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Research Article

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The Analysis of Institutional Environment in the Area of Product Market Competition in the New EU Member States: What Do the Data Say About the Models of Capitalism Emerging in the CEE Countries?

Abstract: The paper analyzes the institutional architecture and the effects of product market competition in 11 countries of Central and Eastern Europe (CEE). The aim of the research was to find out how similar or dissimilar are the CEE countries in the area of product market competition compared with the four models of capitalism prevailing in Western Europe: the Anglo-Saxon (liberal) model (the UK), the continental model (Germany), the Scandinavian (Nordic) model (Sweden), and the Mediterranean one (Spain). The research method involves calculations of the coefficients of similarity and the analysis of polygons, being the extension of our own concept of the hexagons of similarity. The dynamic approach adopted in this study allows to examine the path dependence in order to assess how the institutional environment evolved over time. The analysis indicates that almost all CEE countries were the most similar to the Mediterranean model of capitalism represented by Spain. However, the variety of results for the individual variables is also a proof that the model of capitalism prevailing in CEE in the area of product market competition may be called a patchwork capitalism.

Keywords: varieties of capitalism, institutions, CEE countries, post-communist capitalism
JEL classification: E02, N14, P17, P51

1 Introduction

The study analyzes the institutional architecture and the effects of product market competition in 11 countries of Central and Eastern Europe (CEE), which are new members of the European Union (EU). In existing analyses on models of capitalism, countries are characterized by numerous variables covering a variety of political, social, and economic aspects. Based on these results, countries are classified into a number of categories that share common features and may be treated as one model of capitalism. There are different classifications in the economic literature [see e.g. Coates, 2000; Hall and Soskice, 2001; Amable, 2003; Nölke and Vliegenthart, 2009]. Studies on post-socialist capitalism appear relatively seldom. A review of empirical and theoretical analyses on the emerging varieties (models) of post-socialist capitalism in the

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CEE countries was carried out by Rapacki et al. [2016]. The review indicates that there is still much room for new research on the models of capitalism existing in the CEE countries, with different extensions and modifications.

This study fills the gap by combining the models of capitalism approach and the examination of the institutional environment in one of the institutional areas singled out by Amable [2003], namely, product market competition. The analysis covers the CEE countries. The research focuses on both the current situation prevailing in the given institutional area and dynamic aspects. The latter is made by assessing institutional changes that took place after the EU enlargement.

The aim of the analysis was to find out how similar or dissimilar are the CEE countries in the area of product market competition compared with the four models of capitalism established in Western Europe: the Anglo-Saxon, continental, Nordic, and Mediterranean. On the basis of this comparison, we are able to decide whether the CEE countries created their own model of capitalism, they converge to one specific model of Western European capitalism, or they adopt a variety of features from different models. If the latter hypothesis turns out to be true, the study will support the view that the model of capitalism in the CEE countries can be called a patchwork capitalism. The term 'patchwork capitalism' was introduced by Rapacki et al. [2018].

The paper extends the research carried out by Amable [2003] where the author applied the principal components analysis and the clusters analysis to identify countries' clusters only in well-developed economies in various institutional areas, including product markets. The current paper also augments the earlier studies on the subject [e.g. Próchniak et al., 2017] in which the analysis of six institutional domains, including product market competition, in the group of CEE countries was carried out on a significantly smaller number of variables, with the use of the so-called hexagons of similarity, in a static way.

The dynamic approach adopted in this study allows us to examine the path dependence in order to find out to what extent the current institutional environment of product market competition results from past development trends of the countries under study. The analysis by North [1990, p. 115] of the path dependence of England and Spain involves the situation prevailing several hundred years ago. In this study, we will not go back so far. Since the study covers a group of CEE countries, which in 2004, 2007, and 2013 joined the EU, the path dependence will be analyzed over the last dozen or so years, starting from the period of the largest EU enlargement to the CEE region.

Theoretical and empirical studies include a number of product market competition indicators. They can be classified into three categories [Próchniak, 2018]: microeconomic variables calculated at the level of individual firms (e.g. Boone indicator, Lerner index, number of firms or competitors, price mark up on costs, profit margin), microeconomic variables at the sectoral level (e.g. concentration ratio, Herfindahl–Hirschman index), and macroeconomic variables. The latter group includes, among others, product market regulation indicators.

Alexeev and Song [2013] presented numerous product market competition variables. These authors analyzed the relationship between product market competition and corruption for approximately 60 countries. They included six product market competition indicators: (1) the reaction of consumers to hypothetical increase in prices, (2) costs mark up, (3) Herfindahl–Hirschman index, (4) the number of competitors, (5) share in the domestic market, and (6) local market share.

The current study involves two groups of variables. We take into account variables representing both the determinants of competition on the product market (i.e. the institutional architecture of the country in terms of product market competition) and the effects of competition. In the other words, the analysis involves both input and output variables.

The study is composed of four parts. After the introduction, in section 2, the variables are presented and the methodology is described. Section 3 contains the presentation and interpretation of the results. The last section concludes.

2 Data and methodology

The study includes quantitative and qualitative variables on the level of competition in the product markets. The analysis covers a total of 24 variables described in Table 1.

Table 1. Variables used in the analysis

No.	Variable name	Variable description[a]	Source	Scale[b]
1	hef_fiscal	Fiscal freedom	Heritage Foundation	From 0 to 100; higher value indicates greater scope of economic freedom
2	hef_gov	Freedom from government spending		
3	hef_business	Business freedom		
4	gci_inst	Institutions	World Economic Forum – Global Competitiveness Report	From 1 to 7; higher value indicates better outcome (greater competition)
5	gci_loccom	Intensity of local competition		
6	gci_mardom	Extent of market dominance		
7	gci_effec	Effectiveness of anti-monopoly policy		
8	gci_tax	Total tax rate (% of profits)		
9	gci_domcom	Domestic competition		
10	gci_tradeb	Prevalence of trade barriers		
11	gci_forown	Prevalence of foreign ownership		
12	gci_busimp	Business impact of rules on FDI		
13	gci_forcom	Foreign competition		
14	gci_com	Competition		
15	gci_marsize	Market size		
16	gci_compind	Global Competitiveness Index (GCI)		
17	wdi_costbusi	Cost of business start-up procedures (% of GNI per capita)	World Bank – World Development Indicators	-
18	wdi_taxpaym	Tax payments (number)		
19	wdi_timeenfor	Time required to enforce a contract (days)		
20	wdi_timeregpro	Time required to register property (days)		
21	wdi_timestartbu	Time required to start a business (days)		
22	wdi_timepaytax	Time to prepare and pay taxes (hours)		
23	eur_enterman	Number of enterprises in manufacturing (per million people)	Eurostat	-
24	eur_entertot	Number of enterprises in business economy except financial and insurance activities (per million people)		

[a] For the sake of conciseness, we do not present the exact meaning (method of calculation) of individual variables. Their detailed definitions along with the counting method are given in the quoted sources. In the case of qualitative indicators compiled by the Heritage Foundation and the World Economic Forum, some variable names sound quite general, and without looking at the methodology, it is difficult to determine the exact scope of the variable.

[b] Applies to qualitative variables.

Source: Eurostat [2017], Heritage Foundation [2017], World Bank [2017], and World Economic Forum [2017].

Many variables from the Heritage Foundation, World Economic Forum, and the World Bank can be treated as determinants of product market competition. These indicators cover various elements of the institutional architecture. The list of institutional variables is only a part of a large set of indicators that could be treated as measures of various areas of the institutional environment; however, it is consistent with the definition of the institutions given by North [1990, p. 3], saying that institutions are the rules of the game. The exact set of variables selected for the analysis results, among others, from the availability of data and the author's perception as to the significance and legitimacy of including a given variable in the study.

Table 2. The values of variables in the beginning and final years of the analysis

