On Measurement of Institutions in Trade, Growth, and Investment Studies

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The present paper proposes a critical survey of literature about the approximation of institutional variables in empirical studies on economic growth, trade and investment. We also discuss econometric problems linked to institutional variables and propose a brief review of existing databases for institutional approximation.

1. Introduction[1]

Economic thought about the importance of institutions for economic life has existed for more than a hundred years. It was started by the work of Veblen [112][2] from the Old Institutional Economics School[3] and by studies of the German historical school. One of the most difficult and complex things in institutional analysis is the definition of institutions. As pointed out by Commons [21], it is broad and imprecise. New Institutional Economics, started from the famous study of Coase [18], tends to explain institutions in connection with a neoclassical theory. In the second part of the XXth century numerous studies have attempted to formulate definitions and understand the nature and role of institutions. The major contributions in this field belong to Coase, Williamson, North, Olson, and Greif[4]. However, the definition of institutions is still very broad. It extends from the abstract rules of the game [77, p. 361] to organizations for coordinating human behavior (e.g., [117, p. 38]).

Summarizing theoretical findings, Matthews [72] emphasizes the importance of institutions but highlights the difficulties in incorporating them into economic theory due to their complexity. «But institutions ARE important!»[78]. Olson [81] argues that a huge difference between poor and rich countries cannot be explained only by factor endowments, natural resources, density of population, access to technology or quality of human capital. According to Olson [81], a great number of the

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[2] Cited for example by Harrington and Ferguson [46]. Also, several modern studies state that the importance of institutions for economic life, and trade in particular, was already mentioned in [107, 76].

[3] The Old Institutional Economics was largely criticized for its anti-theoretical ground (e.g. [19, 72]).

[4] See, for example: [20, 114, 81, 77, 79, 80, 41, 42, 43].

differences between countries is due to differences in policies and institutions. Greif [42] emphasizes the importance of institutions for trade. Taking as example the Commercial Revolution of the XI–XIV centuries, he concludes that institutions rather than factors endowments determine the efficiency, the magnitude and the geographical distribution of trade flows. Mediterranean and European long-distance trade «re-emerged» due to institutional changes, not due to changes in endowments or technology. Finally, Anderson [6] by analyzing gravity equation results finds a «missing trade», namely a difference between actual and predicted trade flows. This difference could appear as a result of not including variables which measure institutional development, information availability, imperfect contract enforcement, insecurity and non-diversifiable risks.

The above examples show that a weakness or an absence of institutions raises transaction costs and impedes trade and economic development. Institutions make business environment more predictable and safer. They reduce uncertainty in the behavior of adverse side, and thus reduce transaction costs[5]. Following Coase [20], North [77] and Anderson [6], institutions constitute a part of the transaction costs. In empirical analysis, the presence of institutions is often criticized for its disconnection from the theory. This does not impede, however, the growth of empirical stu-dies with institutional variables.

Recently, institutions have been incorporated into empirical models of trade, economic growth and investment[6] in order to analyze the inter-relations between all these variables. Empirical studies generally provide strong evidence of institutional impact on economic performance. However, empirical work with institutions has several constraints. Due to their complexity, broad and sometimes abstract definition, it is difficult to measure institutions quantitatively. Moreover, every empirical study on institutions confronts at least two specific problems. The first one is the econometric problem. Several institutions are likely to have simultaneous impacts on the same factor [47]. Furthermore, such economic fundamentals as growth, trade and foreign investment are likely to be influenced by the same institution or a group of institutions, and at the same time influence these same institutions[7]. In practice, this creates estimation biases due to endogeneity and multicollinearity. The second problem is the absence of databases for the approximation of institutional variables. The existing databases mainly propose rough and subjective measures of institutions. Furthermore, the variables in question are often only available for short time periods or for a small number of countries. In the present paper we try to summarize how institutions are proxied in empirical studies, namely, which variables are used to get a quantitative measure of institutions. In addition, we propose a brief description of the existing databases that could be used for the approximation of institutions.

The structure of this paper is thus the following. In the second section we explain what we mean by institutions and which classifications of institutions exist. The next two sections propose the review of growth, trade and investment empiri-

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[5] North [79], sited by Greif, [42] notes that Institutions «determine ... costs and hence the profitability and feasibility of ... economic activity».

[6] Institutions have impact on many more factors than growth, trade, and FDI. We select these three as they are highly interrelated and likely to be influenced by the same institutions.

[7] See, for example, [29] for interactions between growth, trade, and institutions.

cal studies, incorporating institutional variables with the particular attention to the approximation of institutional variables. We group all empirical studies into two categories: studies working with domestic institutions (section 3) and studies analyzing the role of international and foreign institutions (section 4). Section 5 is devoted to problems in the econometric estimation of institutional variables. In section 6 we give a brief description of the existing databases. Section 7 concludes.

2. What are institutions: definitions and classifications

According to North [77], institutions are defined as «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». Thus, institutions are defined as formal and informal constraints that aim to structure a human behavior. On the contrary, Adams and Neal (1993) consider institutions as «sets of opportunities» rather than as a set of constraints[8]. Anderson [5] means by institutions «rules and procedures for enforcing the rules» where enforcement is a «rule-driven process operated by a third party with no direct interest in trade».

The World Bank [117] includes organizations in institutions and proposes the following definition of institutions and their functions. Institutions are «the rules and organizations, including informal norms that coordinate human behavior. They are essential for sustainable and equitable development. When they function well, they enable people to work with each other to plan the future for themselves, their families, and their larger communities. But when they are weak or unjust, the result is mistrust and uncertainty». The World Bank [117] distinguishes three institutional functions. Institutions pick up signals (information, feedback, and anticipation of future problems), balance interests (transparency, voice, forums of negotiations) and execute agreed-on decisions (commitment and enforcement mechanisms).

The United Nations Economic Commission for Europe (1998) determines the key institutional foundations as «an effective judicial and law enforcement system, the creation of a healthy commercial banking system, and a coherent policy for changing the structure of incentives so as to encourage entrepreneurship and fixed investment rather than rent-seeking and asset stripping»[9].

Economic literature also proposes several classifications of institutions. According to North, institutions are divided into informal and formal. Raiser [86, p. 10] makes a schema of interactions between formal and informal institutions in a society. The World Development Report 2003 [117] expands the classification on «formal vs. informal» by adding traditional informal institutions or social capital such as trust and religion, and modern formal institutions. In the last group the Report includes different types of organizations. The World Bank classification is reported in table 1.

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[8] Quoted in Raiser [86, p. 2].

[9] United Nations Economic Commission for Europe, Europe Economic Survey of 1998 (New York 1998) p.10, quoted by Jeffries [56, p. 19].

Table 1.

Institutions coordinating human behavior

Social capital	Institutions		
	Rules		Organizations
	Informal	Formal	
Trust	Rules	Easy to change	Government agencies
	Networks	Regulation	Firms
Shared values		Laws	Civil society organizations
	Norms	Difficult to change	Police
Religion	Traditions	Constitutions	Courts
Traditional, informal	←	→	Modern, formal

Source: [117, p. 38].

We should note that organizations are often considered as institutions. Harrington and Ferguson [46] criticize this approach pointing out that it is confusing to consider organizations as institutions. North [77] also distinguishes organizations from institutions. He defines institutions as the «rules of the game» and organizations as the «players». Matthews [72] achieves a compromise by concluding that only organizations «consisting of a set of institutions» can be considered as institutions[10]. We use in this paper this last definition.

Havrylyshyn and van Rooden [48] propose classifying market institutions by dividing them into (i) legislation for free economic activity, namely bankruptcy and contract law, including the rule of law and security of property rights, and (ii) political and civic freedoms, such as democratic process, freedom of assembly and speech, and equal treatment by political and judicial bodies. Economic liberalization, meaning elimination of price distortions, markets openness to competition, deregulation, and unification of exchange rate regimes, privatization and possibility of private activity, is considered by Havrylyshyn and van Rooden [48] as policy, but not institution. They argue that although institutions are important for economic growth in transition countries, policies have a much larger impact on economic growth. We would like to make here two remarks. First, policies (as defined by Havrylyshyn and van Rooden [48]) are highly influenced by institutions. Democratic society is more likely to support market-oriented policies. Such policies can be inefficient or difficult to apply without accompanying them with corresponding institutions. Second, policies themselves can be considered as institutions since they establish the «rules of the game». In contrast to Havrylyshyn and van Rooden [48], Anderson [5]) defines trade policy as a formal institution. Anderson distinguishes informal, i.e. non-State institutions, formal trade policy institutions, and institutions of government.

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[10] In addition, Matthews [72] summarizes four institutional concepts, determined as a set of rights and obligations, which are property rights, conventions, types of contract and authority.

The division into formal and informal[11] institutions is the most frequently used. An alternative approach is proposed by Roland [94]. He classifies institutions on slow- and fast-moving. The former encompasses all informal institutions, and part of the formal ones. These institutions are quite rigid to reforms. Fast-moving institutions can change during a short period of time but these institutions are influenced by the slow-moving ones. An example of fast-moving institutions is political institutions. Interaction between slow- and fast-moving institutions ensures institutional development.

We would like also to point out another type of institutional hierarchy and institutional interactions, namely the relation between domestic and international, and domestic and foreign institutions. Most empirical studies analyze domestic institutions, i.e. institutions created and operating in one country. In reality, domestic institutions are highly influenced by international relations, ranging from bilateral negotiations to the adoption of foreign institutions. By international institutions we mean institutions created with the participation of agents from different countries and aimed at regulating international activity. Foreign or external institutions were created without the participation of the «recipient» country. The recipient country may have the possibility of implementing foreign institutions partially or may be constrained to implement foreign institutions in their integrity without a possibility to change them. The country may also implement foreign institutions voluntary or to be forced to take them. In any case, the effectiveness of such «imported» institutions depends on the possibility to transplant foreign institutions. International and foreign institutions, through the impact on domestic institutions or directly, may influence domestic growth, volumes of trade and FDI inflows.

