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INSTITUTIONAL MEASUREMENT ISSUES: AN INTEGRATED APPROACH

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Abstract. In recent years social scientists have focused their attention on institutions and their impact on the economic performance of countries. Institutions are considered as one of the major determinants of economic growth and sustainable development. The better the institutional performance at a separately taken country, the better the performance of organizations-market players and the faster sustainable development processes. In order to investigate the role of institutions and their impact to economic growth and development researchers employ a wide range of institutional indicators and use different methods. The aim of the paper is to investigate approaches to the measurement of institutions and to discuss issues related to institutional measurement.

Keywords: institutions, measurement, sustainable development.

Jel classification: O1, O10, O43, O44

1. Introduction. What are institutions?

The most important and fundamental question is why some countries prosper and others are poor. The literature on economic growth provides a various determinants that are crucial for economic growth and development: technology, capital, human capital. Institutions as explanations for economic development emerged in the 1970's with the North Douglas work on institutions. To go to the further discussions about institutions and their impact on economic growth and development we have to define, what institutions are. One can find several different definitions of institutions in the scientific literature. Despite the fact that scientists are in broad agreement that institutions are important to economic growth and development, there is still no consensus of common understanding of institutions. The main disagreement concerning the definition of institutions is weather the institutions and organizations are synonymous. According North (1994) „institutions are the humanly devised constraints that structure human interaction. They are made up of formal constraints (e.g., rules, laws, constitutions), informal constraints (e.g., norms of behavior, conventions, self-imposed codes of conduct), and their enforcement characteristics". Together they define the incentive structure of societies and specifically economies. North (1994) maintains that there is the interaction between institutions and organizations: „if institutions are the rules of game, organizations are the players". This definition of institutions indicates that institutions have broader meaning than organizations and refer to abstract variable. If understand institutions like organizations, this term refer to the concrete object as University, Court, Ministry and etc. Hodgson (2006) has the different opinion and he argues that organizations are a special kind of institution, but with additional features. According Hodgson (2006) they involve "criteria to establish their boundaries and to distinguish their members from nonmembers, principles of sovereignty concerning who is in charge and chains of command delineating responsibilities within the organization". Tvaronavičienė *et al.* (2009) suggest that institutions could be considered in broad and narrow sense, id est., institutions embrace organizations in broad sense and in narrow sense North's (1994) approach can be adopted, i.e. „if institutions are the rules of game, organizations are the players". Lopez-Claros *et al.* (2006) determine institutions as system of rules that shapes incentives and defines the way economic agents interact in an economy. This definition is similar to that North (1994) proposed. Brunt (2007) defines institutions as "any generally accepted procedure that governs the process of interaction between members of society:" Voigt (2009) propose definition of institutions as "commonly known rules used to structure recurrent interaction situations that are endowed with sanctioning mechanism". Schotter (1981) emphasizes the importance of social institutions and defined it as "regularity in social behavior that is agreed to by all members of society, specifies behavior in recurrent situations, and is either self-policed or policed by some external authority". The Oxford Dictionaries provide more than one definition of the institutions, e.g. institutions are defined as: "a society or organization founded for a religious, educational, social, or similar purpose", "an established official organization having an important role in the life of a country, such as a bank, church, or legislature" and "an established law, practice, or custom" (Oxford Dictionaries 2011).

The significant contribution to understanding and defining of the institutions makes Oliver Williamsom. Williamson (2000) distinguished four levels of institutions: The highest level of the institutional hierarchy provides the basic foundations for institutions. It encompasses informal institutions, customs, traditions, ethics and social norms, religion and some aspects of language and cognition. The basic institutional environment or according author the formal rules of game depends to level two and includes: constitutions, political systems and basic human rights; property rights and their allocation; laws, courts and related institutions to enforce political, human rights and property rights, basic financial institutions, and the government's power to tax; laws and institutions governing migration, trade and foreign investment rules; and the political, legal and economic mechanisms that facilitate changes in the basic institutional environment. Institutions of governance or "the play of the game" - the governance arrangements through which economic relationships will be governed are attributed to the level three, i.e. the basic structural features of the institutions through which individuals' trade goods, services and labor; the structure of contractual/transactional relations; corporate governance, and financial institutions that support private investment and credit. The level four defines the day-to-day operation (prices, wages, costs, quantities bought and sold). In summary: level 1 encompass informal rules, level 2- formal rules, level 3 – institutional arrangement, level 4 – resource allocation and employment (level of the market). Remember, North (1994) distinguished formal and informal institutions.