Country	Initial year	Final year	Change	Initial year	Final year	Change	Initial year	Final year	Change
(a)	hef_fiscal			hef_gov			hef_business		
Bulgaria	80.3	91.1	10.8	53.4	60.4	7.0	55.0	66.9	11.9
Croatia	59.3	70.8	11.5	26.2	33.7	7.5	55.0	60.3	5.3
Czech Republic	68.2	82.5	14.3	15.1	47.3	32.2	70.0	66.6	-3.4
Estonia	82.9	81.9	-1.0	61.6	54.9	-6.7	85.0	79.0	-6.0
Hungary	67.9	78.7	10.8	25.6	26.7	1.1	70.0	70.6	0.6
Latvia	83.6	84.8	1.2	52.7	58.4	5.7	70.0	78.6	8.6
Lithuania	82.8	92.9	10.1	65.1	63.8	-1.3	70.0	80.0	10.0
Poland	68.3	75.5	7.2	30.3	46.5	16.2	70.0	68.7	-1.3
Romania	70.1	87.5	17.4	68.9	65.6	-3.3	55.0	66.1	11.1
Slovakia	81.9	80.1	-1.8	42.4	49.5	7.1	70.0	68.4	-1.6
Slovenia	55.6	58.6	3.0	45.3	0.0	-45.3	85.0	82.0	-3.0
Germany	58.4	61.5	3.1	28.6	41.3	12.7	70.0	90.0	20.0
Spain	55.4	58.3	2.9	53.0	41.1	-11.9	70.0	76.0	6.0
Sweden	33.7	44.4	10.7	0.0	14.9	14.9	70.0	89.7	19.7
UK	62.3	64.9	2.6	43.5	39.0	-4.5	85.0	86.0	1.0
(b)	gci_inst			gci_loccom			gci_mardom		
Bulgaria	3.05	3.39	0.34	4.08	4.61	0.53	3.63	3.42	-0.21
Croatia	3.61	3.63	0.02	4.85	4.90	0.05	3.44	3.20	-0.24
Czech Republic	3.89	4.09	0.20	5.40	5.75	0.35	4.40	4.54	0.14
Estonia	4.67	5.03	0.36	5.47	5.61	0.14	4.24	4.11	-0.12
Hungary	4.21	3.52	-0.69	5.42	5.12	-0.30	4.12	3.46	-0.67
Latvia	3.96	4.18	0.22	4.86	5.40	0.54	3.85	3.79	-0.07
Lithuania	3.79	4.12	0.32	5.19	5.64	0.45	3.61	3.66	0.05
Poland	3.64	4.07	0.43	4.60	5.29	0.69	4.40	4.74	0.34
Romania	3.32	3.66	0.34	4.63	4.51	-0.11	4.09	3.64	-0.44
Slovakia	3.98	3.43	-0.55	4.96	5.54	0.58	4.32	3.59	-0.73
Slovenia	4.26	3.93	-0.33	5.02	5.12	0.10	4.34	3.87	-0.47
Germany	5.68	5.22	-0.46	6.19	5.97	-0.22	6.23	5.41	-0.81
Spain	4.38	3.94	-0.44	5.42	5.61	0.19	4.51	4.10	-0.41
Sweden	5.48	5.58	0.10	5.72	5.46	-0.26	4.78	4.63	-0.15
UK	5.50	5.46	-0.04	6.07	6.02	-0.05	5.91	4.91	-1.01
(c)	gci_effec			gci_tax			gci_domcom		
Bulgaria	3.18	3.59	0.41	43.5	27.0	-16.5	3.69	4.45	0.76
Croatia	3.47	3.48	0.01	37.1	18.8	-18.3	3.85	4.12	0.27
Czech Republic	4.92	4.14	-0.78	51.8	48.5	-3.3	4.51	4.64	0.13
Estonia	4.87	4.58	-0.28	51.3	49.3	-2.0	4.88	5.05	0.17
Hungary	4.69	3.54	-1.15	60.6	48.0	-12.6	4.38	4.37	-0.01
Latvia	3.97	4.02	0.05	42.6	35.0	-7.6	4.48	4.79	0.31
Lithuania	4.17	3.97	-0.20	52.3	42.6	-9.7	4.24	4.73	0.49
Poland	4.16	4.02	-0.14	38.4	38.7	0.3	4.30	4.66	0.35
Romania	3.51	3.66	0.15	57.7	43.2	-14.5	4.14	4.38	0.24
Slovakia	4.22	3.56	-0.67	51.0	48.6	-2.4	4.56	4.35	-0.21
Slovenia	4.22	3.82	-0.41	39.4	32.0	-7.4	4.24	4.60	0.36
Germany	6.19	5.09	-1.11	57.7	48.8	-8.9	5.09	5.05	-0.04
Spain	4.70	4.15	-0.55	59.1	58.2	-0.9	4.41	4.47	0.06
Sweden	5.51	5.24	-0.27	57.0	49.4	-7.6	4.94	5.07	0.13
UK	6.01	5.18	-0.83	35.5	33.7	-1.8	5.43	5.34	-0.09
(d)	gci_tradeb			gci_forown			gci_busimp		
Bulgaria	4.27	4.10	-0.16	4.23	4.04	-0.19	3.86	3.78	-0.08
Croatia	4.64	4.88	0.24	4.77	4.01	-0.76	4.34	3.10	-1.25
Czech Republic	5.30	4.65	-0.65	5.94	6.02	0.08	5.67	4.98	-0.70
Estonia	5.60	4.65	-0.95	5.72	5.76	0.04	6.01	5.40	-0.61
Hungary	5.60	4.54	-1.06	5.93	5.26	-0.67	5.72	4.65	-1.07
Latvia	4.78	4.69	-0.09	5.31	5.25	-0.06	4.98	5.07	0.08
Lithuania	4.68	4.13	-0.54	4.95	4.37	-0.58	4.64	4.35	-0.29

Country	Initial year	Final year	Change	Initial year	Final year	Change	Initial year	Final year	Change
Poland	4.41	4.35	-0.06	4.73	5.02	0.29	4.47	4.57	0.10
Romania	4.27	4.50	0.22	4.64	4.27	-0.37	4.70	4.66	-0.05
Slovakia	5.77	4.61	-1.16	6.32	6.05	-0.27	6.33	5.01	-1.33
Slovenia	5.45	4.48	-0.96	4.30	3.27	-1.03	4.11	3.43	-0.67
Germany	5.64	4.35	-1.29	5.96	4.94	-1.02	5.68	4.88	-0.80
Spain	4.98	4.17	-0.81	5.52	4.99	-0.53	5.46	4.61	-0.86
Sweden	5.89	4.65	-1.24	6.00	5.10	-0.90	5.75	5.49	-0.26
UK	5.31	4.65	-0.66	6.27	6.17	-0.10	6.09	5.87	-0.22
(e)	gci_forcom			gci_com			gci_marsize		
Bulgaria	3.89	4.78	0.90	3.75	4.55	0.80	4.12	3.91	-0.20
Croatia	4.34	4.67	0.33	3.98	4.25	0.27	3.85	3.59	-0.26
Czech Republic	5.13	5.63	0.49	4.69	4.95	0.26	4.55	4.47	-0.09
Estonia	5.33	5.78	0.45	5.03	5.29	0.26	3.36	3.09	-0.27
Hungary	5.19	5.46	0.27	4.61	4.72	0.10	4.52	4.32	-0.19
Latvia	4.69	5.35	0.66	4.54	4.95	0.41	3.49	3.24	-0.24
Lithuania	4.55	5.13	0.59	4.33	4.86	0.53	3.78	3.61	-0.17
Poland	4.27	4.96	0.69	4.30	4.73	0.43	5.06	5.16	0.10
Romania	3.73	4.80	1.07	4.04	4.48	0.44	4.58	4.57	-0.01
Slovakia	5.51	5.63	0.13	4.85	4.76	-0.09	4.16	4.03	-0.14
Slovenia	4.49	4.89	0.40	4.31	4.69	0.38	3.67	3.39	-0.28
Germany	4.99	4.97	-0.03	5.07	5.03	-0.04	6.00	6.02	0.02
Spain	4.70	4.73	0.02	4.47	4.52	0.06	5.52	5.42	-0.10
Sweden	5.10	5.25	0.15	4.98	5.11	0.13	4.64	4.64	-0.01
UK	5.04	5.34	0.30	5.35	5.34	-0.02	5.83	5.74	-0.08
(f)	gci_compind			wdi_costbusi			wdi_taxpaym		
Bulgaria	3.98	4.32	0.34	9.6	0.7	-8.9	29	14	-15
Croatia	4.16	4.07	-0.09	12.7	3.3	-9.4	40	19	-21
Czech Republic	4.67	4.69	0.02	9.5	6.7	-2.8	27	8	-19
Estonia	4.82	4.74	-0.09	6.2	1.3	-4.9	7	8	1
Hungary	4.49	4.25	-0.25	22.4	7.3	-15.1	13	11	-2
Latvia	4.47	4.45	-0.02	4.2	1.5	-2.7	29	7	-22
Lithuania	4.49	4.55	0.06	3.3	0.6	-2.7	11	11	0
Poland	4.39	4.49	0.11	19.9	12.2	-7.7	41	7	-34
Romania	3.98	4.32	0.34	5.3	2.0	-3.3	108	14	-94
Slovakia	4.54	4.22	-0.32	5.0	1.5	-3.5	32	10	-22
Slovenia	4.48	4.28	-0.20	12.0	0.0	-12.0	22	10	-12
Germany	5.48	5.53	0.05	4.7	1.8	-2.9	12	9	-3
Spain	4.70	4.59	-0.11	16.5	5.2	-11.3	8	9	1
Sweden	5.44	5.43	-0.01	0.7	0.5	-0.2	6	6	0
UK	5.56	5.43	-0.13	0.7	0.1	-0.6	8	8	0
(g)	wdi_timeenfor			wdi_timeregpro			wdi_timestartbu		
Bulgaria	564	564	0	19	11	-8	32	18	-14
Croatia	561	572	11	956	62	-894	29	12	-17
Czech Republic	653	611	-42	124	31	-93	40	15	-25
Estonia	425	425	0	51	18	-33	35	4	-32
Hungary	335	395	60	78	17	-61	38	5	-33
Latvia	279	469	190	55	17	-39	16	6	-11
Lithuania	210	300	90	3	3	-1	26	4	-23
Poland	980	685	-295	195	33	-162	46	30	-16
Romania	537	512	-25	77	19	-58	11	8	-3
Slovakia	565	705	140	17	17	-1	27	12	-16
Slovenia	1350	1160	-190	391	50	-342	60	6	-54
Germany	394	429	35	40	39	-1	22	11	-12
Spain	515	510	-5	20	13	-8	70	14	-56
Sweden	508	321	-187	15	14	-1	16	7	-9
UK	404	437	33	42	22	-20	12	5	-8

