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IMPACT OF NATURAL RESOURCES ON ECONOMIC GROWTH OF TRANSITION COUNTRIES: CIS CASE

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ABBREVIATIONS

BEEPS	– Business Environment and Enterprise Performance Survey
CEE	– Central and Eastern European
EBRD	– European Bank for Reconstruction and Development
EDA	- Exploratory Data Analysis
EIU	- Economist Intelligence Unit
FSU	– Former Soviet Union
GDF	– Global Development Finance Database
GDP	– Gross Domestic Product
ICRG	- International Country Risk Guide
IFIs	– International Financial Institutions
ILO	– International Labour Organisation
IMF	– International Monetary Fund
LCU	– Local Currency Units
LDC	– Less Developed Countries
SITC	- Commodity Indexes of Standard International Trade Classification
UNCTAD	– United Nations Committee of Trade and Development
USSR	– Union of Soviet Socialistic Republic
WB	- World Bank
WDI	– World Development Indicators Database
WTO	– World Trade Organisation

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1 Weighs are assigned on a trade weighted basis

CHAPTER 1. INTRODUCTION

1.1. Rationale for Study

In the process of transition[2], trying to recover from the economic crises after the collapse of Soviet Union, many of the Commonwealth of Independent States (CIS)[3] countries have become more natural resource dependent. Consequently, IFIs recommended macroeconomic policies consistent with the patterns of volatile growth performance characteristic to most resource-rich countries: prudent fiscal, monetary and trade policies. The implications of the recommended policies, especially those emphasising the liberalisation of international trade, capital and natural resource markets can be crucial for the development perspectives of those countries. Hence, the soundness of theoretical underpinnings and the extent of its applicability to transition economies becomes an important and interesting matter to scrutinise.

To start with, the meaning of the term "natural resources" shall be explored. The literature studying natural resources builds on the term in the sense given by the World Bank Institute's Development Education Program definition of natural capital, i.e. all "gifts of nature"- air, land, water, forests, wildlife, topsoil, minerals - used by people for production or for direct consumption, excluding the ones that cannot be stocked (such as sunlight) or be used in production (such as picturesque landscapes) (World Bank, 2003). Consequently, empirical studies of those resources focus on output of agriculture (including forestry and fishing) and mining (and quarrying) sectors. From the very beginning, the literature on natural resources has used the term "primary product" to refer to many of above-mentioned sectors, whereas after the oil shocks of the 1970's a further distinction was made by classifying resources into agricultural and mineral ones. The terminology then changed to diffused (i.e. where production/revenue of resources is concentrated, e.g. diamonds, oil, coffee-cocoa) and point-source (i.e. where production/revenue is diffused, e.g. fertile soils, grazing lands, fisheries) resources (Auty, 1997, Isham et al, 2002).

Furthermore, following the existing theoretical and empirical studies, this paper uses the terms "natural resource abundant", "natural resource dependent", "resource-rich", and "with natural wealth" interchangeably to denote the high share of natural resources in the production and export structure of the economy. In the same vein, the terms "retardation", "collapse" and "poor" economic growth are used interchangeably to denote the long run worsening of economic performance of the country, i.e. lower economic growth, greater cyclical fluctuations in national income trends, etc.

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2 The term transition denotes the process that postsocialist economies undergo from a planned to a market based economic system

3 CIS was created in 1992. Today its members are Azerbaijan, Armenia, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Republic of Moldova, Russian Federation, Tajikistan, Turkmenistan, Ukraine and Uzbekistan (12 FSU countries)

According to these studies, most countries heavily endowed with natural resources or at least reliant on natural resources as their main export have done badly, especially the point-source ones. According to Murshed (2003), only six (or 7 if Oman is included)[4] point-source economies have real per-capita income growth rates that exceed 2.5% per annum on an average between 1965-99[5], out of which only two, Botswana and Indonesia have high growth rates of over 4%. If Malaysia is included as a point-sourced economy too (even though her 1985 and contemporary export pattern suggests that it is diffused and a manufacturing exporter respectively), in the developing world there are only three point-sourced success stories. Similarly, studies of resource-rich transition economies emphasise the high probability of long-run growth collapse for them.

CIS countries are interesting in this perspective due to the increased possibility for them to be providers of resources for the Western energy and raw material markets and a profitable investment opportunity. Indeed, after the collapse of Soviet Union, the rich energy resources of some FSU countries (see table 1.1.) have became a subject of multilateral agreements and a major source of FDI in the region (Levine and Wallace, 2000). As we see, at least five of them (Azerbaijan, Kazakhstan, Russia, Turkmenistan and Uzbekistan) are fairly rich in natural resources.

Table 1.1. CIS Mineral Resources

Country	Proven Crude Oil Reserves (Million Barrels)	Proven Crude Oil Reserves (% of World Total)	Natural Gas Reserves (Trillion Cubic Feet)	Natural Gas Reserves (% of World Total)	Main Source of Mineral-Based Production and Exports
Armenia	minimal	minimal	minimal	minimal	Perlite
Azerbaijan	7,000-12,000	0.6 -1.0%	30	0.5%	Oil and Gas (pipelines through Russia and Georgia)
Belarus	0,2	minimal	minimal	minimal	Potash
Georgia	35	minimal	0.3	minimal	Transit of oil and gas
Kazakhstan	9,000	0.7%	65	1.2%	Oil and gas through China and Russia
Kyrgystan	minimal	minimal	minimal	minimal	Antimony, Mercury and Gold
Moldova	minimal	minimal	minimal	minimal	Steel
Russia	60,000	4.9%	1,680	30.5%	In CIS the biggest producer and exporter of mineral products (14% of the world's total mineral extraction), owner of the main pipeline system from Caspian countries and herself to the western markets
Tajikistan	minimal	minimal	minimal	minimal	Aluminium and gold
Turkmenistan	0,55	minimal	71	1.3%	Gas, chemicals, salt
Ukraine	0,4	minimal	39,6	0.7%	Ferrous metals
Uzbekistan	0,6	minimal	66,2	1.2%	Gold, non-ferrous metals, self-sufficient fuel minerals
% of World Total	1,213	6.4 -6.9%	5,457	35.5%	-

Source: Energy Information Administration (www.eia.doe.gov for 1/01/03), Research of Levine and Wallace (2000) and Economist Intelligence Unit Country Reports

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4 Oman had a 5 % growth rate of per-capita income between 1965-99. It is not usual to include Oman in a list of developing countries, due to its size. Libya and Kuwait have data problems, but the data we have clearly suggests they are growth failures.
5 These are Botswana, Chile, the Dominican Republic, Indonesia, Egypt and Tunisia.

