The Effect of the Model-Shaping Forms of Government Intervention in the Economy on the Economic Growth

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This paper argues that the comparative assessment of the market liberalism-dirigisme in different economies should be done based on some specific forms of the government regulation, which are called the model-shaping forms of government intervention in the economy. For its measurement a composite indicator, called the Index of Leftness (Rightness) of Economy, is introduced. *IL(R)E* is calculated for 62 countries as a weighted average of six sub-indices. Then, *IL(R)E* (both the Index in general and each of its sub-indices) is used to identify the dependence of economic growth rates on governments' model-shaping interference in the economy. Cross-country regression analysis shows that an increase in model-shaping government intervention in the economy (indicated by *IL(R)E*'s change towards one) has a negative impact on economic growth, but different forms of that intervention (measured by individual sub-indices) have different impact. Besides, there is a rather profound difference between the countries with GDP per capita less and more than 30 thousand International dollars. In the second group of countries the impact is less significant. In conclusion the authors hypothesize that the process of moving the economy to the right has a more positive impact on the economic growth than its static (unchanging) proximity to the right pole.

Keywords: model-shaping forms of government intervention, index of leftness (rightness) of economy, economic growth

1. Introduction

The state (or government) intervention in the economy usually is described as the aggregate of all actions carried out to regulate the economy for certain social and economic goals. Intervention can be direct or indirect, formal or informal. In this study, only direct formal interventions are considered.

The theories analyzing the socio-economic goals and consequences of state intervention in the economy consist of two large groups. The main idea of the neoclassical and neoliberal economic theories (which constitute the first group) is that to achieve rapid and effective development of the economy, a country must rely mostly

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on the market self-regulation mechanisms (first of all, on the freedom of pricing and competition), and limit the government intervention to the lowest possible level. The main function of the state is to guarantee market freedoms. The main idea of the second group of theories is that to prevent (or mitigate) the inevitable negative consequences of a self-regulating market economy the government, on the contrary, must actively intervene in the economy and regulate it using all available tools of economic policy. Otherwise, market failures, generated by unfair competition, asymmetric information, negative externalities influence of external (non-economic) events and processes, may become destructive. The state should take over the production of products and services that are important for public needs though not profitable enough. It should ensure an efficient distribution of resources and a fair, as it supposes redistribution of national income.

Sometimes these two groups are qualified as private and public interest theories of regulation (Hertog, 2010). The accuracy of this classification is not indisputable, since both groups of theories claim that they ultimately pursue public interests, and the improvement of people's well-being is their ultimate goal. Simply, according to the first philosophy, the "shortest" path to achieve this goal is through self-regulation of the economy, and to the other – through more active government regulation. The right-wing political groups, and political parties at first, non-governmental organizations, think-tanks and even individuals ("the rightists") are those who bear the first ideology, while "the leftists" – the second one. The permanent competition between these two philosophies (call them rightism and leftism) is one of the main driving forces of political-economic progress in modern world.

It is also due to this rivalry, that the degree and effectiveness of government intervention in the economy, its impact on the economic performance and its optimal level (threshold values) are constantly on the agenda of economic research, especially in recent decades. The empirical studies on these issues have also expanded as the statistical databases are improved and a more reliable cross-country analysis became available. The multidimensional approach to state intervention in the economy, including the development and application of composite indices, has turned increasingly popular. However, all this did not resolve but even intensified the debate about the theoretical aspects of government intervention in the economy, the methodological and empirical issues of its measurement, and its effective (optimal) thresholds. And since the threshold values of optimality differ from country to country and vary in time, these problems will be constanly relevant.

When considering the correlation between government intervention in the economy and economic growth, the initial problem is the definition of content and indicators of intervention. Its level is often denoted by the term "size of government" (e.g., Labonte, 2010). However, the indicators usually applied do not reflect the size of government in direct sense (such as the number of entities in public administration or the number

of their personnel, which would be quite logical). Instead, general indicators of government intervention in the economy are used (as, for example, the share of the state budget in GDP, or of government consumption in the budget).

As noted by Knowles and Garcez (2000), to assess the "size of the government", public expenditure indicators are most often used. But in many cases – Ram (1986), Alexander (1990), Kormendi and Meguire (1985), Evans (1997), etc. – only government spending is applied. Interestingly, in the last four studies, diverse results were obtained: in the first one, a positive correlation between government consumption and economic growth was detected, in the second – a negative correlation, in the third and fourth – no close correlation at all. As for Knowles and Garcez themselves, to measure the state intervention in the economy, they, along with the government consumption, take into account also the magnitude of state property and the degree of price regulation.

Along with the public expenditures and their components (government consumption, public investment and transfers), various indicators related to taxes are also used to measure the government intervention in the economy (Easterly and Rebelo, 1993; Kocherlakota and Yi, 1996; Folster and Henrekson, 1998; Garrett and Rhine, 2006; Odawara, 2010; Matteo, 2013). Barro and Sala-i-Martin (2004) use public expenditure on education and defense, the share of public investment in GDP as indicators of state intervention.

Berg and Henrekson (2011) distinguish two phases of research on the impact of government intervention in the economy on economic growth. At the early stage (1980–2000) studies were based on cross-country regression analysis, at the second stage (after 2000) – on panel data. In all the works reviewed by them (including Agell, Ohlsson and Thoursie, 2006; Afonso and Furceri, 2008; Bergh and Karlsson, 2010; etc.) one or several indicators of government revenues and expenditures are used to assess the level of intervention.

