countries' distance from other clusters in a more dynamic way, but even more so to conduct deeper qualitative analysis to reflect on both these research issues. Additionally, input and output indicators are considered together in the cluster analyses performed. Based on Próchniak et al. (2016) it is not the input but the output side that show a relatively larger difference from Western Europe, it may be worth considering input and output indicators separately as well. One illustrious practical example is how net recipients of EU funds is utilized by members with different institutional quality.

Finally, it should be noted that CEE is the largest cluster (to which even Bulgaria, Romania and Croatia would join in case of an EU26 level analysis), which still appears as a single cluster in an EU-level analysis. The Estonian or Hungarian paths do not divide this particular sub-region into two<sup>15</sup> (Gyórfy, 2022), or at least not yet. Originally,

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<sup>14</sup> European Commission. (2021). European Innovation Scoreboard 2021, Figure 3: *Performance of EU Member States' innovation systems*, Luxembourg: Publications Office of the European Union, Retrieved from: <https://ec.europa.eu/docsroom/documents/46013>.

<sup>15</sup> The Slovenian path was negatively affected by the GFC, neocorporatism was pushed back (Feldmann, 2017), and from 2020 the populist Janez Jansa became the country's prime minister for the third time.

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it was a plausible expectation that the Covid crisis would have a greater impact on the institutional side than in the case of the GFC as the former affects numerous areas of life (health, education, production value chains, employment, etc.). It could have been mean an important crossroads (rather than a curve to reduce the development gap) for Southern and Central European countries wishing to catch up by using the opportunity to reform their models. However, since than the Ukrainian-Russian conflict has been escalated to an extent which causes more significant changes primarily from the demand side. On the other hand, the reform of the institutional side is inevitable for the peripheral member states as several economists have already drawn attention (e.g. Farkas, 2016). The associated risk after the GFC is that populist parties in power are more prone to focus on short-term policy-making, even though reform of the institutional side requires a consensual decision which involves several parties and stakeholders beforehand. Another question is concerning parallel path creation whether the governing political elite and then voters would accept the associated temporary costs due to increased coordination, especially in Southern or Eastern Europe?

Based on the results of the cluster analyses of this paper we can still say that despite certain diverging trends, which started after 2010, the status quo in terms of the EU's capitalist heterogeneity has remained. Their path dependent nature was influential, while resulted performances concerning economic, social and institutional upgrading channels certainly will have backlashes on the mix of path dependent and path creation processes. Farkas (2016) argues that such capitalist diversity is only viable in a differentiated integration. The EU is committed towards enlargement with middle-income countries (Balkan, Ukraine), meanwhile with Brexit a net contributor left the integration. This way the EU is on the right track if it strengthens its core principles and values on the first place thus limiting any deviation towards any rent-seeking form, and manages substantial structural differences that derives from disharmonic operation of more capitalist types in order to prevent the strengthening of the core-periphery nexus.

The next stage of research could be to examine how the institutional side, growth regimes and upgrading channels in each member state interacted after the GFC, shaping the development path of the national model and identifying points and processes that

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On the other hand, in the Estonian and Hungarian cases consensual politics (Kattel & Mergel, 2019) or super-majority were needed respectively to somewhat alter courses.

actually facilitate breaking from the existing (peripheral) model. This requires an intensive qualitative investigation, not only at national level. Addition to the economic perspective, further insight into politics, civil society and quality of formal and certain informal institutions of the country under study need to be applied. This way both external and internal sources of change are considered.