Country	Initial year	Final year	Change	Initial year	Final year	Change	Initial year	Final year	Change
(h)	wdi_timepaytax			eur_enterman			eur_entertot		
Bulgaria	586	423	-163	4 042	4 142	99	36 932	43 247	6 314
Croatia	232	206	-26	5 428	4 858	-570	37 725	34 454	-3 271
Czech Republic	930	405	-525	14 613	15 949	1 335	87 368	94 038	6 671
Estonia	81	81	0	4 097	4 841	744	37 818	47 504	9 686
Hungary	340	277	-63	5 613	4 799	-814	57 115	50 524	-6 590
Latvia	280	193	-87	3 439	4 739	1 299	35 324	48 256	12 932
Lithuania	166	171	5	4 930	5 450	520	43 620	51 815	8 195
Poland	420	271	-149	4 974	4 585	-389	40 824	39 259	-1 565
Romania	190	159	-31	2 790	2 340	-450	24 657	21 825	-2 832
Slovakia	325	188	-137	1 502	11 676	10 174	11 657	72 635	60 979
Slovenia	260	245	-15	8 581	8 810	229	53 275	61 536	8 261
Germany	196	218	22	2 380	2 469	89	22 973	26 702	3 729
Spain	298	158	-140	4 515	3 624	-892	61 241	50 514	-10 727
Sweden	122	122	0	5 895	5 592	-303	62 998	69 053	6 055
UK	105	110	5	2 133	1 995	-138	28 000	27 786	-213

Source: Own calculations based on the data from Heritage Foundation, World Economic Forum, World Bank, and Eurostat.

The effects of product market competition are proxied, inter alia, by two variables from Eurostat on the number of enterprises (per million inhabitants). We are aware of the fact that these are imperfect measures and may represent the impact of numerous other factors.

The study covers the period from about 2004, that is from the largest EU enlargement to the CEE region, till the last available data. Countries are compared at the beginning and the end of this period. Since the availability of variables is very diverse, the terms 'initial year' and 'final year' are used throughout the paper instead of the exact years for which a given observation is taken. The initial year includes observations for the mid-2000s, depending on data availability. In the case of some indicators, these will be values for 2004 or 2005, but in the case of others, there may even be several-year shifts. In turn, the 'final year' includes the latest available observations, usually for 2015 or 2016.

Each country in CEE is compared to four models of capitalism existing in Western Europe: continental, Mediterranean, Scandinavian (Nordic), and Anglo-Saxon (liberal). We assume that the following countries are 'ideal' representatives of a given model of capitalism:

- Germany – the continental model,
- Spain – the Mediterranean model,
- Sweden – the Scandinavian model, and
- UK – the Anglo-Saxon model.

Table 2 presents the values of variables in the initial and final years and their change for 11 CEE countries and for the four reference economies.

For each variable, on the basis of numerical values in the beginning and final years, the similarity coefficient of the CEE country toward each of the four reference economies has been calculated. This coefficient is compiled according to the author's method described in detail by Próchniak et al. [2016]. The similarity coefficient ranges from 0 to 100. The score 100 means that the value of a given variable for the CEE country is exactly the same as the value of this variable for the reference economy, which is a representative of the Western European model of capitalism. The score 0 occurs when the difference between the CEE country and the reference country exceeds (up or down) the three standard deviations calculated for a given variable within the entire group of 15 countries. If the difference is less than three standard deviations (in absolute terms), the similarity coefficient is calculated proportionally to the distance from the reference value. What is important, it does not matter whether the CEE country differs from the reference value upward or downward. In the economic literature, there are also the other methods of measuring similarities [see e.g. Walesiak, 2016; Bernardelli, 2018].

3 Empirical results

The similarity coefficients are shown on polygons, illustrated in Figures 1–11. Polygons constitute the development and extension of our own concept of the hexagon of similarity, which allows to make an assessment involving six indicators. The polygons contain a comparison of a given CEE country to four countries of Western Europe. Each polygon has 24 vertices, each of which corresponds to a single variable. In order to increase the transparency of the charts, the polygon axes have a scale from -20 to 100, although all similarity coefficients are in the range from 0 to 100. The larger the area covered by the curve representing the Western European country, the greater is the similarity of a given CEE economy to a specific Western European model of capitalism.

(a) initial year

(b) final year
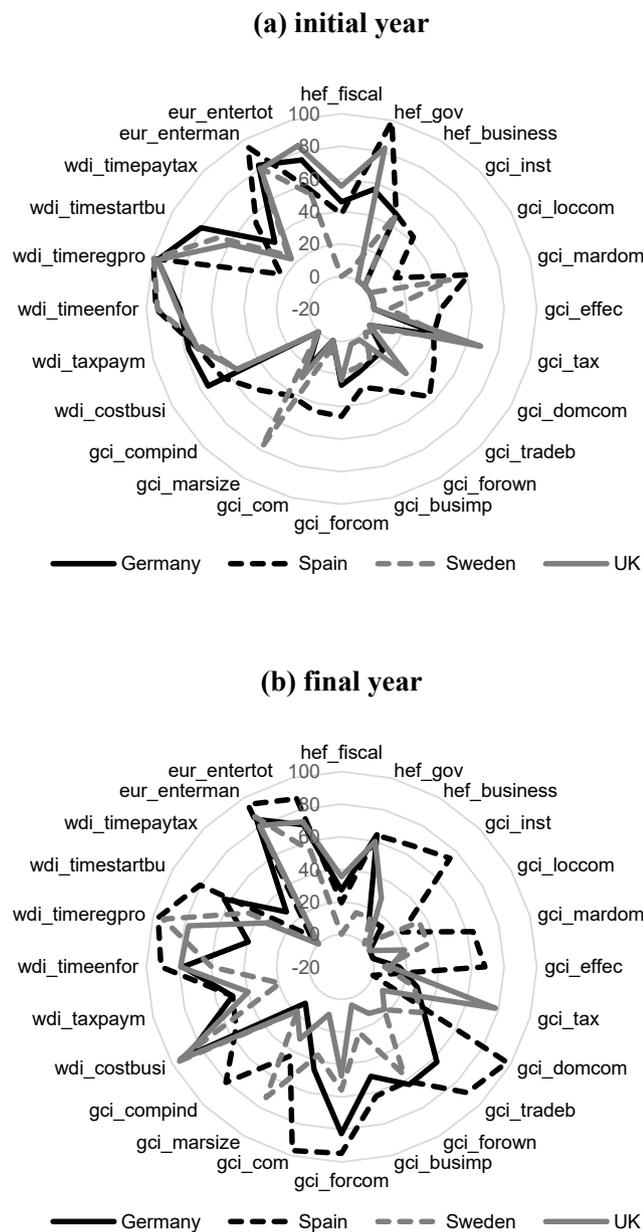
Figure 1. The comparison of Bulgaria with reference countries in the area of product market competition.
*Source:* Own calculations.