1.2. Hypothesis and Contents of the Paper

As mentioned, the development strategies put forward by IFIs have their foundation in the part of theoretical work and empirical studies on the impact of natural resources on economic performance, which emphasise the high probability of growth retardation of the natural resource dependent economies through different mechanisms. The same conclusions are drawn from the studies on natural resources impact in transitional countries. However, the relevance of these studies, as well as the plausibility of their predictions can be questioned on the grounds of the turbulent nature of the transition, consistence of the logic of theoretical argument, etc. Therefore, the current study attempts to inquire into the theoretical and empirical findings on natural resource impact in transition economies, find how relevant the alleged mechanisms and possible outcomes are and draw conclusions on policy implications for the resource abundant CIS countries.

In line with that purpose, the paper will depart with the analysis of the existing theories studying the impact natural resources have on growth, which will be presented in chapter two. Furthermore, chapter three will look into the specific character of the dynamics of transition economies by exploring the relevant studies on both the general level and CIS in particular. Chapter four will discuss the findings of the studies on natural resource impact on transitional economies, followed by chapter five, where these claims will be tested. Finally, chapter six will conclude the study and sketch out policy measures that can be taken to avoid the possible unfavourable effects of resource dependency in resource-rich CIS countries.

1.3. Methodology and Limitations of the Study

The paper builds on the critical overview of the theories and empirical findings, identifying and testing the channels of natural resource impact on the economic performance of the CIS countries by contrasting the performance of those basing their production/exports on natural resources with the ones where the economy is mainly dependent on manufacture sector.

The data used in this paper comes from an array of sources. This is due to the data problems in the transition countries, especially in early years. Among the reasons behind it are: peculiarity of soviet accounting, the only statistics for the FSU countries performance before the year 1992; the difficulties in measuring inflation and employment; over- and under-reporting of the output (De Melo et al, 1997); unrecorded activities from the informal sector making a difference due to its size (Campos and Coricelli, 2002). As a result, inconsistency and incompleteness of the data makes it difficult to be interpreted over time. Therefore, as it was mentioned, the statistics used in the present paper are compiled using different sources. To maximise the consistency, the trade and inflows data is mainly derived from the UNCTAD

database, labour statistics from ILO database and most of the other variables from the WDI, 2003. Information for the GDP and labour sectoral decomposition for 1990-1995 years is taken from CIS Handbook of Statistics. The information is compiled only in case of consistency with earlier or later years from the EIU country reports. The additional caveat is that for some countries there is no data available for various years, such as sectoral composition of labour force for Central Asia countries of CIS for 1999-2002. The worst data problems are encountered in the Turkmenistan (which stopped reporting its performance in 1999), which is the reason behind its exclusion from some of the tests. However, keeping in mind the existing problems, the present collection makes possible to use the data for analysis (the omissions are reported in all cases).

CHAPTER 2. THE PERFORMANCE OF THE NATURAL RESOURCE-DRIVEN ECONOMIES: A REVIEW OF THEORIES

2.1. Introduction

The question of why some countries are rich and others poor has been the main concern of economic theory as far back as classical economics. Even to this day no consensus exists on the subject. In answering this question, one group of theories assigns some role to natural resources. This perspective has a long history with diverse views on both the mechanisms and implications of the natural wealth on growth. Auty et al (2001) divides studies of natural resource impact on economic performance into those that outline exogenous and internal explanations of divergent performance of resource-rich in contrast to resource-poor countries. Other works such as that of Findlay and Lundahl (1999) group theories into ones elaborated/supported by Interventionists, Neoclassical and Marxist/Dependency schools of thought. Murshed (2002) on the other hand, focuses on the range of studies from the ones portraying the onset of resource curse[6] hypothesis to the ones sketching conditions where resource booms can aid growth. The work of Isham et al (2002) outlines works influenced by the political and economic schools of thought; and Stevens (2003) provides an overview of studies from a historical perspective. In this paper, theories on resource abundance impact on economic growth will be grouped into two broad categories. First are those that emphasise the direct links between natural wealth and economic performance. Second are those that highlight the natural resource impact on factors which in turn influence economic growth (indirect links[7]). An important distinction is that the former predicts growth collapse on the long run[8] whereas the latter sees ways to avoid it. Since the empirical and theoretical studies of natural wealth on economic performance in transition countries concentrate on the second group, the paper will elaborate more on it.

The objective of this chapter is to depict the main features of both groups of theories. It is organised as follows. First, the role assigned to the natural resources in theories of growth will be outlined for both groups. Second, conclusions will be drawn by emphasising on policy implications of them.

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6 Term resource curse stands for the negative relationship between natural wealth and economic performance

7 Also referred to as transmission mechanisms (Stevens, 2003) and channels (Gylfason, 2000, others)

8 This prediction is referred to as resource curse

2.2. Direct Links: From Natural Resource Abundance to Growth Collapse

One distinct group of theories (hereafter referred to as (Neo) Liberal) puts emphasis on the direct link between natural resource abundance and economic growth, basing its arguments on the belief that the main problem with the performance of developing countries is imbalances in factors of production, i.e. the mix of surplus labour but shortages of capital. Attracting the latter is therefore seen as a key goal to pursue by, among other things, exploitation of the natural resources. According to the "staple" theory of growth, capital shortages could be overcomed by attracting foreign firms to exploit developing countries' natural resources, consequently reinvesting profits in processing industries and building local infrastructure (Innis, 1956; Watkins, 1963).

In a similar manner, the "big push" theory of economic development suggests that, for developing countries to escape the low-income "equilibrium traps", they need a large expansion in demand to encourage firms to invest in industrialisation. The "big push" required can also come from large revenue streams accruing to an economy from the natural resource exports (Rosenstein-Rodan, 1943; Murphy et al, 1989). Since natural resources are seen as a source of capital and foreign exchange, the poor economic performance of resource-rich countries is explained by the lack of liberalisation of both capital and goods markets, which would allow for the exploitation of the above-mentioned opportunities (Bauer and Yamey, 1957; Lal, 1983; Lal and Myint, 1996; Viner, 1953).

