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THE CONSEQUENCES OF THE CHOICE OF AN ECONOMIC MODEL FOR THE DEVELOPMENT OF CIS COUNTRIES

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Abstract

The development of the CIS countries over 1990-2013 showed that some of these countries use not a variation of traditional economic models (Anglo-American and German-Japanese), but an entirely new model. The article describes the main features of this model as the priority of the rule of patronizing over law; the alienation of the worker from the means of production and management; its dependence on natural rather than intellectual resources, and explains why its use results in low efficiency and high volatility of economic development in these countries. Therefore, the article suggests ways to change it to a more progressive one.

Keywords: Economic Model, Regulation, Efficiency, CIS Countries

JEL Codes: P1, P2, P51, O1

1. Introduction

There is a direct link between a certain type of economic model chosen by the state as its economic model and the current and future level of development of its economy. In general, two major models: Anglo-American and German-Japanese include all variety of economic models used by different countries in market conditions (Groenewegen, 1997).

The Anglo-American model is typical for rich developed countries (Table 1). It bases on a market-led economic growth, with the stock market as the main source of finance, individual success as the main stimulus for individuals to work, and a firm's current profit as main criteria of its performance (Knight, 1957; Alchian and Demsetz 1972; Williamson, 1991).

Developing countries use mainly the German-Japanese model, which represents a model of catch-up development for countries lagging behind in economic development. It is based on government-led economic growth, bank loans as the main source of finance, corporative or national success as the major stimulus for individuals to work, and a firm's long-term profit as the main criteria of its performance (Gelauff and Broeder 1996; Imai and Itami, 1984; Kester, 1992).

Accordingly, the results of operations of two models are differing significantly. Fierce competition between workers, significant social inequalities at the microeconomic level by, and the high propensity of households to consume, and the creation of widely distributed property, unstable economic growth, large country's budget deficit and huge external debt at the macro level, characterizes the Anglo-American model. However, this model performed well concerning

the meeting of public demand, the development and using of commercial innovations, as it limits the monopolization of the economy and creates favorable conditions for the SMEs development.

Table 1. Comparison of two main models of economic development

	Anglo-American model	German-Japanese model
Main users	• Rich countries	• Developing countries
Key features		
Type of economic growth	• Market-led	• Government-led
Major incentive of individuals to work	• Individual success	• Collective success
Main source of finances	• Stock market	• Bank loans
A main criteria of firm's performance	• Current profit	• Long-term profit
Results of using		
At the micro level		
The relationship between workers	• Fierce competition	• Cooperation
Social inequalities	• Significant	• Minimum
The main propensity of households	• to consume	• to save
The distribution of market power	• More equal	• More uneven
At the macro level		
Distribution of property	• Widely	• Concentration
Stability of economic growth	• Low and unstable	• High and stable
Budget balance	• Deficit	• Surplus
External debt	• Large	• Zero or low

Source: developed by the author.

Cooperation and mutual support between employees, minimum social inequalities, high propensity of the population to save at the macroeconomic level by, and the formation of powerful financial and industrial groups, high and stable economic growth, regular budget surpluses and low levels of external debt at the macroeconomic level, are prominent features of the German-Japanese model. This model is performed well under catching up development, since it is based on the acceleration of the development of large manufacturing industry, which allows the economy to take full advantage of economies of scale and, thus, significantly increase the price competitiveness of goods and services, produced inside the country. However, it has certain limitations related to its inability to meet all the requirements of the most exquisite consumer demand and the creation of commercial breakthrough innovation.

The purpose of this article is to develop and test two scientific hypotheses: the first hypothesis that the model, which is used in CIS countries is a new model, rather than variations of traditional economic models, and the second hypothesis that this model is not justified both from an economic and social point of view.

The remainder of this paper is organized as follows. Section 2 presents the literature review, and Section 3 – methodology and data. Section 4 discusses the key features of the economic model used in CIS countries. Section 5 provides main results of the functioning of such a model and Section 6 contains conclusions.

2. Literature Review

In each country, the used economic model has key characteristics, which distinguish it from other countries. By now, researchers have identified two main economic models. These are the Anglo-Saxon model (mostly associated with the U.S. and the U.K.) and the German-Japanese model (so-called because Germany and Japan are its main practitioners). Each of the models of

capitalism differs by the role of the various economic agents in the regulation, development and financing of the economy, in dealing with various socio-economic challenges and problems.

2.1. Macro regulation

In the Anglo-US model, the state involvement is minimal, due to the belief in the self-governing power of the market. Macro policy focuses on managing the short run business cycle. This model leads to an efficient allocation of resources, by assuming well-developed and competitive markets and institutions, and no missing markets, externalities or asymmetric information. Only developed countries can meet these strong requirements (Allen and Zhao, 2007). Over time, the model has changed. Nowadays, it receives some traits of the German-Japanese model, which includes some elements of social security, deposit insurance, universal health care and unionized workforces. Even now, the key values remain the same: the preference for private ownership, large income disparities, high dependence on market forces, and the importance of the stock market for financing of the investments, which stimulate radical innovations. However, the model is subject to market failures due to imperfect information, and macro-economic instability in the absence of long-term national priorities or attitudes (Davis, 2009).

In contrast, social justice are inherent for the German-Japanese model, which takes into account the interests of a broad range of stakeholders both at macro and micro levels. A legal, public and industrial policies' framework of this model aims to support and promote the development of industrial groups formed around banks. The welfare system creates a safety cushion for the poor, not letting them fall below the poverty line. It includes significant subsidies for the unemployed, health- and childcare, as well as retraining programs for laid-off workers. Therefore, higher the social security of the population, which is expressed in a higher life expectancy and low mortality rates, as well as the advancement in the development of improving innovations in manufacturing, technology, equipment and long-term use goods, are main effects of using this model (Davis, 2009).

2.2. Corporate governance

A narrow view of the role of corporations in the economy, which means that firms are to focus on creating wealth for shareholders, is a typical feature of the Anglo-US corporate governance model (Allen and Zhao, 2007). The interests of labor and other stakeholders are subordinate to the interests of shareholders and management, asymmetric information is a source of speculation and profits. Ownership is dispersed and small shareholder have clear dominance in its. For example, in Britain, they account for 80 percent of shareholdings (Hall and Soskice, 2001).

The advanced legal framework, which defines the rights and responsibilities of three key players - management, directors and shareholders, is inherent to this model. The interaction between shareholder and corporation, as well as between shareholders carried out during or outside the annual general meetings (Esping-Andersen, 1996). However, the interest of small shareholders mainly in maximizing dividends is the weak point of the model, which does not always meet the company's needs in a successful long-term development.

In contrast, by the German-Japanese model, corporate governance has traditionally been concerned with a more broad view, which assumes various groups of society as partners rather than rivals or competitors. It has some main features: stakeholders share information and take coordinated action in pursuit of their long-term economic and social goals. Managers act in the interests of employees. The long-run focus minimizes speculations and focuses investment on activities in line with long-term objectives for the stability and well-being of the nation (Davis, 2009). Lifetime employment, seniority advancement and management discipline through competition (Aoki, 1990) are typical characteristics of this model. Banks are main investors, as they hold long-term stakes in other corporations, but non-affiliated shareholders have little or no voice in governance. As a result, there are few truly independent directors, who represent outside shareholders (EWMI/PFS Program, 2005). Boards of directors are almost entirely represented by insiders. Complicated procedures for exercising of shareholders vote's lead to a comparatively low influence of outside shareholders.

The use of this model in conditions of imperfect competition causes a superior allocation of resources. The desire of companies to maximize their values in the presence of negative externalities may cause a misallocation of resources. Only by using of a broader view, they can produce the socially optimal level of externalities (Allen and Gale, 2000). This requires from companies to pay more attention to the interests of a wide range of stakeholders. Therefore, the legal system in these countries constructed in such a way that the companies do not have a sole obligation to pursue the interests of shareholders. For example, in Germany is quite explicit that employees have the same number of seats as shareholders on the company's supervisory board, which is responsible for its strategic decisions. Another example is Japan, where managers do not have a fiduciary responsibility to shareholders (Scott, 1998), and pursue the interests of a variety of stakeholders (Allen and Gale, 2000).

Despite this focus on all stakeholders, the German-Japanese model helps to create more value added in the long term than the Anglo-Saxon model. For example, Toyota has done very well for its shareholders than Ford. However, in terms of wealth, creation in the 1990's Ford briefly outperformed Toyota but over the long run, Toyota has done much better (Allen and Zhao, 2007).

It is also to note, that the disclosure regime in German- Japanese model also differs from the Anglo-US model in several ways. These include: semi-annual disclosure of financial data, compared with quarterly disclosure in the US; aggregate disclosure of executive compensation and supervisory board compensation, compared with individual data on executive and board compensation in the US; and significant differences between National accounting standards and US Generally Accepted Accounting Practices (EWMI/PFS Program, 2005).

2.3. The financial system

The Anglo-Saxon model uses as the main pillar of its financial system the stock markets, while the German-Japanese model - the banks. Therefore, there is a relatively high proportion of securitized company liabilities in the United States – 61% in comparison with Japan and Germany - 15.4% and 21.1%, respectively. On the contrary, the share of the banking system in total financial assets of the economy in the U.S. is about 25%, while in Japan and Germany it reaches 64% and 74%, respectively (Vitols, 2001).

The Anglo-Saxon model emphasizes that markets are better in the provision of basic financial services, stimulating radical innovation, capital allocation, risk management and the prevention of problems associated with the excessive power of the banks. For this reason, the anti-monopoly legislation prohibits banks to be the shareholders of corporations and in providing the multiplicity of services (EWMI/PFS Program, 2005). This suggests that a well-functioning market can improve corporate governance by easing takeovers and making it easier to tie management compensation to company performance (Jensen and Murphy, 1990), better channeling funds for new businesses in emerging sectors (Vitols *et al.* 1997) and facilitating risk management (Levine, 1991).