(a) initial year
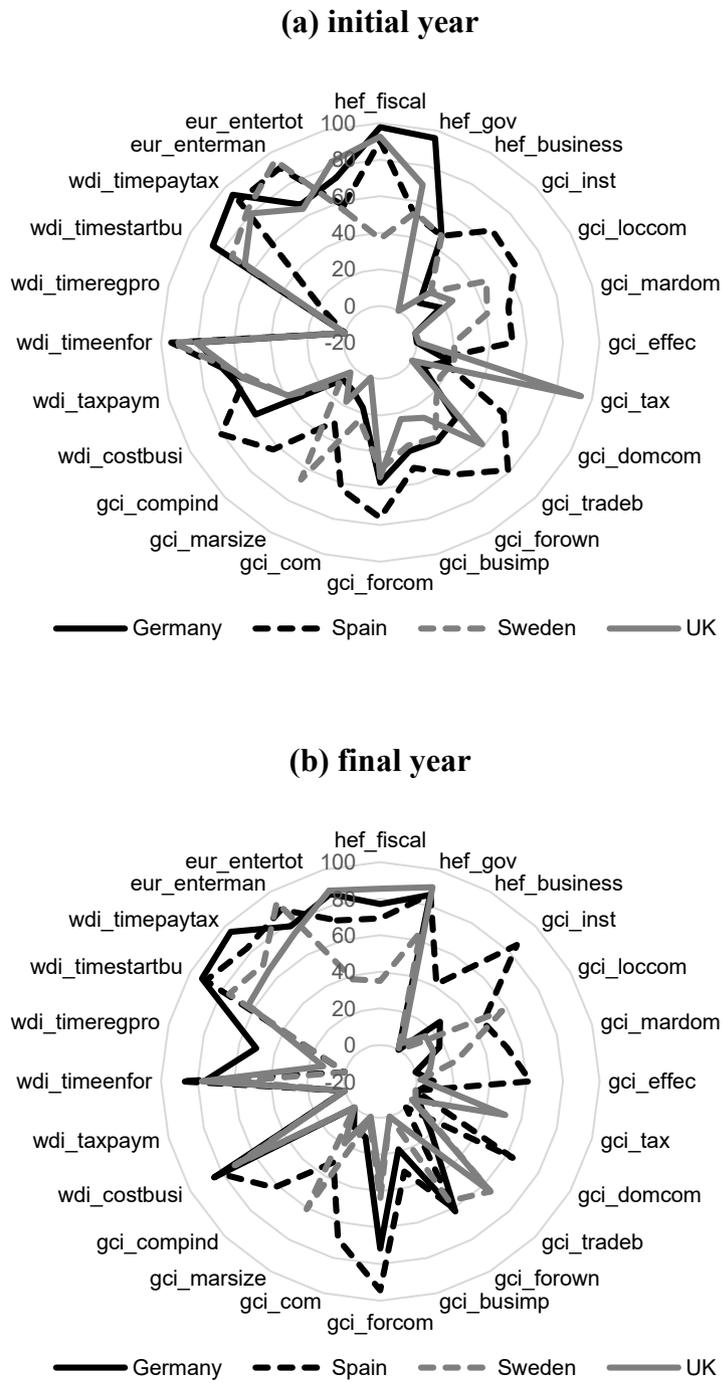
(b) final year

Figure 2. The comparison of Croatia with reference countries in the area of product market competition.
*Source:* Own calculations.
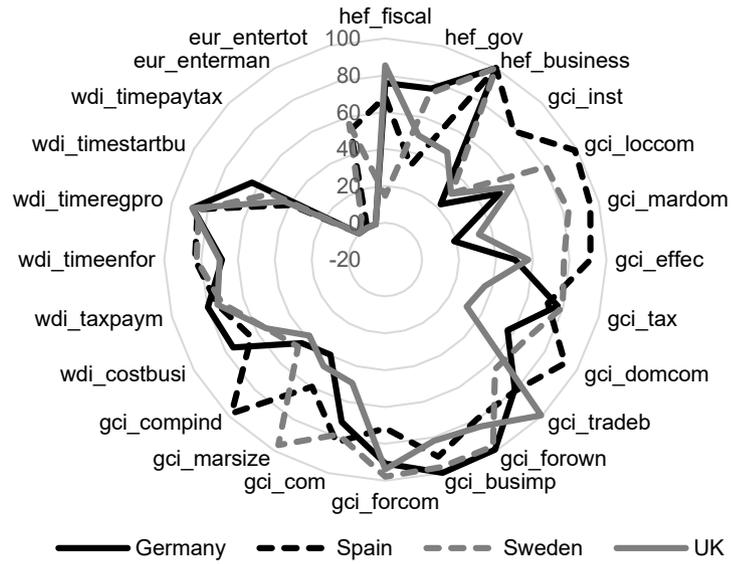
(a) initial year
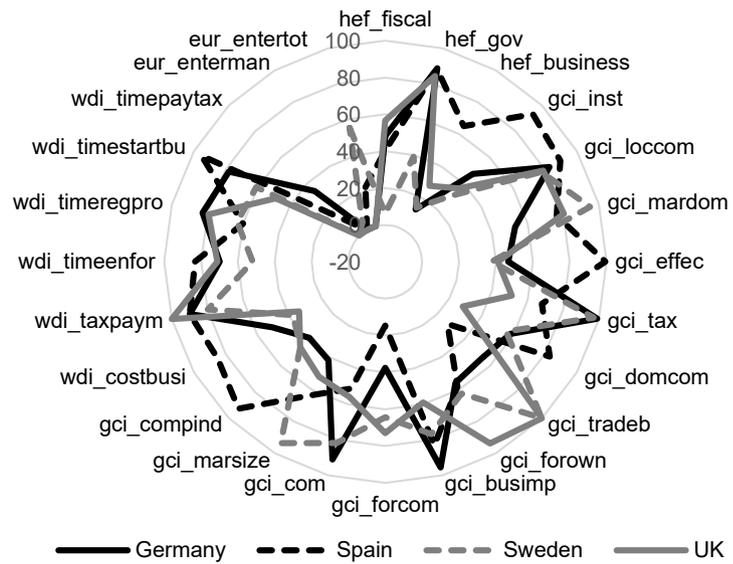
(b) final year

Figure 3. The comparison of the Czech Republic with reference countries in the area of product market competition.
Source: Own calculations.
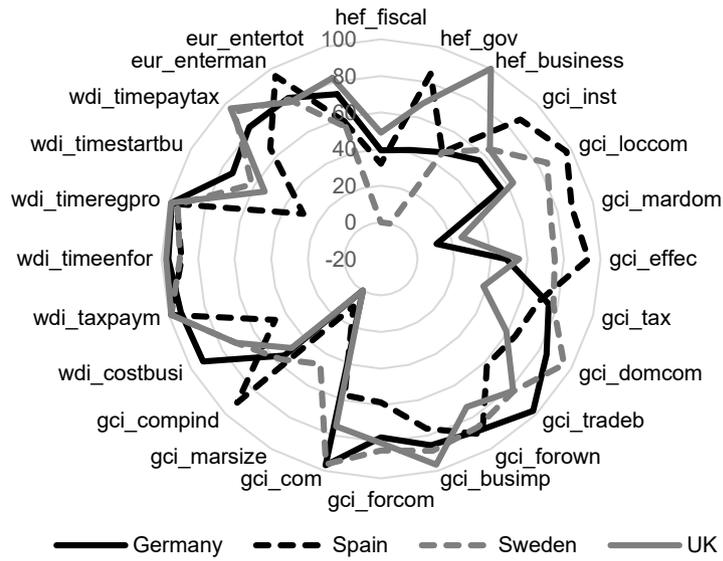
## (a) initial year
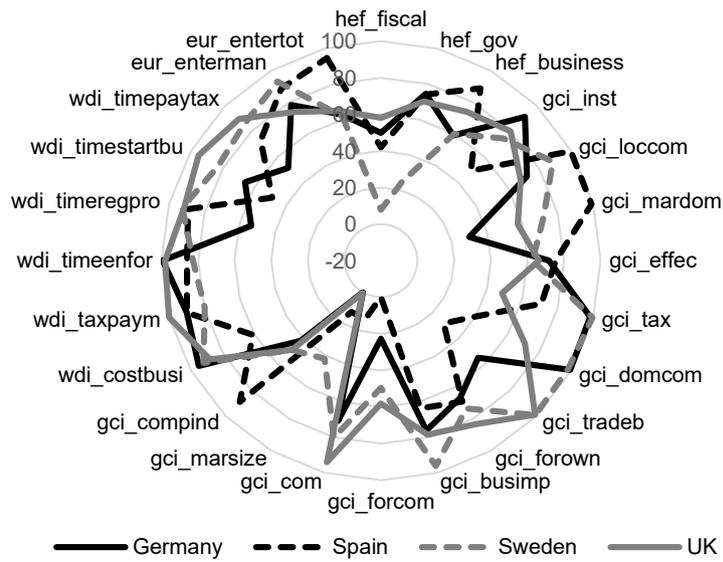
(b) final year

Figure 4 The comparison of Estonia with reference countries in the area of product market competition.
Source: Own calculations.
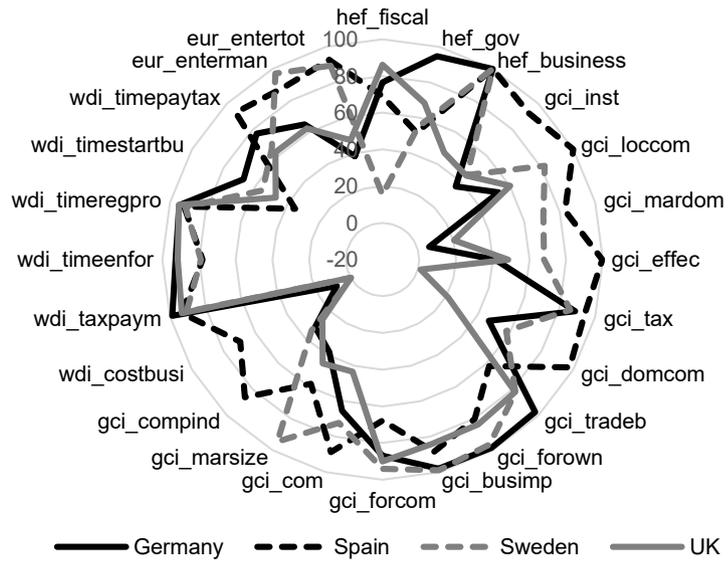
(a) initial year
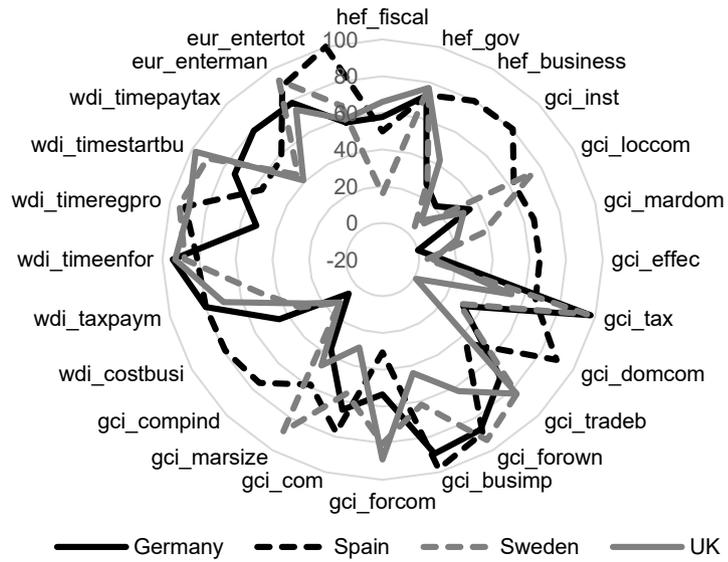
(b) final year

