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Development of states and forms of capitalism: An empirical examination of their relationship

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Given the current economic crisis, we find this time of economic analysis to be both timely, and useful in determining which economic “style” is most supportive countries’ development in global capitalism. The goal of this paper is to determine which form of capitalism is most supportive the country’s development. The hypothesis that is raised in this paper is “The countries with the Liberal Market Economics system are more developed than Coordinated Market economics system countries”. This paper uses Hall and Soskice’s (2001) theoretical approach to varieties of capitalism to analyze countries’ competitiveness according to the World Economic Forum (WEF) and International Institute For Development Management (IMD) competitiveness indices. We use Knell and Srholec’s (2005) introduced methodology to calculate the index of coordination, which determines a country’s type of capitalism. The index consists of 12 variables, which later are divided into 4 groups according to the factor analysis results. Calculations confirmed the main differences, indicated in the literature, between two forms of capitalism at opposite extremes: Liberal Market Economies (LME) and Coordinated Market Economies (CME). Moreover, we discovered that CME is more supportive according to the human development rankings.

JEL Classifications: F12, P11, P21.

Keywords: Varieties of capitalism, economic development, human development, sustainable growth

Introduction

Countries’ development is a concept of high concern. It is well known that the higher the speed of economic growth, the more income goes to the state budget, the more possibilities to improve public sector, social insurance and etc. The society itself has more sources for further development. The problem here is how costly this economic growth is and how much benefit society actually get from it, does this development results in human development of this society.

Therefore we examined certain indicators of countries development (Gross Domestic product, Human development index, Legatum Prosperity index, Happy Planet index) in order to analyze the range of countries development measured by different indicators and how these various measures depends on the capitalism system. We are not going deeply to analyze the methodology of these indexes as we take them as given different indicators of country development.

Combining development indices and types of capitalism provides a valuable and original tool, which helps to identify different countries’ paths of economic development.

This article aims to examine the relation between a country's type of capitalism, which is determined by using Knell and Srholec's (2005) methodology, and its performance in four development rankings: Gross Domestic product (GDP), Human development index (HDI), Legatum Prosperity index (LPI), Happy Planet index (HPI).

To achieve this goal we must deal with two crucially important problems. Firstly, in the varieties of capitalism literature there are no clear guidelines about how to determine a country's type of capitalism. Additionally, Norkus (2008) noted that one country could have more than one type of capitalism, which may be distributed in various parts of the country. Therefore, it is very difficult to detect a pure type of capitalism.

Secondly, the criterion, which determine the type of capitalism may vary based on the discourse which is represented by the authors. For instance, Hall and Soskice (2001) distinguish between two ideal types of capitalism - Liberal Market Economy (LME) and Coordinated Market Economy (CME). These two types could be identified by examining five different sectors of a country's economy: 1) Financial system, 2) Industrial relations, 3) Employer and employees relations, 4) Educational system, and 5) Relations between companies.

Contrariwise, Amable (2004) argues that there is only one criterion which determines the country's type of capitalism - the coordination of market agents. If economic agents' actions are coordinated by the market, then the type of capitalism is LME; if actions are coordinated by the government - the CRE style appears.

What is more, it is very important to have in mind the country's institutional structure, because it defines the way that agents interact (North, 2003). This structure, argues Amable (2004) is critical to the type of capitalism. Keeping this in mind, five different types of capitalism could be identified: 1) The market-based model, 2) The social-democratic model, 3) The Continental European model, 4) The Mediterranean model and 5) The Asian model. Each of these models, according to Amable, is characterized by specific forms of institutions (Amable 2004).

The relation between Hall and Soskice (2001) and Amable (2004) models could be defined as follows: there are two opposites - LRE and CRE types of capitalism. According to the country's institutional structure, there may be more types of capitalism, but they are only modifications of these two types.

Therefore this paper has the following structure: the first section addresses the problem of the identifying different types of capitalism. We do so by applying Knell and Srholec's (2005) methodological approach. The second part is devoted to an analysis of countries development and capitalism system.