However, all this is true only by the presence of developed and competitive financial markets, which is absent in many developing countries. Otherwise, it may cause the following problems: powerful banks can stymie innovation by extracting informational rents and protecting established firms with close bank-firm ties from competition (Hellwig, 1991). They can collude with firm managers against other creditors and impede efficient corporate governance (Wenger and Kaserer, 1998).

Long-term links between bank and corporation and presence of universal banks (there is no distinction between commercial banks, investment banks, or stock brokerages) are main characteristics of the German-Japanese model. Bank-based systems, inherent to this model, are better at mobilizing savings, identifying good investments, and exerting sound corporate control, particularly during the early stages of economic development and under the presence of a weak institutional environment (Levine, 2002).

Banks can exert a strong impact on the top management of firms, giving financial resources and advices for their development, or voting on shares the banks have acquired or hold in deposits. This can prevent debtor firms from riskier investments (Bencivenga and Smith, 1991). The bank-based view implies also that banks can reduce moral hazard through effective

monitoring and controlling (Diamond, 1984), the signing of long-term contracts with firms that helps to ease asymmetric information distortions, and thereby boost economic growth (Sirri and Tufano, 1995).

The bank-based view also stresses the limitations of market-based systems, as liquid markets may create a myopic investor climate. Investors can lose their money for nothing or win something that they have not earned. For this reason, they have little incentive to engage in the development of real business. Thus, better market development may hinder corporate control and long-term economic growth (Bhide, 1993).

Therefore, banks – as coordinator of investors – are better than uncoordinated markets at monitoring firms and reducing post-lending moral hazard (Boot and Thakor, 1997). Banks also have more power to force firms to repay their debts than atomistic markets, especially in countries with weak contract enforcement conditions (Rajan and Zingales, 1998). Finally, for developing countries, it takes a much longer time to develop efficient stock markets than to create a sound banking system. Therefore, in the absence of well-developed stock market, banks have more capabilities to ensure appropriate monitoring of firms and managers (Popov, 1999, p. 2).

2.4. The system of labor relations

Flexible labor markets and ensuring the individual employee wages characterize the Anglo-Saxon model of capitalism. At the same time, there is a high differentiation between the wages of employees and senior staff managers, and top management normally has unilateral control over the firm, including substantial freedom to hire and fire (Hall and Soskice, 2001).

By contrast, workers participation in the regulation at the levels of firm, branch and the nation, and high rates of unionization are typical to the German-Japanese model. This helps to take into account the interests of workers by all major decisions and prevents their transformation from the driving force into simple cogs of the economy. This implies the protection and care of health, human dignity and the right to the self-realization of employees. The Anglo-Saxon model is the system of fierce competition among workers for a place under the sun, while the German-Japanese model is a system of cooperation and collaboration between employees. Naturally, the second model provides greater loyalty and higher initiative to hard work among broad number of workers than the first one.

Executives in the U.S. and the UK have higher salaries on average and a greater proportion of their compensation is performance related. Senior executives in Japan and Germany are lower paid and relatively little tied to the stock price of the company (Brealey *et al.* 2006), which makes them a little interested in short-term results of the company. This makes the growth of companies by German-Japanese model more stable and foreseeable, than in the Anglo-Saxon model, which is characterized by high volatility and sharp ups and downs of production. On the other hand, in the German-Japanese countries, CEO pay is 20 times greater than average worker pay, while in the Anglo-American it is 300 times greater. However, the prospect of being 20 times richer than most people is enough incentive for hard work (Davis, 2009).

2.5. Forms of inter-firm relations

In countries with liberal capitalism, standard market relationship and enforceable formal contracts form the basis of the inter-companies relations. In contrast to this, closer inter-firm linkages, long-term cooperation, and coordinated interaction forms a basis of the German-Japanese model, where professional associations (Hall and Soskice, 2001, p. 30) perform business self-regulation function.

The banks' participation in the ownership and management of enterprises is prohibited in Anglo-Saxon countries, but law allows it in the countries using German-Japanese model. This is one of the main reasons for the formation of powerful finance-industrial groups around the banks in the second case, and the almost complete its absence - in the first case. The direct consequence is a better use of synergies from closer cooperation between firms using the

German-Japanese model, which reflects in higher rates of growth of business and economy than in the case of Anglo-Saxon model.

2.6. Social protection

Two models of capitalism differ greatly with regard to social protection and investments in human capital. The degree of social protection is very low in the Anglo-Saxon model, as the strong social protection associated with the violation of the laws of the market and individual freedom. The state's role in the social protection of citizens is also low, as it aims only at the most necessary. Therefore, the countries using this model have a high level of social stratification of the population. In these conditions, the private insurance system acts as a main vehicle to protect people from the adverse effects of the market system (Davis, 2009). Therefore, this system in its original form is tough. It leads to a sharp polarization of incomes of the population in the community, as the current income of the population, and their future insurance proceeds vary widely depending on the capabilities of persons. Moreover, it does not provide social protection to the entire population, since some people are not able to do insurance contributions. As a result, a part of the population remains socially unprotected and vulnerable.

Despite this, the German-Japanese model is a socially oriented model. It pays a lot of attention at all levels of management to the social protection and investments in human capital, and considers them as a basic prerequisite for active employee participation in economic life and as a key driving force of economy, especially in conditions of the information age. Here, social protection extends to all layers of the population, without exception. Although there is no strong difference in incomes of the population, as well as its provision of pensions. Here, as a rule, there is no eye-catching luxury, but there is no extreme poverty.

A large differentiation in rendering social assistance, depending on the experience, seniority, or the branch, wherein the employee is engaged, stimulates people to develop and not to abuse with the welfare system. Such a system of social protection is a typical for such countries as Germany, Austria, France, Italy and others (Esping-Andersen, 1996). The private insurance system for the mitigation of the adverse effects of market on people acts here only as an additional, not as a basic means of social protection of population.

2.7. The system of education and training

In the Anglo-Saxon model, workers do themselves personal investments in own education and training (Hall and Soskice, 2001). The role of government in the financing of such costs is very low. In the German-Japanese model of capitalism, strong vocational training of staff (coaching) is a typical feature of the education system and staff receives all necessary knowledge and skills within firms. "Germany relies on industry-wide employer associations and trade unions to supervise a publicly subsidized training system" (Hall and Soskice, 2001, p. 25).

From the standpoint of equal and freer access to education as the main condition for the successful social development of the people, the second model is more preferable, although more expensive for the government in the short term. However, in the long run these additional costs are more than compensated for by the more active and productive participation of all members of society in public life.

2.8. The organization of innovation process

Anglo-Saxon model focuses on radical innovations, which is characterized by high risks. It refers to fast-growing and high-tech industries such as corporate telecommunications, finance, advertising, entertainment, biotechnology, software and others. The funding of venture companies is main vehicle of the business development and explains its large share in investments of these countries. In contrast, the orientation on long-term projects, which results in the development and application of basic and improving innovations, is main feature of the German-Japanese model. Its use is effective in such sectors as manufacturing, technology, equipment and long-term use goods (Hall and Soskice, 2001).

As a conclusion of the literature review, it should be noted that the majority of economists believe that the economic model best suited to the current needs of transition economies is a bank-based (German-Japanese type), not a market-based (Anglo-American type) model. It is more suitable for catching-up, which is typical for developing countries that strongly lagged behind in their development. Just this type of a system emerges in the most of the post-communist countries (Blasi *et al.* 1996; Popov, 1999). However, some researchers indicate that although overall financial development has robustly links with economic growth, there is no support for either the bank-based or the market-based view (Levine, 2002).

3. The Methodology and data

In this research, different methods are used to test the above-mentioned hypotheses. To verify the first hypothesis that the economic model used in CIS countries is a new model, and not the variation of traditional models, the descriptive method of the review of available scientific data on this problem, and the method of a comparison of key parameters of economic and social development in different countries, are used. These enable to identify many cases, which traditional models do not cover, as well as theoretically reveal the key features of the new economic model.

To test the second hypothesis, the method of the grouping statistical data by countries with the similar models, the method of selection of the most important indicators of the economic development in different countries, and the method of comparing the countries with various models are used. This allowed us to test the hypothesis whether the model in the CIS countries less effective than the traditional economic models.

Data for the research are the database of the World Bank, available for various countries and regions, as well as other sources (Appendix 1). The sample data covers the period from 1990, when the Soviet Union broke up into several independent states, and reforms have initiated to transform the socialist system into a capitalist, up to 2014. It should be paid attention that the statistics are not always available for the entire period; in this case, we considered the existing data at our disposal.

4. The economic model of CIS countries and its main features

At first, we would like to check the first hypothesis that the model used in CIS countries is a completely new model and not a type of traditional models. If this is a new economic model, it must contain features that are not typical or cannot be explained by traditional models.

4.1. The difference from traditional economic models

4.1.1. Macro regulation

Government officials in these countries pursue mainly two aims: to prevent a steep decline in their popularity and to protect the interests of those business structures closest to the government (Lane, 2007; Kislitsyn, 2014). This is its essential difference from the traditional model, which suggests that the people rule and they rule in own interests, and not in the interests of officials.

The important feature of the economic model of CIS countries is that it combines contested elections with pervasive political clientelism (Hale, 2010), which is not typical for traditional economic models that assume democratic elections and a regular re-election of authorities.

Some CIS countries can be identified as a post-soviet rentier states, which are characterized economically by huge resources and low production diversification, and politically by strong autocratic presidential with neopatrimonial structures (Franke *et al.* 2009).