Figure 5. The comparison of Hungary with reference countries in the area of product market competition.
Source: Own calculations.
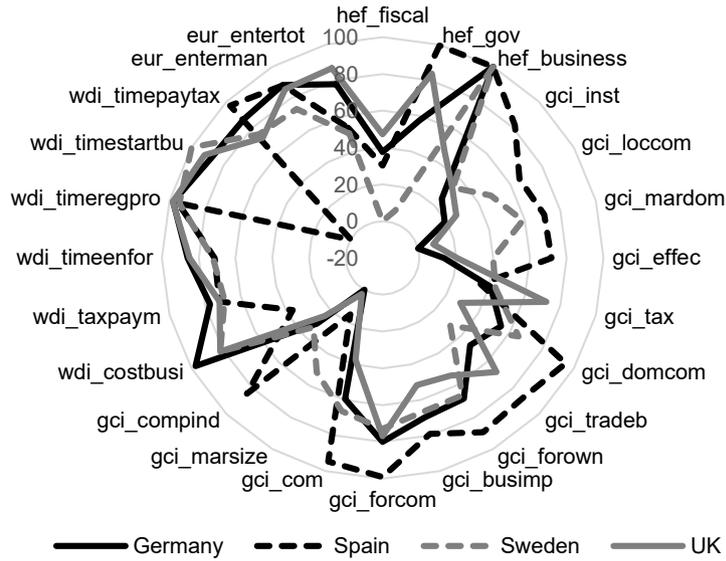
(a) initial year
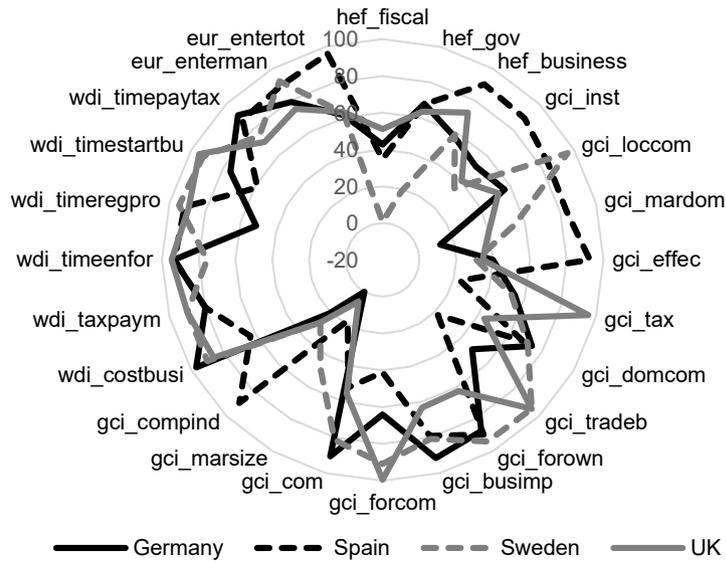
(b) final year

Figure 6. The comparison of Latvia with reference countries in the area of product market competition.
Source: Own calculations.
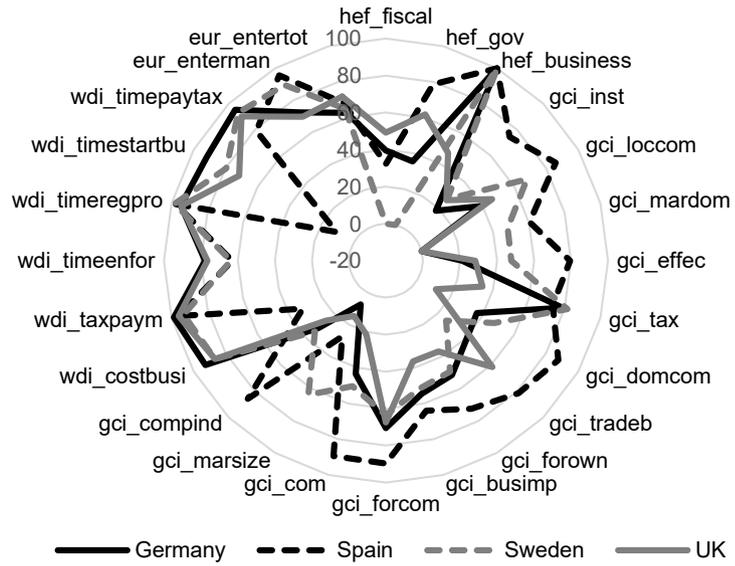
(a) initial year
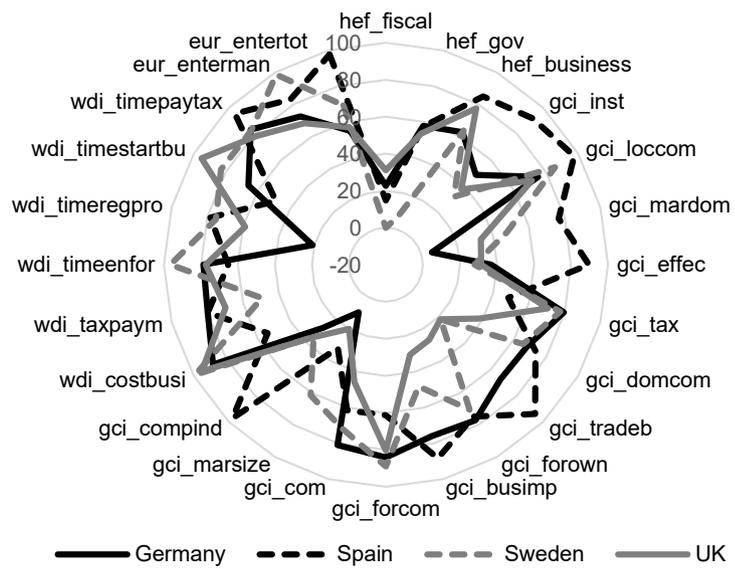
(b) final year

Figure 7. The comparison of Lithuania with reference countries in the area of product market competition.
Source: Own calculations.
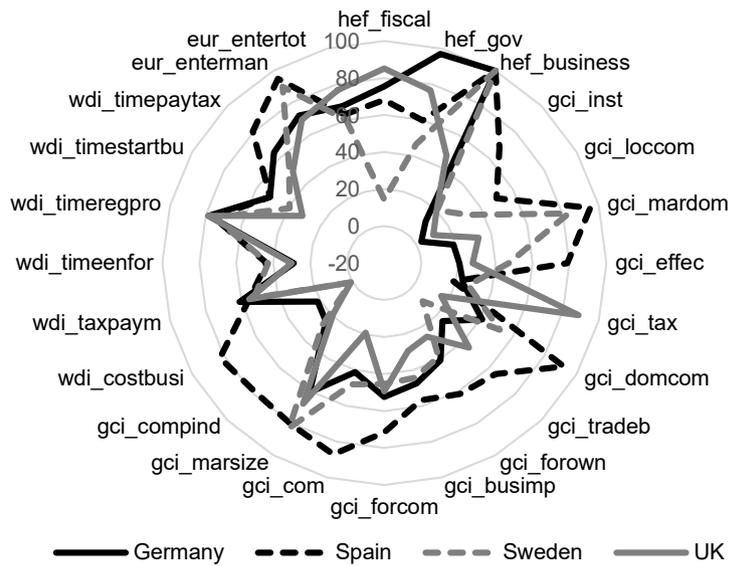
(a) initial year
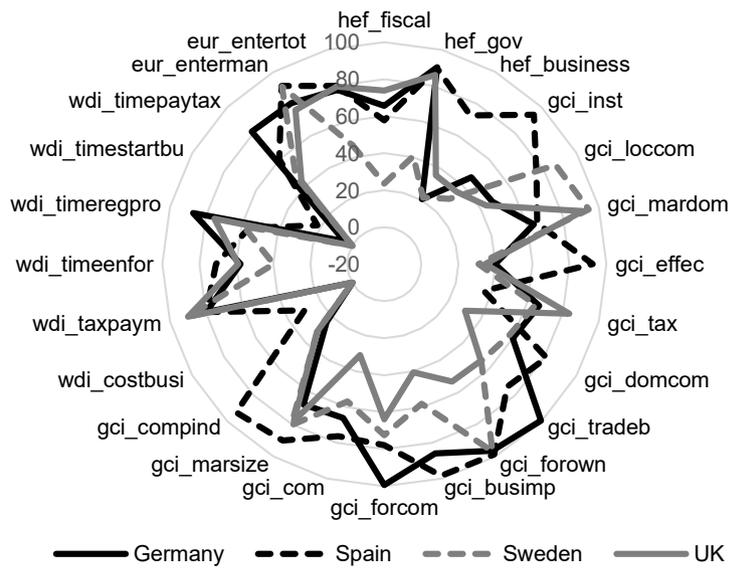
(b) final year