3. Measuring domestic institutions

Institutional impact on economic growth is much more developed in comparison with the studies on institutions-trade and institutions-investment relations. Hall and Jones [45], Acemoglu, Johnson and Robinson [1, 2, 3], Dollar and Kraay [28, 29], and Rodrik, Subramanian and Trebbi [93] are most quoted papers related to growth. A positive link between income per capita and institutional quality is highlighted by the World Bank World Development Reports [116, 117], the IMF World Economic Outlook [54], and the Heritage Foundation [52]. Zak [118] demonstrates a positive relation between government expenditures that enforce property rights and per capita income growth. Kaufmann and his co-authors not only show that the quality of governance is strongly correlated with economic growth [57], but also propose an excellent database of institutional indicators with a detailed description [58]. Some studies, however, find only a partial effect of institutions, as for example in [88], who conclude that a high degree of corruption has a negative impact on economic growth and investment, but only in developed countries.

The relation between institutions and trade or institutions and FDI is less tested empirically, probably due to the endogeneity problem. Institutions, together with trade or investment, are determinants of growth. In addition, institutions, trade, growth and FDI interact with each other. Saleh [101] summarizes different channels through which property rights institutions may affect investment. Grogan

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[11] «Informal» as in definition of North.

and Moers [44] emphasize the impact of institutions on economic growth and FDI. Keren and Ofer [59] conclude that «good» governance has a positive impact on the FDI flows, while corruption affects it negatively. Smarzynska Javorcik [106] finds that intellectual property rights protection has an impact on the decomposition of FDI. Next, Smarzynska Javorcik [106] proposes a brief literature review about the impact of intellectual property rights on FDI.

The work by Anderson and Marcoullier [7] is the most cited paper testing the impact of institutions on trade. The authors show a positive relationship between the volume of trade and contract enforcement. De Sousa and Disdier [27] find an impact of the legal framework on trade in transition economies. De Groot *et al.* [23, 24] analyze the impact of institutions on trade using a gravity model framework. Jansen and Nordes [55], also working with a gravity model, conclude that institutions have both direct and indirect impacts on trade flows.

Let us now look at how different types of institutions are approximated in empirical studies[12]. Havrylyshyn and van Rooden [48] propose a literature review of empirical growth studies incorporating institutional variables, mainly political risk and corruption. Here we expand a literature review by adding trade and investment studies. Furthermore, our survey covers a larger number of institutional variables. We discuss different possibilities of approximation, from more broad to more precise. Note that every approach has a trade-off. A broader measure of institutions may capture the effects produced by non-institutional factors. A precise qualitative measure risks to determine institutions only partially or inexactly[13], or to suffer from excessive subjectivity. In the second case, testing several closely-related institutional indicators within the same model could justify the (un)importance of a given institution.

In a very broad approximation, institutions can be considered as unobservable component and, hence, a part of residual. Otherwise, institutions can be treated as a part of the unobservable characteristics specific to each country. Usually, such characteristics are captured by fixed effects. Suppose for a moment that we estimate a model where all parameters, except institutions, are already included. Then, by introducing fixed effects we can capture institutional characteristics. If we consider, following Olson [81], that state borders constitute at the same time institutional borders, our country fixed effects may reflect the institutional environment in each country. However, not all institutions will be captured by country fixed effects. In

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[12] Taking into account a broad and contradictory definition of institutions, we expand our literature review also on studies incorporating variables which are likely to be institutional and not only those which explicitly call some variables «nstitutions». For example, we include variables which determine countries' policies (policy institutions), and we consider some international organizations as institutions. There is no agreement in the existing literature which factors should be considered as institutions. Policy institutions and international organizations are, probably, the most questionable ones. As it was already mentioned, some studies do not include these groups into institutions. Consideration of these factors as institutions is a view of the author of this paper and does not necessary represent the view of authors of the cited empirical studies.

[13] Kudina [64], in a literature review of empirical studies on the institutional impact on FDI, emphasizes the ambiguity of results. She explains the ambiguous effect of political stability on the volume of FDI by incorrect proxy for political stability: not all variables that measure political stability are able to measure the risk for investment.

the case of bilateral interactions (i.e., international trade) a pair of countries may have or establish institutions specific to this pair. Such institutions can be informal, like a code of conduct inherited from a common colonial history, or formal, like bilateral trade agreements. Below we will return to international agreements. The fixed effect approach or countries' dummies do not clarify whether the effect of a particular dummy on dependent variable reflects an institutional impact or the impact of any other factor omitted by the model. Quantitative measures of institutional variables depend on particular definitions of institutions. We generalized domestic institutions which are likely to be important for economic growth, trade or investment into six groups: informal, political, legal, governance, security, and policy institutions[14].

By **Traditional or informal institutions** we mean history, habits, codes of conduct, traditions, culture, religion, and trust. History, culture and religion are not institutions in a strict sense, but they represent factors likely to influence and determine rules in a society, and hence, determine its informal institutions. Through them we can make assumptions about informal institutions in a given economy. Trust is not an institution as well but it creates a particular environment which influences institutional development. Trust is endogenous. On the one hand, it is influenced by historical and cultural particularities, but on the other hand, formal institutions also impact the degree of trust in society. For example, a totalitarian state or organized crime creates an unfaithful environment. Despite the abstractness of informal institutions, we can measure them qualitatively through proxies, e.g., colonial origins, religion or language. Generally, these proxies are used to capture specific bilateral characteristics. For example, empirical studies use dummies for common language, common religion or common colonial history. Frankel et al. [37] and Soloaga and Winters [108] use a common language only. This variable is often present in gravity studies. Rose [99] (and earlier studies) uses the most complete set of informal institutions, including, relative to each pair of countries, dummies for common language, for being colonies after 1945 with the same colonizer, for capturing if both countries are colonies or if one of them was ever a colonizer of another one. He also introduces a dummy for countries which where a part of the same nation during the estimation period (e.g., France and Guadeloupe).

Institutional variables from this group are often not considered as institutions but used as instrumental variables for formal institutions, since informal institutions influence the formal ones. For example, Hall and Jones [45] use the fraction of speaking European languages and latitude as instruments for social infrastructure. The latter indicator Hall and Jones measure as a combination of two indexes: *Government antidiversion policies* from Political Risk Service and an average of selected components from the ICRG database, namely, *Law and Order, Bureaucratic quality, Corruption, Risk of expropriation*, and *Government repudiation of contracts*.

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[14] Some institutions may belong to more than one category, e.g., a contract law which protects property rights and fights with commercial crime. In a broader sense, institutions that we call «governance institutions» incorporate partially «security institutions». We distinguish these two groups to stress the role of institutions in reducing black market activities. Some institutions, like price regulation or social and environmental regulations are often considered as policies. We discussed above the reason for including these factors in institutions.

Political institutions include those guaranteeing political freedoms such as independence and democracy, and political stability, including the absence of war[15] or ethnic and religious conflicts. Political institutions are often proxied by *Political rights* incorporating freedom of participation in political process, fair elections and *Civil liberties* containing the freedom of expression, belief, and respecting the rights of associations and organizations. The corresponding variables may be constructed with the help of a questionnaire. For example, the database of The Freedom House is based on a questionnaire completed by regional experts and scholars of The Freedom House, taking into account both constitutional guarantees of human rights and fulfillment of those rights. Indicators of political institutions also illustrate a political structure. The database by Beck et al. [11] combines «questionnaire-type» indicators and statistical measures. This database describes political parties, the number of opposition parties and their political power, election process, constraints on executive, military involvement (e.g., Is the Chief Executive or Defense Minster a military officer?), composition of government (e.g., sum of the squared seat shares of all parties in the government), and the number of years under a particular political regime (autocracy, democracy, and others).

Despite the fact that the importance of political institutions for economic performance has been the particular attention of empirical economics during the last 20 years[16], conclusions about the impact of institutions are not uniform. For example, Alesina et al. [4] find that countries with higher political instability have lower growth rates. Their panel data set includes a time series and cross section panel containing macroeconomic statistics and political instability data on more than 100 countries from 1950 to 1982. According to Rodrik [90], political rights and civil liberties are positively but not robustly associated with GDP per capita growth during 1970−1989; however, the most successful reforms in 80s − 90s were led by democratic regimes. Levine and Renelt [69] report an ambiguous effect of political institutions (civil liberties) on the growth rate of the GDP per capita during 1960−1989[17].

La Porta *et al.* [65] investigate various institutional measures including *Constraints on executive* (taken from Polity IV dataset), *Government effectiveness* (Kaufmann et al. database), and *Expropriation risk* (provided by ICRG). The authors conclude that most of them are not suitable for measuring institutional impact on growth. The best measure of political institutions is the *Constraint on executive* but even this indicator reflects rather political outcomes than institutional constraints. In addition, this index is not correlated with constitutional constraints which impede

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[15] We also include conflicts (e.g., war) in political institutions, assuming that war is a result of political destabilization or a governmental policy. Barro [9], using a sample of 98 countries over 1960−1985, finds that the index of wars and revolutions or the number of political assassinations negatively affect economic growth. However, this result was later criticized by Levine and Renelt [69].

[16] Kormendi and Meguire [62] are one of the first who tested empirically political institutions as potential determinants of growth. The authors find that greater civil liberties entail higher economic growth; however the magnitude of this effect is small. On the other hand, civil liberties explain investment better than other variables.

[17] In addition, the authors control for the number of revolutions and coups per year, and include a dummy for the socialist economy, but the latter is not significant.

estimating the effectiveness of changing political rules. The authors find that the initial level of *Constraints on executive* fails to predict subsequent growth, while human capital does not. In our view, any measure of political institutions is quite volatile, while human capital and economic growth are more inertial. This could be a possible explanation of the La Porta *et al.* results.

It should be noted that political institutions may also influence other institutions. De Haan and Sturm [25], using political rights and civil liberties from various sources as a proxy for political freedom and *Index of economic freedom* as a proxy of economic freedom, conclude that political freedom in developing countries has a positive impact on their economic freedom. Finally, Clague et al. [16] argue that democracies, especially log-lasting democracies, have a positive impact on property and contract rights. It is more difficult to conclude that newly established democracies will ensure property rights protection, since there is a risk that government will change quickly or democracy will transform into dictatorship.