It is important to mention that the (Neo) Liberal view is based on the doctrine of comparative advantage, i.e. the benefits to be obtained from concentration of efforts in producing of goods which can be manufactured cheapest due to natural endowments in land, skilled and unskilled labour and capital, criticised by scholars that follow the Structuralist/Dependency and Marxists Schools.

Another group of theories (hereafter referred as Dependency) builds its argument on the Terms of Trade theory (Myrdal, 1956; Prebisch, 1950; Singer, 1950,). The theory contradicts the classical belief that gains from technological progress of the industrial based countries will be distributed to the primary sector based ones without any vigorous industrialisation policy (Singer, 1998). Further, the theory rests on the Structuralists view that the limitations in output expansion in natural resource/primary product sectors results in the lack of investable funds in LDCs. From its side, this is caused by the low income elasticity of demand from primary products, consequently resulting in a fall of their prices on the long run. Therefore, primary product exporters (the periphery) find themselves disadvantaged in trading with the industrialised countries (the centre). Thus, the whys and wherefores of the economic underperformance of resource-dependent countries is the secular tendency of their terms of

trade to deteriorate. The hypothesis is related to the ongoing debate on the statistically significant proves to support it: some works challenge the empirical basis of the argument (Cuddington, 1985; Maizels, 1968; Mikesell, 1997) and some verify it (Brohman, 1996; Sapsford, 1985; Sarkar and Singer, 1991).

Marxist theory explains the backwardness of resource-rich countries by associating the cases of growth retardation with the nature of the global capital, which acts through economic institutions of global governance in order to preserve and reinforce the existing international division of labour, and consequently conditions the low profitability of natural resources (Brewer, 1997). For its part, Marxist theory is based on the belief of the exploitative nature of capital, which generates profits from the surplus labour of workers (Marx, 1957; Lenin, 1950).

In conclusion, theories emphasising direct links between natural resource dependence and economic performance draw our attention to the inherent danger of growth collapse of resource-rich countries due to the lack of liberalisation of markets, a secular deterioration of the terms of trade of resource dependent economies and the nature of the global capital.

2.3. Indirect Links: The Curse or Blessing Dilemma of Natural Wealth?

In answering this question another group of studies emphasise the channels through which the underperformance of resource-rich countries is taking place. They, in general, build on the input of the "linkages" hypothesis that highlights the limited links that primary product exports create within the economy as opposed to manufactured exports. For instance, the work of Hirschman (1958) points out that while industrial activities are closely related to each other and generate both forward and backward physical production linkages, natural resource production does not. This is due to the fact that natural resource production has few linkages to the rest of the economy hence why the term "enclave economy" was later coined regarding resource dependent economy. Similar line of the argument is held in "export-based" theories (Baldwin, 1956) that attribute growth retardation to the different staple production functions of the South relative to the North. Namely, the South with capital-intensive production (e.g. in mining) and a shortage of linkages to drive economic growth fails to create sufficient demand for domestically produced goods, trapping the economy into staple production. In contrast, with labour-intensive staple production (e.g. food grain) and diffuse linkages, the North diversifies the economy and escapes the trap.

At later stage, other than physical production linkages have been displayed. They include consumption and fiscal links inherent to the different degree in primary and manufacture sectors (Hirschman, 1981). Consequently, more favourable linkages not only are attributed to the industrial sector, but used to explain the different economic performance of diffused and point-source resource economies. Indeed, the following studies stress higher domestic demand

for the own manufacture products in agricultural-product-based economies compared to mineral-based ones, as a condition to counteract resource curse (Auty, 2001; Murshed, 2001). Similarly, less developed fiscal linkages, characteristic to the primary sector, are used to explain the growth collapse of resource-rich countries from the perspective of the political economy. Namely, it is stressed that concentrated rent flows from the point-source resources have the tendency to be directed away from productive activities compared to the rents from diffused resources (Auty and Gelb, 2001).

With time, more channels have developed among which can be distinguished overvaluation of real exchange rate, deterioration of human capital, weak public institutions/policies, armed conflicts and increased levels of poverty and inequality. All of them question any automatic negative causality from resource abundance to the growth collapse. At the same time, the divergence performance of economies is seen as conditioned by the types of natural resources.

The real exchange rate channel

The real exchange rate overvaluation channel as a cause of poor performance of resource-rich countries builds its arguments on the "Dutch Disease" theory[9] (Neary and Wijnbergen, 1986). The theory draws attention to the long run growth collapse of economies experiencing windfall inflows as a result of de-industrialisation of the existing manufacturing base. One source of these inflows considered to be large revenues from a resource price boom. Based on the assumption of the inflows translating into increased demand for goods and services[10], the theories predict real exchange rate appreciation[11], if no sterilisation measures are pursued. As a result, first, the relative price of non-tradables to tradables[12] rises and second, both labour and capital shift away from manufactured sector. From its side, it leads to de-industrialisation and, consequently, growth failure. These effects are referred to as the spending and resource movement respectively (outlined by Corden and Neary, 1982). The spending one is considered to be a short term effect. Resulting from the real exchange rate appreciation, it points out a decrease of domestic prices of imports and a consequent increase of import expenditure. At the same time, with an increase of domestic price of tradables, favourable conditions are created for the imports of tradable competing goods to crowd out the manufacturing sector. However, the collapse is not inevitable: the findings of the studies such as Murshed (2001)

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9 Named after the phenomenon of the Dutch guilder appreciation as a result of the natural gas deposits discovery within the country's jurisdiction in the North Sea in the late 1950s-early 1960s, which reduced the profitability of manufacturing and service exports.