Figure 8. The comparison of Poland with reference countries in the area of product market competition.
Source: Own calculations.
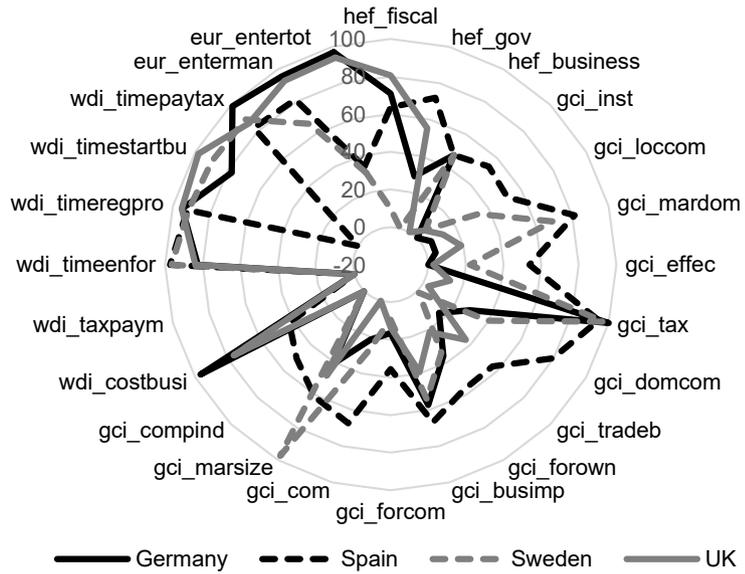
(a) initial year
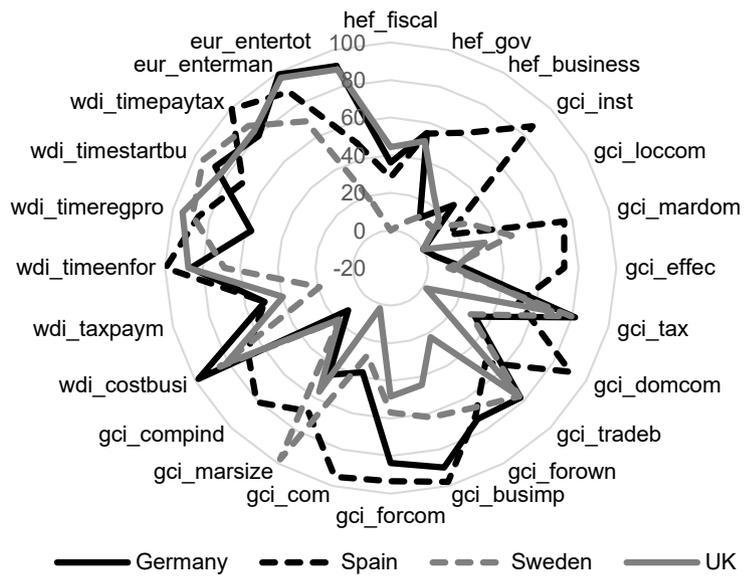
(b) final year

Figure 9. The comparison of Romania with reference countries in the area of product market competition.
*Source:* Own calculations.
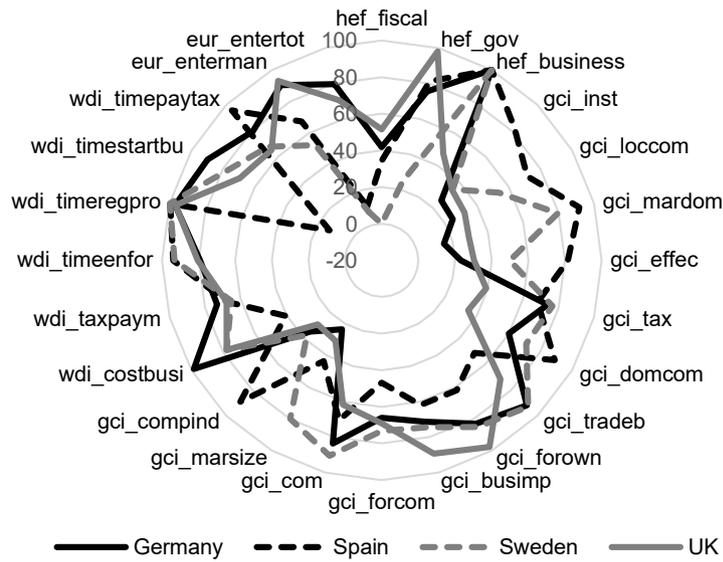
(a) initial year
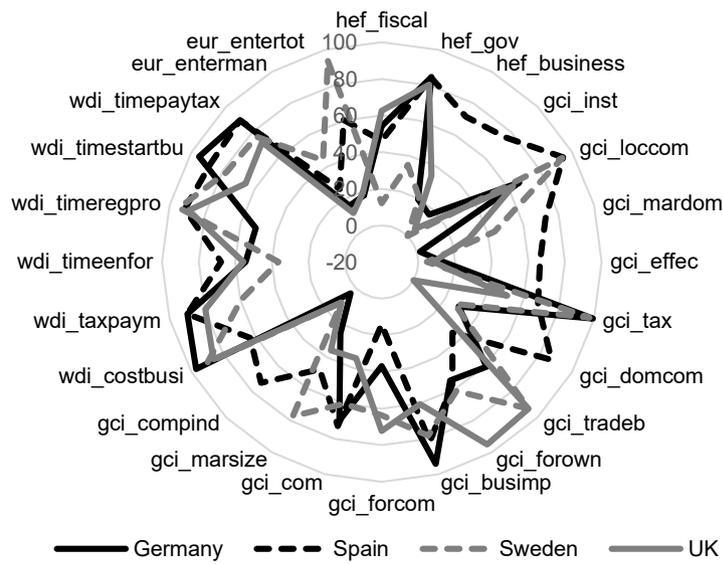
(b) final year

Figure 10. The comparison of Slovakia with reference countries in the area of product market competition.
Source: Own calculations.

(a) initial year
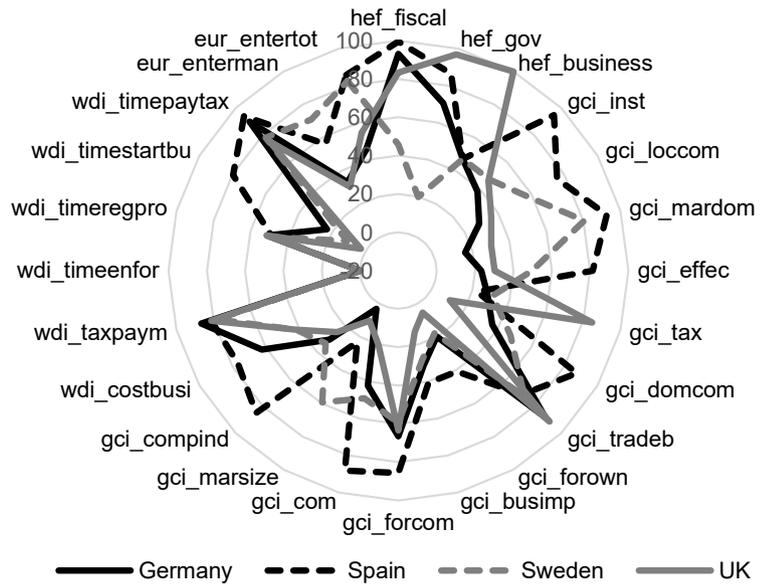
(b) final year
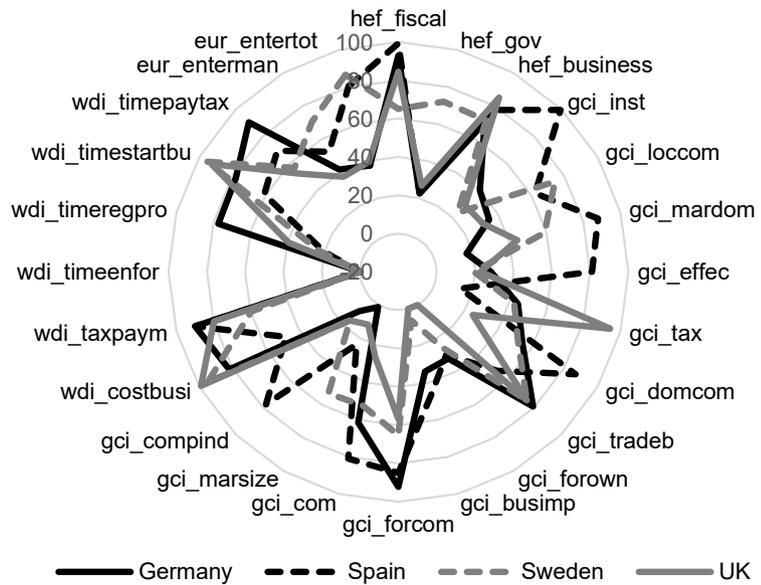
Figure 11. The comparison of Slovenia with reference countries in the area of product market competition.
Source: Own calculations.

Table 3 shows the aggregated similarity coefficients, being averages for 24 variables. The values given in Table 3 are average values of individual variables plotted on polygons. In the last row, mean coefficients for the entire CEE group are calculated.

Correlation coefficients were also calculated for changes in the values of individual variables, which are given in Table 2. Correlation coefficients do not include two variables measuring the number of firms (*eur_enterman* and *eur_entertot*). Hence, for each pair of countries, correlations cover 22 observations. Due to the possibility of a spurious correlation, the results obtained based on the correlation analysis are treated as supplementary.