Legal institutions include legal origins, codification of laws, their application, interpretation, and transplantation. Here we distinguish two streams. The first one discusses the impact of legal origins on economic performance and business environment. The most quoted references in this group are the studies by La Porta and his co-authors. La Porta et al. [67] argue that variation in law and its enforcement across countries is partially explained by their legal origins. The authors distinguish four legal families: a common law group and three civil law groups (French, German, and Scandinavian). They demonstrate that legislation based on the Common law traditions is more favorable for creditors and corporate shareholders rights protection and, in general, is more favorable to the investment climate than legislation in civil law countries[18]. To estimate various characteristics of legal protection in different legal families, La Porta et al. [67] construct indicators based on Company Law, Bankruptcy and Reorganization Laws, and Commercial Code characteristics. In addition, they use traditional measures of law and order, corruption in government or expropriation risk which will be described in the next sub-section. Pistor et al. [85] extend the approach by La Porta et al. [67] to transition economies and construct additional institutional measures. Pistor et al. [85] argue that the «law on the books» has weaker explanatory power of financial market development in comparison with effectiveness of the law. The work by Pistor and co-authors forms a second stream in the group of legal institutions, emphasizing that the effectiveness of legal institutions depends on how these institutions were transplanted or received. In their more recent paper [12], Pistor and co-authors argue that the transplanting process is a more important for the effectiveness of legal institutions than legal origins. In addition, the latter one is sensitive to alternative measures. The authors divide countries into those developing their formal legal order internally and countries receiving their formal legal order externally. According to Pistor and co-authors, law will be effective only if a country can develop it, increase its quality and/or if a population in that country is already familiar with the law. The transplant effect is found to have greater significance than the legal family effect and has a strong indirect impact on economic development via the effectiveness of legal institutions.

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[18] The distinction by legal origins is also used in other La Porta and co-authors studies; see, for example, La Porta et al. [66].

Governance and security institutions encompass those which aim at protecting property rights, rule of law and contract enforceability. They cover national legislation and regulations concerning bankruptcy law, law protecting property rights and insurance law, company law, anti-monopole and competition supporting law. Governance institutions reflect a degree of government intervention into economy such as price control, government subsidies affecting prices, government ownership, and fiscal pressure. Institutions from this group are probably the most frequently used in empirical studies. Property rights, rule of law or contract enforcement are applied by Dollar and Kraay [28], Jansen and Nordes [55], Meon and Sekkat [75], Zak and Knack [119]. As pointed out by Clague *et al.* [16], property rights and contracts rights are difficult to measure. To cover the maximum factors related to property rights protection, the authors propose six different indicators, including: *Contract-Intensive Money*, the property rights index constructed from the ICRG database (*Expropriation risk, Risk of contract repudiation by the government, Quality of the bureaucracy, Corruption in government* and *Rule of law*), the BERI index (*Contract Enforceability, Nationalization risk, Bureaucratic delays*, and *Infrastructure quality*), a subjective rating of the risk of default on sovereign debt published by Institutional Investor, inflation considered as an indirect method of expropriation, and the black market premium on currency exchange.

Davis [22] stresses the inappropriateness for legal system approximation by such institutional variables as Rule of law, Property rights and Contract enforcement. His key argument is that all available variables incorporate additional nonlegislative factors, like crime, corruption, or, broadly speaking, the behavior of the general public. Note, however, that, in our opinion, this does not contradict using the above mentioned variables for a broader institutional measure. Furthermore, «general public behavior» is determined by a functioning legal system and, hence, may be considered as a product of the legal system and included into corresponding institutional indicators. Another problem in institutional approximation, also noted by Davis [22], is inconsistency between the label and contents of institutional variables. Often institutional variables (e.g., contract enforcement) have a general label and in practice they are only control for a part of the characteristics from a given category.

Expropriation risk is another popular measure of property rights protection. This indicator is used in Acemoglu, Johnson and Robinson [2, 3], Sachs and MacArthur [100], Hall and Jones [45], and Knack & Keefer [60]. In governance institutions we also include studies using a more aggregate institutional measure, such as economic freedom. Weede and Kämpf [113] illustrate that improvement in economic freedom has a significant impact on economic growth rates (0,507−0,656) during 1970−1995. For this purpose, Weede and Kämpf [113] use the *Economic Freedom of the World* provided by the Fraser Institute. This is a composite indicator including judicial independence and security of property rights, taxes on international trade and regulatory trade barriers, credit and labor market regulations, and business regulations (price control, difficulties in starting a new business). Sturm *et al.* [110] construct their institutional indicator using information from the same database. They conclude, however, that this index is not robustly associated with economic growth. We would also to note that the data provided by the Fraser Institute partially covers policy institutions, namely, trade policy, labor market regulations and price control.

Security institutions are closely associated with governance institutions. They include institutions fighting corruption, commercial crime and reducing the share of unofficial economy (including police and custom services). The degree of corruption represents state capacity to ensure law and order. This also reflects the effectiveness of institutions. Following Shleifer and Vishny [105], the structure of governmental institutions and political process are important determinants of the level of corruption in the society. They emphasize that corruption is costly for economic development and foreign investment, in particular. Knack and Kefeer [60] and Hall and Jones [45] argue that corruption has a negative effect on income per capita growth. Keren and Ofer [59] find that corruption negatively affects FDI. Meon and Sekkat [75] use three different measures of corruption from three databases and find their negative effect not only on FDI but also on manufactured exports. Generally corruption negatively affects economic development, meanwhile, Knack and Azfar [61] emphasize that the effect of corruption may be biased by the sample selection bias because corruption indicators mostly provided for countries that could be potentially interesting for multinational investors.

In our view, the various measures of illegal activity suffer from subjectivity more than other institutional indicators due to difficulties in obtaining such information. Golden and Picci [39] try to fill this gap by proposing a more objective measure of corruption. They estimate corruption as the difference between amounts of public infrastructure (roads, schools, hospitals, etc.) and the amounts of money spent for the development of this infrastructure. Notice that this indicator covers only one possible source of corruption and, in our view, it measures rather fraud than corruption. However, this is an interesting tentative to find an alternative a more objective measure of corruption or, more broadly, some illegal activities.

Finally, corruption or organized crime is not an institution in a strict sense but it is able to provide information about institutional environment. Crime rises when the probability to be punished for illegal activity is low and institutions are weak or ineffective.

Policy institutions include tariffs, prices and exchange rate regulations; institutions supporting structural changes, social and environmental protection. *Price liberalization* and *Progress in privatization* constructed by the EBRD for 25 transition economies to survey their progress in transition and reform process are included in studies of Havrylyshyn *et al.* [47] and Havrylyshyn and van Rooden [48]. Smarzynska Javorcik [106], among institutional variables, uses an average of the EBRD indicators to measure the progress in price liberalization, trade and exchange system, large and small scale privatization. In addition to the EBRD database, tariff regulations can be approximated by the Trade Policy from the Heritage Foundation database or the IMF trade restrictiveness index.

We conclude this section with some general remarks. First, most of the studies use more than one institutional indicator. We can divide these studies into two streams: those which measure the impact of different institutions on the same factor (trade, growth or investment) and those which try to aggregate or transform existing institutional indicators to construct a new one for studying its impact on the above mentioned factors. The first stream supports the hypothesis that many institutions are likely to affect economic performance simultaneously. Nine indices from five sources are used in Havrylyshyn and van Rooden [48]. Havrylyshyn *et al.*

[47] empirically test factors (that can be used for a qualitative measure of institutions as well) important for economic growth in transition economies. They find that the complex of structural reforms is one of the most important factors for economic growth in these countries but the reforms can be successful only if they all contribute simultaneously to economic growth. The authors do not find that any particular reform is more important than others. They also use lagged values to prove that reforms have initial costs, but once these reforms are implemented, they have a strong positive impact on economic growth[19]. Meon and Sekatt [75] use several institutional indices from four sources to measure the institutional impact on FDI and manufactured exports. The second stream tends to use institutional variables aggregated from different sources to avoid or reduce a mis-measurement in institutional variables[20]. Another reason for institutional aggregation is their correlation with each other. Aggregated institutions can be obtained as simple average or through more sophisticated approaches. Keren and Ofer [59] group different indicators, including institutional, into clusters and test their impact on FDI. Sturm *et al*. [110] apply the principal component analysis to construct the index of economic freedom based on the 14 components of the Fraser's Institute *Economic Freedom of the World*.

Generally, empirical studies use aggregated trade data, i.e. total countries' exports and/or imports. Disaggregated trade data is not always available nor has a good quality. Furthermore, the fraction of zero trade to total trade is much higher in disaggregated than in aggregated data. This zero trade is often dropped from estimation. This may lead to sample selection bias. Institutional indicators are also not available on industry level. On this point, an interesting study is conducted by Levchenko [68]. The author presents a model where import share is a function of factor endowments and institutional quality. Levchenko [68] estimates the impact of institutional quality on international trade using the U.S. disaggregated weighted import shares. Institutional quality is the interaction variable of institutional quality on a country level and institutional dependence for a given industry. The former is measured as a rule of law and property rights protection index, and the latter one is proxied by product complexity (Herfindahl index of intermediate input). Despite the fact that the Herfindahl index is quite a rough measure of institutional quality, this study is definitely interesting iny its attempt to estimate institutions on a disaggregated level.

Finally, why do institutions increase bilateral trade or investment: because they are well-functioning in both countries or because they are similar? The latter approach assumes that similar institutions may affect the volume of trade/investment differently. For example, developed countries with well-functioning market institutions trade more but the conclusion is not so evident for countries where institutions impede trade or some market institutions do not work at all. Firms from these countries may trade less due to unfavorable institutional conditions. On the other hand, they may still trade a lot but mostly with countries with similar institu-

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[19] Similar conclusion regarding institutions is given by Engerman and Sokoloff [32]. They argue that institutions cannot be considered as unimportant for economic performance because they are endogenous. «Endogenous institutions, once in place, can prove as crucial as if they were exogenous, and they might persist for as long or even longer.»

[20] The same principle is used by Kaufmann *et al*. [58] for construction of their database.

tional environment because they are familiar with code of conduct and informer rules in a partner country, and they know how to operate in this environment. Furthermore, fear of trading partner from «criminal» country or fear of entering on the market where the rule of law doesn't work or there is an expropriation risk also pushes such «dangerous» countries to trade with each other. By consequence, firms wish to trade or mostly may trade in similar but not necessary market oriented institutional environment. Using the gravity equation approach, De Groot *et al.* [23] find empirically a trade increase due to institutional similarity.