10 Theory mostly considers inflows related to the aid and resource price boom as causing adverse effects whereas other inflows such as FDI are considered to have positive effect on the economy. Perhaps the assumptions are that either FDI do not translate into spending or LDCs are far form experiencing large enough FDI inflow to cause Dutch Disease

11 It is argued, that the real exchange rate appreciation takes place in both fixed and flexible rage regimes, through the rise of domestic price level and nominal exchange rate respectively

12 In empirical studies, the tradable sectors are usually considered to be agriculture, mining and manufacturing ones, non-tradables being retail trade, services, and construction non-tradable ones

emphasise the possibility to counteract the disease by right[13] policies (here devaluation). On the long run, as resource movement effect indicates, boost in labour-intensive non-tradable sector relative to the capital-intensive tradable sector amounts in the decline of capital accumulation (Rosenberg and Saavalainen, 1998), hindering the future prospects of economic growth. Importantly, the prediction of the Dutch Disease theory on crowding out of traded sector is also argued to be dependent on the type of natural resource economy, e.g. with higher propensity to consume domestically produced goods (i.e. better consumption linkages) diffused economies have more probability to avoid adverse effects of resource booms (Murshed, 2002).

The Human Capital Channel
Secondly, the cause of a negative relationship between natural resource boom and future possibilities of growth is seen in reduced positive externalities (e.g. learning-by-doing) of the manufacturing sector, which explores the interlinkages view further. The hypothesis is taken up by Van Wijnbergen's (1984) two-period model in which tradeables productivity in the second period depends on tradeables production in the previous one, Krugman's (1987) model based on the increasing returns to scale and Sachs and Warner's (1995) endogenous growth model, etc.

Learning by dong view builds on Human Capital theory (Birdsal et al, 2001, Gylfason, 2000, others), according to which the reason of the poor growth is related to the undeveloped human capital, characteristic to the resource-abundant countries. This points out another channel of growth retardation: decreased human capital. Here, the vicious circle is created by the lowering demand for education due to deterioration of manufacturing sector (Matsuyama, 1992), further reinforced by the lack of incentives for skilled labour[14] and the little investment in human capital. Moreover, the concentration of rents in the government and business elites, that increases inequality as well as incremented taxes that reduce private investment in education, lock the economy in staple trap.

The Policy/Institutions Channel
Still, another stand is taken by the theories emphasising the importance of socio-economic and political institutions[15] and policy decisions. Thus, Murshed (2002) and Stevens (2003) argue

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13 By right/good policies these studies refer to the broad range of macroeconomic policies that "help to avoid problems related to the economic performance and that lead to greater prosperity" (Meier and Stiglitz, 2001). According to Chang (2002) "good policies", broadly, mean those prescribed by the so-called Washington consensus such as restrictive macroeconomic policy, liberalisation of international trade and investment, privatisation and deregulation. Consequently, the opposite is to denote "poor" policies.

14 Based on the assumption that worker's education raises the productivity of labour in manufacture, but not in the non-tradable sector. Since people incur costs on education only if they expect to be employed in the manufacturing sector, with the shrinking tradable sector each generation forgoing education and working in non-tradable sector since price and market wage there is above the marginal value of product of labour in manufacturing (Sachs and Warner, 1997). The result is less skilled workers and teachers as time goes by.

15 Studies that emphasise on indirect links between natural resources and economic performance build on the definition of institutions by North (1990). According to him, institutions are "the humanly devised constraints that shape human interaction". Starting from it, the important

that the underperformance of resource-rich economies cannot be assumed a priori, but it is rather a consequence of inappropriate policies, that are the product of poor institutional settings. Easterly and Levine (2003) present evidence, based on cross-sectional econometric analysis that, among other factors, natural resource endowments does retard economic development but it works via institutions as measured by Kaufmann, Kraay and Zoido-Lóbaton (2002). The conclusion is that institutions are paramount: all other effects, including policies and policy changes, will not work except through institutions. In addition, the findings of different studies are that the point-source as compared to diffused resources are more inclined to have weaker institutional capacities (Woolcock et al, 2001) and growth collapse (Murshed, 2001). This argument brings in another channel between the national wealth and economic performance: weak public institutions and policy failures.

The institutions/policy view builds on inputs from social capital and political economy studies. Social capital part is based on the so-called Olson effect (the constraining effect of the social groups on economic growth). It points out that social cohesion[16] (civic social capital), the weakness of which is determined, among other things, by natural resource endowment, positively affects the quality of public institutions and thus, triggers poor economic performance (Ritzen, 2000). Inputs from political economy theories result in a distinction between benevolent (i.e. directing the rents towards social welfare maximisation, investment in infrastructure and human capital) and predatory (i.e. promoting rent-seeking, lobbying and uncompetitive industrialisation and hence, misallocation of the resource revenues) states (Auty and Gelb, 2001). In this case, the resource-rich states (especially those with point-source resources) are more inclined to be predatory, leading to difficulties in improving the poor growth performance. Namely, since natural resource rents are easier to capture in comparison to returns from the investments, in circumstances where the state authorities control the extraction of natural resources (especially true for point-source ones) the possibility to capture the rents from them leads to: a) development of corruption and inefficient bureaucracies (Gelb, 1988); b) state-led policies as import protection (Sachs and Warner, 1997); c) inefficient exhaustion of the public good through competition over the rents (Murshed, 2002) and d) waste of the rents through spendthrift investments or inappropriate consumption[17] (Lane and Tornell, 1995). From its side, each of the outcomes is detrimental for the growth (Auty, 1994; Bhagwati, 1982; Mauro, 1995).

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institutions for those studies are the socio-political arrangements of redistribution of the national wealth and the capacity of social groups for mobilisation and coordination of their action for change (i.e. support the creation of the institutions favouring the market-type economy). Chang (2002) reveals that "good" institutions, in this sense, include democracy, 'good' bureaucracy, an independent judiciary, protected private property rights, transparent and market-oriented corporate governance and financial institutions. However, the meaning of term differs for the "old" institutional economists that use it to indicate the arrangements that enforce the interests of a class (Meier and Stiglitz, 2001).

16 Social cohesion implies a state of affairs in which a group of people demonstrate an aptitude for collaboration that produces a climate for change

17 Such as so called white elephants, i.e. investment projects with negative social cost

The Armed Conflict Channel

Studies that emphasise on armed conflict channel of growth deterioration of resource-rich countries follow the same line of argument as rent seeking ones. They find the positive correlation between the resource-dependence and risk of the conflict (Collier and Hoeffler, 2000), that builds on the notion of 'loot-seeking' wars versus 'justice-seeking' wars. The former is based on greed or self-serving behaviour and the latter on grievance or justice-seeking behaviour. In the greed-driven conflicts case, probabilities of rebellious movements increase with the availability of lootable income such as rents from the natural resources. Ross (2001b) finds as much as nine ways for the natural wealth to initiate and influence the civil war, among which the greed and grievance together with the predation are grouped into ones increasing incidence of war, others - into influencing the duration and intensity of it. As for the relationship between conflicts and economic growth, studies point out two-way effect. First is the unfortunate path-dependence on reconstruction of highly distorted 'post-conflict' economies (Addison and Murshed, 2001). Second is the view that economic growth reduces the incentive to be involved in armed conflicts (Collier and Hoeffler, 2001).