In the last 20 years the government intervention in the economy is interpreted wider, and various sets of indicators are used for its measurement. Thomas and Wang (1996) calculate two composite indices – to estimate openness and macroeconomic stability, and to measure government expenditures. The first index consists of seven indicators including freedom of trade, inflation, real interest rates, agricultural protectionism. The second index is calculated using the shares in GDP of public-sector investment, total government expenditure, fixed capital formation, subsidies and government expenditures on education and health.

Loayza, Oviedo and Serven (2010) analyze the impact of government intervention in the economy on economic growth and macroeconomic volatility using the composite index calculated based on registration of enterprises, fiscal burden, labor regulations, trade barriers, financial regulation, enforcement of contracts and bankruptcy procedures. According to their study, the increase in the regulatory burden slows

down economic growth and increases volatility, but a better institutional environment "softens" these negative impacts.

To measure the size of government, Afonso and Jalles (2011) use government consumption expenditures as a percentage of total consumption, transfers and subsidies as a percentage of GDP, the underlying tax system (proxied by top marginal tax rates) and the number of government enterprises. Along with these, they also make use of total government expenditures, government consumption and total government debt. Gwortney, Lawson and Hall (2016) for the same purpose apply the general government consumption spending as a percentage of total consumption, transfers and subsidies as a share of GDP, government investment as a share of total investment and top marginal tax rates. Since their final purpose is measurement of the overall level of economic freedom in different countries, they also employ sets of indicators reflecting the state of the legal system and property rights, monetary regulation, foreign trade freedom, regulation of credit market and labor market.

Some studies, such as the World Bank's *Doing Business*, the World Economic Forum's *The Global Competitiveness Report*, the Heritage Foundation's (jointly with The Wall Street Journal) *Index of Economic Freedom* and a number of other researches on various aspects of government regulation of the economy, should be put together in a separate group. These are primary fundamental comparative studies in this field.

Some actual results of these studies have been used in this research as a statistical base.

2. Material and Methods

Contemporary economic theory has developed numerous classifications of forms of government interference in the economy. According to one of the most noticeable versions, economic forms of regulation, usually allocated in a separate group,[1] in turn, are divided into two groups: structural regulation and conduct regulation. The first group includes restrictions on entering and leaving the market, licensing rules, etc. The second group includes norms that govern the market behaviour of economic actors (producers and consumers), such as price control, quality standards and other similar tools of regulation (Kay and Vickers, 1990). These and other classifications of forms of government interference in the economy are comprehensively analyzed by Hertog (2010).

Every classification of government-regulation-of-economy forms pursues certain cognitive and practical goals. For a comparative assessment of the market liberalism in different economies, focus should be made on some of specific forms of the government regulation. These are the forms that distinguish the economic models

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[1] Some authors distinguish them from the social regulation (that is regulation, pursuing direct social goals) which focuses on environmental protection, equality in employment, safe working conditions, consumer protection, etc. (see, for example, Viscusi, Vernon and Harrington, 2005).

(economic systems) of different countries. This set of forms of state intervention in the economy can be logically called model-shaping or system-shaping.

The fact is that not all forms of state intervention give the economy characteristics of liberalism, or, conversely, of dirigisme. Some forms (for example, financial interventions to control inflation, measures to legalize the informal economy, or restrictions on child labor) are neutral from this point of view. Unquestionably, monetary stability is one of the most important conditions for successful business, and its maintenance is an essential function of the government. Nevertheless, government interventions in the financial market to adjust the exchange rates, do not make the economy more liberal or more administrative, and therefore do not apply to model-shaping forms. The inflation rate itself also is not an indicator of liberalism, or dirigisme of the economy. It is not correct to claim that since the inflation in country "A" exceeds its level in country "B", then the economy of country "A" is more liberal (or more administrative) than the economy of country "B".

The model-shaping forms of government intervention in the economy include the ratio of the state and private sectors of the economy, the scale of the national income redistribution (the level of taxes, the share of the government expenditures in GDP), price control and some others. Measurement and evaluation of these types of intervention is the only possible way to classify economies by the criterion of liberalism – dirigisme.

All model-shaping forms of state intervention in the economy (with no exception) are bipolar. It means that both the reduction (mitigation) and the increase (tightening) of interventions of this type have its own logics or justification. For example, both objectives pursued by the regulation of foreign trade that, in fact, mutually exclude one another – the freedom of imports and domestic market protection – have a right to exist. They are like two values with the constant sum, i.e. an increase of one implies a decrease of another. It is fundamentally impossible to increase freedom of imports and reinforce market protection for the same goods and services (or for the country as a whole) simultaneously. Every country has its own specific priority for a given time: in one case it may be freedom of import, in the other – protection of the domestic market. However, the choice between these two points is not a "either this or that" type choice, but is the choice of a certain combination of two purposes with accent on a priority goal.

This approach is fundamentally different from that used in contemporary cross-country studies on the business conditions assessment or economic freedoms evaluation. These studies assess the economy only from one pole, which is declared "good", while the other one is considered a priori "bad".