4. The role of international and foreign institutions

Rich countries generally have well-functioning and market supporting institutions. Poor countries are «governed» by institutions ineffective for supporting either market economy or economic growth. Institutional development would be able to promote market reform and economic growth in these poor countries. However, the poorer a country is, and the less its institutions are market-oriented, the more difficult it is to ameliorate the institutional performance in a given country [89]. Various factors are likely to predetermine institutional underdevelopment or institutional ineffectiveness. For example, Acemoglu Johnson and Robinson [3] emphasize that current institutional development is determined by former institutions created two hundreds years ago. Initial conditions are found to be important for the reform process, especially during its initial phase, and for developing market institutions in transition economies [26, 35, 36]. More broadly, history may predetermine institutional development in a certain way, which is known as institutional path-dependence phenomena. Another explanation is the possibility of multiple institutional equilibriums. For example, according to Gradstein [40], two steady states are possible: poor economy − weak institutions and rich economy − strong institutions. In the theoretical model, Roland and Verdier [95] show that in the presence of coordination problems in law enforcement, there is a possibility of multiple institutional equilibriums, and economy may converge to a «good» or to a «bad» equilibrium. In this model economic agents are divided into honest producers paying taxes and predators robbing producers. Government uses tax revenue to pursue the predators' activity. When the probability of penalty for illegal activity is higher than the tax rate, economic agents decide to be producers. Economy converges to a «good» equilibrium when most of the agents choose to be honest producers. In such a case even a very low tax rate is sufficient to deter predators. In the opposite case, more agents decide to be predators, the lower is a probability of punishment for illegal activity, more tax revenue government need for repression of predators' activity, higher is the tax rate and, by consequence, for producer higher is incentive to became a predator. In this situation the economy converges to equilibrium without law enforcement or a «bad» equilibrium. Roland and Verdier [95] propose two mechanisms for law enforcement and elimination of the «bad» equilibrium which they call «dualism» and «external borrowing». The first model, dualism, is characterized by a liberalized (market-oriented) non-state sector co-existing with an unreformed state sector directly controlling economic resources. The Chinese transition is an example of this model. An illustration of the second model is accession to the European Union (EU). According to Brezis and Verdier [14], the presence of such a strong institutional anchor as the EU for Central and Eastern European countries

may be one of the explanations why these countries have a better functioning law enforcement mechanism than Russia. Roland and Verdier [95] also note that «even without external borrowing», the accession process increases expectations in future law enforcement of the accession country.

International and foreign institutions may help improve domestic institutions, increase confidence in trade partners, favor investment, lock the reform process, support economic development, and promote a deeper integration of this country into the world economy[21]. The importance of institutional anchors, like international agreements, is mentioned in the IMF Economic Outlook 2003 [54]. Following the EBRD Transition Report 2003 [33], for the new European Union members and candidates for future enlargement such an anchor could be the *Acquis communautaire*[22]. Countries of the Southeastern Europe may improve their institutional environment by participating in the Stabilization and Association Agreement, however *de facto* it plays a much more moderate role. For non-WTO members, Russia, in particular, such an anchor could be future participation in the WTO.

Note that adoption or transplantation of foreign institutions may represent not only benefits but also contain potential danger. Besides political influence from the outside, as it was already mentioned, institutions with completely different roots are more difficult to adopt. They are not always well understood and accepted by society. Furthermore, foreign institutions may affect economic performance differrently in the home and foreign countries.

International institutions aim to establish rules in international economic activities, i.e., international trade or foreign direct investment, where regulation by national institutions is insufficient. Examples of international institutions are international agreements (e.g., European Agreements, Stabilization and Association Agree-

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[21] Note, however, that following Rock and Bonnett [88], larger countries tend to be more self-sufficient and more resistant to the external pressure of international institutions.

[22] *Acquis Communautaire* is a French term for Community Law or European Union law. The *Acquis* is founded in particular on the Treaty of Rome, the Single European Act, and the Treaty of European Union. It comprises the treaties, regulations, recommendations and directives passed by the European institutions and the judgments of the Court of Justice. The aim of the Community Law is to approach the new EU-members' legislation to the European Union ones. This requires transformation of national institutions to conform to EU legislation, standards and rules. At the same time, they must set up or change the necessary administrative or judicial bodies which administer the legislation. All *Acquis*, with few exceptions, must be adopted or implemented before accession to the EU. Candidate countries must harmonize national legislation to be in line with the *Acquis*. In some cases a transition period is allowed. Created in the early sixties by six EU members, the *Aquis* was largely developed then. At the present it is about 90000 pages and consists of 31 chapters. It aims to ensure freedom in movements of goods and capitals, freedom to provide banking, insurance and investment services, as well as freedom in the labor force movement and recognition of professional qualifications within the Single Market. It harmonizes labor law and social security system. The *Acquis* regulates competition and industrial policy, company law and enterprise policy, protection of industrial and intellectual property rights, transport and telecommunications. It establishes standards for agricultural products, controls fishery sector and environmental quality protection. The *Acquis Communautaire* protects consumer interests, supports and harmonizes education, science and research. Custom Union, Schengen Area and Economic and Monetary Union (EMU) are also covered by the *Acquis*.

ments), interstates organizations (the WTO, the OECD, the European Commission, the IMF, the World Bank, and the EBRD) and international arbitration institutions, such as the International Chamber of Commerce (ICC) or the American Arbitrary Association (AAA). Staiger [109] notes that GATT, or, more broadly, international agreements, provides rules, constraints and enforcement mechanisms. Winters [115] emphasizes that international agreements can lock domestic reforms by influencing trade law and trade institutions. He notes that for the Central and Eastern European Countries (CEEC)[23] such policy-making institutions can be the WTO and European Agreements. Sapir [103] proposes a similar conclusion. According to him, the European Agreements provide a powerful institutional mechanism to sustain current trade policy; namely, they support trade liberalization and trade openness of the CEEC. By participating in intergovernmental organization(s), a country accepts a set of rules that supports institutional and economic development. International organizations, like the World Bank, the IMF or the EBRD may also influence the process of reforms, institutional development and economic welfare of developing and transition economies by providing credit. The role of private international institutions is probably less important but still non-negligible[24]. The role of the International Chamber of Commerce does beyond that of a simple arbitrary institution. Its activities also include support of free trade development and the market economy system, business self-regulation, fighting corruption and commercial crime. The ICC gives recommendations to governments and intergovernmental organizations, and it groups companies from 130 countries. «Through membership of ICC, companies shape rules and policies that stimulate international trade and investment»[25].

The impact of international agreements is generally measured by introducing dummies. Bilateral agreements can be captured by one or several dummies. Rose [98] includes dummies for the WTO, the OECD and the IMF membership to measure the impact of these international organizations on trade. He finds that only membership in the OECD (but not in the IMF or, surprisingly, in the WTO) is likely to promote international trade. In further studies, he also concludes that the WTO has no significant effect either on the increase in volume of trade [97] or on trade volatility [99]. The role of the WTO is rehabilitated in the study of Subramanian and Wei [111]. They argue, however, that the impact of the WTO membership is asymmetric. Li and Wu [70] use an ordered dummy for the WTO membership varying from 1 to 10 and measure the impact of the WTO accession on economic growth. They find that the WTO has a greater impact on high income countries (with income higher than USD 3000 in 1987). They interpret these results by stating that openness is insufficient for sustainable economic growth and should be supported by market institutions. This conclusion is in line with other studies discussing the endogeneity of international and external institutions.

To our knowledge, there are no studies testing the effect of international arbitrary institutions, such as the ICC, on trade. Note that this impact is difficult to measure because only big companies can address to the ICC. Hence, it only defends

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[23] Here we consider the following countries: Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

[24] The World Bank World Development Report [116] emphasizes the importance of private organizations which can influence a governmental decision.

[25] See the ICC web site http://www.iccwbo.org/home/intro_icc/membership.asp

the interests of the part of business. Furthermore, the effect on trade and FDI of the ICC's advisory activity for governments and international organizations is not direct.

Foreign and external institutions are determined exogenously for a given country. A single country cannot change the existing rules and norms of external institutions. External institutions help to lock the country's reform process, and accelerate institutional development. Examples of such institutions could be the *Acquis Communautaire* or the WTO for non-members, particularly, a negotiation process for the WTO participation. In Babetskaia-Kukharchuk and Maurel [74] we discuss the advantages of Russia's accession to the WTO for institutional development and further economic integration; in this section we focus on the *Acquis Communautaire* as a representative of foreign institutions.

The *Acquis* supports institutional development and market reforms in countries willing to apply for EU membership. To become an EU member, each candidate-country should conform to the Copenhagen criteria which are divided into economic, political and the *Acquis*. The first two criteria aim to guarantee political stability, democracy, the rule of law, human rights and the respect for and protection of minorities, as well as macroeconomic stabilization. The candidate country should ensure the existence of a functioning market economy as well as the capacity to cope with competitive pressure and market forces within the Union. In empirical studies, the Copenhagen criteria are used as a possible quantitative measure for EU accession, e.g., Ricœur-Nicolaï et al. [87] apply factor component analysis to test the Copenhagen Criteria. The authors take the EBRD transition indicators as institutional proxies. They distinguish two groups of CEEC, those more advanced and likely to join EU first, and less advanced economies. The accession country must conform to Copenhagen criteria and accept the *Acquis*, while the EU membership is not guaranteed[26]. From this point of view, Copenhagen Criteria, including the *Acquis*, are external to the economies and can be considered external anchors since a candidate country cannot modify them or only partially accept them.