The Poverty/Inequality Channel

Armed conflicts argument is related to the channel of poverty and inequality. This belongs to the group of theories that explain the growth retardation of resource-rich countries through welfare mechanisms. Ross (2001a) finds a positive correlation between the oil dependence and the poverty rates, the mechanism being the worsening of condition of the poor through decreased health care and education. In particular, he emphasises that since economic growth is believed to enhance policies that reduce poverty (Dollar and Kraay, 2000), growing empirical evidence of the growth collapse among point-source-dependent economies can be interpreted as the fact that natural resources abundance is bad for the poor. The link from increased poverty to decrease in economic growth is mostly assumed. Fields (1989), Easterly (2001) and others similarly stress the high positive correlation between the natural resource dependency and degree of inequality, that increases the probability of poor economic performance.

Criticism

Despite the multitude of studies confirming the mentioned theoretical arguments of indirect linkages from natural wealth to economic performance, many of them are debatable. To start, the theoretical underpinnings of Dutch Disease theory raise some questions. Indeed, if world markets do not determine domestic prices for certain tradeables (as assumed by this theory), then the impact differs between the importable and the exportable sectors (Benjamin et al, 1989). Also, the argued effects seem to be inflow-type specific (see footnote 7). Further, several studies (McMahon, 1997; Mikesell, 1997) conclude that the Dutch disease was not the major factor in explaining the growth pattern for the countries used as case studies (mostly countries of Latin America and Africa). Moreover, Fardmanesh (1991) argues that after the oil boom of the 1970s oil exporting countries have experienced expansion of manufacturing

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sector. On top of all, studies on Dutch Disease in transition economies are criticised for being highly theoretical, basing their analysis on modelling rather than empirical work (Stevens, 2003).

The logic of the human capital argument can be questioned also since studies such as Ritzen et al (2000) brings in the example that call in question logic of that argument. Namely, in resource-poor countries of the European Union investment in higher education exhibit a decreasing trend and resources are diverted towards the rich (with the exception of the four countries: UK, the Netherlands, Norway and Sweden). Additionally, the assumptions of the learning-by-doing model are questioned on the grounds of possibility of sectors besides the traded one to contribute to it (Torvik, 2001).

As for the rent-seeking/corruption arguments, doubts are raised over whether the corruption is the phenomenon conditioned by resource richness and if it automatically translates into the growth collapse, to mention few. In fact, corruption is widespread in many highly-industrialised economies such as Italy and Japan (Stevens, 2003). Moreover, different works (Hall, 1999; Hellman et al, 2002) emphasise the fact that foreign companies, almost invariably involved in exploration/exploitation of the mineral resources, in many cases condition corruption. These studies slacken the vigour of institutions/policy channel arguments. On top of all, it is believed that in the presence of other distortions, rent-seeking and shadow market activity may be a second-best solution to the original distortions: rent seeking may actually increase efficiency and welfare. It terms of governance also, the possibility to buy the political decisions may be beneficial in otherwise highly bureaucratic environment (Bardhan, 1997). Further still, the social cohesion argument is a contested concept as well with difficulties to find relevant measures capturing the essence of it.

At the end, there is a controversial view on the increased inequality positively correlating to growth collapse (Ros, 2000) so as on the relationship between the conflicts and economic growth. Lastly, the poverty channel is arguable since it limits its analysis and narrowly bases the conclusions on the findings of one group of studies.

2.4. Conclusion

As it is obvious, the mechanisms of the natural wealth's impact on economic growth are different, depending on the hypothesis on the reasons, so are the "cures". The justifications offered by the (Neo) Liberal theorists see a problem in state intervention, which distorts dynamic mechanisms of the comparative advantage-based development. The ensuing policy consequences are to promote market liberalisation. Rationale of Dependency scholars has translated into the policy implications to avoid the dependency on natural resources by state-led industrialisation. Explanations suggested by the Marxist theorists, similarly to dependency

scholars, precipitated into industrialisation strategies as mean for resource-dependent economies to avoid backwardness. Additionally, changes at the level of global governance institutions are important.

Theories underlining linkages root the problem in the nature of bonds between sectors. A number of indirect channels that have developed from them stress the possibility to counteract the resource curse, occurring through overvalued real exchange rate, poor policies that are conditioned by weak institutions, armed conflicts, deteriorating human capital and welfare by adequate policies.

Since the studies of transition economies reflect the stand that indirect channels are outlining (Auty, 2003; Gylfason, 2000; Kronenberg, 2001; Markandya and Averchenkova, 2001; Petersen and Budina, 2002; Rosenberg and Saavalainen, 1998) the doubts and limitations of them are important to clarify. Therefore, the empirical work done on transition economies will be scrutinised in the fourth chapter, upon presenting the economic dynamics of case study countries. The further analysis will focus on the plausibility and applicability of emphasised indirect links as well as the consistency of theoretical input with empirical work.

CHAPTER 3. PRESENTATION OF THE CASE STUDY: ECONOMIC PERFORMANCE OF CIS COUNTRIES

3.1. Introduction

CIS countries represent 3.7% of the world economy (by PPP estimates of GDP, Economic Survey of Europe 2000 No. 2/3). In studies of transitional economies they are distinguished has been translated by from others such as Central and Eastern European (CEE)[18], Baltic[19] and Asian[20] ones, among other things, in terms of poorer economic performance (de Melo et al, 1997; EBRD, 1999; etc). Indeed, four out from twelve CIS countries are of lower middle-income group and the rest of low income (see annex 3.1).