The review of scientific literature developed, that the basic concepts of institutions can be identified: first, the understanding of institutions as organizations, which influence political decisions and systems by establishing sets of rules and second, that institutions can be defined as North (1994) proposed - "rules of game". It should be underlined, that understanding institutions as "rules of the game" is the most widely accepted by scholars.

2. Institutions and economic performance

Despite the fact, that there is no unanimous opinion between scholars about the definitions of institutions, scientists pay their attention to institutional environment trying to understand the role of institutions and their impact on economic performance. Researchers employ a wide range of institutional indicators and use different methods to investigate the role of institutions and their impact to economic growth and development. Scientists investigate what sort of institutions matter for economic development, whether the set of institutions that matter across all countries exist, and how institutions effect economic development. Scientists emphasize the importance of institutions to economic growth and development, e.g. Helpman (2004) highlight the role of institutions and their impact to economic development and underline the importance of human capital and technological innovation to accelerating productivity rates. Helm (1998) consider that properly functioning institutions are essential for sustainable development in the realization of the social, economic, and environmental aims set by the society. Author point out the importance of institutions, including property rights protection, legal systems, customs, and political systems to economic growth. Lopez-Claros *et al.* (2006) emphasize the importance of the institutional framework on competitiveness and growth. Lopez-Claros *et al.* (2006) underline a central role of institutions in the ways societies distribute the benefits and their impact on investment decisions and on the organization of production. In order to substantiate the importance of institutions and their impact on economic development, researchers have applied various methods and employ different indicators. Cavalcanti and Novo (2005) investigated the relationship between institutions and economic development. Authors used the level of output per worker as measure of economic development. For their research authors employ quantile regression methods. The proxy of institutions was based on two indexes: first index measures the risk of confiscation and expropriation of private investments, and government repudiation of contracts. The second index based on the openness of a country to international trade. Authors employ as institutional variable the average of these two indexes. Cavalcanti and Novo (2005) findings approved that institutions are key in explaining differences in output per worker across countries. Nelson (2008) investigated the role of institutions in the relationship with technological advance. Nelson claims that in order to understand the role of institutions and institutional change in economic growth, one need to see how these variables are connected to technological change. The understanding of how institutions and institutional change relate to technological innovation helps to analyze the economic growth in broader terms. Gwartney *et.al.* (2006) analyze how institutional quality influences growth, impact of institutions on productivity of investment and indicate that countries with higher quality institutions achieved more growth per unit and attract higher level of investment.

Furthermore, it is important what sort of institutions matter. North (1990) distinguished two types of institutions: political and economic institutions. He states that the political and economic institutions are the underlying determinant of economic performance as institutions form the incentive structure of a society. According North (2003) the economic institutions derive from political institutions. Polities define and enforce the economic rules. The similar notion we can find in Acemoglu and Robinson (2008) work. They argue that the main determinant of economic development is differences in economic institutions and to solve the problem of development will entail reforming these institutions. Acemoglu and Robinson (2008) underline the cohesion between political and economic institutions. Economic institutions are outcome of political process and depend on the nature of political institutions and the distribution of political power in society. That's why it is difficult to reform these institutions. They note the importance of understanding the factors that lead a society into a political equilibrium, which is crucial for good economic institutions. Authors distinguished three institutional characteristics: economic institutions, political power, and political institutions. Economic institutions shape the incentives of key economic actors in society. In particular, they influence investments in physical and human capital and technology and the organization of production. Political institutions determine the constraints on the incentives of the key actors in the political sphere. Because not all individuals' and groups prefer the same type of economic institutions, the conflict of interest occurs and the political power of the different groups will be the deciding factor. As the examples of political institutions Acemoglu and Robinson (2008) present the form of government, and the extent of constraints on politicians and political elites. Acemoglu and Robinson (2008) conclude that understanding of the determinants of political equilibrium can really design interventions that make poor societies prosperous. Although most scientists consider the institutional environment in developing countries, however some researchers examined the institutional environment of developed and emerging countries. Eicher and Leukert (2006) investigated weather exists the set of institutions that matter across all countries, not only in developing countries, but also in developed nations too. Authors employ the set of instruments that is based on the hierarchy of institutions hypotheses. The basic argument is that the constitutional institutions/political rules set the stage for the economic institutions. Authors divide institutions into two dimensions: constitutional/ political institutions to serve as instruments and economic institutions that are thought to exert direct effects on output. Eicher and Leukert (2006) confirm that a common set of economically important institutions exist among advanced and developing nations. Other scientists, e.g. Tridico (2007) analyze emerging and transition economies that experienced fast growth in order to understand the determinants that might cause the economic growth. He classified countries according their socio-economic models and institutional variables. Tridico (2007) maintains that countries, which experienced an increase in non-income dimensions of human developments as a consequence of appropriate institutions, will have sustained economic growth. Non-income dimensions of human development are associated with institutional improvements and competitiveness. In other words, human development, together with appropriate institutions and competitiveness of markets, underlined by export ability and human capital determine economic growth. When institutions give the right incentives to economic agents a positive interaction with other socio-economic variables will foster economic growth. Tridico (2007) suggests that human development instead of GDP is a better measure of well-being and countries that experienced an increase in human development levels will have sustained economic growth. However, other scientists, e.g. Bresser-Pereira (2008) take a different view about impact of institutions on economic growth. With reference to most of the econometric tests Bresser-Pereira (2008) claims that there is no correlations between institutional variables and the increase in per capita income or the improvement of standards of living. Bresser-Pereira (2008) agrees about the importance of institutional reform to development, but he claims that institutions do not explain why some countries start growing faster than before. As the key institution in economic growth Bresser-Pereira (2008) sees national development strategies and determines it "as a cluster of laws, policies, agreements, understandings, and shared beliefs – i.e., of formal and informal institutions – that create investment opportunities and orient competitive economic actions undertaken on one hand by business entrepreneurs, workers, and the professional middle-class, and, on the other, of politicians and state bureaucrats".