Table 3. Similarity coefficients in the area of product market competition

CEE country	Reference country			
	Germany	**Spain**	**Sweden**	**UK**
(a) Initial year				
Bulgaria	37.4	54.0	35.1	35.4
Croatia	43.0	58.7	43.7	39.7
Czech Republic	59.5	70.5	66.3	52.2
Estonia	68.8	70.3	71.2	69.0
Hungary	66.8	81.7	71.7	56.4
Latvia	58.4	71.4	58.4	56.5
Lithuania	56.5	71.8	59.5	51.1
Poland	47.0	70.0	47.1	43.8
Romania	46.5	59.3	45.4	40.7
Slovakia	65.9	67.2	65.2	61.1
Slovenia	43.9	68.5	48.2	45.2
Mean	**54.0**	**67.6**	**55.6**	**50.1**
(b) Final year				
Bulgaria	43.3	65.2	37.7	35.9
Croatia	40.7	56.5	34.5	35.5
Czech Republic	56.5	64.3	55.5	54.1
Estonia	65.6	64.4	72.8	73.2
Hungary	55.1	72.5	58.3	51.2
Latvia	62.0	70.2	67.0	65.3
Lithuania	59.3	72.8	60.8	54.3
Poland	62.8	73.4	53.1	53.6
Romania	55.5	70.9	48.2	49.0
Slovakia	51.7	67.6	56.3	50.6
Slovenia	50.5	60.3	52.4	44.5
Mean	**54.8**	**67.1**	**54.2**	**51.6**

Gray cells indicate the reference country to which the CEE country is most similar. If the difference is less than 3 percentage points compared to other reference countries, the gray color includes the larger group of countries including all countries for which the difference from the leader is less than 3 percentage points.

Source: Own calculations.

The empirical analysis yields the following findings for the individual CEE countries.

3.1 Bulgaria

The analysis suggests that Bulgaria was the most similar to the Mediterranean model of capitalism. This took place both in the initial and final years of the study. The similarity coefficient for the initial year given in Table 3 amounted to 54.0% in relation to that of Spain. In relation to the other three countries, the coefficients were significantly lower: 37.4% in relation to Germany, 35.4% against the UK, and 35.1% toward Sweden. In the final year, the similarity to Spain even increased: the coefficient between Bulgaria and Spain was 65.2%, i.e. significantly higher than in comparison with that of the other three reference countries: Germany (43.3%), Sweden (37.7%), and the UK (35.9%).

A strong similarity to Spain over the last 10 years is also confirmed by the correlation coefficient for changes in the values of indicators, which are given in Table 2. The correlation coefficient calculated in this way between Bulgaria and Spain is 0.9369 and is statistically significant at the 1% significance level ($p = 0.0000$). The correlation coefficients of the dynamics of 22 variables between Bulgaria and the other three reference countries are negative but statistically insignificant.

The results suggest that in terms of path dependency, changes in the area of product market competition in Bulgaria were very similar to changes taking place in Spain. It can thus be assumed that the model of capitalism in Bulgaria was very similar to the Mediterranean model of capitalism, and the similarity was stable over time.

Analysis of polygons in Figure 1 confirms that the similarity to Spain was strong in both the initial and final years. The figure also shows that the similarity (or its lack) between Bulgaria and all four reference countries was quite stable over time: the variables with the highest similarity between Bulgaria and the other reference countries were more or less the same in the initial and final years of the study.

3.2 Croatia

Croatia – like Bulgaria – was the most similar to the Mediterranean model of capitalism in terms of the institutional environment in the area of product market competition. Croatia shaped its path dependency in the same way as Spain. High resemblance to the Mediterranean model was observed both in the initial and final years. In the mid-2000s, the similarity coefficient between Croatia and Spain equaled 58.7% and was much higher than in the other three reference economies: Germany (43.0%), Sweden (43.7%), and the UK (39.7%). At the end of the period, a high similarity to the Mediterranean model was maintained (56.5%), but the similarity to the Scandinavian and Anglo-Saxon models decreased to 34.5% and 35.5%, respectively.

Analysis of polygons in Figure 2 confirms the highest institutional similarity between Croatia and Spain, but in the case of several variables, there are strong differences between these countries at the beginning and end of the analyzed period. In the mid-2000s, Croatia was very different from Spain in terms of total tax rate, time needed to register ownership, and time needed to start a business. In turn, in recent years, the largest differences between Croatia and Spain could be additionally noted in terms of trade barriers and the number of tax payments, while they were not visible in time needed to start a business. Such an outcome supports the view of the patchwork nature of capitalism.

Correlation coefficients between Croatia and the four reference countries for changes in 22 indicators are statistically insignificant at the 1% significance level and cannot be the basis for inference.

3.3 Czech Republic

The Czech economy also shows the strongest similarity to Spain. This finding results both from comparing the Czech Republic and Spain based on the coefficients of similarity and the values of particular indicators on polygons, as well as from the analysis of correlation coefficients calculated for the dynamics of the variables examined.

The similarity coefficient presented in Table 3 in the period around the country's entry into the EU equaled 70.5% in relation to Spain, while in the case of other countries, it was lower: 66.3% toward Sweden and 59.5% and 52.2% in relation to Germany and the UK, respectively. In the last year, the institutional

architecture of the Czech Republic was the closest to the Mediterranean model as well (similarity coefficient at 64.3%), while the resemblance to the other three models (continental, Nordic, and liberal) was smaller with coefficients around 55%.

High similarity of the Czech and Spanish institutional environment is also visible in the case of the analysis of changes in indicators over the last decade. The correlation coefficient on data representing the dynamics of 22 variables in the Czech Republic and Spain was 0.919 and was statistically significant at 1% level ($p = 0.0000$). Analogous correlation coefficients between the Czech Republic and other reference countries turned out to be statistically insignificant at the 1% significance level.

At the time of EU accession, the Czech Republic was almost identical to Spain in terms of the following three areas: business freedom, intensity of local competition, and the overall competitiveness index called Global Competitiveness Index (GCI). For example, the value of the latter index in the 2006–2007 edition (i.e. for the oldest available data) equaled 4.67 in the Czech Republic and 4.70 in Spain, i.e. at a similar level. In the final year, the greatest similarity between the Czech and Spanish economies concerned the effectiveness of anti-monopoly policy.

The proximity of the institutional systems in product market competition in the Czech and Mediterranean models of capitalism and the relative similarity of past trends can also be seen on the polygons shown in Figure 3. Polygons demonstrate that the Czech Republic was evidently different from reference countries (not only Spain but also Germany, Sweden, and the UK) in terms of one variable: the number of enterprises in manufacturing and – albeit to a lesser extent – the total number of enterprises. Indeed, the analysis of source data shows that the Czech economy was characterized by the largest number of enterprises per one million inhabitants (in total economy and in manufacturing) among the entire group of 15 countries during both the beginning and the final years.

3.4 Estonia

In contrast to the three previously analyzed countries, the Estonian economy is characterized by a different institutional architecture and is not the closest to the Mediterranean model. The path that Estonia followed was different, and it is difficult to determine to which of the already shaped capitalist models, it fits the most.

The similarity coefficients calculated for the initial year do not allow to draw unambiguous conclusions. The difference between the most similar model, i.e. Scandinavian, and the most different one, i.e. continental, is less than 3 percentage points, which makes the whole row in part (a) of Table 3 marked in gray.

The data suggest that after joining the EU, Estonia found itself on the path that made this country similar to both the Anglo-Saxon and Scandinavian models. As a result, the highest similarity coefficients in the final year were recorded in relation to the UK (73.2%) and Sweden (72.8%). The similarity to Germany and Spain in recent years was lower (similarity coefficients equal to 65.6% and 64.4%, respectively). The closeness to the Anglo-Saxon model results from the high degree of economic freedom in Estonia, the efficient tax system and, as a result, a large openness and competitiveness of the economy. It turns out that in the case of many analyzed variables, Estonia achieves the best (or one of the better) outcomes in the entire group of 11 CEE countries. For example, Estonia is a leader among the new EU members in terms of time needed to prepare and pay taxes, the number of tax payments, time needed to start a business, and the scope of domestic competition. In turn, a large similarity to Sweden results, among others, from the geographical proximity of these countries and the strong ties of Estonia with Scandinavia.

The Estonian path of convergence toward the Anglo-Saxon model of capitalism is also confirmed by the correlation coefficients. A statistically significant correlation (at the 1% significance level) occurs only with the UK, and the value of the correlation coefficient is positive. This is an additional argument suggesting that the changes in the values of the analyzed variables in Estonia were often in line with the changes observed in Great Britain.

The polygons illustrated in Figure 4 show that the model of capitalism in Estonia displayed many common features with all four reference models of capitalism. As a result – especially in part (a) of the chart

– it is difficult to distinguish the Western European country most similar to Estonia in terms of the analyzed variables. This outcome supports the concept of patchwork character of capitalism.

3.5 Hungary

The model of capitalism that appeared in Hungary most resembles the Mediterranean variant of capitalism existing in Spain. This situation occurred both in the initial and final years of the analysis. The similarity coefficients for the initial year amounted to 81.7% in relation to Spain, while in comparison to other reference countries, they were equal to 71.7% (Sweden), 66.8% (Germany), and 56.4% (UK). In the final year, the strongest similarity of the Hungarian economy to the Mediterranean model is also reflected by high similarity coefficient at the level of 72.5%, well above three other values (between 50% and 60% for the three remaining reference countries).

The institutional path that makes the Hungarian economy similar to the Mediterranean model of capitalism is also confirmed by a positive and statistically significant (at 1% significance level) correlation coefficient for changes in 22 indicators in Hungary and Spain. Nevertheless, looking at the mutual correlations of the dynamics of changes, statistically significant coefficients were also recorded between Hungary and Sweden (negative relationship) and between Hungary and the UK (positive link).

The analysis of individual variables shows that Hungary achieved similar results as Spain in the initial year in three areas: business freedom, the intensity of local competition, and the effectiveness of anti-monopoly policy. Recently, the strongest similarity to the Mediterranean model of capitalism occurred in terms of the economic impact of law on foreign direct investments (FDI) and the number of enterprises in the economy (per million inhabitants).