For example, obviously, the easier it is for the employer to dismiss his employee, the better are the business conditions. And it is believed that this is, accordingly, better for the country that by providing such conditions gets a higher rating. However, the simplicity of dismissal at the same time means weakness (the absence on the extreme

point) of social security of workers by this parameter (which, by the way, is one of the most important social guarantees). If the favorable conditions for business are on one side of the scale, then the social protection of employees is on its other side. In fact, in almost all countries both of them (some "portion" of ease of dismissal and some "portion" of social protection of workers) are present. Simply (or maybe complicatedly), in some countries the prevailing feature of the economic environment is the first one, while in others – the second one, depending on what their current priorities are.

Based on above-mentioned methodological assumptions, the Institute of Economics of the Azerbaijan National Academy of Sciences has developed and annually publishes since 2014 a composite indicator, called the Index of Leftness (Rightness) of Economy – *IL(R)E*. The purpose of the study is to assess the level of liberalism (dirigisme) of the economy in various countries of the world. For any particular country the *IL(R)E* indicates that its economy is lefter (more administrative) relative to any other country's (countries') economy, and righter (more liberal) than other's (others') economy. The Index also measures the degree of leftness-rightness of the economy showing how far lefter (or righter) the economy of country "A" is relative to the economy of country "B".

IL(R)E is calculated as a weighted average of six sub-indices, which in turn are estimated based on several indicators. The sub-indices are: *Public Finance Sub-Index*, *Price Regulation Sub-Index*, *Foreign Trade Sub-Index*, *Licensing Sub-Index*, *Employment Regulation Sub-Index*, and *Minimum Wage Sub-Index*.

IL(R)E and its all sub-indices change in 0–1 interval. Zero indicates the extreme rightness of economy (absence of the government intervention), one – its extreme leftness (total government regulation). The indicators were brought into this interval by the formula (Vi–Vmin) / (Vmax–Vmin), and in some cases subtracted from 1.

For some forms of the government intervention in economy (i.e. for some sub-indices) an absolute rightness, of course, is possible, but in general, a national economy can't take absolute right or left points. So all countries' *IL(R)Es* are at a certain distance from 0 to the left and from 1 to the right.

The lowest possible value for each of indices that sub-indices are based on, is taken as *Vmin*, and their highest possible value – as the *Vmax*.

Public Finance Sub-Index expresses the level of income redistribution through taxes, and is calculated as a simple average of two indices – *Budget Expenditures Index* and *Business Tax Burden Index*. The former is calculated through indexing of the share of budget expenditures in GDP. IMF's *World Economic Outlook Database* is used as source for this information. The latter is counted through indexing of the total taxes paid in a given year by a modeled company as share of its profit. Data is retrieved from the World Bank's *Doing Business* report.

If there weren't resource exporters among the examined countries, the share of budget expenditures in GDP would albeit indirectly, but still adequately describe

aggregate tax burden of businesses and citizens. In case oil and gas revenues transfers make up a significant portion of budget funds, there is need to take into account tax burden indicators separately.

Some research institutions calculate tax burden on the basis of top tax rates on individual and corporate income. But tax payments on top rates both by citizens and companies are not typical for most countries. This is why tax payments of a hypothetical company are accepted as indicators to calculate the Business Tax Burden Index. Theoretically, *Public Finance Sub-Index* must also reflect the redistribution of national income via individual income tax, but some countries apply proportional and others progressive tax system, and it would be a mistake to make them single measure. For both indices *Vmin = 0, a Vmax = 100*.

Price Regulation Sub-Index signifies the level of freedom of pricing (the right wing), and at the same time, the level of government interference in the price formation (the left wing). Approaching of *PR Sub-Index* of a country to 0 means that pricing is getting there more liberal, and in opposite, approaching to 1 means that government regulation of prices becomes more stringent. *PR Sub-Index* is calculated as a simple average of *Price Freedom Index* and *Monetary Freedom Index*. The former is estimated based on Fraser Institute's (Canada) *Economic Freedom of the World* report for 2011 (following years data on freedom of companies in pricing was not developed as a separate set); the latter – based on data presented in *2014 Index of Economic Freedom* report by the Heritage Foundation and The Wall Street Journal.

For *Price Freedom Index* – *Vmin = 0, Vmax = 10*, and for *Monetary Freedom Index* – *Vmin = 0, Vmax = 100*. Since in the statistical bases used in calculation of both indices, higher scores express less government intervention, final values of *PR Sub-Index* are obtained by subtracting from 1.

Foreign Trade Sub-Index measures the freedom of foreign trade (the right side) and the rigidity of foreign trade regulations that in most cases are related to protection of domestic market (the left side). If *FT Sub-Index* of a country goes down to 0, it means that freedom of this countries' companies to trade internationally is getting higher; if government regulations of foreign trade are becoming stricter then *FT Sub-Index* approaches to 1.

The concept relies on three principles. First, the foreign trade freedom should be measured by the freedom of imports, not exports. Second, as a rule, the higher the freedom of imports, the weaker the domestic market protection, but stricter regulations do not necessarily mean better protection. Third, for countries where natural resource exports constitute a significant part of the economy, foreign trade freedom can't be measured through the absolute volume of export-import operations or their relative values (e.g. the exports and imports to GDP ratios).