3. The measurement of institutions

One of the most important issues is how to measure institutions. How to measure the degree to which institutions effect economic development? Do the differences in institutions cause the differences in economic outcome between countries? It is not easy to find the answers to these questions. The task is complicated as it is not easy to quantify institutions. Institutions are rather qualitative measure than quantitative. Scholars use a wide range of institutional indicators for their research purposes. The mostly used and well-known measures of political and economical institutions are described in appendix 1. Below author describe the various measures of institutions used by researchers.

Decker and Lim (2008) to measure institutional quality employ composite indicator, which range from –2,5 to 2,5 (higher value indicate stronger institutions) provided by Kaufmann et al. (2007) Indicators measure six dimensions of governance: Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. Since the composite governance measure was available for shorter period, authors substitute institutional quality measure with alternative measure compiled from the International Country Risk Guide (Political Risk Services 2003). The political risk rating provides a means of assessing the political stability of the countries covered by ICRG on a comparable basis. Political risk components comprise: Socioeconomic Conditions, Investment Profile, Internal Conflict, External Conflict, Corruption, and Military in Politics, Religious Tensions, Law and Order, Ethnic Tensions, Democratic Accountability, Bureaucracy Quality. Decker and Lim (2008) main finding is that political-economic institutions exert a significant impact on the level of income. Political -economic institutions are significant determinant of economic growth. Cavallo, A.F and Cavallo E.A. (2010) employ measures of democracy and institutional quality as political variable. This variable is the aggregate indicator of democracy from the PolityIV database (polity2) (Marshall and Jaggers, 2002). This index ranges from -10 to +10 (where -10 is high autocracy and +10 is high democracy) and is constructed as the difference between the sub-indexes for democracy (democ2) and autocracy (autoc2). It provides a qualitative measure of democratic institutions, defined by the existence of a high level of political participation, civil liberties and institutionalized constraints on the exercise of power by the executive. Henisz (2000) provides an alternate measure of political institutions. The Political Constraint Index (POLCON) measures the possibility of a change in policy given the structure of a country's political institutions (number of veto points) and the Preferences of the political actors in these institutions (partisan alignment and homogeneity of preferences within each branch). The scale ranges from 0 to 1. There are two versions, PolconIII and PolconV, which are constructed in a similar way, but PolconV includes two additional veto points: the judiciary and sub-federal entities. In addition to those listed in the appendix 1, scientists proposed and other measures for institutional quality. Acemoglu et al. (2001) use mortality rates of colonial settlers as instrument for institutional quality in colonized areas. They argue that mortality rates affected the settlement patterns of Europeans and may have had a significant effect on institutional development. In places where the mortality rates were high, Europeans set up extractive institutions and they could not settle. In the places where they settled in the colonies (United States, Australia, New Zealand), Europeans set up institutions which enforced the rule of law and encouraged investment. Acemoglu et al. (2001) underline colonial experience as one of factors that effect institutions. The results of their analysis show that reducing expropriation risk would result a significant income per capita.