The process of *Acquis*' implementation is endogenous: to be able to implement the *Acquis*, an accession country should already have quite well developed and functioning institutions. On the other hand, the *Acquis* itself can help to the institutional development in the accession countries. Piazolo [83] argues that the transition and accession process overlap with each other, and the *Acquis* helps build institutions in transition economies. He shows that requirements for EU accession are in line with the transition process and help to lock market reforms. Namely, macroeconomic stabilization, the principle component of the transition process, is in line with the Maastricht Criteria, required for European Monetary Union membership. Reforms on the microeconomic level are necessary not only for transition but also for proper functioning of the market economy. And last, but not least, no reforms will be successful without a well-functioning institutional framework: law defending property rights, a two-tier banking system and central bank independence, a viable

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[26] Bulgaria and Romania can join the EU not earlier than 2007. Despite that their macroeconomic situation is more stable and reform process is more advanced in Bulgaria than in Romania, Bulgaria could not join the EU in May 2004. Bulgaria is not much «worse» than new EU members. It seems that the EU does not wish to leave Romania alone and separate these two countries into two groups.

law of contract and enterprise law. At the same time, all these requirements are necessary for the *Acquis Communautaire.*

However, the *Acquis* represents not only benefits but also incorporates potential costs for acceding countries, in particular being a political instrument to influence the CEEC. The EU15 has fear of losing market shares and of increasing in competition from lower-cost CEEC. A considerable share of the agriculture also poses a problem for the EU15. On the other side, improvement in productivity, safety standards, and higher standards in environmental and consumer protection may penalize acceding countries. Higher EU15 standards may entail an increase in costs and increase in prices for products from the new member-states, which may significantly reduce the competitiveness of these countries. In addition, a transitory period of up to seven years with restrictions on labor mobility from new member-states to the EU15 may imply additional costs for or a delay in the EMU participation since labor mobility represents a powerful instrument of adjustment to asymmetric shocks. Finally, potential costs may incorporate even the adoption of the EMU *Acquis* itself. Despite the fact that acceding countries will not introduce the euro just after EU accession, this *Acquis* may be difficult to implement. A choice of optimal monetary policy for new EU members is not straightforward. On the one hand, future participation in the ERM-II (Exchange Rate Mechanism) and euro adoption require exchange rate stability vis-à-vis euro. At the same time, the catching-up process in new member-states is reflected in higher productivity growth vis-a-vis the euro area which, in turn, entails real exchange rate appreciation. Furthermore, the exchange rate in the new member states still represents an instrument of adjustment to different shocks. The new member-countries which join the ERM-II might be viewed as balancing their monetary policy between low inflation, requested by the Maastricht Criteria, and stable exchange rate vis-à-vis the euro imposed by the ERM-II. Resuming we would note that the advantages of accepting EU institutions seems to outweigh the constraints imposed by the EU, and the *Acquis Communautaire* may be considered as the institutional anchor for economic development in the CEEC. Certainly, the convergence of CEEC institutions toward EU ones is not the only contribution of the *Acquis*. However, following Piazolo, CEEC can narrow the institutional gap with the EU through adoption and transplantation of the EU legislation.

The current EU enlargement is interesting and unusual, since for the first time in history the EU enlargement covers ex-centrally planned economies which are constrained to adopt, within a short period of time, institutions and legislation developed by western European countries during the last forty years. As noted by Martens [71], this is an «unprecedented experiment in institutional reform» because the process of the institutional transformation is not «home grown» but transposed from the western, EU, economies. Prior to becoming EU members, most of these CEEC successfully achieved a long transformation process that started in the last decade of the XXth century. However, historical, political, and economic development is different in west and in east of Europe.

Institutional development is a long and sophisticated process. Even being members of the EU, there is still room for further institutional improvement. Accelerating reforms can lead not only to a deeper integration/cooperation with EU but also to a deeper integration into the world economy. Furthermore, the *Acquis Com-*

munautaire may represent in a certain sense an institutional benchmark even for countries which are not considered potential candidates to the EU. Following Samson [102], adopting some principles of the *Acquis* may help Russia to advance in the European integration and reform process. This does not mean that Russia should adopt EU legislation (this is costly and will not be reimbursed by the EU as in the case of candidate countries), but the «loan» of part of the European legislation may help to lock Russian reforms.

External institutions are the most difficult to measure. Following Piazolo, one possible source of the CEEC convergence to the EU is the adoption of the *Acquis Communautaire*. Piazolo [83] uses a modified Barro (1990, see Journal of Political Economy, 98, 5, p. 103−125) production function to measure the impact of institutional changes on economic growth in 25 transition economies. The author constructs an indicator of institutional change by summing up nine EBRD transition indicators for 1998. He finds increase in growth due to institutional improvement is about 30% on average. In Koukhartchouk and Maurel [63] we find a total increase in trade due to institutional convergence of the CEEC toward the EU average is about 46%[27]. Essentially, this increase in trade is due to reducing the un-official economy (25,1%) and to improving property rights protection (11,6%). Reducing government intervention in banking and financial sectors, deregulating wages and prices, as well as trade policy, have moderate impact on trade. Clausing and Dorobantu [17] show that the announcement of future membership has a significant effect on FDI received by CEE countries. Their results are robust to the alternative specifications. The authors find that most benefits from membership announcement have «second wave» countries where the announcement of future enlargement on these countries reduced the uncertainty regarding these countries.

The impact of external institutions can be analyzed by studying domestic institutional development. Databases with large cross-section and time period seem to be more suitable for this purpose. For example, the components of the *Index of Economic Freedom* are an example of such a database[28]. *Trade Policy* is enclosed partially in the «Free movements of Goods» (Chapter 1) and «Customs Union» (Chapter 25). *Trade policy* is also present in the Chapter 26 «External Relations» which is related to the WTO principles in community policy face to rules of antidumping and safeguard measures, measures against subsidized imports or illicit trade practices, quantitative restrictions and embargos. *Banking and Finance* is regulated by Chapters 3 «Freedom to Provide Services» and 4 «Free Movement of Capital». *Property Rights* are protected by Chapter 5 «Company Law» and partially by Chapter 15 «Industrial Policy». Chapter 13, «Social Policy Employment», may have an

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[27] Trade potential is based on gravity equation estimation for 42 countries over the period 1994−2001. The explanatory variable is log of bilateral trade. Regressors are logs of country's i and country's j GDP, distance between i and j, bilateral exchange rate volatility, institutional variables (*Index of Economic Freedom* components), and a set of dummy variables to capture relations within and between trade in four blocs: EU, CEEC, CIS and other countries. We estimate this equation by applying a Hausman − Taylor (1981) procedure.

[28] The ten components of the IEF are *Trade Policy, Fiscal Burden of Government, Government Intervention into Economy, Monetary Policy, Foreign Investment, Banking and Finance, Wages Prices, Property Rights, Regulation,* and *Black Market.*

impact on *Wages and Prices*. This does not mean, however, that changes in such institutions are purely determined by the *Acquis*, but following the *Acquis* requirements will lead to institutional convergence. Reducing the black market activity is also covered by the *Acquis*, e.g., Chapter 25 «Custom Union» requires that candidate countries should implement different measures aimed to guarantee the protection of copy rights and industrial property rights, to fight against economic crime and organized crime, as well as against fraud and corruption[29].

5. Measurement problems: reverse causality and multicollinearity

Institutions are highly interdependent and highly influenced by other factors[30]. Informal institutions influence domestic institutions which in turn influence international institutions or have an impact on institutions of another country. The causality may also run in the opposite direction. For example, formal institutions are influenced by informal ones. Informal institutions themselves can evolve over the time, and their evolution is determined by formal institutions (e.g., after the October 1917 Revolution, the new political and ideological environment in Russia had a great influence on Russia's informal institutions). In addition, international institutions, i.e. international organizations, in turn, are influenced by the position of each member-country. External institutions are exempted from domestic influence but a country willing to adopt foreign institutions should attain a certain level of economic development.

The direction of causality between institutions and other factors, like growth, trade, and investment is a highly-debated subject. However, the impact of institutions on economic performance is more explored in literature than the opposite causal link. The direction of the causality is not evident. The example of North and South Korea is a good illustration. Before World War II, North and South Korea had similar cultural, geographical, and economic conditions. At present, these countries are quite different in the level of income per capita and have different institutions. Following Acemoglu, Johnson and Robinson [1], the case of both Korea is an illustration of institutional impact on economic growth: market oriented institutions established under control of the USA boosted economic growth in South Korea, while the socialistic institutions of North Korea impeded economic growth. La Porta et al. [65] cite the same example as an illustration of the impact of growth on political institutions. Thus, institutions are endogenously self-enforcing, and they are endogenous vis-à-vis economic growth, trade or investment. However, if we suppose, for example, that market institutions are determined by economic growth, they will not be purely endogenous vis-à-vis growth, since they are also determined by other institutions, such as political institutions or social environments.

Grogan and Moers [44] prove empirically the existence of reverse causality between institutions from the one hand and economic growth and FDI from the other. They note, however, that the impact of institutions on growth is likely to be

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[29] See European Commission (2003).

[30] For example, Rodrik and Rigobon [92] studying interrelations between democracy, rule of law, openness and income show that rule of law and democracy mutually reinforce each other. In addition they both have a positive impact on economic performance.

more important than the impact of growth on institutions; moreover, reverse cau-
sality is lower in the case of FDI. Dollar and Kraay [29] obtain controversial results
and conclude that it is difficult to measure the true impact of institutions on eco-
nomic growth due to a weak identification of the instruments. Rodrik [91] points out
that the degree of openness influences institutional development.

There are several possible solutions to the endogeneity problem. The use of
instrumental variables (IV) is the most frequent. Informal institutions can be in-
strumented by geographical conditions, e.g., Zak and Knack [119] take latitude to
instrument trust. Sachs and McArthur [100] use latitude, the proportion of land area
within 100 km of the sea cost, and average temperature. Formal institutions can be
instrumented by informal institutions. Dollar and Kraay [28] and Hall and Jones [45]
use as instruments fractions of the population speaking English and the main Euro-
pean languages in a static model. Similarly, Grogan and Moers [44] take ethno-
linguistic fractions as an instrument for institutions in transition economies. Acemo-
glu, Jonson and Robinson [2, 3] use origin institutions as an instrument for modern
institutions. They proxy origin institutions by using the settler's mortality in the
colonies in the 17th-19th centuries. Finally, some studies instrument the rule of law
or property rights by political institutions. Brunetti et al. [15] use for this purpose
Gastil index of political rights. Note, however, that this approach was criticized by
Grogan and Moers [44]. Political institutions are likely to influence other institutions
and growth, and hence cannot be a good instrument. Also Grogan and Moers [44]
prove econometrically that ethno-linguistic fractions is a better instrument for pro-
perty rights or the rule of law. Finally, Sachs and McArthur [100], in addition to
geographical instruments, use political institutions such as the period of independ-
ence and dummy for war.