Identifying types of capitalism

Before explaining the detailed calculations and methodology applied in this paper, a few important assumptions must be mentioned. First, in applying this methodology, we assume that each country has its own institutional structure, which defines the kind of agent interactions and therefore has a critical impact on the type of capitalism. Secondly, per Amable's (2004) approach types of capitalism could be detected by examining the coordination index - a variable which defines levels of market and strategic coordination.

A first step in our analysis was to determine sample size, which was determined by the IMD countries competitiveness ranking (N=57). The World Bank does not provide the "Doing Business" project data for some countries (such as South Korea and Taiwan), therefore the sample was reduced to 51 countries. It includes the most developed world states according to GDP per capita, and represents different types of capitalism: Hong Kong, the United States (LMEs) and Norway, Slovenia (CREs). For comparative purposes, the sample also consists of less developed South American, and Central and Eastern European countries.

Our second step was gaining the necessary data for the calculations. According to Knell and Srholec (2005), 12 variables should be taken to find the coordination index. The description of all used indicators could be found in the Appendix.

Before calculations were made, a few additional tests were done in order to find information about the validity in employing factor analysis on the sample. Two statistical tests were ran on the data: KMO and Bartlett's test for sphericity. The results are presented in Table 1.

TABLE 1. RESULTS OF ADDITIONAL STATISTICAL TESTS

Title of the test	Value of the test
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.596
Bartlett's Test of Sphericity	0.001

The KMO test measures partial correlations among the sample variables. If the data is suitable for analysis, KMO value should be above 0.5. In this case we have a slightly higher number, which indicates that data is suitable for factor analysis. The second test is Bartlett's Test of Sphericity. It examines the null hypothesis that the correlation matrix is an identity matrix. The goal of Bartlett's test is to find a value less than the significance level of 0.05, therefore we claim that correlation matrix is not equal to an identity matrix and factor analysis is again indicated as appropriate. Lastly, factor analysis was ran. The results are seen in Table 2.

TABLE 2. RESULTS OF FACTOR ANALYSIS

Variables	Factor loadings			
	Social cohesion	Labour market regulation	Taxes policy	Business regulation
Size of government spending as percentage of GDP	0.824	0.238	-0.289	-0.064
Size of GINI index	0.751	0.141	0.099	0.418
Rigidity of working hours	-0.760	0.160	-0.023	0.270
Cost of firing worker	0.223	0.741	0.027	-0.024
Difficulty of firing workers	-0.358	0.581	0.007	-0.058
Difficulty of hiring workers	-0.330	0.473	-0.077	0.485
Rate of corporate income tax	0.144	0.146	0.810	0.273
Rate of personal income tax	-0.302	0.077	0.754	-0.249
Value of traded stocks as percentage of GDP	0.330	-0.455	0.436	-0.256
Number of procedures needed to register property	-0.013	0.046	-0.035	0.911
Number of procedures needed to start a business	0.153	0.616	0.175	0.242
Time needed to resolve insolvency problems	0.292	0.499	-0.485	0.290
Eigenvalues after rotation	2.43	2.07	1.78	1.66
% of the sum across eigenvalues after rotation	20.3	17.3	14.8	13.8

Rotation Method: Varimax with Kaiser Normalization

According to the results of our factor analysis, there are four groups of variables which have higher than 1 eigenvalue score. This means that the analysis of 4 groups, as shown in table No. 2, should be excluded. According to Knell and Srholec (2005), all groups should have the same number of variables, therefore for each group three variables were assigned. Some of the variables have scores with a negative value; this indicates a reverse dependence between variables.

All indices have the same calculation methodology: the index is the final sum of variables, multiplied by the factor loading score. Next, the index for each country was normalized

using (2) formula. Lastly, the index for each country was adjusted to the scale from -6 to 6, because this scale was used in the original Knell and Srholec (2005) research.

The general index calculation formula could be summarized as follows:

$$I_t = V_1 * F_1 + V_2 * F_2 + V_3 * F_3 \quad (1)$$

Where I_t is an unnormalized index meaning for “t” country, V_1 , V_2 and V_3 represent different variables, F_1 , F_2 and F_3 denote the factor loadings for variables.