Since this paper aims at analysing the plausibility of natural resource hypothesis in CIS countries, this chapter attempts to inquire into the economic performance of those countries. For that, first, the distinguishing features of CIS economies vis-à-vis CEE and Baltic[21] ones will be explored. The selection of countries is based on the fact that all of them are examples of growth collapse, feature that differentiates them from the Asian economies in transition. Second, the stylised facts of the CIS transition outcomes will be presented. Due to the multitude of factors having a bearing on growth in CIS, the complete discussion of which is beyond the scope of the paper, the selection of factors is made on the basis of their relevance to natural resource impact analysis. Therefore, the dynamics and change in composition of output, labour, capital and trade will be outlined. Also, aspects of indebtedness and institutional factors are presented as most of the policy recommendations for CIS countries build on them. Lastly, the main findings will be showed in concluding part of the chapter.

3.2. Divergence In Transition: How and Why CIS Countries Differ from Others?

How CIS Economic Performance Differs From Other Transitional Countries
CIS countries had experienced more severe crises than CEE and Baltic economies in the beginning of the transition (see chart 3.1). This can be considered a first distinguishing feature of CIS economies. To emphasise the extent of the shock[22], it appears that the most affected countries are Latvia among Baltic Countries, Albania and Croatia among CEE and Azerbaijan and Georgia in CIS (see table 3.1)[23].

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18 Albania, Bosnia and Herzegovina, Bulgaria, Macedonia FYR, Romania, Federal Republic of Yugoslavia, Croatia, Czech Republic, Hungary, Poland and Slovak Republic
19 Latvia, Lithuania and Estonia
20 China, Mongolia and Vietnam
21 CIS, CEE and Baltic countries will be further referred to as Eastern Bloc
22 Following existing works, further referred to as systemic transformation (Kornai, 1990) and transitional recession (World Bank, 2002)
23 The year is chosen to emphasise on the depth of the crisis

Chart 3.1. GDP Growth and Inflation for CEE and CIS Countries
1989-2000 (annual % change), Group Average
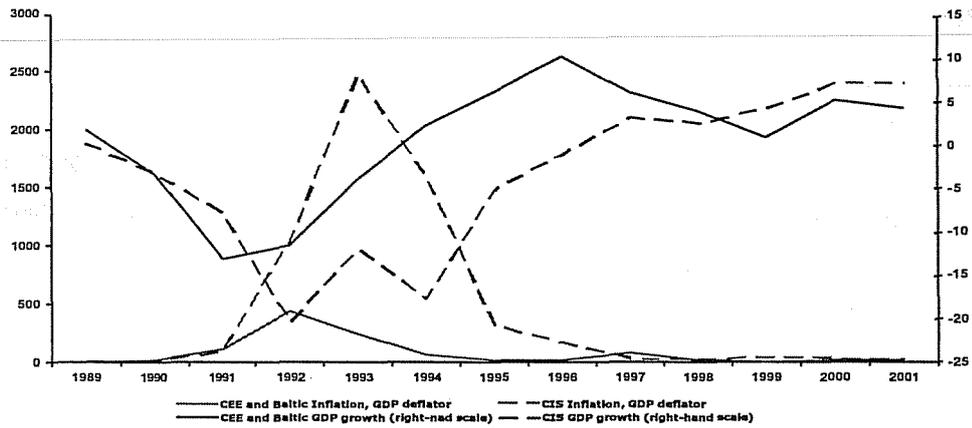
Table 3.1. Inflation and GDP Growth in 1992 for selected countries

GDP growth (annual %)		Inflation, GDP deflator (annual %)	
CEE Average	-5.6	CEE Average	273
Albania	-27	Albania	115
Croatia	-21	Croatia	1,467
Average Baltic	-25.7	Average Baltic	930
Latvia	-35	Latvia	976
Average CIS	-20.4	Average CIS	1,160
Georgia	-40	Georgia	1,205
Azerbaijan	-35	Azerbaijan	1,351

Source: WDI, 2002

Second distinguishing feature of CIS from the rest of Eastern Bloc is the growth performance after the recovery (see chart 3.2): CIS countries are far behind the level of 1989 when some of the CEE and Baltic economies such as Hungary and Slovenia reached it in 2000.

Chart 3.2. GDP Growth Index (1989=100), based on data in LCU
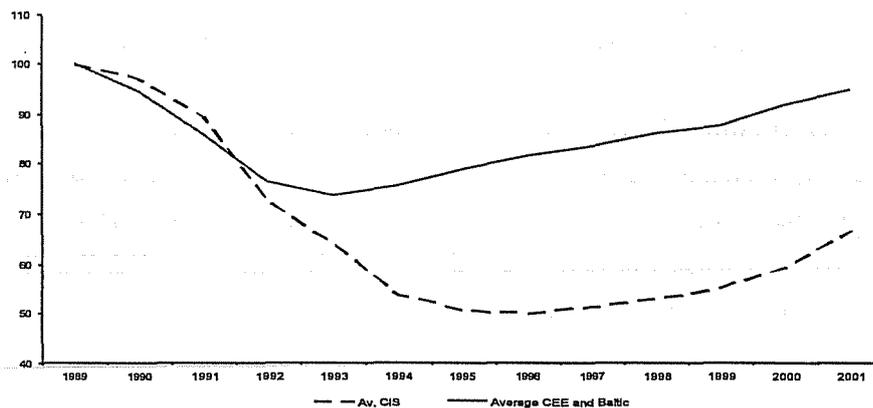
Source: WDI, 2002

One more distinctive feature of transition in CIS is the extent of increase in poverty and inequality. Indeed, the Eastern Bloc countries saw sharp raises of both in the beginning of the transition and show no signs of decline yet. According to the study by Milanovic (1998), in all transition countries, the Poverty Headcount Index has increased from 4% in the late 1980s to

15

45% in 1993-95. Income inequality measured by the Gini coefficient has nearly doubled in Armenia, Russia, Tajikistan and Ukraine (World Bank, 2002).

Why CIS Economic Performance Differs From Other Transitional Countries

Among the explanations of the divergence among transition countries two main groups can be distinguished. The first comprises the factors playing a role in the initial output collapse (1989-1994). The second encompasses the factors explaining the later economic performance. It is important to emphasise that the first group points out the differences in initial conditions (characteristics of countries in the beginning of the transition) whereas the second accentuates the policies in the transition process.