Partially, the endogeneity problem can be solved using dynamic models, or
static fixed effects models. The low variation over time of institutional variables
makes it difficult to use its lagged values. Moreover, in most databases long time-
series of institutional variables are not available. Dollar and Kraay [28] use first dif-
ferences of institutions and trade in the growth equation to resolve the endogeneity
problem. They find that changes in trade affect economic growth more than
changes in institutions. In their further study, Dollar and Kraay [29] conclude that
there is no good instrument. Nevertheless, if we cannot solve the endogeneity prob-
lem we can test at least which direction of causality is more important, e.g., in
Granger sense. This approach is, however, quite limited due to data unavailability.

As we mentioned above, fixed effect models can partially correct all endoge-
nous variables in the model. Numerous econometric studies use a fixed effect ap-
proach; see, for example, Egger and Pfaffermayr [31], Pakko and Wall [82], Rose
and van Wincoop [96] and Maurel [74]. We note that, when we take all possible
fixed effects into account, our explanatory variables can be rejected by the model.
For example Matyas et al. [73] use a triple indexed fixed-effects gravity model. He
argues that the effects of strict environmental regulations on foreign trade became
insignificant once he introduces exporter and importer fixed effects into the model.
This result demonstrates that environmental regulations do not have direct impact
on bilateral trade. We believe, however, that such an insignificant result may be due
to the fact that environmental regulations are already captured by the fixed effects.

A Hausman − Taylor approach represents a symbiosis between the IV and fi-
xed effect approaches. This method of estimation is better than fixed effect when

we have time-invariant explanatory variables, and it responds to the main criticism of the IV approach (that the variable external to the model cannot be a «good» instrument) by creating instruments from the explanatory variables. We use a Hausman − Taylor approach in Babetskaia-Kukharchuk and Maurel [8] to study the institutional impact on bilateral trade flows.

Finally, we can estimate a system of simultaneous equations. It is difficult to determine an equation for institutional variables. Egger [30], using gravity approach, estimates a system of simultaneous equations for trade and FDI. Both trade and FDI regressions include the respect of the rule of law in foreign and domestic countries. Thus, this system only corrects the causality between trade and FDI. To capture additional sources of endogeneity, Egger [30] estimates the model by using an autoregressive approach and an autoregressive approach augmented by the Hausman − Taylor method.

Empirical institutional analysis has a dilemma: how many institutions can be included into one regression? As it was already mentioned, several institutions are likely to influence the same factor. Furthermore, institutions have greater impact when they act jointly, and institutions are more effective when they simultaneously affect several economic sectors. In practice, this leads to the correlation of institutions and multicollinearity problem. Multicollinearity between institutions presents, probably, in all available databases. Let take some examples. The correlation between *Governance, Rule of Law* and *Corruption* from the Kaufmann *et al.* database is around 0,9. Ten components of the *Index of Economic Freedom* (IEF) are also interdependent. We show a correlation table (table 2) and the first four components retained from the principal components analysis (figure 1) for ten factors of the *Index of Economic Freedom* collected for 42 countries over 1994−2001[31].

Table 2.

Correlation table for Index of Economic Freedom components

	Inst 1	Inst 2	Inst 3	Inst 4	Inst 5	Inst 6	Inst 7	Inst 8	Inst 9	Inst 10
Inst1: Trade Policy	1									
Inst2: Fiscal Burden of Government	−0,35	1								
Inst3: Government Intervention into Economy	0,34	0,11	1							
Inst4: Monetary Policy	0,49	−0,21	0,14	1						
Inst5: Foreign Investment	0,69	−0,42	0,16	0,23	1					
Inst6: Banking and Finance	0,53	−0,23	0,31	0,42	0,55	1				
Inst7: Wages Prices	0,60	−0,29	0,11	0,46	0,66	0,69	1			
Inst8: Property Rights	0,68	−0,23	0,40	0,79	0,54	0,62	0,62	1		
Inst9: Regulation	0,73	−0,15	0,35	0,47	0,48	0,67	0,60	0,70	1	
Inst10: Black Market	0,64	−0,26	0,29	0,86	0,41	0,57	0,60	0,87	0,56	1

As table 2 demonstrates, part of the IEF components have a correlation higher than 0,5: *Monetary Policy*, *Property Rights* and *Black Market* correlate between

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[31] This sample can be easily extended but since institutions do not change too much over such a short period, we expect to observe the same tendency in a larger and longer sample.

0,79 and 0,87, and *Trade Policy*, *Wages and Prices*, *Property Rights* and *Regulation* have correlation with some institutions between 0,53 and 0,73. The principal components analysis (fig. 1) illustrates a high degree of dependency between IEF factors[32]. The first and second components show interdependence between practically all IEF variables, except for *Fiscal Burden of Government* (Inst 2) and *Government Intervention into Economy* (Inst 3). The analysis of the third and forth components does not find such strong correlation. This result, and not excessive correlation between IEF components, allows simultaneously introducing various IEF factors into the regression analysis. However, it is recommended to test if the results change when we introduce into regression the IEF factors one by one.

Finally, general problems of everyone who works with institutions are their approximation and subjectivity of the institutional variables. A broad definition of institutions makes it difficult to find a good approximation for them. Existing variables can measure at the same time different categories of institutions. Numerous databases, used for constructing institutional variables, primarily focus on a measure of political stability or economic growth and can potentially be biased. Moreover, country-risk surveys primarily focus on satisfying investors' demand regarding risks of doing business. Such surveys may be subjective, and they may cover only countries potentially interesting for investment. This should not discourage using institutional variables but take into account all aforementioned factors.

Component	1	2	3	4	5	6	7	8	9	10
Proportion	0,55	0,13	0,11	0,07	0,05	0,04	0,02	0,02	0,01	0,01
Cumulative	0,55	0,67	0,78	0,85	0,90	0,94	0,96	0,98	0,99	1,00

Principal Components Analysis
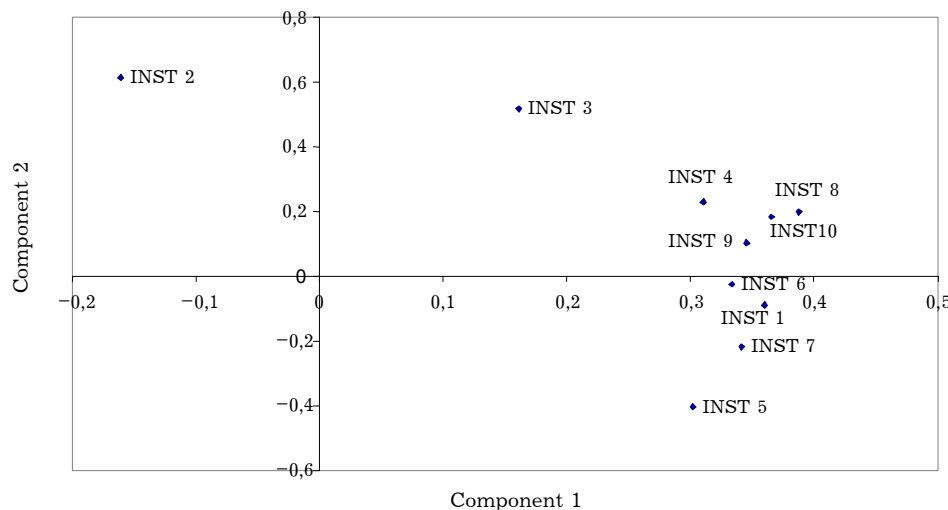
[32] For the principal components analysis we take period averages.

Principal Components Analysis
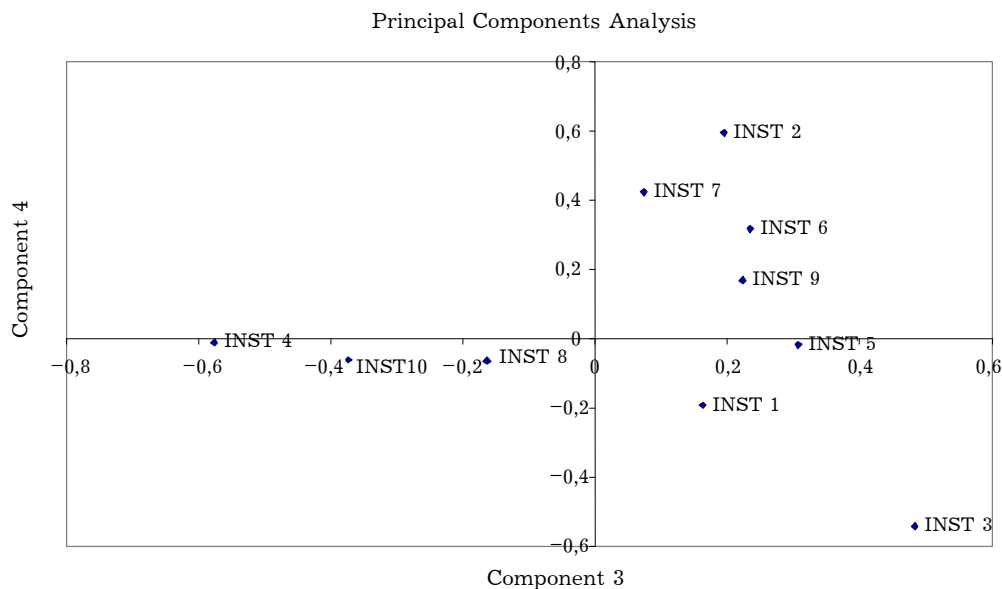
Note: Inst1 − Inst10 are ten components from the *Index of Economic Freedom*. For a moredetailed description see table 2.

Fig. 1. Principal components analysis

        The next section proposes a brief description of the existing databases which could be used for institutional approximation. We also discuss which databases are the most appropriated for empirical studies.