Then index for country “t”, I_t was normalized using the following formula:

$$I_t^n = (I_t - I^m) / (\text{std}) \quad (2)$$

I_t^n denotes the normalized index value for country “t”, I^m is the mean of unnormalized index and (std) stands for the standard deviation of the sample. The difference ($I_t - I^m$) is not squared, because it results in a negative meaning of index. This is necessary to adjust index meaning to the scale from -6 to 6, as indicated in Knell and Srholec (2005) paper.

The first group - Social cohesion - refers to the variables, which indicate the way social cohesion is maintained in the country. The group contains of three variables which have the highest factor loadings: size of government spending as percentage of GDP, Gini index, and the rigidity of working hours index. The higher score means that a country uses an economic institutional coordination mechanism, while a smaller score suggests that social cohesion is achieved by market coordination. The index of social cohesion is shown in Figure 1.

FIGURE 1. INDEX OF SOCIAL COHESION

The results show that most of the sample countries tend to stimulate social cohesion through institutional coordination. What is more, the graph indicates that countries with higher GDP per capita at purchasing power parity use a liberal coordination mechanism.

In this case only three variables were used to compose the index of social cohesion therefore Figure 1 illustrates main tendencies. Most post-Soviet countries such as Estonia, Hungary, Lithuania, Poland, Romania, Slovakia and Bulgaria with smaller than average GDP per capita moved to the right part of the graph and became part of coordinated states group. We interpret this as a result of the current economic crisis, because at this time most of the countries broaden the variety of social aid.

We call the second group of factors Labour Market Regulation. This group consists of three variables which reflect the costs and difficulty of hiring and firing workers. One variable - costs of firing worker - was selected because of its highest factor loading whereas the other two variables - Difficulty of hiring worker and Difficulty of firing worker - were selected because they reflect the level of labour market coordination. The index of labour market coordination can be seen in Figure 2.

FIGURE 2. LABOUR MARKET COORDINATION

At first sight the graph looks chaotic, but upon inspection it shows that there are only minor changes in the sample countries' index of labour market regulation. Some countries show a clear labour market liberalization tendency (for instance Denmark, Lithuania, Italy), while other countries (for example China) indicate the opposite direction.

This tendency could also be interpreted as a consequence of the current economic crisis. For instance, Lithuania's government was forced to pass more liberal labour market regulation laws because of a high unemployment rate. On the other hand, we believe that the economic crisis was not the main reason for this trend and rather was an accelerator, since Knell and Srholec (2005) indicated that majority of developed economies maintain relatively low labour market regulation laws. This trend is the main difference between the index of social cohesion and an index of labour market regulation.

We call the third group of variables Tax policy. It refers to the variables which are related to the rate of taxes at personal and corporate levels. This group of variables was formed according to the rate of factor loadings and relevancy between variables. The index of Tax policy is plotted in Figure 3.

Figure 3 suggests that most of the developed sample countries could be assigned to the coordinated economies according to their tax policy. We believe this is a consequence of the sudden increase in the corporate profit tax. For instance, in Lithuania this tax was

raised by 5% in 2009. High taxes according to Hall and Soskice (2001) is a typical feature of CME style of capitalism.

FIGURE 3. TAX POLICY

FIGURE 4. BUSINESS REGULATION

This trend is especially clear among the less developed countries. As plotted in Figure 3, the majority of countries with smaller than average GDP per capita belong in the lower left corner. On the other hand, among developed countries there is a different trend: the majority of developed countries occupy the upper right corner. The graph indicates that countries with high GDPs per capita foster high taxes at corporate and personal levels.

The last group of variables is called Business regulation. It includes three variables, two of which refer to the number of procedures required to start a business and register property. The last variable in the group is a value of traded stocks as percentage of GDP. This group of variables also was formed according to factor loadings and relevancy between variables. The calculations are shown in the Figure 4.

Figure 4 shows that more developed countries (with higher GDP per capita) tend to maintain less strict business regulation laws than countries with smaller GDP per capita. Scandinavian countries, which in most cases are classified as CME type, can be seen in the upper left corner (Norkus, 2008). This might be the consequence of currently adopted market liberalization laws.