FT Sub-Index is calculated as an average of three indices – *Foreign Trade Freedom*, *Economic Value of Imports*, and *Trade Freedom*. *Foreign Trade Freedom Index* is

calculated based on Freedom to Trade Internationally ratings by the Fraser Institute (*Economic Freedom of the World 2014*). *Economic Value of Imports Index* is calculated based on Domestic Market Access scores by World Economic Forum's the *Global Enabling Trade Report 2014*), and *Trade Freedom Index* is calculated based on the indices of the same name from the *2015 Economic Freedom Index* jointly presented by the Heritage Foundation and The Wall Street Journal.

For *Foreign Trade Freedom Index – Vmin = 0, Vmax = 10*, for *Economic Value of Imports Index – Vmin = 1, Vmax = 7*, and for *Trade Freedom Index – Vmin = 0, Vmax = 100*. In the statistical bases used in calculation higher scores express less government intervention, and therefore final values of *FT Sub-Index* are obtained by subtracting from 1.

Licensing Sub-Index. The evaluation of the leftness-rightness of an economy upon the ease or difficulty of licensing requires consideration of four parameters: a) number of economic activities obligatory to licensing, b) variety of licensed activities, c) validity time of licenses, d) licensing rules. The more favorable these parameters are for businesses (i.e. less number, narrower list, longer term and simpler rules), the righter is an economy. However, sufficiently accurate inter-country comparisons on any of these parameters are unobtainable.

Consequently, *Licensing Sub-Index* calculations lean on the World Bank's methodology and are done using indicators of time and cost that the hypothetical company spends to obtain necessary licenses and permits for a construction (*Doing Business 2015: Dealing with Construction Permits*). *Licensing Sub-Index* is a simple average of two indices calculated by using two respective series of data. The World Bank's third indicator (number of procedures) is not considered as far as it distorts the overall picture of simplicity (complexity) of licensing.

For *Licensing Time Index – Vmin = 0, Vmax = 1000*, and for *Licensing Cost Index – Vmin = 0, Vmax = 100*.

Employment Regulation Sub-Index measures to what extent a government intervenes in the relationship between employer and employee, and regulates the labor process. Unlike some conventional social programs, this interference directly aims social protection purposes. As a rule, the reinforcement of direct social protection of employee costs the limitation of employer freedom.

ER Sub-Index is calculated based on two indices – *Rigidity of Employment* and *Redundancy Cost*. The former, in turn, is the average of 3 indicators: *difficulty (ease) of hiring, rigidity (flexibility) of working hours* and *difficulty (simplicity) of redundancy*. Redundancy Cost is a sum of advance notice cost and severance payments. Considering the higher importance of the Rigidity of Employment Index, it is weighted as 0.75, and Redundancy Cost Index, accordingly, as 0.25. The statistical database of World Economic Forum 2015 is used in calculations.

When evaluating business environment, the research institutions usually rank the countries "from good to bad, that is, from the countries with more favorable

environment for business to those that complicate business activities with tough regulations. Classification of economies on the basis of leftness-rightness does not assume "bad or good countries; this approach just indicates that there are countries with righter or lefter economy. The higher priority for the first ones is the freedom of companies, and for the second ones – the social protection of workers.

For both indices – *Vmin = 0, Vmax = 100*.

Minimum Wage Sub-Index is the indexed version of share of legal minimum wage in GDP per capita (both with correction for PPP). The level of minimum wage directly affects the leftness-rightness of economy. Its increase, as of some other indicators, enhances both the leftness of economy and the degree of its social orientation.

The economies where the minimum wage level is regulated neither by law nor collective agreements are located on the absolute right (zero) point. The countries where its level is regulated only by collective agreements, but not by low are conditionally placed on 0.050 point, and the economies where it is regulated by government, but for a limited number of employees are located on 0.080 point.

Statistical data on annual minimum wage by countries is retrieved from the *Wage Indicator* and *Wikipedia*. GDP per capita indicators are extracted from the *World Bank's database*. The minimum wages in national currencies are converted to US dollars using official exchange rates available at World Bank's database.

It is accepted that *Vmin = 0, Vmax = 100*.

The higher weight is given to *Public Finance Sub-Index*.

$$IL(R)E_i = 0.30 \times PF_i + 0.14 \times PR_i + 0.14 \times FT_i + 0.14 \times L_i + 0.14 \times ER_i + 0.14 \times MW_i \quad (1)$$

For the purpose mentioned above cross-country regression analysis was conducted for 61 countries[1] on the following equality:

$$Growth_i = \beta_0 + \beta_1 \times IL(R)E_i + \beta_2 \times X_i + \beta_3 \times K_i + u_i \qquad (2)$$

where, $Growth_i$ is the economic growth rate in country i in the medium term; $IL(R)E_i$ is Index of Leftness (Rightness) of Economy for country i; X_i are other macroeconomic factors affecting economic growth (control variables) for country i; K_i is factor of convergence for country i (GDP per capita adjusted for PPP at the beginning of the analyzed period); $\beta_0, \beta_1, \beta_2$ and β_3 are coefficients; u_i is white noice for country i.

The analysis is performed both on the cumulative growth index and on the average growth rate for the analyzed period. Since the research on *IL(R)E* has started relatively recently and the results cover only the last two years, estimates are made only for the medium-term period.

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[1] Macedonia was not considered since its data on investments for the relevant period was unavailable.