6. Short overview of the existing institutional data bases

        One of the first databases on institutions was collected by the Fraser Institute and Freedom House. Since the early 70s they publish indices of economic and political freedom in the world. From the middle 80s, the International Country Risk Guide and its derivate Country Indicators for Foreign Policy, start publications of countries' ratings according to political, economic and financial risks. Since that time, between 30 and 50 studies have emerged, proposing indicators of institutional development, competitiveness or risk for business.
        A quite complete database is The Heritage Foundation *Index of Economic Freedom*. It covers a large spectrum of institutional measures, i.e. trade policy, property rights protection, investment, importance of unofficial economy and corruption. The last indicator is not presented as an independent component but is included into other IEF factors as a measure of corruption within bureaucracy, within custom services and within the judiciary (for explicit measure of corruption see Transparency International or the Kaufmann et al., [58] database). The Heritage foundation provides scores for a large number of countries (from 101 in 1995 to 155−156 at present), and covers a long time period (from 1995 to present). The database for

measuring unofficial economy [38] starts in 1985, ends in 1998, and includes only 69 economies. The «oldest» data are provided by Polity IV and POLCON (Political Constraint Index). These data are available from 1800 and 1815 respectively. Note, however, that the data for the XIX century are only available for a very limited number of countries. Longer time series are offered by the Fraser Institute Economic Freedom of the World database (starts from 1975), Freedom House (from 1972) and International Country Risk Guide (begins in 1984). The last one, unfortunately, is not accessible free of charge. Moreover, the data for some transition economies are only available starting from 1998. Beck et al. [11] also criticized the Polity database for its subjectivity, aggregation, and unclear distribution of weights among various political factors.

An excellent and largely used in empirical studies database is provided by Kaufmann et al. [58]. The entire data set was recently up-dated, significantly increasing the number of sources for indicators' estimation and the number of countries. In this version, Kaufmann et al. [58] use several hundred variables from 37 different sources and 31 organizations. Thus, this database, in our view, covers the largest number of sources among comparable databases. All variables are aggregated into six groups: *Voice and Accountability*, *Political Stability* and *Absence of Violence*, *Government Effectiveness*, *Regulatory Quality*, *Rule of Law*, and *Control of Corruption*. These six indicators are provided for 209 countries and available for every two years from 1996 to 2004. An important advantage and novelty of this database is estimation of measurement errors for each observation in the database and publication of the number of sources used for constructing each observation. On average, from 7 to 9,5 sources were used to construct every observation. The maximum number of sources available for one observation varies from 12 (*Political stability*) to 17 (*Rule of Law*), and only 7% of all estimates are based on one source. Indicators vary from −2,5 to +2,5; a higher score means better governance. In each period, indicators are normally distributed with the mean of zero and standard deviation of one.

Kaufmann *et al.* [58] also provide the best methodological description of the constructed data. The Heritage Foundation also elaborated a good methodology for the IEF. This indicator consists in 52 factors aggregated into 10 components[33]. For every country the Heritage Foundation publishes scores for each of the 10 components: a lower score means better institutional performance and lower state intervention into economy. Unfortunately, intermediate scores (for 52 factors) are not available. This does not allow the regrouping of the 52 factors. For example, the component *Regulation* contains consumer safety and worker health regulations as well as corruption within the bureaucracy. Thus, the first component of *Regulation* (consumers and workers protection) should be higher in developed countries where these norms are more elaborated than in, for example, former Soviet Union countries (FSU). On the contrary, the second component should be higher for the FSU countries and lower for developed countries. By consequence, it is not clear what exactly the component *Regulation* measures, if its sub-components may go in opposite directions. Fortunately, *Regulation* is a rare exception in the Heritage Foundation database.

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[33] See, for example, The Heritage Foundation [52], chapter 5 for description of 52 components.

An excellent database for measuring the development of market-oriented institutions and reform progress is available from the EBRD Transition Reports, but these indicators are calculated for transition economies only. It is possible to use this data for a larger sample where additional countries are the EU15 or other developped economies. In this case, institutions in developed economies are considered as a benchmark and obtain the highest values.

A number of useful institutional indicators for measuring the characteristics of legal rules and estimating the impact of security law on the stock market are proposed by La Porta et al. [65, 66, respectively]. The authors use own-developed questionnaires and compare laws in different countries. Unfortunately this data is only available for 49 countries. Another interesting study is provided by the Institute for Management Development (IMD). The IMD calculates countries' competitiveness taking into account economic performance, government and business efficiency, and infrastructure. This database is also available for about 50 countries. Despite the data availability during the last five years, it is difficult to use them in a panel analysis. First, the overall ranking is calculated relative to selected countries using a standard deviation method, but the number of countries changes from one year to another. Second, from the year 2003, the IMD calculates competitiveness scores separately for countries with population greater and less than 20 million people.

A very comprehensive data set of institutional variables is proposed by the OECD study [104]. The authors construct various institutional indicators for the OECD countries using a detailed questionnaire. Generally, institutional variables based on the «questionnaire-type» are more precise and allow introducing specific questions often omitted in the data based on aggregated measures. However, such databases are difficult to update. As consequence, the data may be available for one or several years only. Thus, the above mentioned Scarpetta et al. [104] database uses information for the year 1998 that seems to be a bit too outdated for transition countries.

In the annex to this paper we provide a short description of each database, including the period and frequency of the data, the number of countries, and a short description of available indicators. Note, however, that many of existing databases provide a similar measure of institutions. Havrylyshyn and van Rooden [48, p. 11] construct a correlation matrix for institutions in 24 transition economies (FYR Macedonia is excluded) collected from five sources: Heritage Foundation, Freedom House, Euromoney, EBRD and the World Bank Indicators. Nine institutional indicators[34], collected from these databases, are correlated between 0,7 and 0,99.

In addition, several indicators for informal and political institutions as well as for international organizations can be constructed using the CIA World Factbook. It is available from the internet free of charge, and it is regularly up-dated[35]. The CIA World Factbook helps to construct, for example, the number of years of independence, colonial and linguistic origins. Political conflicts can be constructed using

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[34] The selected indicators are: IEF overall score and property rights; democracy, economic freedom, political and civil rights, and average of rule of law, governance and public administration from the Freedom House; legal reform index from the EBRD; average of the World Bank institutions prepared for the World Development Report 1998; and the Euromoney's country risk rating.

[35] See The World Factbook web site at http://www.cia.gov/cia/publications/factbook/.

the Marshall's database of Major Episodes of Political Violence or other similar databases.

How good are the existing databases? Subjectivity is a well-known problem in such data. First, an indicator may reflect a political view of its creator which is influenced by residence in a country under study or by the country's mass-media. The authors of the Index of economic freedom may support USA politics and be more critical vis-a-vis the European Union. As a result, the United States may have overestimated scores and the European Union underestimated. In the same way, the same EBRD indicators may be biased by the EU political position; in particular, this may concern Russia because the European standard may also represent the instrument to influence country's policy. At the same time, we agree that further institutional reforms are necessary for Russia's economic development. Some indicators, such as black market activity or corruption, are difficult to measure. The Heritage Foundation stresses that some information is obtained from unofficial sources. Such sources are difficult to check. Another example is enterprise surveys. This type of data is collected, for example, by the IMD sending questionnaires to firms/organizations around the world. Here, many factors may be supposed to influence the respondent. The degree of the respondent's sincerity may depend on the political regime. Some may fear to reveal the real point of view even in the confidential survey or people may not take seriously the proposed survey and provide answers by hazard. An alternative possibility is to ask residents from different countries who are the same nationality. The example is the database of the French Ministry of Finance [13]. Here, the perception may be biased by ethnic and cultural similarities, but this allows comparison between countries. Kaufmann et al. (2005) mention that subjectivity also has advantages in comparison with objective measures, since it allows taking into account the overall institutional environment. Another important remark of these authors is that in order to obtain more realistic measure of governance (this is true for all institutions), conclusions from quantitative results should be complemented by the country's diagnostic.

The criticism concerning institutional databases does not mean that we should refuse to use institutional variables, but it points to the necessity of comparing, if possible, indicators from several sources. The latter approach is also not perfect; indicators from different sources may partially overlap with each other, e.g. the ICRG, the Heritage Foundation database, and the Governance Matters IV. In addition, the aggregated indicators sometimes consist of factors which have a different impact on economic performance.

In our opinion, the best institutional database for panel studies with a large cross-section is the Heritage Foundation's *Index of Economic Freedom*. This database, together with the one collected by the EBRD, was also mentioned as being one of the best by Havrylyshyn and van Rooden [48]. Good institutional measures are also provided by the database the Freedom of the World from the Freedom House, Kaufmann et al., Governance indicators and Global Corruption Report from Transparency International. Nevertheless, this «ranking» of databases can change depending on specific research purposes.

One more concluding remark concerns institutions themselves. Rodrik [90] emphasizes that institutions are diversified not only between high-income and low-income countries but also within developed countries. American institutions are different from European institutions, nevertheless, both in the USA and in the European Union

they effectively support a market economy. At the same time, institutions in developed countries have similar characteristics. These similarities can be taken into account by transition or developing countries. Institutional diversity within developed economies is an additional argument that for transition and developing countries it is not sufficient to just «copy-paste» well-functioning foreign institutions. Instead they should find an appropriate institutional combination taking into account historical origins and the current domestic political and economic situation. From a pure empirical point of view, using a broader spectrum of institutional variables seems to be reasonable as it takes into account wide-ranging explanatory factors. Furthermore, existing institutional databases are more appropriate for institutional measure in a broad sense rather than narrowly determined institutions.

7. Conclusion

This paper proposes a classification of different types of institutions and gives a literature review of their approximation in empirical studies on institutional determinants of economic growth, trade and foreign investment. Institutions are highly endogenous. Different types of institutions are likely to influence each other. Governance, policy and security institutions tend to be determined by political institutions. At the same time, they are all influenced by informal institutions and initial conditions. Institutions are self-enforcing and they are effective when they act together. Finally, the effect of institutions is difficult to separate from the effect of policies. On the other side, institutions are interdependent with growth, trade and investment, and institutions are likely to influence the same economic factors simultaneously. Institutions are difficult to approximate; for some of them, an exact measure does not exist. Sometimes we can observe the impact of institutions only through their impact on other institutions. Numerous studies emphasize the importance of institutions for economic development, but several problems related to institutional approximation and econometric estimations suggest a further investigation of the role of institutions in economics.

In recent years institutional databases have been considerably ameliorated and developed. A longer time series will make it possible to obtain more robust econometric results. This is in particular important for transition economies where longer time series have just become available. However, debates on econometric improvements are far from being closed. Another point is that the majority of studies measure institutions in levels; thus, institutional (dis)similarity requires more a detailed analysis.