The list of the explanatory factors of the sharp output fall in the beginning (1989-1992) and the difficulty in recovery in early years of the transition (1992-1995) is quite long and includes variables from the geography-related ones to the structural characteristics of the economy and the institutional environment. Geography-related disadvantages include countries' distant location from the Western markets[24], which is considered to handicap the trade. Next impediment is natural resource abundance[25] that hinders the future perspectives of economic growth by conditioning making of inappropriate policy decisions (such as delay of liberalisation reforms). The initial structure of economy, another important explanatory factor for the depth of the transitional recession, is unfavourable for countries with higher degree of overindustrialisation[26] (Wolf, 1997), inter-Republic[27] dependence on trade and production[28] (Gomulka, 2000) and favourable for countries with the higher degree of urbanisation and initial income level (de Melo et al, 1996). Further, initial distortions are also seen to have an important role in a degree of shock (Berg et al, 1999, others). Among these distortions are repressed inflation (measured as a difference between the increase in real wages and real GDP from 1987 to 1990), black market exchange rate (measured as a difference between the black market and the official exchange rates) and terms of trade losses for the CIS. On top of all, the so called market memory (experiences in the design of an institutional framework that supports market economy), the experience of countries as independent nations and the extent to which they were affected by war or civil strives are taken into the consideration (de Melo et al, 1997; others). In short, CIS countries that are a) further away from the western markets, b) more endowed with natural resources, c) overindustrialised, d) affected by wars, have e) less initial income level, f) repressed inflation, g) high black market exchange rate, h) loss in terms of trade i) less market memory and j) no experience of being independent in the near past would have poorer performance in the beginning of the transition.

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24 Mostly proxied by the distance of capital from Duesseldorf (Fisher and Sahay, 2000, others)

25 Many studies use qualitative variable to distinguish resource poor, moderate and rich countries following the work of de Melo et al, 1997

26 Mostly proxied by the initial level of PPP adjusted per-capita income (Fisher and Sahay, 2000 and de Melo et al, 1996)

27 Trade between the USSR countries

28 Under dependence on trade usually it's referred to the membership of states in Council of Mutual Economic Assistance (CMEA) whereas under dependence on production - the intra-USSR production links (such as the Warsaw Pact based ones of the defence industry, etc.)

However, there are some caveats. Moldova being among the countries located close to the western markets should better off; instead it is one of the growth collapse examples (see table 3.2). The same holds for Georgia with one of the highest initial income levels. Hence, the shortcomings of the frequently used cross-country regression analysis employing the above-mentioned factors has to be taken into consideration, especially when it claims to explain only 54% of the growth performance in 1990-1995 (World Bank, 2000).

As mentioned, the second part of the divergence puzzle is argued to lie in the policy decisions made during later years (from 1994-95 onwards). The policies had to address the initial outcomes of transition such as soaring inflation, severe balance of payment problems, dramatic falls in output, etc. The cure was found in establishing market mechanisms with stabilisation and structural adjustment programmes recommended by the IFIs (see annex 3.1). Mostly, the stabilization policies included measures such as pursuing restrictive fiscal and monetary policies with nominal anchors assigned to income policy and fixed exchange rate regimes. At later stages of the stabilisation programmes, when inflation declined to less than 10%, flexible exchange rate regimes were favoured more[29].

Analysis of the policies in the transition period has resulted in assigning an explanatory role of the divergence to the speed of reforms (de Melo, 1996; Stiglitz, 1998; Áslund et al, 1996). Indeed, the indicators developed to capture the reform speed's impact on growth, pointed out early liberalisers' (those who completed price liberalization, full current account convertibility and almost completed small-scale privatisation before 1993) advantage over the late ones. the majority of all CEE and Baltic countries[30] were graded in the former group whereas CIS countries were graded in the latter (EBRD, 1999). In a word, the transition strategy with faster macroeconomic stabilisation and liberalisation is seen to be given CEE and Baltic countries chances to outperform CIS economies. Provided that, considering the examples of Vietnam and China, that continue to grow despite the choice of very slow transformation, leaves the room for the additional analysis.

3.3. What Do Stylised Facts of CIS Transition Show?

More then a decade later, the outcomes of the CIS countries transition do not reveal an optimistic picture. Indeed, the fall in output, considerable lower levels of capital accumulation, reallocations of labour, shifts in GDP composition away from the industry, alteration of both composition and geographical distribution of trade, etc. indicate to the deep structural changes of those economies. Similarly, they bring about the concerns on the future prospects of CIS economic performance.

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29 The argument was to limit the destabilising effects of capital inflows. The reasons to choose it over the peg was belief of inability to maintain the peg in the situation of the real shocks, a lack of foreign exchange reserves and low credibility of countries (Fisher and Sahay, 2000:7)
30 With exception of Yugoslavia

Output

Table 3.2. CIS GDP growth (1989=100)		
Countries	1992	2001
Armenia	51.4	84.3
Azerbaijan	56.8	62.2
Belarus	88.1	92.3
Georgia	40.0	23.9
Kazakhstan	80.4	78.6
Kyrgyz Republic	83.9	70.1
Moldova	58.1	37.5
Russian Federation	78.7	69.5
Tajikistan	66.2	42.0
Turkmenistan	90.9	91.5
Ukraine	77.4	47.3
Uzbekistan	89.8	99.8
Average CIS	71.9	59.3

As was mentioned, output fell dramatically in the beginning of the transition and, for most countries, did not recover (see table 3.2 and annex 3.2). The graphs in annex 3.2 exhibit the difficulty with the recovery after transformational recession: the growth of the most of countries is still far from the pre-transition level. For some countries, such as Georgia, Moldova, Ukraine and Tajikistan the recovery is very slow. Moreover, Moldova and Ukraine only start experiencing growth in 2000.

Additionally, the composition of GDP has changed (see chart 3.3). Most of the countries have experienced a decrease in industry[31] and agricultural sectors and increase in a) trade, b) transport and communication and c) service and other sectors. On average, the share of agriculture during the transition has decreased approximately by 11% and industry by 8% (see annex 3.4). In some countries where industry has not fallen or even has risen such as Azerbaijan, it is driven by fuel sector. Increase in services and the sector called the other attract attention as well since its share has risen by 15%. The theoretical explanation for it points out the real GDP per-capita growth as a cause (Chenery, 1960). However, this obviously does not seem to be relevant in the case of transition economies. More sensible would be to put the increase in these two sectors on the account of the small size of the service sector in pre-transition time.