Due to aforementioned reasons, the economic policies of the CIS countries not accompanied by an increase of efficiency of functioning of the economy in both short and long term. It does not focus on providing more efficient functioning of the market (as in the Anglo-Saxon model), as well as to ensure social justice (as in the German-Japanese model).

4.1.2. Corporate governance

Corporate governance in the CIS countries is more similar to the type used in the German-Japanese model. Business owners are also its major shareholders. However, there are important differences. If in the German-Japanese model great attention is paid to the partnership of various groups, in the model used in the CIS countries it is absent. Persons affiliated with authorities are usually owners or patrons of large businesses. The prominent feature of corporate governance in CIS countries is the exclusive focus on getting fast cash income and unwillingness to deal with the real needs of firms, as people became owners usually through privatization, and did not create this business from scratch. As for SMEs, it is the feeding glade for officials. Therefore, it is no coincidence that "government policies in CIS countries was focused on promoting the interest of large financial-industrial groups (FIG), despite announced state support of SMEs. SMEs were instead hardly pressed by taxation and regulations of all kinds" (Naciri, 2008, p. 279). As noted by Steves *et al.* (2004, p. 32): "Small firms and privately-owned firms continue to pay a higher proportion of annual revenues in bribes than medium-large firms and state-owned firms, further damaging the prospects for growth in this crucial sector of the economy". Each change in the balance of power in authority leads to the inevitable change in the list of owners of large enterprises, in contrast to developed countries, where there is no such connection. CIS countries conducted inconsistent stop-and-go reform policy prone to the political struggle between various interest groups (McGee, 2008).

4.1.3. The financial system

The important source of revenues in the above countries is natural rent. According to the World Bank, the share of natural rent in the GDP reaches in Azerbaijan 36%, in Turkmenistan - 31%, in Kazakhstan - 30%, in Uzbekistan - 20%, in Russia - 18%, in Kyrgyzstan - 10 %, and Ukraine - 8% (World Bank, 2016). However, CIS countries with poor natural resources receive not less income from the remittances. For example, in 2015, the remittances from citizens working abroad consist in Tajikistan 36.6% of GDP, in Kyrgyzstan - 30.3%, in Moldova – 26.2%, in Armenia - 19.1%, in Georgia - 12%, and in Uzbekistan - 9.3% (World Bank, 2016). Thus, the effect of remittances from migrants, received by poor countries of the CIS, was comparable with the income of rich CIS countries from oil and gas sector. Despite that, the main source of funds in the developed countries using the Anglo-Saxon model is a stock market, and in the German-Japanese model – the banking system.

Another distinctive feature is the extremely unequal distribution of income in CIS countries, which is even higher than in the countries using the Anglo-Saxon system. For example, interpersonal inequality in the United States is on a par with that of Russia. However, its interregional inequality is far lower, and grows far more slowly (Remington, 2015).

4.1.4. The system of labor relations

On the one hand, model of labor relations in these countries is similar to the Anglo-Saxon model, as there exists a high differentiation between the wages of employees and senior staff managers. The top management normally has unilateral control over the firm, and the unionization rates are low, as heavy industry where unions were common has lost its positions during the last twenty years. On the other hand, not all CIS countries¹ have implemented individual labor contracts, lifted restrictions for management to hiring and firing procedures, and weakened social protection for workers, that is typical of the Anglo-Saxon system.

Besides this, the model has the features that are not typical for the market economy and are inherent to the command economy. This includes propiska - a system of people residence registration, a compulsory system of temporary registration for visitors, if they visit for a period of more than specified by the authorities that restrict the free movement of labor inside the country.

¹ Five CIS countries (Belarus, Moldova, Tajikistan, Turkmenistan, and Uzbekistan) have retained centrally planned wage setting (Pavlova and Rohozynsky, 2005).

Another example is a centrally wage setting system for low-paid workers, which limited the freedom of wage determination by market forces.

4.1.5. Forms of inter-firm relations

Closer inter-firm linkages, long-term cooperation, and coordinated interaction among firms belonging to the same financial-industrial groups prevail in CIS countries as it is in the German-Japanese model, despite the low role of trade unions and the high difference in the level of salaries that are typical of the Anglo-Saxon model. This is because large shareholders dominate in the ownership structure of firms as by the German-Japanese model.

However, the model used in the CIS has significant differences from the traditional models. This includes lax contractual discipline and enforcement that forces enterprises to keep excess inventories or maintain extensive in-shop production of auxiliary goods and services, and led to higher costs and lower competitiveness (Golikova and Kuznetsov, 2013). Another large problem of inter-firm relationships in the CIS countries is the high level of corruption. The Business Environment and Enterprise Performance Survey (BEEPS) surveys conducted by the EBRD and the World Bank in 2002 found that administrative corruption is still a severe problem in some CIS countries, which have the heaviest bribe taxes among the transition countries (Steves *et al.* 2004).

4.1.6. Social protection

High level of social disadvantages and inequality; growth of the commercialization of the social infrastructure; low access to education, health and quality leisure; manifestations of authoritarianism and corruption in the regulation of the economy, are typical features of CIS countries (Gorodetskii, 2014). CIS countries also have the “ineffective systems of labor relations and social protection, which generate extensive informal sector employment and the concomitant problems of abuse of social benefit systems, workers’ rights, and illegal labor migration.” (Pavlova and Rohozynsky, 2005, p. 16).

4.1.7. Education and training

There are “large mismatches between the skills of the labor market supplied by outdated education systems on the one hand and the skills that require the new market economies, on the other. This is especially true for cities and regions in which one or few enterprises dominate in the economy” (Pavlova and Rohozynsky, 2005, p. 16).

4.1.8. Organization of innovation process

Distrust over intellectual property rights protection prevents tighter market relationships between R&D institutions and producers and may lead to non-market links between economic agents to overcome the deficiencies in formal institutions (Golikova and Kuznetsov, 2013). Thus, all the mentioned parameters allow us to draw a conclusion that the model used in the CIS is not similar to the traditional economic models, and represents a completely different model.

4.2. The key prominent features of the economic model used in CIS countries

The model used in the CIS countries has the following key features that determine all of the abovementioned manifestations of this model, which distinguishes it from traditional models (Figure 1):

- The priority of the rule of patronage over the law.
- Alienation of people from the ownership and governance.
- Dependence on natural rather than intellectual resources.

Figure 1. The economic model used in the CIS countries

Source: Developed by the author

When we consider the above-mentioned features of this model in more detail, we can see that this is not a variation of the existing model, but an entirely new economic model.

4.2.1. The priority of the rule of patronage over the law

If the law is the rule that is binding for all individuals, the term of “priority of the rule over patronizing over law” is less clear. The priority of the rule of patronizing over law – it is a system of loyalty of subordinate official to a higher official when recruitment is carried out not by a person’s professionalism, but on the principle of his loyalty, membership or affiliation to a certain clan or a tribe. Due to the use of this model, most talented officials cannot penetrate power, and suboptimal decisions are made in economics and politics (Kaser, 2003). The appearance of raiding caused by the above-mentioned factors impede the development of business and cause the migration of a viable business abroad. As noted by Glazyev (2010), incompetent top managers appointed to senior positions on the basis of personal loyalty are not responsible for the inevitable failures in work. Therefore, at best, they prefer to do nothing, at worst - used their official position for personal gains.

Table 2. A comparison of the political systems in the developed countries and in CIS countries

	Developed countries	CIS countries
Nominal number of parties	• Several	• Several
The actual number of parties	• Several, as all parties are independent	• One, as all parties are controlled by a single party
Elections	• Real	• Formal
Main condition for the party to win elections	• Receive the largest number of votes	• Control the process of votes counting
The one-stop duration of the ruling party in power	• One - two elections	• Unlimited time
A key impetus to the work of members of the party	• The threat of the transfer of power to alternative parties	• Administrative carousel
The effectiveness of the political system for the society	• High, the entire apparatus is updated if ruling party loses	• Low, all the office workers remain in their places all time

Source: developed by the author

Considering this feature on the example of the CIS countries, it is obvious that there are no effective mechanisms for the accountability of officials to society (Table 2). Formal and non-binding reporting system of higher officials to the public, because they do not carry any real responsibility before the public for their actions is used instead of the democratic mechanism. Therefore, it is not surprising, that the legal rights index in CIS countries is quite low and for the past 10 years has not been changed (Table 3). The main reason is that the office-holders at all levels of power in CIS countries do not depend on their voters. They depend on the own boss, or the boss of his (her) boss, etc. This is explained by the fact that there are no real elections of state officials both in the center and in the localities. And if they are still available, there is no mechanism to recall deputies and officials, which do not fulfill their duties. As Glazyev (2010) noted, that without real elections, real opposition, and parliamentary control over the executive branch, it is impossible to create a competitive management environment and to build an effective system of governance in the 21st century.

Table 3. Strength of legal rights index (0=weak to 12=strong)

Country Name	2004	2007	2010	2014	Changes in 1990-2011	
					Index	%
CIS countries	4.5	4.9	5.5	4.6	0.1	3.0
• Armenia	5.0	6.0	6.0	5.0	0.0	0.0
• Azerbaijan	5.0	5.0	5.0	2.0	-3.0	-60.0
• Belarus	2.0	2.0	3.0	2.0	0.0	0.0
• Georgia	5.0	5.0	7.0	9.0	4.0	80.0
• Kazakhstan	2.0	2.0	2.0	3.0	1.0	50.0
• Kyrgyz Republic	6.0	7.0	10.0	8.0	2.0	33.3
• Moldova	8.0	8.0	8.0	8.0	0.0	0.0
• Russia	5.0	5.0	5.0	4.0	-1.0	-20.0
• Tajikistan	..	3.0	3.0	1.0	..	..
• Turkmenistan	..	..	..	..	..	..
• Ukraine	5.0	9.0	9.0	8.0	3.0	60.0
• Uzbekistan	2.0	2.0	2.0	1.0	-1.0	-50.0
European Union	6.5	6.7	6.8	5.8	-0.8	-11.8
Japan	5.0	6.0	6.0	4.0	-1.0	-20.0
United States	9.0	9.0	9.0	11.0	2.0	22.2
World	4.9	5.2	5.5	4.9	0.0	0.0

Source: Author's calculations on the data of the World Bank (2014a).