Glaeser et al. (2004) analyze the three sets of institutional variables: the first set is survey indicators of institutional quality from the International Country Risk Guide; the second set is an aggregated index of mostly survey assessments of government effectiveness collected by Kaufmann et al. (2003) and the third set, coming from the Polity IV data set collected by Marshall and Jaggers (2000). Glaeser et al. (2004) provide critical comments about those measures. Scientists claim that all three sets of indicators measure outcomes, but not permanent characteristics that were referred by North (1994). Moreover, all these measure are volatile and rise with per capita income. According Glaeser et al. (2004) these measures are by their very construction not constraints, and therefore unusable for discussions of how specific constraints on government that would guarantee the security of property rights. Although Polity IV data try to measure the political environment, but according Glaeser et al. (2004) it is rather outcome measure reflecting what happened in the last elections, than constrains. Authors' suggest that further research must focus on actual rules, rather than on conceptually ambiguous assessments of institutional outcomes. Knack (2002) remarked that the institutional indicators (e.g. IRCG and TI) very broadly measure government performance, but not process and it is difficult to infer policy implications from broad-brush indicators. According Knack (2002) attention should be paid on measure governmental processes, but not only performance; measures should be more specific. Voigt (2009) argue, that „measures of institutions should be precise, objective, and take into account de jure and de facto elements". Voigt (2009) states that institutional measures should refer to specific institutions and that most of measures, e.g. „rule of law"(see appendix 1) are too broad. Woodruff (2006) points out that it is important to pay attention to the methods used for measuring institutions. According Woodruff different methods measure something different. He noted that various measures of institutions are highly correlated, and it makes difficult to separate specific institutions that are important to economic growth. Acemoglu and Johnson (2005) made an attemption to unbundle a broad institutions and did a step toward the investigation which types of institutions matter more for economic outcomes. Authors tried to evaluate the importance of specific institutions as property rights institutions (institutions constraining government and elite expropriation) and contracting institutions (institution supporting private contracts) to economic outcomes. As a measure for property rights institutions authors employed constraint on the executive measure (Polity IV), assessment of protection against government expropriation (Political Risk Service) and assessment of private property protection (The Heritage Foundation). For contracting institutions three different measures have been used: index of legal formalism, index of procedural complexity and the number of procedures necessary to resolve a court case involving this same commercial debt. The results show that property rights institutions matter significantly to long-run economic growth. Nevertheless, authors claim that there are still unanswered question how exactly property rights institutions affect economic growth.

4. Conclusions

Author of this paper investigated approaches to the measurement of institutions and main issues related to institutional measurement. Attention has been focused on scientific discussion of institution definition and on measurement of institutions.

Despite the strand of scientific literature devoted to institutional performance issues and discusses the impact of institutions on economic growth and development, there is no general agreement how to perceive institution itself.

From surveying the scientific literature it is obvious that two basic definitions of institutions can be accentuated: first, the understanding of institutions as organizations and second, that institution can be defined as "rules of game". The majority of scientists define institutions as the "rules of game".

Researchers employ a wide range of institutional indicators and use different methods to investigate the role of institutions and their impact to economic growth and development. Scientists came to the agreement that institutions are essential for sustainable development and are the key factors explaining the different economic performance across countries.

Though, how to measure institutions is still complicated task as it is not easy to quantify institutions. Institutions are rather qualitative measure than quantitative. Scientists trying to build quantitative indicators based on qualitative judgments. However, a wide range of indicators proposed by various scientists received critical comments. It was emphasized that proposed measures of institutions are too broad, highly aggregated; various measures of institutions are highly correlated and et cetera. Therefore, future research should be concentrated on elaborating the measures of institutions.