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## Appendix

Table A.1: Indicators used during cluster analyses

<b>Product market</b>	
Government enterprises and investment index	EFW (Gwartney–Lawson, 2008)
Top statutory corporate income tax rates (*HIPA is)	<a href="https://ec.europa.eu/taxation_customs/taxation-1/economic-analysis-taxation/data-taxation_en">https://ec.europa.eu/taxation_customs/taxation-1/economic-analysis-taxation/data-taxation_en</a>
Paying taxes, total tax rate (% of profit)	World Bank
Start-up procedures to register a business (number)	World Bank
Time required to start a business (days)	World Bank
Cost of business start-up procedures (% of GNI per capita)	World Bank
Starting a business, minimum capital (% of income per capita)	World Bank
Registering property, procedures (number)	World Bank
Time required to register property (days)	World Bank
Registering property, cost (% of property value)	World Bank
Tax payments (number)	World Bank
Time to prepare and pay taxes (hours)	World Bank
Time required to enforce a contract (days)	World Bank
Enforcing contracts, cost (% of claim)	World Bank
Inward FDI stock, % of GDP	UNCTAD
Outward FDI stock, % of GDP	UNCTAD
Net export/GDP by SMEs	OECD
Net export/GDP by large companies	OECD
Index of Economic Freedom component: Business freedom	Heritage Foundation
GCI component: Intensity of local competition	GCI
GCI component: Extent of market dominance	GCI
GCI component: Domestic competition	GCI
GCI component: Prevalence of non-trade barriers	GCI
GCI component: Foreign competition	GCI
GCI component: Competition	GCI
GCI component: Market size	GCI
Business Extent Of Disclosure Index (0=Less Disclosure To 10=More Disclosure)	World Bank
<b>Labour market</b>	
Employees with a contract of limited duration (annual average) (% of total number of employees)	Eurostat
Persons employed part-time (% of total employment)	Eurostat
Union density rate	ICTWSS
Adjusted bargaining coverage rate	ICTWSS
Coordination of wage bargaining (1–5)	ICTWSS
Hiring and firing practices, 1-7 (best)	World Bank
Hours regulations	EFW
Share of non-wage costs (%)	Eurostat
Redundancy costs, weeks of salary	World Bank
Employment rate	Eurostat
Unemployment rate	Eurostat
Long-term unemployed (12 months and more) as a percentage of the total active population	Eurostat
Young people neither in employment nor in education and training (NEET)	Eurostat
The predominant level at which wage bargaining takes place	ICTWSS
Nominal labor productivity per hour worked – Index (EU27 (2020) = 100)	Eurostat



<b>R&amp;D</b>	
General government R&D expenditure by function (COFOG), all sectors, % GDP	Eurostat
R&D expenditure (Percentage of total, business enterprise sector)	Eurostat
R&D expenditure (Percentage of total, government sector)	Eurostat
R&D personnel (% of the labor force, all sectors)	Eurostat
Employment in knowledge-intensive services (% of total employment)	Eurostat
High-tech exports (% of total exports)	Eurostat
Patent applications to the European Patent Office (EPO) by priority year (per million inhabitants)	Eurostat
Gross domestic expenditure on R&D (GERD) by source of funds; Abroad (%)	Eurostat
Research and development expenditure, % of GDP	OECD
<b>Education</b>	
Percentage of the population aged 25–64 having completed at most lower secondary education	Eurostat
Early school-leavers—Percentage of the population aged 18–24 with at most lower secondary education and not in further education or training	Eurostat
Total population having completed at least upper secondary education, Population aged 25–64 (%)	Eurostat
Youth education attainment level—Percentage of the population aged 20–24 having completed at least upper secondary education	Eurostat
Share of population by educational attainment (25–64 years, Tertiary education, Women)	OECD
Share of population by educational attainment (25–64 years, vocational training)	OECD
Population with tertiary education, 25–34 year-olds, % in same age group	OECD
Life-long learning (adult participation in education and training)—Percentage of the population aged 25–64 participating in education and training over the four weeks prior to the survey	Eurostat
Science and technology graduates (BA level) in mathematics, science and technology per 1000 of population aged 20–29	Eurostat
Total expenditure on educational institutions per full-time equivalent student relative to GDP per capita (Primary to Tertiary education (ISCED2011 levels 1 to 8))	OECD
Total expenditure on educational institutions per full-time equivalent student relative to GDP per capita (Total tertiary education (ISCED2011 levels 5 to 8))	OECD
Public spending on education (Primary to tertiary, % of GDP, 1995 – 2016)	OECD
Private spending on education (Primary to tertiary, % of GDP, 1995 – 2016)	OECD
Unemployment rates of the population aged 25–64 by level of education; Pre-primary, primary and lower secondary education—levels 0–2 (ISCED), Annual average	Eurostat
Unemployment rates of the population aged 25–64 by level of education; Upper secondary and post-secondary non-tertiary education—levels 3–4 (ISCED), Annual average	Eurostat
Unemployment rates of the population aged 25–64 by level of education; Tertiary education—levels 5–6 (ISCED), Annual average	Eurostat
Pupil/teacher ratio in primary education	Eurostat, OECD
<b>Financial system</b>	
Total consolidated assets of domestic banking groups (% of GDP)	ECB
Bank overhead costs/Total assets	Beck et al. ( 2000 )
Deposit money bank assets/GDP	Beck et al. ( 2000 )
Domestic credit to private sector by banks (% of GDP)	World Bank
Herfindahl index for CIs (index ranging from 0 to 10,000)	ECB
Share of the 5 largest CIs in total assets in %	ECB
Life insurance premium volume/GDP	Beck et al. ( 2000 )
Non-life insurance premium volume/GDP	Beck et al. ( 2000 )
Total assets of foreign controlled branches and subsidiaries (% of GDP)	ECB