As a result, officials remain in their places until the next election even if they did not fulfill their pre-election promises. From the social point of view, it is extremely inefficient, as they continue to implement further the ineffective policy. While for the society, it would be appropriate to replace non-complying officials on more capable officials in a timely manner, or just change the policy, which is not justified itself.

This also does not guarantee to maintain interests of society, and at the next election a situation can be repeated again - the same officials, though in a different capacity would be involved in public administration. The reason lies in the fact that the party to which they belong is in power all the time. This raises the question of how does the ruling party manages to hold the power for a long period.

This is due to the lack of a real multi-party system in CIS countries, especially in Central Asia (Ryabov, 2001; Grushevskii, 2008). Despite the fact, there are several parties available in the market of public services in CIS countries, but they all tend to be artificial since the ruling party directly or indirectly controls them. Real parties that have their own position and vision on the main issues of the development of the state, which differ significantly from the vision of the leading party, are simply not allowed to the market of public administration. As a result, only the same ruling party is in the market all the time. It means that there is a monopoly in the provision of public administration's services. However, any monopoly is inefficient by definition. As we know from economic theory, it leads to a decrease in social welfare due to the detriment of public interest and lobbying of private interests, and this reduces the volume of services provided by the state in comparison with competitive level. What does it mean for CIS countries? This means that in these circumstances the actual democratic mechanism simply does not work (Bader, 2014). This is true for CIS countries, especially for the super-presidential republics in Central Asia, where governing parties and their leaders are ruling usually lifelong (Grushevskii, 2008). As a result, almost all officials belonging to the ruling party are in public administration for many years, as their seats at particular places do not direct depend on the performance of units headed by them, but on their loyalty to their superiors.

The same refers to entrepreneurs that operate in these countries. The business that is under the patronage of senior officials is given a "green light". However, if a businessperson has no such protection, even though its business is exclusively socially beneficial and cost-effective, then it can only develop to a certain threshold's size, beyond which it would be forced to sell it to the people, patronized by the ruling party. Therefore, the migration of domestic business to abroad got swing now in CIS countries (Kulikov, 2013), despite the fact that the government is trying to improve the conditions for its development.

In western countries, political parties are the real social forces that represent the interests of different segments of society. Therefore, even in the presence of a two-party system, but real, not sham parties, this system works. The threat of the transfer of administrative power from one party to the other forces officials belonging to the ruling party and occupying leading positions in the state apparatus to work harder. Otherwise, if they are not properly performing their duties, there is a real danger that they will lose the support of voters and their power positions in the state.

Such strange metamorphoses is impossible to understand if we assume that public rules the country. However, everything falls into its path, taking into account existing realities in these countries. The place of an official on the career ladder depends not so much on the opinions of his voters about his works, but also on the attitude of his boss, and so on. If an official has good relations with his superiors, then regardless of his results, he will grow rapidly up the career ladder, or sit well on his "hatched" place. However, if he has trouble with his superiors, he can quickly lose his seat, regardless of the results of his work.

Under these conditions, the promotion of officials up the career ladder depends mainly not only on his professional talents and abilities but also on his ability to win the trust of his boss. Therefore, if here the tool for the transition from the lowest to the highest social stratum ever exists, in contrast to western countries, in career ladder, it leads to rise of not the most talented, but most loyal superiors, which often do not have their own opinion. Not accidentally, that the following joke is now popular in CIS countries that poorer studied student's best arranged in life, they tend to become chiefs of entities with the high salary, while excellent, and good students

forced to work on them and live from payday to payday. Naturally, this situation is abnormal for society. Although it can be very convenient for the top officials, as they shine like stars in the sky surrounded by such people, but a clear shortage of talents in the power dramatically reduces the efficiency of public administration. Therefore, most of the CIS countries generally show modest or medium results in many spheres of life, despite the availability of rich natural resources and high intellectual and spiritual potential of their people. Over the years of independence, there was a strong de-industrialization of economies in Russia, Kazakhstan, Azerbaijan, etc. (Koshanov, 2009; Glazyev, 2010). These countries have transformed from the major producers of industrial and high-tech products to the simple raw material suppliers at the world market, and their economies have become strongly dependent on imports of finished products. For example, if in Soviet times, Kazakhstan produced machines with numerical program control, then currently it specializes mainly in the production of raw materials (Tables 4 and 5). If in that time, it fully satisfied its own needs in livestock production and was even its exporter, today it imports such products from other countries like China, Australia, Brazil, etc. However, given the rapid depletion of natural resources and negative impact on the environment, the actual rates of economic growth in CIS countries are not positive as is commonly believed, but even negative by calculations of the World Bank's staff (World Bank, 2010). Moreover, many social achievements were lost, such as free higher education, health, social security, infrastructure, and housing.

Table 4. Production of different commodities in physical terms in Kazakhstan in 1990-2014

Commodities	Units	1990	1995	2000	2005	2010	2014	Change, times
Oil and gas condensate	mln. ton	25.8	20.6	35.3	61.5	79.7	82.9	+3.2
Wool	thd tons	75.2	7.9	0.4	1.2	2.4	1.6	-48.0
Cotton	thd tons	99.3	69.0	95.5	156.3	91.4	62.9	-1.6
Leather	mln.dc2	624.9	18.9	1.9	88.1	99.3	105.3	-5.9
Phosphorus	thd tons	449.0	50.1	15.4	83.4	64.2	88.0	-5.1
Lead	thd tons	290.3	88.5	185.8	135.4	103.4	127.1	-2.3
Meat and offals	thd tons	1076.6	321.4	79.4	85.7	157.2	218.9	-4.9
Vegetable oil	thd tons	95.0	43.5	55.1	167.5	222.9	329.3	+2.9
Processed milk	thd tons	1469.6	278.8	109.6	179.7	295.0	472.9	-3.1
Dairy butter	thd tons	85.1	30.4	4.4	19.7	14.0	18.8	-4.5
Flour products	thd tons	132.5	78.8	37.3	78.4	124.1	152.5	+1.1
Fabrics	mln.sq.m.	255.1	28.8	6.8	35.5	36.8	41.3	-6.2
Shoes	mln pairs	46.6	3.2	0.7	0.8	1.2	1.1	-42.1
Motor fuel	mln tons	3.5	2.2	1.3	2.4	2.9	3.0	-1.2
Phosphorus fertilizer	mln tons	1211.2	140.2	0.2	81.2	40.7	100.1	-12.1
Tinplate and rolled	mln tons	313.0	222.0	218.9	222.7	210.4	76.7	-4.1

Source: Author's calculations on the data of the AKS (2001, 2011, 2014).

Table 5. The structure of industrial production in Kazakhstan in 1990-2014, in percent

Branches	1990	1995	2000	2005	2010	2014	Change, p.p.
Extractive branches	11.2	24.7	44.5	59.1	61.3	60.0	+48.8
– Coal and lignite	3.0	6.8	1.5	1.2	1.1	1.2	-1.8
– Oil and gas	2.6	10.3	38.5	50.6	51.2	50.0	+47.4
– Metallic ores	3.7	6.1	3.2	4.0	5.4	4.7	+1.0
Manufacturing branches	81.5	51.4	45.8	35.2	31.8	32.9	-48.6
– Food industry	23.3	10.6	11.4	7.0	5.7	6.0	-17.3
– Light industry	12.2	2	1.2	0.7	0.3	0.3	-11.9
– Refinery products	2.1	5.2	3.3	2.9	2.7	3.0	+0.9
– Chemical industry	4.3	2.7	1.5	1.0	0.9	1.2	-3.1
– Petrochemical industry	2.0	0.2	0.2	0.6	0.7	1.1	-0.9
– Production of fertilizers	5.2	3.2	0.8	2.1	1.7	2.4	-2.8
– Metallurgy	13.9	17.8	20.3	13.1	13.2	10.3	-3.6
– Mechanical engineering	12.5	5.7	2.6	3.4	3.1	5.9	-6.6
– Manufacture of furniture	1.1	0.3	0.1	0.2	0.2	0.2	-0.9
Electricity, gas, steam supply	6.56	21.7	8.4	5.0	5.9	6.5	0.0
Water supply, sewerage	0.7	2.2	1.4	0.8	1.1	0.9	+0.2
Total industry	100	100	100	100	100	100	0.0

Source: Author's calculations on the data of the AKS (2001, 2011, 2014).

Of course, long-term stay of officials in one place, in the absence of the threat of losing it if they belong to the ruling party or a clan, has lead to a gradual stagnation and degradation of administrative power. Bearing in mind this possibility, authorities provided an option of staff rotation or "carousel", when the same officials transplanted to the place of their colleagues after a certain period. As a result, it looks like as if new people come to the management of different ministries and departments because they really do not have anything with these structures before, but on the other hand - they are all the same old and proven officials from the same "holder of executives." The peak of the carousel was the event of May 12, 2012, when Russian president and prime minister officially exchanged their seats with each other².