One of the main methodological assumptions is that in most countries of the world, the level of liberalism (dirigisme) of the economy is relatively stable. Radical changes in the degree of model-shaping government intervention in the economy are not typical not only for short-term, but even medium-term time frames. Such changes can be distinctive only for periods of profound systemic transformations.

For example, after the collapse of the Soviet Union and the "socialist camp" in the early 1990s, Eastern European countries and new states that restored their national independence have carried out fundamental reforms on the transition from the command-administrative system to the market economy. And their economies *synchronously and in a relatively short period of time* (in fact, for several years) significantly "moved" to the right. Although such a broad liberalization of the economy (or strengthening its dirigisme) is not typical for the normal (non-extreme) course of economic processes, reforms carried out in the country can cause quite serious changes in the leftness-rightness of its economy even in a short period of time (for example, during a year). Empirical research confirms this judgment. Recalculations to test the changes in the country *IL(R)Es* in 2014–2015, conducted on the same statistical databases with bringing the results to a single measurement, show that in almost all these countries certain changes in the level of state intervention in the economy occurred, although in general there are not changes that could be qualified as radical.

With a same assumption (that in most countries the level economic liberalism is relatively stable) and using a similar regression equality, the impact of the *IL(R)E* subindices on the economic growth was also tested. As expected, volatility by subindices is higher than by the composite index, but for an initial assessment of the overall picture, this analysis can be considered sufficient.

In order to account the impact on economic growth of investments, which are among the main drivers of economic development in the medium term, the average for period share of investments in GDP was used. Quantitative and qualitative characteristics of human resources, or technological innovations, despite all their importance as growth determinants, are not considered in the five-year analysis, since they are more inert and undergo serious changes only in the long-term period. The main assumption on inflation is that, up to a certain level, it stimulates, and on exceeding this level, on the contrary, restrains economic growth. Therefore inflation is attributed to the "external" factors of economic growth (the square of inflation rate is also considered). Along with this, the inflation volatility (in this case – standard deviation) as one of the indicators of macroeconomic instability is taken into account.

The convergence factor is based on the hypothesis that in low-income countries GDP is growing faster than in high-income countries, and in this sense, some convergence in the countries' development level occurs. In other words, it is assumed that the rate of economic growth in the country is inversely proportional to the level of economic development. Therefore per capita GDP adjusted for PPP in each country at

the beginning of the analyzed period (2010 indicator) is used as a convergence factor. The statistically significant negative value of the coefficient calculated for this variable indicates a tendency of convergence in the countries' economic development level.

Considering that in countries with different level of economic development, the same degree of government intervention in the economy can influence economic growth differently (both its direction and scale), the analyzed 61 countries are divided into two groups – countries with GDP per capita above and below 30 thousand International dollars, and, in addition to the general analysis, an assessment was made for each group separately.

3. Results and Discussion

The results obtained in the latest study are presented in Table 1 and on the Scale designed based on that Table. The Table may be interpreted both from top to down and from bottom to up. In the first approach economies are ranked from right to left, in the second – from left to right (Table 1). Higher place of a country in the Table means that its economy contains more rightness (self-regulation) and less leftness (governmental regulation) (also see Figure 1).

Table 1. Indices of Leftness (Rightness) of Economy (2015)

| Country	IL(R)E	Country	IL(R)E	Country	IL(R)E
Singapore	0.107	Luxembourg	0.270	Malta	0.322
UAE	0.160	United Kingdom	0.270	Germany	0.324
Georgia	0.163	Cyprus	0.271	Turkey	0.326
Switzerland	0.188	Sweden	0.272	Portugal	0.332
Denmark	0.190	Azerbaijan	0.273	Slovakia	0.334
Macedonia	0.214	Latvia	0.273	Tunisia	0.334
Kazakhstan	0.232	Montenegro	0.283	Croatia	0.335
Armenia	0.238	Finland	0.285	Spain	0.344
Canada	0.238	Albania	0.288	Slovenia	0.345
Ireland	0.241	Estonia	0.288	Poland	0.346
New Zealand	0.241	Hungary	0.298	Russia	0.354
Kyrgyzstan	0.243	Japan	0.298	Moldova	0.358
USA	0.245	Australia	0.300	Greece	0.362
South Africa	0.246	Thailand	0.301	China	0.368
Malaysia	0.251	Bosnia-Herz.	0.303	Brazil	0.382
Czech Republic	0.255	Mexico	0.311	Serbia	0.389
Lithuania	0.255	Egypt	0.314	India	0.394
Austria	0.256	Netherlands	0.317	Ukraine	0.399
Norway	0.265	Romania	0.317	Iran	0.412
Israel	0.267	Italy	0.319	France	0.416
Bulgaria	0.268	Indonesia	0.322		

Source: Authors' calculations.
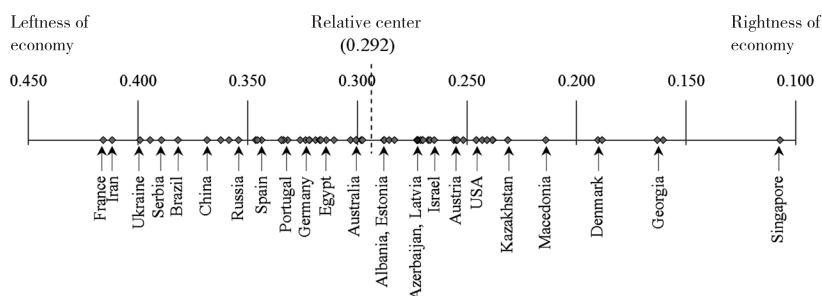
Figure 1. Index of Leftness (Rightness) of Economy (2015)