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Appendix 1. Measures of institutions

Indicator	Description	Unit	Source
Index of Democracy	Based on five categories: electoral process and pluralism; civil liberties; the functioning of government; political participation; and political culture.	Scale 0 to 10.	Economist Intelligence Unit
Political Rights	Based on ten political questions grouped into three subcategories: Electoral Process (3 questions), Political Pluralism and Participation (4), and Functioning of Government (3). 194 countries since 1972	Rating of 1 through 7, with 1 representing the highest and 7 the lowest level	Freedom House
Civil Liberties	Based on 15 questions grouped into four subcategories: Freedom of Expression and Belief (4 questions), Associational and Organizational Rights (3), Rule of Law (4), and Personal Autonomy and Individual Rights (4). 194 countries (2010 year edition) since 1972 (151 countries).	Rating of 1 through 7, with 1 representing the highest and 7 the lowest level	Freedom House
Freedom House Index (FHI),	The average of the two indices: Political Rights and Civil Liberties	Status of Free, Partly Free, Not Free	Freedom House
Economic Freedom of the World (EFW)	Measure the degree of economic freedom in broad areas: Size of Government: Expenditures, Taxes, Enterprises; Legal Structure and Security of Property Rights; Access to Sound Money; Freedom to Trade Internationally; Regulation of Credit, Labor, Business. Incorporates 42 components; measure economic freedom in 141 nations. To measure the degree to which a nation's institutions and Policies support voluntary exchange, the protection of property rights, open markets, and minimal regulation of economic activity.	The ratings are based on a 0 to10 scale, with 10 being most free and 0 the least	Gwartney and Lawson (2003 and later). Fraser Institute
The Political Constraint Index (POLCON)	Measure of political constraints that estimate the feasibility of policy change. Covers 226 present and historical countries. First data for some of the variables are from 1800. Last data is up to 2007.	It is a 0–1 measure which takes into account the number of independent branches of government with veto power over policy, modified by the extent of party alignment across branches of government and the extent of preference heterogeneity within each legislative branch	Henisz, W. J. (2000)

End of Appendix 1

Indicator	Description	Unit	Source
Political Risk Index	Political risk comprising 12 components (and 15 subcomponents). 12 Components: Government Stability; Socioeconomic Conditions; Investment Profile; Internal Conflict; External Conflict; Corruption; Military in Politics; Religious Tensions; Law and Order; Ethnic Tensions; Democratic Accountability; Bureaucracy Quality. The aim of the political risk rating is to provide a means of assessing the political stability of the countries covered by ICRG on a comparable basis. This is done by assigning risk points to a preset group of factors, termed political risk components. 100 countries	The index is based on 100 points. The lower the risk point total, the higher the risk, and the higher the risk point total the lower the risk	International Country Risk Guide. The PRS Group
The Worldwide Governance indicators: Voice and Accountability; Political Stability and Absence of Violence/Terrorism; Government Effectiveness; Regulatory Quality; Rule of Law; Control of Corruption	Composite indicators; covering over 200 countries since 1996. The process by which governments are selected, monitored, and replaced; The capacity of the government to effectively formulate and implement sound policies; The respect of citizens and the state for the institutions that govern economic and social interactions among them	Unit from -2.5 to 2.5, with higher values corresponding to better governance. The data in percentile rank term, ranging from 0 (lowest rank) to 100 (highest rank)	Kaufmann, D.; Kraay, A.; Mastruzzi, M. (2007)
AUTOC Institutionalized Autocracy	Autocracies sharply restrict or suppress competitive political participation. Their chief executives are chosen in a regularized process of selection within the political elite, and once in office they exercise power with few institutional constraints.	Scale 0 to 10	Polity IV Project
DEMOC Institutionalized Democracy	Conceived as three essential, interdependent elements: the presence of institutions and procedures through which citizens can express effective preferences about alternative policies and leaders; the existence of institutionalized constraints on the exercise of power by the executive; the guarantee of civil liberties to all citizens in their daily lives and in acts of political participation.	Scale 0 to 10	Polity IV Project
Polity index	Combined score computed by subtracting AUTOC from DEMOC. Is a measure of the degree of democracy and autocracy. 163 countries over the period 1800-2009	The Polity scale ranges from −10, fully institutionalized autocracy, to +10, fully institutionalized democracy	Polity IV Project
Index of Economic freedom	Covers 10 freedoms in 183 countries since 1995: Business Freedom; Trade Freedom; Fiscal Freedom; Government Freedom; Monetary Freedom; Investment Freedom; Financial Freedom; Property Freedom; Freedom from Corruption; Labor Freedom	Scale from 0 to 100, where 100 represents the maximum freedom	The Heritage Foundation
The corruption perception index	Measures the degree to which public sector corruption is perceived to exist. Aggregate Indicator calculated using data from 13 sources by 10 independent institutions. 1995-2010. 178 countries.	It scores countries on a scale from 10 (very clean) to 0 (highly corrupt)	Transparency international