Figure 5 also shows the strongest similarity of Hungary to Spain. Particularly in part (a) of the chart, the black dotted line is located very close to the vertices of the polygon, confirming the high value of the similarity coefficient.

3.6 Latvia

In contrast to the previously discussed Baltic country, i.e. Estonia, the institutional environment in the area of product market competition of the Latvian economy is the closest to the Mediterranean model of capitalism. This is confirmed by the calculated similarity coefficients. For the initial year, this coefficient equaled 71.4% compared to that of Spain, but in relation to the other three reference countries, it stood at 56%–58%. Analogous differences, although smaller, occurred in the final year of the analysis. The similarity coefficient of Latvia to Spain, according to the latest available data, reached the value of 70.2%, and for the remaining three reference countries, it ranged from 62% to 67%.

Analysis of polygons in Figure 6 confirms the strong similarity between Latvia and Spain. Part (a) of the chart suggests that the Latvian economy was close to the Mediterranean model of capitalism, but it remained remote compared to other models mainly on the basis of competitiveness indicators from the *World Economic Forum* database. For example, if we look at the aggregate GCI (variable *gci_compind*), we see that the value of this indicator for Latvia (4.47 in the initial year and 4.45 in the final year) was the closest to that for Spain, for which this indicator stood at 4.70 and 4.59, respectively, while in the other reference countries, this index exceeded 5 in both years.

3.7 Lithuania

The Lithuanian economy is similar in some aspects to the Latvian one. As a result, Lithuania achieves outcomes comparable to those by Latvia in terms of institutional environment prevailing at product markets after joining the EU. As in the case of Latvia, the greatest similarity of the institutional architecture in the field of product market competition occurred between Lithuania and Spain. The closeness to the Mediterranean model of capitalism was evident in both analyzed years and is confirmed by similarity coefficients.

Lithuania's similarity coefficient toward Spain amounted to 71.8% in the initial year and 72.8% in the final year, i.e. at similar levels as in the case of Latvia. Lithuania's coefficients in relation to the other three reference countries in both analyzed years were lower and ranged from 50% to 60%.

The polygons in Figure 7 confirm the significant resemblance of Lithuania to the Mediterranean model of capitalism. Polygons for Lithuania are also similar in terms of both shape and surface to analogous polygons for Latvia, which reflects the common characteristics of the economies of these two Baltic countries.

3.8 Poland

The results suggest that in terms of product market competition, the Polish economy was the most similar to the Mediterranean model of capitalism represented by Spain. In the initial year, the similarity coefficient for this pair of countries amounted to 70.0% and was much higher than that between Poland and the other three reference economies: Sweden (47.1%), Germany (47.0%), and the UK (43.8%). In the final year, Poland maintained its greatest resemblance to the Mediterranean model of capitalism with a coefficient of 73.4%. The German economy ranked second in terms of the degree of similarity (a coefficient of 62.8%). The values of similarity coefficients in relation to the two other reference countries, Great Britain and Sweden, were significantly lower and amounted to around 53%.

In the initial year, the relatively strong similarity of Poland to the Mediterranean model and weak resemblance to the Scandinavian, Anglo-Saxon and continental models of capitalism could be observed for the following indicators: institutions, effectiveness of anti-monopoly policy, domestic competition, competition, GCI, and the cost of procedures required to start a business. One hundred percent similarity to Spain also occurred in the case of business freedom, but for this variable, the same full similarity also took place in relation to Germany and Sweden (for all the abovementioned countries, the value of the indicator was 70.0).

At the end of the analyzed period, the areas in which Poland was highly similar to the Mediterranean model and at the same time relatively different from other Western European countries were as follows: business freedom, institutions, effectiveness of anti-monopoly policy, GCI competitiveness index, and cost of procedures required to start a business. As we can see, the areas of similarity between Poland and Spain were to a large extent the same in both years.

Figure 8 shows the polygons of Poland's similarity to the four reference countries. In part (a), the black dotted line representing Spain covers the largest area (it lies near the vertices) and is significantly different compared with the other lines. This confirms the greatest similarity of Poland to the Mediterranean model of capitalism and much smaller similarity to the other models in the initial year of the study. In part (b) of the figure, the black solid line increased the coverage of the polygon, indicating the relative rapprochement by Poland toward Germany in recent years, being the sign of the patchwork nature of capitalism.

3.9 Romania

Like the majority of the countries analyzed so far, the institutional architecture of Romania was the closest to the Mediterranean model of capitalism in both analyzed years. At the beginning of the period, the coefficient in relation to Spain amounted to 59.3% and was higher than that for other countries: Germany (46.5%), Sweden (45.4%), and the UK (40.7%). Analogous differences also occurred in the final year. The similarity coefficient toward Spain amounted to 70.9%, well above the corresponding figures for Germany (55.5%), Sweden (48.2%), and the UK (49.0%). The degree of similarity for all 24 variables is illustrated on the polygons shown in Figure 9.

In the initial year, the similarity coefficient for Romania relative to the Mediterranean model was at a level comparable to that recorded by Bulgaria and Croatia and at the same time significantly lower than that noted by the other eight CEE countries. This is due to the fact that Romania, Bulgaria, and Croatia joined the EU a few years later (the first two countries in 2007 and Croatia in 2013), so the institutional environment in these countries was characterized in the mid-2000s by a relatively small degree of similarity to the shaped models of capitalism in Western Europe. In the final year of the analysis, i.e. over 10 years after the largest

EU enlargement into CEE, the similarity coefficient for Romania (as well as for Bulgaria, although not for Croatia) in relation to that for Spain converged to a level comparable with that for many other CEE countries.

3.10 Slovakia

Around the EU accession, Slovakia revealed institutional architecture in the area of product market competition comparable to that prevailing in three Western European models of capitalism: Mediterranean, continental, and Scandinavian. Despite the highest resemblance toward Spain (67.2%), the analogous figures in relation to Germany and Sweden are at comparable levels (65.9% and 65.2%, respectively). Hence, it is difficult to recognize (based on 24 macroeconomic variables adopted in the study) to what model of capitalism the Slovak economy converged, which supports the view on the patchwork nature of capitalism. Figure 10 shows polygons that compare Slovakia with four reference countries in the initial and final years.

At the end of the period, the situation regarding the reference country significantly crystallized. According to the newest available data, Slovakia is the closest to the Mediterranean model of capitalism represented by Spain. The corresponding similarity coefficient was 67.6%. The similarity coefficients in relation to other countries ranged from 50% to 56%.

The resemblance to Spain has been confirmed by correlation analysis. The correlation coefficient between Slovakia and Spain for changes in 22 indicators amounted to 0.6614 and was statistically significant at the 1% significance level. Correlation coefficients against Germany and the UK were statistically insignificant, while negative correlation was recorded toward Sweden.

3.11 Slovenia

Slovenia shows the greatest resemblance to the Mediterranean model of capitalism. Especially in the initial year, i.e. around the country's accession to the EU, the similarity to Spain was clearly greater than the convergence toward other reference countries. In this year, the similarity coefficient to Spain was 68.5%, while in the case of the other Western European economies, it was much lower: Germany (43.9%), Sweden (48.2%), and the UK (45.2%). A strong similarity to Spain is visible in part (a) of Figure 11. The black dotted line covers an area much larger than the other lines, indicating the relatively high closeness between Slovenia and Spain in the area of product market competition. This result is difficult to consider as accidental. Slovenia is a country located in the Mediterranean region and borders Italy, a state that is also treated as a typical example of the Mediterranean model of capitalism. Such a path dependence, including the closeness of countries in historical, geographical, political, social, and economic terms, has made Slovenia the closest to the Mediterranean model.

The proximity to the Mediterranean model also occurred in the final year of the study, although the differences with other reference countries were not so large. The similarity coefficient against Spain was 60.3%, toward Germany and Sweden was 50%–52%, and in relation to the UK was 45%. Slovenia can be considered as the least similar to the liberal model of capitalism, which results, inter alia, from high state involvement in the economy of this country.

As we can see, EU membership shaped the path dependence and brought Slovenia closer to other EU countries in terms of the institutional environment in the area of product market competition.

4 Conclusions

The analysis carried out in the study allows to draw the following conclusions.
1. In the area of product market competition, almost all CEE countries were the most similar to the Mediterranean model of capitalism represented by Spain.
2. The exception is Estonia, whose institutional architecture in terms of product market competition was more similar to that of the Anglo-Saxon and Scandinavian models.
3. CEE countries showed a relatively stable path dependence – their similarity to the Mediterranean

model took place in both the initial year of the analysis (around the largest EU enlargement into the CEE region) and the final year (i.e. for the latest available data).

4. It can be assumed that a large resemblance to Spain results from a similar level of development. In terms of GDP per capita, the CEE countries achieve similar outcomes like Spain, which is the poorest among the four reference countries included in the study.

5. The analysis of individual variables shows that the degree of similarity to the 'ideal–typical' capitalist models was very differentiated in terms of single indicators (similarity coefficients for individual variables exhibit a large variance). This can be seen as a confirmation of the observation that the adoption of any Western European models of capitalism was not an intended economic and political goal.

6. The variety of results for the individual indicators is also a proof that the model of capitalism prevailing in CEE in the area of product market competition may be called a patchwork capitalism.

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