Another important comment concerns both theoretical and empirical work with institutions. Current institutional studies do not take into account the costs of institutions. Theoretically, the costs of institutional implementation, adoption or institutional improvements reduce the potential benefits from these institutions. Consequently, the obtained qualitative results should be corrected. Furthermore, institutional costs may in reality be diminished by additional benefits such as, credit for institutional reforms or other support.

Finally, democracy, protection of property rights, contract enforcement and a low degree of corruption are generally found favorable for trade, growth and investment. Application of international experience may also contain potential benefits. However, for positive and effective institutional impact on economic performan-

ce, institutional development and improvement should be done simultaneously in various sectors and should take into account country's specificity.

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Annex.

Databases for the measure of institutional and policy indicators

Database	Number of countries	Period and Frequency	Description	Data provider
EBRD Transition Indicators	27 transition economies	1994−2004 Annual	Transition indicators (price and trade liberalization, small- and large-scale privatizations, enterprise reform, competition policy, infrastructure reform, banking sector reform and reform of non-banking financial institutions)	EBRD EBRD Transition Report
BEEPS	26 transition economies	1999 and 2002	Study different types of interactions between firms and state covering labor, tax and custom regulations, court system, and property rights protection, importance of the organized crime and control of corruption	EBRD−World Bank Business Environment and Enterprise Performance Survey (BEEPS) http://wbln00 18.worldbank. org/eca/ecspe Ext.nsf/Ext ECADocbyU nid/3960AF 54C50B91B9 85256E8 A006EFE96? Opendocument
World Bank Governance Indicators [58]	209	1996−2004 Every two years	drawn from 37 separate data sources constructed by 31 different organizations, and includes 6 indicators in six specific dimensions of governance: - Voice and Accountability - Political Stability and Absence of Violence - Government Effectiveness - Regulatory Quality - Rule of Law - Control of Corruption	World Bank. http://www. worldbank. org/wbi/go-vernance/ govdata/ see also [58] for methodology description
Dodging the Grabbing Hand: The Determinants of	69	1985−1998 Annual	includes: income tax, corporate tax, value-added tax, social security tax, regulatory burden, management time, price control, freedom of private businesses and cooperatives to compete in market, trade, civil liberties, equality of citizens, efficiency of judiciary, law and order, property rights,	World Bank [38] http://www. worldbank. org/wbi/go-vernance/

Database	Number of countries	Period and Frequency	Description	Data provider
Unofficial Activity in 69 Countries, 1985−1998			transparency of government, corruption, corruption index, regulatory discretion, exporter bribery index and public finance which are evaluated to study the association between higher taxation vis-à-vis corruption with the amount of unofficial activity as a percent of GDP	pubs/dodginghand.html
IMF Trade Restrictiveness Index	184 and some territorial entities	1997−2002 Annual	Provide several indices for tariff and not tariff protection. Not available in free access	International Monetary Fund (Staff calculations)
IMD Competitiveness Index	51 and 8 regional economies	1999−2004 Annual	To construct competitiveness ranking IMD uses 321 criteria (for 2003) grouped in 4 major groups: Economic Performance, Government Efficiency, Business Efficiency, Infrastructure	The IMD World Competitiveness Yearbook
The World Business Environment Survey (WBES) 2000, The World Bank Group	80	Late 1999− Early 2000	Based on over 10,000 enterprise responses to multiple questions on the investment climate and business environment; governance; regulatory, infrastructure and financial impediments. Includes: policy instability, taxes and regulations, inflation and price instability, exchange rates, finance, governance, the legal system and corruption, quality of public services, corruption, judiciary, lobbying, investment climate and the quality of the business environment	The World Bank http://info.worldbank.org/governance/wbes/ see [10]
PriceWaterhouse Coopers Opacity Index, 2001	35	2000 Cross-section	«O-Factor» score for each country, based on micro cross section opacity data in five different areas that affect capital markets: corruption, legal system, government macroeconomic and fiscal policies, accounting standards and practices (including corporate governance and information release), and regulatory regime	PriceWaterhouse Coopers http://www.pwcglobal.com/fr/pwc_pdf/pwc_100068_opacity_index.pdf
Index of Economic Freedom	101−161	1995−2004 Annual	includes trade policy, fiscal burden of government, government intervention into economy, monetary policy, foreign investment, banking and finance, wages and prices, property rights, regulation, black market, total score	Heritage Foundation, Index of Economic Freedom
Economic Freedom of the World	123 (for CIS only Russia and	1975−2000, 2001 update Every	38 parameters in the Fraser report grouped in: Size of Government, Security of Property Rights, Sound Money, Freedom to Trade With Foreigners, and Regu-	The Fraser Institute (www.freetheworld.com),

Database	Number of countries	Period and Frequency	Description	Data provider
	Ukraine data are available)	five years	lation of Business. Each category includes: (a)Size of Government (government consumption, Transfers and subsidies, government enterprises and investment, Top Marginal Income Tax Rate, Top Marginal Income and Payroll Tax Rate, Top marginal tax rate), (b)Legal System & Property Rights (Judiciary independence, Impartial courts, Protection of intellectual property, Military in Politics, Law and Order), (c)Sound Money (Average growth of money minus growth of real GDP, inflation, Freedom of citizens to own foreign currency bank accounts), (d)Freedom to Trade with foreigners (International trade tax revenues, Tariffs, Regulatory Trade Barriers: Hidden import barriers and Costs of importing, Difference between official and black market exchange rates, Access of Citizens to foreign capital markets/foreign access to domestic capital markets, Restrictions in Foreign Capital Market Exchange, International Capital Market Controls) (e)Regulation (Ownership of banks, Competition in domestic banking, Extension of credit, Interest rate regulations, Interest rate controls, Credit Market Regulation, Impact of minimum wage, Unemployment insurance, Labor Market Regulations, Price controls, Administrative Conditions, Entry of New Business, Time with government bureaucracy, Starting a new business, Business Regulations)	Economic Freedom of the World, Annual Report
Freedom in the World	192 and 18 territories	1972−2003 Annual	3 indicators: Political Rights, Civil Liberties, Freedom Status	Freedom House
International Country Risk Guide	140	1984−present Monthly	22 indicators , including: (a) political components such as corruption, bureaucracy, tensions and conflicts; (b) financial components such as foreign debts, current accounts and exchange rates; and (c) economic components such as budget balances, current account balances and inflation rates	The PRS Group (www.countrydata.com)
What Works in Securities' Laws	49	1996−2000	This study was done in 2000 and it examined the effect of securities laws on stock market development in 49 countries focusing specifically on how these laws	NBER. See [66]

Database	Number of countries	Period and Frequency	Description	Data provider
			regulate the issuance of new equity to the public. The data includes in particular: ownership, index of burden of proof against directors, index of power of supervisors to command documents, index of investigative powers, index aggregating stop and do orders that may be directed at the issuers, index of orders, index of criminal sanctions, index of private enforcement, index of public enforcement, average of the ratio of stock market capitalization held by small shareholders to GDP, number of domestic firms, population, index of anti-director rights, efficiency and integrity of the legal environment, effectiveness of the government, corruption perception index, government ownership of banks, average value of five different indices of ethonolinguistic fractionalization, percentage of the population that belonged to the Roman Catholic religion, ratio of value traded to GDP and others	http://post. economics. harvard.edu/ faculty/ shleifer/ papers/se- curities_ data.xls
Global Corrup- tion Re- port (GCR)	175	1995−2004 Annual	The annual GCR contains macro cross-section data and rankings of countries for 2 indices - the Corruption Perceptions Index and the Bribes Payer Index. Corruption index based on data from 15 different sources. Bribes Payer Index primarily looks at key factors influencing corruption, covers unfair business practices, and assesses the readiness of the private sector for new bans on bribing practices	Transparen- cy Interna- tional http://www. globalcorrup tionreport.org/
The 7th UN Sur- vey on Crime Trends and the Opera- tions of Criminal Justice Systems (1998− 2000)	92	1998−2000 Annual	The survey studies main components of the criminal justice system for 1998−2000. Data collected from the official addresses clearly defined jurisdictions (such as national or federal) and are statistically valid. It covers the following arrears: police, prosecution, prisons, and courts	United Na- tions Office on Drugs and Crime (UNODC) http://www. unodc.org/ unodc/en /crime_cicp_ survey_se- venth.html

Database	Number of countries	Period and Frequency	Description	Data provider
Polity IV	187	1800−2002 only few countries are avail. since 1800. Annual	The database contains coded annual information on regime and authority for all independent states with population greater than 500000. Polity IV includes indicators of democracy and autocracy, authority characteristics, polity regime transitions, regime durability, executive constraints, political competition, and others	Center for International Development and Conflict Management
Political Institutions	177	1975−2000	Measures of checks and balances, tenure, and stability; identification of party affiliation with government or opposition; and fragmentation of opposition and government parties in legislatures	The World Bank [11]
The Political Constraint Index, 1815−2000 (POLCON)	160	1815−2000	covers: legislative effectiveness, legislative chambers, existence of independent judiciary, independent sub-federal entities, alignment between the executive and the lower legislative chamber, alignment between the executive and the upper legislative chamber, alignment between the legislative chambers, legislative fractionalization	See Henisz [49, 50, 51]
Political Instability and Economic Growth, 1950−1982	119	1950−1982 Annual	includes: populations, inflation, national elections, executive adjustments, one party democracies, democracy with fixed elections, one party rule, unsuccessful and successful coups, successful transfers, imposition of sanctions, assassinations, armed attacks, percentage labor force in agriculture, percentage enrolled in secondary school, consumption growth, political executions, repressions, and others	NBER See [4] http://www. nuff.ox.ac.uk/ Economics /Growth /swagel.htm
Country Indicators for Foreign Policy	196	1985−2000	measures domestic armed conflict, governance and political instability, militarization, religious and ethnic diversity, demographic stress, economic performance, human development, environmental stress, and international linkages	CIFP http://www. carleton.ca/ cifp/
Major Episodes of Political Violence, 1946−2002, up-dated May 2003	About 100 involved in armed conflicts	1946−2003	contains 305 episodes of armed conflict and covers all forms of major armed conflicts in the world over the period of 1946 to May 2003	The Center for Systemic Peace (CSP) Compiled by Monty G. Marshall http://members.aol.com/ CSPmgm/ warlist.htm