Less developed post-communist countries (such as Lithuania and Estonia) are in the lower right corner of the graph. This is relevant, because others, such as Knell and Srholec (2005) found that these countries were classified as liberal economies according to the Business regulation index. One way to explain this unexpected move could be the fall of stock prices and smaller turnover in local markets during the current economic crisis, since this variable has a significant influence in the final index meaning. If there is a rapid slowdown in the stock market, the country moves toward the CME type of capitalism.

Lastly, these four indexes were summed up to the final index of coordination, which we use as an indicator to determine the country's type of capitalism. The index of coordination is the average of all four indices normalized to scale from -10 to 10, as indicated in Figure 5.

FIGURE 5. THE OVERALL INDEX OF COORDINATION

The graph of coordination index reveals very similar tendencies as Knell and Srholec's (2005) findings. Scandinavian countries and central-southern European countries are using the institutional coordination mechanism, whereas Anglo-Saxon countries maintain the LME type of capitalism. This dualism confirms Amable's (2004) theory of various types of capitalisms across the Europe.

Most of the post-communist countries (except Slovenia) are below the GDP per capita average and are designated in the lower left corner. This could be interpreted as a sign of a different development path: Slovenia after Soviet occupation chose the CME type of capitalism, whereas Lithuania decided to foster the LME type of capitalism (Norkus, 2008). The distinction between these two (according to the type of capitalism) countries are seen not only in the graph of overall index of coordination, but also in examining various countries' economic and political life fields, such as relations between companies and educational systems.

Data from the overall index of coordination is going to be used to find the relation between competitiveness rankings and type of capitalism. It is very important to note that the correlation coefficient does not give any information about causality relations between variables. Therefore the question of if higher competitiveness ranking is determined by the type of capitalism (or vice versa) is left unanswered.

Type of capitalism and development

In this paper, two opposite types of capitalism (Hall and Soskice 2001) were distinguished. Liberal market economies (LME) are countries with a coordination index from 0 to -10 and Coordinated market economies (CRE) - countries with coordination index from 0 to +10. To examine the relation between types of capitalism and a country's development, four indices were used: the GDP, Human Development index, Legatum Prosperity index and Global Happiness index. These four indexes are the most known development indexes and they cover different sectors of society. The GDP as well known and most criticized development index actually measures the level of production and that was the main goal of this indicator following the Keynesian economics. Nevertheless the country's development is not only the growth of production but much more. The authors of Human development index (Human development report, 2010) argue that assessment of development of the country and country's progress should include the human development measure. The argument that underlies this statement is "the main wealth of nation are people". Therefore, human development index cover three main sectors of human life: income, education and health. Those three sectors are estimated by four indicators: gross national income per capita, mean years of schooling, expected years of schooling and life expectancy at birth. The 2010 HDI report presented the renewed version of HDI, which include inequality adjusted HDI. An inequality is not only the income distribution but also the ability to attain the education, health and other public goods.

The Legatum Prosperity index as HDI includes income and wellbeing measures by using 8 sub-indexes (economy, entrepreneurship and opportunity, governance, education, health, safety and security, personal freedom and social capital) equally weighted. The goal of authors of this index is different but both groups researchers stress that progress of nation - prosperity of nation - is not just money. The authors of Legatum Prosperity index reckon that prosperity is a combination of wealth and subjective wellbeing.

Therefore both above mentioned indexes attempted to produce wider measure of nation development than GDP growth suggests.

The ideas of the researchers those proposed alternative measures for countries development emboldened us to look at the relationship of capitalism system and Happy Planet index (introduced in 2006 by new economics foundation) as the offset to GDP indicator.

The Happy Planet index is a measure of the “ecological efficiency with which human achieve good lives” (Abdallah, Thompson, Michaelson, Marks, Steuer, 2009) and as authors of this measure suppose “it gives a better picture of true health and wealth of nations”. The HPI uses life satisfaction combined with life expectancy at birth and carbon footprint (as resources required by nation to support the lifestyles of its citizens). Scores range from 0 to 100 - high scores shows that all three targets embodied in the index - high life expectancy, high life satisfaction, and a low ecological footprint are achievable.

As we do not have the aim to analyze the methodology of measuring these indexes we will not go deeper in discussion about the pros and cons of those indexes we just use them as different indicators of country's development measure.