On the one hand, new people in power is a good thing - because the power gets albeit artificial, but some shake-up, as new people even from the "old holder" can look at the same thing from different angles that will allow the organization to improve its governance to some extent. On the other hand, this is bad, because nonprofessionals manage government agencies almost all the time. To make this clearer, consider this example. Assume that in the administrative carousel are 30 seats and initially 30 professionals are occupying these seats.

When we assume that officials change their place in the carousel annually, then nonprofessional will be engaged in the management of such a system for 29 years of 30 years, and it will be managed professionally only 1 year of 30 years. Therefore, the results of this type of a management practice will always be below its potential level for the same resources and people capabilities in the country. Hence, it follows that in CIS countries do not the state serve the needs of people, but rather people the needs and whims of bureaucrats. A servant becomes a governor of his lord. In civilized countries, such a situation is not possible, as the piper calls the tune of whom, who pays for it.

4.2.2. Alienation of people from the ownership and governance

Another feature of the management in CIS countries is the alienation of workers from the property (Tretyakov, 2014) and management. This leads to a lack of workers interests in the results of own works, a lower productivity of their efforts and the lack of incentives for the workers. The socio-

² Putin becomes president, and Medvedev - prime minister, although they held before the opposite positions.

economic reforms in these countries have not only reduced but also, on the contrary, increased the alienation of people from the ownership and management. So in Soviet times, all the means of production belonged to the whole society. It means that all the workers were their owners nominally, and one real problem was the alienation of workers from the ownership and management, which reduced their interest in own work and diminished its efficiency. After the transition to a market economy and the subsequent mass privatization, the workers in these countries found themselves without any ownership on the means of production and turned to be wagedworkers. This happened despite the fact that privatization was carried out under the slogan of returning the ownership by means of production to workers in order to increase productivity of their performance. In fact, it resulted in a mass redistribution of ownership by the means of production in favor of persons, who at that time was in power. These persons have received the opportunity to assign them and then to live beyond their own work efforts at the expense of profit derived from the use of factors of production, owners of which they made themselves before.

Therefore, if earlier workers have a sense of patriotism, we can remember the famous Stakhanov movement, and then at the present time no one wants to take the initiative, because he (she) knows that all benefits of his (her) efforts will be used to enrich the owners of the company, who do not live in poverty. A very interesting example shows Lakshmi Mittal's steel empire. For example, in 2013, he asked his workers at the Karaganda Metallurgical Plant to reduce their demands in terms of salary payment, because the company was in a crisis, but at the same time this situation did not prevent him from making a magnificent multi-million dollar wedding of his niece in England (Petrov, 2013; Tengri News, 2013). Of course, the private interests have boosted productivity by the increasing interests of workers in the obtained results and their responsibility for the received decisions. Nevertheless, it was typical only for SME's, which are not large and their owners can clearly see the efforts of each worker.

The situation was different in large enterprises, where privatization, as a rule, did not improve, but at least reduced the incentives of employees to a more productive work. Large enterprises, especially in CIS countries, are monopolies or oligopolies, because from the beginning, they built in accordance with the principle of one company for one region. Therefore, their privatization has led to an increase in monopolization. But if the state bodies can influence the state monopoly, then their influence on private companies is more limited. Privatization in CIS countries held without taking into account the technological relationship between the different units of largest enterprises, which produced various goods ranging from raw materials to finished products. Because of privatization, the different links of the entire production chain have appeared in different hands, which drastically reduced the efficiency of the whole production (Kalyuzhnova, 1998).

Suppose that during privatization, one entrepreneur has owned a mining firm, the second one – a processing plant, the third one – a research institute, and the fourth one - a wholesale shop. However, the effectiveness of the entire system would be significantly lower, due to the loss of synergy. Manufacturer of raw materials instead of delivering them to the local processing companies at the domestic price would be preferred to sell it abroad at world prices. The processing plant would force to purchase raw materials around the world rather than domestic prices, which causes a reduction of its production and its subsequent bankruptcy. Research institute may become bankrupt if it would have lost orders from the upstream and downstream enterprises. Wholesale store, deprived of supplies of finished domestic products after the privatization in order to survive would be to start to specialize in the supply of imported goods. As a result, the benefits that the mining company could get from privatization would be much less than the overall loss for the society. For society as a whole, it was more profitable to produce and sell finished products rather than raw materials, since they are much more expensive. The bankruptcy of processing plant and research institute will lead to the loss of production and jobs for society and the reorientation of the wholesale store from sale of domestic products to sell of imported products. This would worsen the balance of payment of a whole country and reduce the stability of its currency. Thus, all the links in a single processing chain would be received damage from the privatization of large enterprises. In addition, for the entire society, the policy of privatization of large enterprises, in reality, turned to be a policy of de-industrialization and production simplification (Gurova and Ivanter, 2013). "The degradation of the real economy and

the simplification of its structures likewise resulted in declines in professionalization, skilled training, and certification of the country's working class, scientific and technical intelligentsia, and engineering corps" (Gorodetskii, 2014, p. 63).

It is no coincidence that the results of privatization in the CIS countries in 1991-1994 were not economic growth, as its organizers assumed, but a large decline in production. The losses of the CIS countries from the production decline exceeded losses of the USA during the Great Depression in the 1930s. If in the USA, there was a production fall by 30%, most of CIS countries have lost 35-65% of their production in the early 1990s (Table 6). Moreover, even after twenty years, the production of many kinds of agricultural products, especially livestock, has not yet restored, and still significantly lower than in 1989-1990s, when the Soviet Union was collapsed (Gurova and Ivanter, 2013). The greatest decline in production occurred in industries producing knowledge-intensive and high-tech products. Many high-tech products ceased to produce. As a result, highly paid and skilled specialists forced to seek other activities, such as shuttle traders or unskilled laborers.

Table 6. Dynamics of GDP in the CIS countries (GDP 1989 = 100%)

	Start year of the crisis	Year of passing its bottom	Year of the achieving of pre-crisis level	The full duration of the crisis, years	The decline at the bottom, %	Growth in 1989-2013, times	The growth in 2013 to the bottom, times
Armenia	1990	1993	2004	14	-56	1.60	3.61
Azerbaijan	1990	1995	2006	16	-63	2.26	6.12
Belarus	1990	1995	2003	13	-35	1.96	3.00
Georgia	1989	1994	not reached	continues	-77	0.69	2.93
Kazakhstan	1990	1995	2004	14	-39	1.82	3.00
Kyrgyz R.	1991	1995	2008	17	-46	1.23	2.30
Moldova	1990	1999	not reached	continues	-66	0.66	1.94
Russian	1990	1998	2007	17	-44	1.14	2.05
Tajikistan	1989	1996	2013	24	-69	1.03	3.27
Turkmenistan	1989	1997	1999	10	-19	3.14	3.88
Ukraine	1990	1999	not reached	continues	-62	0.66	1.73
Uzbekistan	1991	1995	2001	10	-18	2.46	2.99

Sources: Calculated by the author based on the data for the years 1990-1913 (World Bank, 2014b) and data on Armenia, Azerbaijan, Kazakhstan for 1990 (Friedman and Aliyev, 2014).

4.2.3. Dependence on natural rather than intellectual resources

Finally, the next feature of the model used in the CIS countries is its non-innovative or raw material nature (Fedotov and Titov, 2009). For example, "A decade of transition has eliminated the industrial base and left the Kazakhstani economy dependent upon raw materials – especially oil and gas" (Ofer and Pomfret, 2004, p. 267). This is because from the beginning of markets reforms, the state did not bet on the use of the intellectual potential of the nation, but on the use of its existing natural resources such as soil, water, mineral resources, geographical location, climate, etc. Since the growth of the scientific staff and specialists took a long time, the authorities have relied on foreign capital, which at that time for government officials seemed the least expensive and fastest way to obtain a large and quick profits.

The CIS countries lag far behind EU countries, Japan and the US by the development of intellectual potential and its use in the production, as can be indirectly judged by the number of patent applications per 1 mln people (Table 7). If the CIS countries in 2013 recorded an average of 194 patent applications, the European Union received 271 patent applications (1.4 times more), in Japan - 2579 (in 13.3 times more), in the United States - 1,808 (9.3 times more).

Table 7. Patent applications per 1 million people

Country Name	1995	2000	2005	2010	2013	Changes in 1990-2011	
						Units	%
CIS countries	126	158	154	190	194	68	54
• Armenia	88	41	69	48	44	-44	-50
• Azerbaijan	33	..	34	30	..	..	..
• Belarus	102	120	151	204	173	71	69
• Georgia	149	95	109	81	74	-75	-50
• Kazakhstan	87	102	107	120	129	42	49
• Kyrgyz Republic	32	17	..	26	20	-13	-39
• Moldova	84	69	108	42	27	-57	-68
• Russian	165	221	225	298	313	148	90
• Tajikistan	11	8	5	1	0	-11	-96
• Turkmenistan	..	..	..	..	..	..	..
• Ukraine	116	147	119	116	119	3	3
• Uzbekistan	46	39	17	22	18	-28	-60
European Union	261	341	272	266	271	10	4
Japan	2940	3308	3342	2691	2579	-361	-12
United States	857	1049	1322	1585	1808	951	111
World	171	208	240	266	336	165	97

Source: Author's calculations on the data of the World Bank (2014a).

At the same time, the CIS countries more than others relied on the use of natural resources, which can be judged by the relatively high share of natural rent and agricultural in the GDP of these countries. As regards the use of raw materials, in 2013 the share of the natural rent was 17.9% of GDP in the CIS countries, which was several times larger than in developed countries - from 0 to 1.2%, and the world average - 4.9%. Especially high share of natural rent was in the following CIS countries: Azerbaijan 36%, Turkmenistan - 31%, Kazakhstan - 30%, Uzbekistan - 20%, Russia - 18%, Kyrgyzstan - 10 %, and Ukraine - 8% (Table 8).