<b>Social protection and welfare</b>	
Health expenditure, total (% of GDP)	OECD
Health expenditure, public (i.e. health insurance) (% of GDP)	OECD
Health expenditure, private (i.e. NGO+private institutions) (% of GDP)	OECD
Income quintile share ratio S80/S20 for disposable income	Eurostat
Expenditure on pensions Current prices (% of GDP)	Eurostat
At-risk-of-poverty rate before social transfers (%)	Eurostat
At-risk-of-poverty rate after social transfers (%)	Eurostat
Total expenditure on social protection, Current prices (% of GDP)	Eurostat
Social benefits paid by general government (% of total)	Eurostat
Social benefits by function; Sicknes/Health care (% of total benefits)	Eurostat
Social benefits by function; Family/Children (% of total benefits)	Eurostat
Social benefits by function; Old age (% of total benefits)	Eurostat
Social benefits by function; Disability (% of total benefits)	Eurostat
Social benefits by function; Housing (% of total benefits)	Eurostat
Social benefits by function; Unemployment (% of total benefits)	Eurostat
Social protection receipts by type; General government contributions (% of total receipts)	Eurostat
Social protection receipts by type; Employers' social contribution (% of total receipts)	Eurostat
Social protection receipts by type; Social contribution paid by the protected persons (% of total receipts)	Eurostat
PIT revenue to total tax revenue ratio	OECD
CIT revenue to total tax revenue ratio	OECD
Value-added taxes revenue to total tax revenue ratio	OECD
Total tax revenue to GDP ratio	OECD
<b>Housing</b>	
Share of population living in cities	Eurostat
General government expenditure on housing as a share of GDP	Eurostat
Share of housing costs in disposable household income	Eurostat
Share of population living in a dwelling that is considered as overcrowded	Eurostat
Share of young adults aged 25–34 living with their parents	Eurostat
Share of population living in owner-occupied dwellings	Eurostat
Share of population living in owner-occupied dwellings, with mortgage or loan	Eurostat
Share of population living in rented dwellings with a rent at market price	Eurostat

<b>Growth regimes</b>	
Remittance inflows to GDP (%)	Beck et al. ( 2000 )
Inward FDI stock, % of GDP	UNCTAD
General government expenditure, %GDP	Eurostat
Population growth, %	World Bank
sectoral financial balance of corporate sectors	AMECO
Current account balance (% of GDP)	World Bank
relative growth contribution of private consumption	AMECO
relative growth contribution of public consumption	Eurostat
relative growth contribution of net exports	Eurostat
relative growth contribution of investment	Eurostat
Share of finance sector in gross value-added of all sectors	Eurostat
Share of EU expenditure by country, GNI %	<a href="https://ec.europa.eu/info/strategy/eu-budget/long-term-eu-budget/2014-2020/spending-and-revenue_en">https://ec.europa.eu/info/strategy/eu-budget/long-term-eu-budget/2014-2020/spending-and-revenue_en</a>
Industry (including construction), value added (% of GDP)	World Bank
Services, value added (% of GDP)	World Bank
Nominal unit labour costs	Ameco
Trade in goods, net trade, billion USD	OECD
Trade in services, net trade, million USD	OECD
General government deficit, %GDP	OECD
Household Debt as Percentage of Net Disposable Income	OECD
Manufacturing, value added (% of GDP)	World Bank

Note: Beck et al. (2000) indicates <https://www.worldbank.org/en/publication/gfdr/data/financial-structure-database>

Table A.2: Cluster membership for EU23 per sub-spheres

	Product market	R&D	Education	Social protection	Labour market	Financial system	Housing market	Growth regime
AUT	3	1	4	4	3	2	1	6
BEL	3	1	1	4	3	2	1	6
CZE	3	2	4	4	1	1	2	5
DEU	3	1	4	4	3	2	1	4
DNK	3	1	1	4	3	2	1	4
ESP	3	2	3	1	2	2	2	4
EST	3	2	1	5	1	1	2	5
FIN	3	1	1	4	3	2	1	6
FRA	3	1	1	4	2	2	1	6
GBR	3	1	1	2	1	2	1	6
GRC	2	2	2	1	2	2	2	6
HUN	2	2	4	5	1	1	2	5
IRL	1	1	2	2	1	1	1	1
ITA	3	2	3	1	2	2	2	4
LTU	2	2	4	5	1	1	2	5
LUX	1	2	1	2	3	3	1	2
LVA	2	2	4	5	1	1	2	5
NLD	1	1	1	4	3	2	1	4
POL	2	2	4	5	1	1	2	3
PRT	3	2	3	1	2	2	2	6
SVK	2	2	4	4	1	1	2	5
SVN	2	1	4	4	1	1	2	5
SWE	3	1	1	4	3	2	1	6
Number of clusters	3	2	4	5	3	3	2	6

Source: own elaboration

Note: Numbers indicate to which cluster a country belongs.