For analysis we used the country's place in the certain index rankings, not the meaning of competitiveness indexes. Therefore, the number of country's place in competitiveness rankings was multiplied by -1. Figure 6 illustrates GDP rankings and the overall index of coordination.

The analysis of GDP per capita and index of coordination does not show evidence of any emphatic relationship. Norway and Luxemburg are the leaders according to this indicator and depends to the group of CME countries. The four countries from LME group are very close followers of the leaders (Figure 6).

TABLE 3. LINEAR REGRESSION ANALYSIS BETWEEN WEF COMPETITIVENESS RANKINGS AND OVERALL COORDINATION INDEX

Model	Sum of Squares	df	Mean Square	F	Sig.	R2
Regression	887.796	1	887.796	4.474	0.040	0.085
Residual	9524.704	48	198.431			
Total	10412.500	49				

Dependent variable: WEF competitiveness rankings

FIGURE 6. GDP RANKING AND INDEX OF COORDINATION

Now we are going to apply the same methodology to examine the significance of relation between left indicators of nation development and index of coordination. This is plotted in Figure 7.

FIGURE 7. HDI RANKING AND INDEX OF COORDINATION

The analysis of HDI countries' index and index of coordination revealed a similar trend: both capitalism types are almost equally supportive in terms of human development partners. The Norway is a leader but Australia, USA and New Zealand are very close. It is important to state that distance between countries became less or even opposite when we include into analyses of development such sectors as health, education and people freedom.

TABLE 4. LINEAR REGRESSION ANALYSIS BETWEEN IMD COMPETITIVENESS RANKINGS AND OVERALL COORDINATION INDEX

Model	Sum of Squares	df	Mean Square	F	Sig.	R ²
Regression	1903.463	1	1903.463	10.738	0.02	0.183
Residual	8509.037	48	177.272			
Total	10412.500	49				

Dependent variable: IMD competitiveness rankings

The relationship between IAHD and capitalism system does not point any significant relationship. Nevertheless it is worth to notice that the inequality adjusted HDI changed position of countries and absolutely erased a fragile advantage of LME, which could be suggested in relation to the HDI.

Three countries from CME are on the top of range of LPI (Figure 8). All of them are Scandinavian countries and the fourth - Sweden is rather close. The lower prosperity reflects the four LME countries but in general overall distribution doesn't witness the clear advantage of any of them. Despite of rather weak relationship between coordination index and development indicators the countries' development indexes, which includes

more variable than only income or GDP, shows that countries with less GDP could reach higher development level than countries with very high GDP level.

FIGURE 8. LPI RANKING AND INDEX OF COORDINATION

The last analyzed indicator of country development HPI (Figure 9) rotated countries position. On the top of this rang are countries far from highest GDP levels. The index, which include satisfaction, life expectancy and ecological efficiency and doesn't include GDP or GNI proves that happiness is possible with less income and lower economic growth but more attention to people and their possibility to choose their own life and not harm the environment. In other words, the sustainable development is possible in the countries with lower economic growth and people happiness not necessary depends on high consumption level or amount of wealth. The second interesting result is that all top countries are from the CME countries.

FIGURE 9. HPI RANKING AND INDEX OF COORDINATION

Summarizing we could conclude that analyzing country's development with regard to more "soft" parameters (perception of people, health, education, security and equality, freedom of choices) the leaders countries have changed. The only clear relationship between HPI and capitalism system doesn't allow us to conclude that CME is more supportive than LME for country development. For such conclusion it is much worth to go deeper to our analyses and concentrate more on effectiveness of governance management instead on coordination level itself.

Conclusion

This paper's main purpose was to explore the relation between countries' development according to well-known indices and types of capitalism. Types of capitalism in this paper are represented by the overall index of coordination, which leads to the distinction of two groups of countries - Liberal Market Economies (LME) and Coordinated Market Economies (CME). This terminology originates from the work of Hall and Soskice (2001) and distinguishes themselves in many ways, which are explained in Table 2.

The hypothesis of paper wasn't proved. The analysis revealed that both types of capitalism are almost equally supportive according to the four analyzed countries' development rankings and there is no statistically significant relation between a country's type of capitalism and its position in development rankings. However we found that CRE tend to be more supportive than LRE types for human development and especially it is truth for personal perception of well-being. We believe this tendency is determined by higher security feeling in CRE countries.