Table 8. Total natural resources rents (% of GDP)

Country Name	1990	1995	2000	2005	2010	2013	Changes in 1990-2013	
							p.p.	%
CIS countries	16.3	14.2	38.1	34.5	21.8	17.9	1.6	9.6
• Armenia	0.0	0.7	0.4	0.9	3.1	3.9	3.9	..
• Azerbaijan	24.8	38.6	55.2	64.6	47.7	36.4	11.6	46.7
• Belarus	1.7	3.9	3.9	2.9	2.1	2.3	0.6	35.2
• Georgia	0.4	0.4	1.2	1.1	1.3	0.9	0.5	142.3
• Kazakhstan	20.8	17.8	43.7	51.4	37.8	29.7	8.9	42.7
• Kyrgyz Republic	1.9	0.9	1.5	4.5	11.8	9.8	8.0	423.9
• Moldova	0.0	0.5	0.4	0.3	0.2	0.3	0.3	..
• Russia	19.0	14.8	43.0	38.5	21.6	18.0	-1.0	-5.1
• Tajikistan	1.2	0.5	0.9	1.1	1.5	1.7	0.5	39.5
• Turkmenistan	0.0	76.4	0.0	0.0	45.0	31.4	31.4	..
• Ukraine	4.3	4.2	8.6	10.7	11.6	8.3	4.0	92.9
• Uzbekistan	18.3	24.5	50.8	4.6	30.5	20.1	1.8	9.7
European Union	0.6	0.5	0.8	0.8	0.6	0.5	-0.1	-9.8
Japan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-26.0
United States	1.3	0.8	1.0	1.5	1.2	1.2	-0.1	-6.9
World	2.9	1.8	2.8	4.5	4.8	4.9	2.1	72.3

Source: Author's calculations on the data of the World Bank (2014a).

The share of agriculture in the GDP on average was also high - 5.2% in CIS countries, compared to 3.1% in the world and from 1.2% to 1.6% - in the developed countries (Table 7). The highest share of agriculture to GDP has been observed in Tajikistan - 27.4%, Armenia - 20.7%, Uzbekistan - 19.2%, Kyrgyzstan - 17%, Turkmenistan - 14.5%, Moldova - 13.8%, Ukraine -10.2%, Georgia - 9.4% and Belarus -8.1%. Hence, we have shown that CIS countries use a completely new model, which determines the main features of the socio-economic development in these countries. Thus, with regard to the CIS countries, it is more correct to speak about the use of the new model, and not the traditional one.

5. Main results of the functioning of such a model

For verifying the second hypothesis that the economic model used in the CIS countries is not cost effective and socially justified, we can compare the main results of the model applied in the CIS countries with the results of the traditional economic models used in developed countries on statistics for 1990-2013.

The model is not suitable for the most of the population since it raises the following acute problems:

- A strong dependence of the situation in the economy on market conditions. It is caused mainly by the high share of the primary sector in the structure of production, as world commodity prices are more volatile than prices for finished products. High dependence on exports of raw materials (Table 8) or agricultural products (Table 9), has led to the fact that the economic situation in raw export-oriented CIS countries is heavily dependent on world commodity prices.

Table 9. Agriculture, value added (% of GDP)

Country Name	1990	1995	2000	2005	2010	2013	Changes in 1990-2013	
							p.p.	%
CIS countries	17.9	9.6	8.7	6.5	5.2	5.2	-12.7	-70.8
• Armenia	17.4	42.3	25.5	20.9	19.2	20.7	3.4	19.4
• Azerbaijan	29.0	27.3	17.1	9.9	5.9	5.7	-23.4	-80.5
• Belarus	23.5	17.5	14.2	9.9	10.6	8.1	-15.5	-65.6
• Georgia	31.7	52.2	21.9	16.7	8.4	9.4	-22.3	-70.3
• Kazakhstan	..	12.9	8.7	6.8	4.8	4.9	..	..
• Kyrgyz Republic	33.5	43.9	36.7	31.9	19.4	17.0	-16.5	-49.3
• Moldova	36.1	33.0	29.0	19.5	14.4	14.8	-21.3	-59.1
• Russia	16.6	7.2	6.4	5.0	3.9	4.0	-12.6	-75.8
• Tajikistan	33.3	38.4	27.4	24.0	22.1	27.4	-5.9	-17.7
• Turkmenistan	32.2	17.2	24.4	18.8	14.5	..		
• Ukraine	25.6	15.4	17.1	10.4	8.3	10.2	-15.4	-60.3
• Uzbekistan	32.8	32.3	34.4	28.0	19.1	19.2	-13.6	-41.4
European Union	..	2.9	2.3	1.7	1.6	1.6		
Japan	2.1	1.8	1.6	1.2	1.2	1.2	-0.9	-43.1
United States	..	..	1.2	1.2	1.2	1.4		
World	..	6.4	4.0	3.3	3.0	3.1	160.6	175.2

Source: Author's calculations on the data of the World Bank (2014a).

Output grows when commodity prices are rising, and shrinks when they fall below a certain level. Especially, this situation is typical for the economy of Russia, Kazakhstan, Azerbaijan, Turkmenistan, and Uzbekistan (Friedman and Aliyev, 2014), and to some extent for the economy of Belarus³ in regard to price of oil and gas. For Kazakhstan, Kyrgyzstan, Uzbekistan, Armenia, Georgia, and Tajikistan is the case in relation to the price of electro energy and nonferrous metals, Armenia, Georgia, Moldova, Turkmenistan, Uzbekistan, Ukraine and Belarus – in relation to the price of agricultural products. This leads to a pronounced cyclical development of the economy and creates uncertainty for businesses and public in the future. Such type of development is an imminent characteristic of commodity-dependent countries, but not countries, which produce finished products. If commodity prices usually vary by 2-3 times, the average amplitude of the price fluctuations of the finished products is usually in 3-5 times smaller (Figure 2).

Figure 2. Monthly price changes of selected groups of world commodities, in 2005-2017

Note: Manufactures prices are export and import prices of such goods. Food prices include cereal, vegetable oils, meat, seafood, sugar, bananas, and oranges prices. Metals prices include copper, aluminum, iron ore, tin, nickel, zinc, lead, and uranium prices. Fuel prices include crude oil, natural gas, and coal prices. The coefficient of variation that describes the risks of price changes for the analyzed period was 7% for manufactures prices, 18.5% for food, 24.3% for metals, and 31% for fuel prices.

Sources: Author's calculations based on the data of the WTO Secretariat (2017) and World Bank (2017).

- The extensive specialization at the lower levels of the technological chain and evidence of Dutch disease observed in a number of CIS countries lead to degradation of the processing industries. Their products become uncompetitive due to rising real exchange rate, coupled with an influx of foreign exchange into the country (E'gert, 2009; Dobrynskaya and Turkisch, 2009; E'gert, 2012). For example, in Kazakhstan, a huge increase in oil production and a reduction in the production of many traditional products in 1990-2014 was observed (Table 4 and 5) due to the growth in the real effective rate of Tenge at the same time.

³ Although Belarus has a large processing industry, its competitiveness is linked largely to the procurement of crude oil from Russia (160-175 mln barrels per year) at preferential prices. If these prices increased up to the world level, a large part of the economy of Belarus would be uncompetitive. At the end of 2015, the Belarusian government had hoped to receive \$2.5 bln from that source, but cheap oil is practically "halved" these hopes. Largely for this reason, the trade between Belarus and Russia from January to August 2015 fell by almost 30% compared with the same period in 2014 - up to 18.2 billion dollars (Manenok, 2015).

Moreover, small CIS countries are highly dependent on the situation in the major CIS countries, which form a significant demand for their products and labor force, and from where they get the bulk of remittances and foreign direct investments. For example, in 2015 remittances by migrant workers to Tajikistan were equivalent to 36.6% of GDP, in Kyrgyzstan - 30.3%, in Moldova – 26.2%, in Armenia - 19.1%, in Georgia - 12%, and in Uzbekistan - 9.3% (World Bank, 2016, p. 22).

Therefore, lower prices on oil and gas have hardly hit the economies of all CIS countries, not only those, engaged in the extraction of raw materials. For example, in the first quarter of 2015 the volume of transfers from Russia to CIS countries was at 45.5% less than in the first quarter of 2014. This transfer is particularly strong decreased during the year in Turkmenistan by 62.5%, in Moldova – by 51%, in Azerbaijan – by 50%, in Ukraine - by 50.5%, in Uzbekistan - by 47.2% (Denisenko *et al.* 2015). Concerning CIS countries Moody's (2016) has noted that spillover from Russia's recession, including weak import demand, lower remittance and FDI outflows, is contributing to slower growth in all CIS countries.

- Application of the existing model leads to inefficient use of resources, and a marked deterioration of the environment due to the use of active policy of the forced extraction of natural resources. Energy use in the CIS countries per each \$1,000 of GDP was on average in 1.6-2.4-fold greater (Table 10), and CO₂ emission in 1.5-2.5 times higher (Table 11) than in developed countries. It can also see indirectly, based on environmental monitoring data in some CIS countries. For example, in Kazakhstan the Caspian seal population has been decreased over past five years in 3 times and was 20 000 animals at the end of 2003. Cases of mass mortality of Caspian seals have appeared due the deterioration of the environment and pollution of the sea because of oil production, although authorities deny this. Oil production has strong negatively influence on fisheries resources. 17 major fish kills were officially registered in the Caspian Sea since 1987. Caspian herring virtually disappeared. The fishing of certain species of fish is almost completely stopped now, as their populations have been reduced significantly" (Baideldinova, 2004). A similar situation also observed in Russia (Industrial Ecology, 2013).