The rightest economy among the 62 is Singapore's (0.107), where the government intervention in the economy is at a minimum. Economies of the United Arab Emirates (0.160), Georgia (0.163), Switzerland (0,188) and Denmark (0.190) also belong to the right-wing. French economy is the leftest (0.416), followed by the Islamic Republic of Iran (0.412), Ukraine (0.399), India (0.394) and Serbia (0.389). In the ranking of 62 economies from right to left Azerbaijan (0.273) occupies 26th place and from left to right – 37th, and is located to the right from the relative center (0.292). It means that compared to the most of observed countries, Azerbaijan's economy is less exposed to government interference.

In this research *IL(R)E* is used as the main tool to identify the dependence of economic growth rates on the governments' model-shaping interference in the economy, as well as to assess the impact of right and left reforms on economic development.

An increase in model-shaping government intervention in the economy indicated by *IL(R)E*'s change towards one has a negative impact on economic growth (Table 2).

By general (with no grouping) calculations, an increase of *IL(R)E* (which corresponds with strengthening of model-shaping government intervention in the economy) by 0.100 points reduces the average economic growth rate by 0.71 percentage points. By the cumulative growth index, this decline is 3.52 percentage points. Both coefficients are statistically significant at the level of 0.05. By the Akaike information criterion (AIC), among the modifications of the model [1] presented in Table 2, modification 1.3 is more preferable, and its results are taken as a basis.

As for other results on this model, an increase in the share of investments in GDP by 1 percentage point increases the medium-term average growth rate by 0.245 percentage points. Up to a certain point, inflation supports economic growth: an increase in the average inflation rate by 1 percentage point per year is accompanied by an increase in the medium-term growth rate by 0.545 percentage points, but when inflation exceeds the 9.7% point, it starts to affect the economic growth negatively. The convergence factor is not considered in these calculations, because it is not statistically significant and deteriorates the model's quality.

Table 2. The Impact of Model-Shaping Government Intervention in the Economy on Economic Growth:
Results of Cross-Country Regression Analysis

Variables	Model modifications [1]					
	1.1	1.2	1.3	1.4	1.5	1.6
	Regressand (Average growth rate)			Regressand (Cumulative growth index)		
IL(R)E	−9.477	−8.108	−7.080	−40.994	−35.211	−44.172
Probability	*0.005*	*0.008*	0.013	*0.012*	0.022	*0.015*
Investments	0.227	0.240	0.245	1.358	1.389	1.374
Probability	*0.000*	*0.000*	0.000	*0.000*	0.000	*0.000*
Inflation	0.148	0.497	0.545	2.670	2.939	–
Probability	*0.053*	*0.000*	0.000	*0.000*	0.000	–
Inflation^2	–	−0.025	−0.028	−0.140	−0.154	–
Probability	–	*0.001*	0.000	*0.000*	0.000	–
Inflation Volatility	−0.320	−0.188	−0.179	−0.938	−0.887	−1.017
Probability	*0.001*	*0.049*	0.059	*0.067*	0.082	*0.009*
Convergence factor	−0.00003	−0.00001	–	−0.00006	–	−0.00016
Probability	*0.030*	*0.302*	–	*0.281*	–	*0.010*
C – constant	0.550	−1.314	−2.155	−9.347	−14.078	−0.865
Probability	*0.697*	*0.341*	0.056	*0.210*	0.022	*0.911*
Dummy variable	3.009	3.159	3.132	17.256	17.102	16.440
Probability	*0.000*	*0.000*	0.000	*0.000*	0.000	*0.000*
R^2	0.674	0.739	0.734	0.747	0.742	0.660
F stat.	18.579	21.461	24.818	22.388	25.833	21.388
Probability (F stat.)	0.000	0.000	0.000	0.000	0.000	0.000
Durbin-Watson stat.	2.124	2.085	2.153	2.058	2.137	1.975
AIC – Akaike information criterion	3.490	3.299	3.286	6.666	6.655	6.895
Number of observations	61	61	61	61	61	61

Source: Authors' calculations.

Statically significant influence of the convergence factor is observed in modifications 1.1 and 1.6 of the model [1]. According to the results obtained on these equalities, the increase in GDP per capita for every 10 thousand international dollars reduces the average economic growth rate by 0.3 percentage points, and the cumulative growth rate for the reviewed period by 1.6 percentage points.

Thus, strengthening the model-shaping government interference in the economy that shifts the economy to the left pole slows down the growth rate, and, conversely, the shift of the economy to the right pole accelerates growth. Theoretically it may be interpreted as follows: after the minimal prerequisites for the normal functioning of enterprises in the market regime (security, property rights, contract enforcement mechanisms, physical infrastructure, etc.) have already been created, each additional burden of intervention increases the direct and alternative costs of companies (especially of private companies), diminishes their efficiency and, thereby, hinders the development of the economy (reduces the rate of economic growth).