Lastly, we believe that it is worth to go deeper to our analyses and concentrate more on effectiveness of governance instead on coordination level itself in relationship with country's development, because it gives the unique opportunity to detect different countries' developmental economic paths.

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Appendix

EXPLANATION OF THE USED VARIABLES

	Variable	Source	Year	Description
1	Size of government spending as percentage of GDP	Heritage foundation	2009	The general government expenditure data include all levels of government such as federal, state, and local and is expressed as percentage of total country's GDP.
2	Size of Gini Index	WIDER (World Income Inequality Database)	2005-2009	This index measures the inequality of income distribution among country's citizens. The higher index meaning reflects the higher inequality level.
3	Rigidity of working hours	World Bank (The Doing Business Project)	2009	The rigidity of hours index has 5 components: (1) whether there are restrictions on night work; (2) whether there are restrictions on weekly holiday work; (3) whether the workweek can consist of 5.5 days; (4) whether the workweek can extend to 50 hours or more (including overtime) for 2 months a year to respond to a seasonal increase in production; and (5) whether paid annual vacation is 21 working days or fewer.
4	Costs of firing workers	World Bank (The Doing Business Project)	2009	This indicator measures the cost of advance notice requirements, severance payments and penalties due when terminating a redundant worker, expressed in weeks of salary.
5	Difficulty of firing workers	World Bank (The Doing Business Project)	2009	The difficulty of firing workers index has 8 components: (1) whether redundancy is disallowed as a basis for terminating workers; (2) whether the employer needs to notify a third party (such as a government agency) to terminate 1 redundant worker; (3) whether the employer needs to notify a third party to terminate a group of 9 redundant workers; (4) whether the employer needs approval from a third party to terminate 1 redundant worker; (5) whether the employer needs approval from a third party to terminate a group of 9 redundant workers; (6) whether the law requires the employer to reassign or retrain a worker before making the worker redundant; (7) whether priority rules apply for redundancies; and (8) whether priority rules apply for reemployment.
6	Difficulty of hiring workers	World Bank (The Doing Business Project)	2009	The difficulty of hiring index measures (1) whether fixed-term contracts are prohibited for permanent tasks; (2) the maximum cumulative duration of fixed term contracts; and (3) the ratio of the minimum wage for a trainee or first-time employee to the average value added per worker.
7	Rate of corporate income tax	The World Bank database	2009	Highest marginal tax rate (corporate rate) is the highest rate shown on the schedule of tax rates applied to the taxable income of corporations.
8	Rate of personal income tax	The World Bank database	2009	Highest marginal tax rate (individual rate) is the highest rate shown on the schedule of tax rates applied to the taxable income of individuals.

EXPLANATION OF THE USED VARIABLES

	Variable	Source	Year	Description
9	Time needed to resolve insolvency problems	World Bank (The Doing Business Project)	2009	Time (in years) to resolve insolvency problems captures the amount of time needed to complete the procedures estimated by the insolvency lawyers.
10	Number of procedures needed to register property	World Bank (The Doing Business Project)	2009	Number of procedures needed to transfer the property rights from buyer to seller. All procedures that are legally or in practice required for registering property are recorded, even if they may be avoided in exceptional cases. It is assumed that the buyer follows the fastest legal option available and used by the majority of property owners
11	Number of procedures needed to start a business	World Bank (The Doing Business Project)	2009	The number of procedures, that are officially required for an entrepreneur to start an industrial or commercial business including all necessary verifications and permits from authorized institutions.
12	Value of traded stocks as percentage of GDP	The World Bank database	2009	Stocks traded refers to the total value of shares traded during the period. This indicator complements the market capitalization ratio by showing whether market size is matched by trading.
13	GDP per capita at Purchasing Power Parity (PPP) in current U.S. dollars	International Monetary Fund	2009	GDP per person employed is gross domestic product (GDP) divided by total employment in the economy. Purchasing power parity (PPP) GDP is GDP converted to 1990 constant international dollars using PPP rates. An international dollar has the same purchasing power over GDP that a U.S. dollar has in the United States.