Table 10. Energy use (kg of oil equivalent) per \$1,000 GDP (constant 2011 PPP)

Country Name	1990	1995	2000	2005	2010	2011	Changes in 1990-2011	
							kg	%
CIS countries	454	469	377	295	228	223	-231	-51
• Armenia	582	235	224	157	129	134	-448	-77
• Azerbaijan	372	545	315	199	80	87	-285	-77
• Belarus	552	460	338	256	186	188	-365	-66
• Georgia	322	342	199	138	118	125	-197	-61
• Kazakhstan	353	409	247	215	233	227	-126	-36
• Kyrgyz R.	491	308	228	204	185	192	-298	-61
• Moldova	417	496	341	294	246	224	-193	-46
• Russia	306	357	321	251	227	227	-80	-26
• Tajikistan	276	304	293	200	147	139	-137	-50
• Turkmenistan	572	707	617	621	448	426	-146	-26
• Ukraine	462	625	565	417	367	333	-129	-28
• Uzbekistan	743	843	830	590	366	369	-374	-50
European Union	135	129	115	110	101	95	-40	-30
Japan	120	127	127	120	113	105	-15	-13
United States	207	197	175	158	145	141	-66	-32
World	184	173	157	149	139	136	-47	-26

Source: Author's calculations on the data of the World Bank (2014a).

Table 11. CO2 emissions (kg per 2011 PPP \$ of GDP)

Country Name	1992	1995	2000	2005	2010	Changes in 1992-2010	
						kg	%
CIS countries	1.16	1.08	0.82	0.65	0.52	-0.64	-55
• Armenia	0.60	0.50	0.39	0.27	0.22	-0.38	-63
• Azerbaijan	1.23	1.31	0.82	0.51	0.32	-0.91	-74
• Belarus	1.19	1.16	0.73	0.56	0.42	-0.77	-65
• Georgia	0.92	0.21	0.31	0.25	0.24	-0.68	-74
• Kazakhstan	1.49	1.30	0.88	0.75	0.78	-0.71	-48
• Kyrgyz Republic	0.90	0.57	0.45	0.43	0.42	-0.48	-53
• Moldova	1.48	1.18	0.42	0.41	0.35	-1.14	-77
• Russian Federation	0.92	0.93	0.81	0.62	0.56	-0.36	-39
• Tajikistan	0.57	0.33	0.30	0.21	0.18	-0.39	-69
• Turkmenistan	1.13	1.79	1.47	1.47	1.05	-0.08	-7
• Ukraine	1.42	1.70	1.35	0.97	0.85	-0.58	-41
• Uzbekistan	2.07	1.99	1.96	1.41	0.87	-1.19	-58
European Union	0.33	0.31	0.27	0.25	0.22	-0.12	-35
Japan	0.30	0.30	0.30	0.29	0.27	-0.03	-10
United States	0.51	0.49	0.44	0.40	0.36	-0.16	-31
World	0.47	0.45	0.40	0.40	0.37	-0.09	-20

Source: Author's calculations on the data of the World Bank (2014a).

- The bulk of the population dwell in the care of their daily bread constantly, and it tends to live from paycheck to paycheck. 60% of Kazakhstan's population lived in poverty in 2012, rather than 4% as indicated by official statistics (Isabaeva, 2012). In our opinion, these significant differences in the estimates are caused by the artificially defined poverty line in Kazakhstan. It is about 11% of the average wage in the country (AKS, 2013), whereas in developed countries it makes 60% of median income. In other CIS countries, there is a similar or a more severe situation, as most of which have a significantly lower GNI per capita (Table 12). If we compare the CIS countries with developed countries, the per capita GNP in the CIS countries is on average 5.4-8.3 times lower than in developed countries.

Table 12. GNI per capita (constant 2005 US\$)

Country Name	1990	1995	2000	2005	2010	2013	Changes in 1990-2013	
							GNI_cap	%
CIS countries	4687.8	3035.5	3271.0	4521.9	5311.6	5515.8	828	17.7
• Armenia	1096	664	919	1694	2093	2416	1319	120.3
• Azerbaijan	..	674	861	1382	3012	3159		
• Belarus	2328	1514	2095	3132	4412	4661	2332	100.2
• Georgia	..	..	..	1484	..	..		
• Kazakhstan	..	1934	2175	3417	4054	4738		
• Kyrgyz Republic	..	333	392	459	529	603		
• Moldova	..	637	591	931	1067	1259		
• Russia	5680	3511	3775	5209	6172	6600	921	16.2
• Tajikistan	716	239	224	328	411	477	-239	-33.4
• Turkmenistan	..	1223	1311	1588	..	..		
• Ukraine	2717	1256	1172	1808	1944	..		
• Uzbekistan	..	398	439	546	774	921		
European Union	22555	24027	27233	28960	29858	29975	7420	32.9
Japan	31379	33218	34403	36615	37251	38896	7516	24.0
United States	33242	35484	41377	44621	43976	45744	12502	37.6
World	5855	6061	6694	7242	7651	7971	2116	36.1

Note: In the conditions of a significant presence of foreign capital in the country, this figure better reflects the current level of life of the population, than the rate of GDP per capita.

Source: Author's calculations on the data of the World Bank (2014a).

- The all CIS countries characterized by a high level of corruption due to the limited size of natural resources. This is evidenced by the fact that according to the Transparency International by the rating of corruption in CIS countries were on 123-168 places in the world in 2013 (NAK, 2014). The level of corruption in CIS countries is 3.1 times higher than in the USA and in 3.4-3.5 times higher than in Japan and Germany (Table 13).

Table 13. Freedom from corruption

Country Name	1998	2000	2005	2010	2014	Changes in 1998-2014	
						p.p.	%
CIS countries	20	22	23	23	23	-3.7	-4.6
• Armenia	30	30	30	29	27	3.3	4.7
• Azerbaijan	30	30	18	19	23	7.3	10.4
• Belarus	10	39	42	20	25	-14.6	-16.2
• Georgia	10	10	18	39	43	-32.8	-36.4
• Kazakhstan	10	10	24	22	26	-15.7	-17.4
• Kyrgyz Republic	30	30	21	18	19	10.8	15.4
• Moldova	30	30	24	29	29	1.0	1.4
• Russia	26	24	27	21	22	3.9	5.3
• Tajikistan	10	10	18	20	19	-9.4	-10.4
• Turkmenistan	10	10	10	18	13	-3.4	-3.8
• Ukraine	30	28	23	25	22	8.2	11.7
• Uzbekistan	10	10	24	18	13	-3.4	-3.8
Germany	83	79	77	79	80	2.9	17.1
Japan	71	58	70	73	78	-6.8	-23.4
United States	77	75	75	73	72	5.0	21.7

Source: Author's calculations on the data of the Heritage Foundation (2014)

- The extremely uneven socio-economic development in the branches or regional context. The Gini coefficient is commonly used as an indicator to estimate the size of the public income differentiation. However, it shows a high-income differentiation only in Kyrgyzstan (33), Azerbaijan (34), Uzbekistan (37), Turkmenistan (41) and Russia (42). In other CIS countries, it has appeared at or below the level of the world (CIA, 2012). However, this is likely due to inaccurate statistics. According to the calculations of Koshanov (2012), the income gap in Kazakhstan is 29 to 1, while in developed countries it is 4.8 to 1. Such differences may lead to acute social conflicts. For example, it is Zhanaozen in Kazakhstan in 2010 (Satpayev and Umbetaliyeva, 2015).

- All these features of the model reflected in the life expectancy of the population in the CIS countries. Compared with developed countries, the life expectancy in CIS countries in 2013 was on average 71 years, ranged from 65 years in Turkmenistan to 74 years in Georgia. At the same time, the life expectancy in the US was noticeably larger - 79 years, and in the European Union and in Japan - 80 and 83 years, respectively (Table 14). The more comprehensive description of the impact of this model on the socio-economic development in the CIS countries presented in Table 15.

Table 14. Life expectancy at birth, total (years)

Country Name	1990	1995	2000	2005	2010	2013	Changes in 1990-2013	
							GNI_cap	%
CIS countries	69	66	66	67	69	71	2	3
• Armenia	68	69	71	73	74	75	7	10
• Azerbaijan	65	65	67	69	70	71	6	9
• Belarus	71	68	69	69	70	72	2	2
• Georgia	70	70	72	73	74	74	4	6
• Kazakhstan	68	65	66	66	68	70	2	3
• Kyrgyz R.	68	66	69	68	69	70	2	3
• Moldova	67	67	67	68	68	69	1	2
• Russia	69	65	65	65	69	71	2	3
• Tajikistan	63	62	64	66	67	67	5	7
• Turkmenistan	63	63	64	64	65	65	3	4
• Ukraine	70	67	68	68	70	71	1	1
• Uzbekistan	67	66	67	67	68	68	2	2
European Union	75	76	77	78	80	80	6	7
Japan	79	80	81	82	83	83	4	6
United States	75	76	77	77	79	79	4	5
World	66	66	68	69	70	71	5	8

Source: Author's calculations on the data of the World Bank (2014a).

Table 15. The typical economic model of CIS countries: features and results

Key features	Main results
The priority of the rule of patronizing over law	<ul style="list-style-type: none"> • There is a mechanism of social lifting for the most loyal, but not for the most talented persons • Not optimal decisions are taken in the economy and politics • The monopolization of power by separate groups • High levels of corruption
The alienation of people from the ownership and governance	<ul style="list-style-type: none"> • The high size of the public income differentiation • A lower standard of living of wide population and excessive enrichment of the elite • Discrimination in payment for the same efforts • Not all workers receive pensions or their size is very small
The reliance on raw materials, rather than intellectual resources of people	<ul style="list-style-type: none"> • High unevenness of regional development • A strong dependence on market conditions • Rapid depletion of natural resources • Most people have not got enough money for current needs • Causing irreparable harm to the ecology and human health • The growth rates and the standard of living are significantly lower than the potentially possible

The above data clearly show that by all key socio-economic parameters such as growth sustainability, use of resources, per capita income, corruption's level, income inequality and life duration, the model of CIS countries is inferior to traditional economic models. Because of its instability, it can only be viewed as a transitional, as long as the CIS countries have quite rich natural resources, in order to maintain the achieved level of living of the population by their extensive use.