In this regard, public finance and the foreign trade regulation are somewhat

different from other forms of model-shaping government intervention in the economy. Since some portion of government expenditure is used specifically for the formation of above-mentioned prerequisites, it can be assumed that if the framework of those prerequisites is properly defined (that is the financed projects are necessary and sufficient at this stage) and allocated resources have been used effectively, it creates additional conditions for private sector growth.

However, normally the main source of government investment are taxes, and therefore an increase in these costs, firstly, is usually achieved through additional tax burden, secondly, can create a "crowding out effect".[1] And these two factors have a negative impact on the economic growth rate.

The main source of government's social expenditures also is taxes, and their rise, similarly, presumes the financial costs increase for business. In addition, an increase in social spending can weaken the motivation of the population for economic activity – of those who finance these expenses with paid taxes, and of those who are the main recipients of government's social programs.

Change in foreign trade regulations affects the economic growth differently depending on the country's economic development level and some other factors. In developed countries, higher freedom of foreign trade opens up additional opportunities for economic growth, whereas in less developed countries it can lead to the seizure of the market by foreign goods and services, bankruptcy of local companies due to their relatively low competitiveness and, ultimately, to lower growth. The latter is more typical for countries committed to a stable exchange rate, since a smooth devaluation of the national currency in the long run can partially compensate the low competitiveness of the economy and increase the country's investment attractiveness.

As it was noted above, to identify the peculiarities in the correlation between the degree of government intervention in the economy and economic growth in countries with different development, the calculations were also made for country groups. There were 35 countries in the group of countries with GDP per capita up to 30 thousand International dollars, and 26 countries in the second group (Table 3).

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[1] If public expenditures (budget deficit) are financed through borrowing, interest rates are rising, private investment become more expensive and, as a consequence, is declining. This dependence was called the "crowding out effect" (Carlson and Spencer, 1975; Friedman, 1978; Dumas, 1985; Afonso and Aubyn, 2008; Başar, Polat and Oltulular, 2011). In economies with the natural resources extraction and export dominance, the "crowding effect" does not disappear, although "works" differently, since it becomes possible to finance the non-resource budget deficit by resource incomes, not just borrowing. For example, in Azerbaijan the bulk of the non-oil budget deficit is covered by transfers from the State Oil Fund. Therefore the impact is indirect: these transfers become the main channel for the money issuing to circulation and the Central Bank's refinancing channel partially lose its efficacy. As a result, the commercial banks' potential to acquire cheaper financial resources is narrowing, and they are forced to use more expensive resources (deposits and savings) that leads to a rise in the private investment cost and "crowd them out".

Table 3. The Impact of Model-Shaping Government Intervention in the Economy on Economic Growth: Differentiation in Terms of GDP Per Capita

Variables	Group of countries with GDP p/c up to 30 thou. Int. dollars	Group of countries with GDP p/c more than 30 thou. Int. dollars
	Regressand (Average growth rate)	
IL(R)E	−10.634	−0.396
Probability	*0.010*	*0.853*
Investments	0.233	0.094
Probability	*0.000*	*0.003*
Inflation	0.299	–
Probability	*0.021*	–
Inflation^2	−0.017	–
Probability	*0.024*	–
Inflation Volatility	–	–
Probability	–	–
C	−0.056	–
Probability	0.966	–
Dummy variable 1	−2.124	−2.319
Probability	*0.007*	*0.000*
Dummy variable 2	–	−0.961
Probability	–	*0.032*
Dummy variable 3	–	2.348
Probability	–	*0.000*
R^2	0.837	0.828
F stat.	29.892	19.266
Probability (F stat.)	0.000	0.000
Durbin-Watson stat.	1.947	2.044
AIC	3.081	2.623
Number of observations	*35*	*26*

Source: Authors' calculations.

According to the primary hypothesis, increased government intervention in the economy has a negative impact on economic growth. However, in this respect, there is a rather profound difference between the two groups of countries under consideration. In countries with GDP per capita less than 30 thousand International dollars, the increase of *IL(R)E* by 0.100 points slows down the average annual economic growth rate by 1.06 percentage points, and in countries over 30 thousand International dollars – by 0.04 percentage points. This is obvious that the degree of influence revealed for the second group is not statistically significant.

The reasons for this difference deserve to be a subject for separate research, but it may well be assumed that it is determined, first of all, by the divergence of public institutions quality. Rich countries, which tend to have better public institutions, implement state regulation more effectively, and therefore are less exposed to the negative impact of increased government intervention in the economy. This judgment is in tune with the results of studies showing that high-quality public institutions

support the economic growth (Acemoglu and Robinson, 2005; Farla, 2013; Lal, 1998; Loayza, Oviedo and Serven, 2010).

Differences between country groups are observed for other model variables as well. In low-income countries economic growth responds to changes in the share of investment in GDP more actively than in high-income countries. In the first country group, an increase in the share of investments in GDP by 1 percentage point is accompanied by an increase in the average rate of economic growth by 0.23 percentage points, while in the second group only by 0.094 percentage points.

The results on inflation and its volatility also vary. In the first group of countries a rise in inflation by 1 percentage point leads to the average growth rate increase by 0.299 percentage points. This influence remains in force up to 8.8 percent, after which inflation starts to restrain economic growth. In the second group of countries the impact of inflation and its volatility on economic growth is not observed. Since their indicators are not statistically significant and deteriorate the model's quality, they've been excluded from the final version.