The main consequence of the model is its general inefficiency caused by the following reasons:

- due to the low quality of public administration, it is forced to specialize at the lower levels of the technological chain;
- the instability of economic development, as prices for raw materials and agricultural products are very volatile;
- the high level of monopolization, as primary industries are characterized by a high degree of concentration of market power;
- production's simplification due to the extensive specialization at the lower levels of the technological chain and the evidence of Dutch Disease;
- high levels of corruption, as the raw materials fields are scarce resources;
- low public confidence in the future, as the resource-based economy is very volatile on their own.

All these consequences lead to:

- a decrease in the standard of living of the population;
- the excessive enrichment of the elite;
- a high uneven regional development;
- discrimination in pay for the same efforts;
- the rapid depletion of natural resources;
- irreparable harm to the country's ecology and human health.

Thus, the second hypothesis about the inefficiency of this model has also found its empirical support.

6. Conclusion

Thus, we, on the statistical data, theoretically proved and checked the validity of both hypotheses: that the economic model used in the most of CIS countries is a completely new model and not a variation of traditional models, and that this model is not efficient from both economic and social standpoints. The proof of the first hypothesis carried out by identifying the distinctive features of its functioning and the consequences that cannot be explained by traditional economic models. This includes the following key features of the model of CIS countries:

- The priority of the rule of patronage over the law;
- The alienation of people from the ownership and governance;
- The reliance on natural, rather than intellectual resources.

These features of the model lead to social and economic outcomes that cannot be explained by traditional economic models (Table 15).

The truth of the second hypothesis was tested by comparing the statistical data in the CIS countries and developed countries on the main indicators of socio-economic development, such as the structure and efficiency of production (Tables 6, 10), incentives for innovations (Table 8), standard of living (Table 12), the pollution of environment (Table 11) and corruption (Table 13). All results clearly show that the current economic model of CIS countries is not attractive because of its low economic and social efficiency. Therefore, a new model, which is free from the shortcomings of the currently used, should replace this. In our view, the new economic model for CIS countries should have the following features:

- It has to promote the fast career development for gifted and honest people from the bottom to the very top of the career ladder. This will lead to the elimination of corruption and bring to the sound management decisions at all levels of government and business;
 - Instead of sham elections, the government should introduce a multi-party system that will overcome the monopolization of power and gives opportunity to those people and programs that actually improve the lives of most, not the few of people;
 - Voters should take the rights to recall and replace the deputies' fails to meet their duties.
- This can improve the efficiency of the state apparatus and its emphasis on the needs of people, not the rulers;

- The state should return all strategic enterprises to own property by buying them at a fair market price, and economic rent should be appropriate by the people, not the top management of companies. These measures will create equal conditions for access to basic resources for all business entities, regardless of their nationality, which is a prerequisite for rapid and sustainable economic development in these countries and significant improvement of the living standards of the population.

- The government should establish a preferential tax system in direct relation to the volume of production and number of employees for the small and medium business, as well as the share of production, which is going for export. This would create favorable conditions for the growth of SME, extend opportunities for the emergence of new industries, increase employment opportunities for unemployed and self-employed, and help to solve the problems of pension provision when they reach retirement age.

- National funds created in some CIS countries to absorb unforeseen windfalls from mining should be more transparent, and the principles of their work should be revised to reflect the interests of the whole society, not small social groups:

- a) Parliament, as an adequate representative body of the interests of different groups of population, and not other power bodies, should have the right to dispose of means of the National Fund. This will be possible if the parliament is formed in a democratic way and only through fair elections.

- b) National Fund should accumulate only natural rents, and not all taxes from the oil and gas sector, because it leads to the formation of a huge state budget deficit⁴, which then must be compensated by transferring funds from the national budget. This approach is fundamentally wrong because it distorts the assessment of the effectiveness of the work of economic agents and makes the initial budget negative. Thus, the proposed measure would restore the incentives of economic agents for effective actions.

- c) The state budget has to collect economic rents from production of all types of raw materials (grain, nonferrous metals, uranium, etc.) and not just from oil and gas. This will eliminate the preferential conditions for some sectors and discriminatory conditions for other industries.

- d) The National Fund should receive the investment function. It means the right to invest, if not in the creation of new high value-added businesses in the country, then at least the right to invest in the high-tech foreign firms abroad. This will create an opportunity in accordance with Hartwick rule for a more sustainable development of a resource-rich country (Hartwick, 1977), that helps to maintain the achieved living standard of population, even after the depletion of natural reserves. If the government is unable for any reason effectively to invest within the country, fearing not the rational use of funds or overheating of its economy, and then it has to invest in high-tech firms abroad. Such a policy will create the opportunity not only to receive a permanent and sustainable income in the future, but also transfer of advanced technologies in the country that cannot be obtained in any other way.

In conclusion, we would like to note that the implementation of the measures proposed to revise the economic model currently used in the CIS countries, will not only ensure a higher rate of economic growth but also lead to more socially acceptable results for the entire population.

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⁴ For example, in 2015 the consolidated non-oil deficit of the general government (measured on IMF methodology) expected to reach 11.3 percent of GDP in Kazakhstan (IMF, 2015). A similar situation observed in other commodity-producing CIS countries.

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Appendix 1. Data definitions and sources

Indicator Name	Long definition	Sources
Strength of legal rights index (0=weak to 12=strong)	Strength of legal rights index measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate	World Bank, Doing Business project (http://www.doingbusiness.org/).
Patent applications, residents	Patent applications are worldwide patent applications filed through the Patent Cooperation Treaty procedure or with a national patent office for exclusive rights for an invention--a product or process that provides a new way of doing something or offers a new technical solution to a problem. A patent provides protection for the invention to the owner of the patent for a limited period, generally 20 years.	World Intellectual Property Organization (WIPO), WIPO Patent Report: Statistics on Worldwide Patent Activity. The International Bureau of WIPO assumes no responsibility with respect to the transformation of these data.
Patent applications, nonresidents	Patent applications are worldwide patent applications filed through the Patent Cooperation Treaty procedure or with a national patent office for exclusive rights for an invention--a product or process that provides a new way of doing something or offers a new technical solution to a problem. A patent provides protection for the invention to the owner of the patent for a limited period, generally 20 years.	World Intellectual Property Organization (WIPO), WIPO Patent Report: Statistics on Worldwide Patent Activity. The International Bureau of WIPO assumes no responsibility with respect to the transformation of these data.
Total natural resources rents (% of GDP)	Total natural resources rents are the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents.	Estimates based on sources and methods described in "The Changing Wealth of Nations: Measuring Sustainable Development in the New Millennium" (World Bank, 2011).
GNI per employee (current 1000 US\$)	GNI (formerly GNP) in current US dollars divided by the number of employees entering the labor force, which comprises people aged 15 and older who meet the International Labor Organization definition of the economically active population.	GNI is from the World Bank national accounts data, and OECD National Accounts data files. Labor force is from the International Labor Organization, using World Bank population estimates.
Energy use (kg of oil equivalent) per \$1,000 GDP (constant 2011 PPP)	Energy use per PPP GDP is the kilogram of oil equivalent of energy use per constant PPP GDP. Energy use refers to use of primary energy before transformation to other end-use fuels, which is equal to indigenous production plus imports and stock changes, minus exports and fuels supplied to ships and aircraft engaged in international transport. PPP GDP is gross domestic product converted to 2011 constant international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GDP as a U.S. dollar has in the United States.	International Energy Agency (IEA Statistics © OECD/IEA, http://www.iea.org/stats/index.asp), and World Bank PPP data.
CO2 emissions (kg per 2011 PPP \$ of GDP)	Carbon dioxide emissions are those stemming from the burning of fossil fuels and the manufacture of cement. They include carbon dioxide produced during consumption of solid, liquid, and gas fuels and gas flaring.	Carbon Dioxide Information Analysis Center, Environmental Sciences Division, Oak Ridge National Laboratory, Tennessee, United States.

Appendix 1. Data definitions and sources (continued)

GNI per capita, PPP (current international \$)	GNI per capita based on purchasing power parity (PPP). PPP GNI is gross national income (GNI) converted to international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GNI as a U.S. dollar has in the United States. GNI is the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad. Data are in current international dollars based on the 2011 ICP round.	World Bank, International Comparison Program database.
Freedom from corruption	The score for this component has derived primarily from Transparency International's Corruption Perceptions Index (CPI) for 2011, which measures the level of corruption in 183 countries. A 10-point scale in which a score of 10 indicates very little corruption and a score of 0 indicates a very corrupt government is the bases of the CPI. In scoring freedom from corruption, the Index converts the raw CPI data to a scale of 0 to 100 by multiplying the CPI score by 10. For example, if a country's raw CPI data score is 5.5, its overall freedom from corruption score is 55.	Unless otherwise noted, the Index relies on the following sources for information on informal market activities, in order of priority: Transparency International, Corruption Perceptions Index, 2011; U.S. Department of Commerce, Country Commercial Guide, 2009–2012; Economist Intelligence Unit, Country Commerce, 2009–2012; Office of the U.S. Trade Representative, 2012 National Trade Estimate Report on Foreign Trade Barriers; and official government publications of each country.