In countries where GDP per capita is less than 30 thousand International dollars 84% of changes in the average growth rate for the reviewed period, and 83% of them in the second group of countries can be explained by changes in the analyzed variables.

As it can be seen from Table 4, the strengthening of government intervention in the economy in almost all its model-shaping forms expressed by presented sub-indices (except the *Minimum Wage Sub-Index*) has a negative impact on the medium-term economic growth rates: the coefficients of all subindices are of negative value. With that, not all coefficients are statistically significant. The Public Finance, The Foreign Trade and The Employment Regulation sub-indices are statistically significant at the levels of 0.01, 0.10 and 0.01, respectively; that is, are suitable for analysis at a 90–99% confidence level.

Table 4. The Impact of Model-Shaping Government Intervention in the Economy on Economic Growth: Evaluation by Subindices

Variables	Results for sub-indices by the model [1] Regressand (Average growth rate)				
Public Finance Sub-Index	–6.216				
Probability	*0.001*				
Price Regulation Sub-Index		–1.122			
Probability		*0.480*			
Foreign Trade Sub-Index			–5.635		
Probability			*0.065*		
Licensing Sub-Index				–4.110	
Probability				*0.136*	
Employment Regulation Sub-Index					–3.782
Probability					*0.008*
Minimum Wage Sub-Index						1.274

	Results for sub-indices by the model [1]					
Variables	Regressand (Average growth rate)					
Probability						*0.214*
Investments	0.233	0.255	0.260	0.253	0.248	0.256
Probability	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Inflation	0.504	0.529	0.597	0.518	0.576	0.527
Probability	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Inflation^2	–0.028	–0.028	–0.024	–0.028	–0.030	–0.028
Probability	*0.000*	*0.000*	*0.001*	*0.000*	*0.000*	*0.000*
Inflation Volatility	–0.182	–0.189	–0.291	–0.197	–0.189	–0.224
Probability	*0.042*	*0.059*	*0.009*	*0.045*	*0.044*	*0.027*
C – constant	–1.376	–4.003	–3.126	–3.873	–3.351	–4.724
Probability	*0.193*	*0.000*	*0.002*	*0.000*	*0.000*	*0.000*
Dummy Variable	3.062	3.393	3.388	3.331	3.115	3.464
Probability	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
R^2	0.762	0.704	0.720	0.714	0.738	0.710
F stat.	28.847	21.447	23.147	22.446	25.341	22.048
Probability (F stat.)	0.000	0.000	0.000	0.000	0.000	0.000
Durbin-Watson stat.	1.973	2.142	2.088	2.157	1.951	2.049
AIC – Akaike Information Criterion	3.174	3.391	3.337	3.359	3.271	3.372
Number of observations	*61*	*61*	*61*	*61*	*61*	*61*

Source: Authors' calculations.

The rise in the *Public Finance Sub-Index* by 0,100 points is accompanied by a decrease in the average rate of economic growth by 0.62 percentage points. For the *Foreign Trade Sub-Index*, this figure is 0.56, and for the *Employment Regulation Sub-Index* – 0.38 percentage points.

4. Conclusions

As a tool for multivariate analysis, *IL(R)E* allows to measure the impact of changes in the model-shaping government intervention in the economy on macroeconomic performance and economic development in more detail – both for individual countries and for their groups.

According to the results obtained by the regression analysis conducted for 61 countries on a limited statistical data, an increase of the model-shaping government intervention in the economy has a negative impact on the economic growth rate. In low-income countries this negative impact is stronger than in countries where GDP per capita exceeds 30 thousand International dollars. This difference derives from a number of factors, and first of all, the public institutions development level and government regulation's quality.

Primary testing suggests that reduction of government intervention in the economy (at least by its model-shaping forms), or in other words, shift of the economy to the right, can be considered a more appropriate strategy to accelerate economic growth.

It is true that this process can not continue indefinitely and is discrete, since at times when the economy for any reason (including a decline in natural resources prices at international market, in case if the natural resources extraction and export dominates in the economy) is in crisis, the overall enlargement of government intervention in the economy usually becomes inevitable.

However, firstly, the developed countries, whose economy during the crisis (in particular, the 2008–2010 crisis) moves to the left (i.e., moves away from the right pole) to a lesser extent, as a rule, better, with fewer losses, overcome the crisis (Müzəffərli, 2014). Secondly, there are reasons to formulate a hypothesis that the process of moving the economy to the right has a more positive impact on the economic growth than its static (unchanging) proximity to the right pole. For empirical confirmation of this hypothesis, there is a need to conduct *IL(R)E* studies on panel data.

It is widely accepted that the rate of economic growth, for all its importance, is not the exhaustive indicator for socio-economic development assessment. Growth statistics do not reflect the degree of economic growth inclusiveness, i.e. what contribution to its achievement is made by different social groups and to what extent each of them can benefit from its results. Besides, along with basic value indicators (national wealth and income, its distribution and redistribution), it is important to account also the non-value indicators of national development. In future studies of model-forming forms of government intervention in the economy, an analysis of such indicators will obviously be very relevant. In the forthcoming studies of the model-shaping forms of government intervention in the economy an analysis of such indicators will obviously be quite relevant.

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