Chart 3.3. GDP Sectoral Composition Change (% of GDP), Average CIS
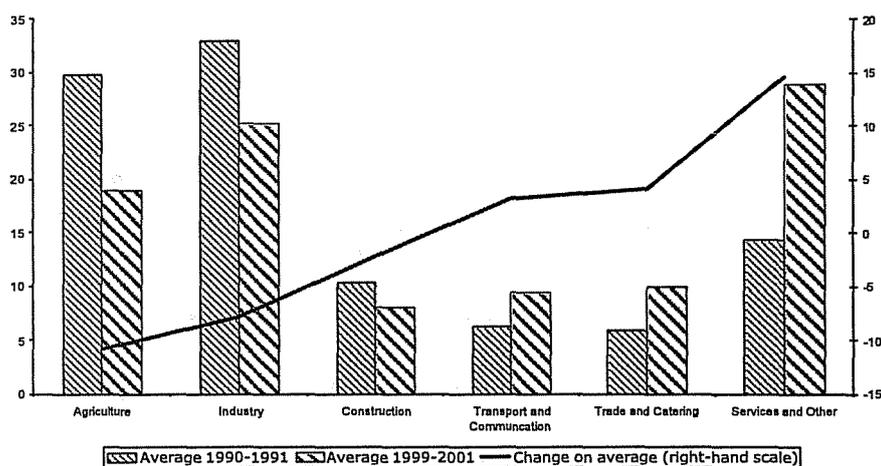
Average 1990-1991   Average 1999-2001 ——Change on average (right-hand scale)

Source: Statistical Yearbooks of Interstate Statistical Committee of CIS States,
Economist Intelligence Unit Country Reports and IMF Country Reports
with Selected Issues and Statistical Appendixes

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31 Comprised of manufacture, fuel and energy sectors

Labour/Employment

To start with, the dynamics of labour growth shall be inquired into. The exploration of the annual population growth rates reveals the low figures characteristic to the area: 0.6% for the 1990-2000 across CIS. Irrespective to the trend, some countries display higher population growth rates such as Turkmenistan with 3.4%, Uzbekistan with 1.9% and Tajikistan with 1.6%[32]. Part of it is explained by the concentration of the asylum seekers and refugees such as Turkmens and Afgans from Tajikistan in Turkmenistan (United Nations System in Turkmenistan, 2000).

Furthermore, the observation of the sectoral change of labour shows dynamics that are similar to the GDP composition change. Indeed, share of total labour force in the industrial sector has decreased by 5.7% and has increased in the trade and catering sector by 2.9%. However, other trends are reversed: the share of labour increases in agricultural sector by 8.5% and decreases in construction by 3.9%, in transport and communication by 0.4% and in services and other by 2.2% (see annex 3.5). At the same time, on average, unemployment in CIS has increased for as much as 5 times from 1992[33] to 2001. The educational composition of unemployment has changed as well: using the same comparison, the share of unemployed population with higher and special secondary education has decreased (by 6% and 2% respectively) and the ones of general secondary education have increased (by 6% and 1% respectively) (see annex 3.7).

Lastly, human capital underwent changes as well. From the beginning it should be mentioned that countries of CIS (similar to others in Eastern Bloc) are characterised by the high indices of human capital[34] compared to the development countries and even OECD. The reason lies in the high prioritisation of education during the Soviet times. The results are the high demand from the population and ever-decreasing, but still available supply in a form of government-subsidised schools. Irrespective of the educational attainment level of the average worker, the composition of the stock human capital (in terms of the occupations) was assessed to be inadequate to the needs of modern market requirements (Klara Sabirianova, 2000, Campos and Žlábková, 2001). Therefore, the privatisation of the sector was recommended. As the result, share of the private sector in education has increased. In parallel, secondary school enrolment has decreased from the 95% in 1990 to 80% in 2000 (measured in regional averages)[35] whereas primary school enrolment has stayed almost unchanged (at approximately 96% level). On top of all, countries permanently experienced net out-migration of skilled labour related to the disruption of industrial bases (e.g. urban population with

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32 Own calculations on the basis of WDI 2002

33 1992 is selected because it is the earliest a vailable data, however the fact that 1992 was a trough year has to be taken into the consideration

34 Measured in gross or net enrolments, average years of schooling and literacy rates

35 Own calculations based on WDI 2003

19

industrial skills that served the military industry in Central Asian states[36]) and brain drain (e.g. R&D specialists that left for the Western institutions).

Capital

Capital formation in CIS exhibits a declining trend similar to savings (see chart 3.4). Additionally, savings trend reveals two troughs in 1992 and 1994, similar to the output dynamics (see annex 3.3). Since the downward trend in trend savings and investments was anticipated, the additional investments needed for the restructuring and upgrading of the production technologies were expected to come from FDI (Campos and Coricelli, 2002). To attract them, in most CIS

Chart 3.4. Capital Formation, Savings and FDI Dynamics (% of total), CIS Average

Share of Net FDI Inflows in Gross Capital Formation
Share of Gross Capital Formation in GDP
Share of Gross Domestic Savings in GDP
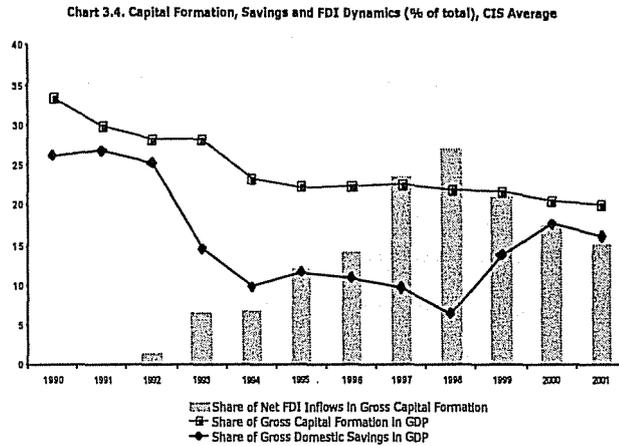
Source: WDI, 2002

countries adequate policy and legislative measures were taken to ensure the "conducive investment climate". In response, as chart 3.4 shows, share of net FDI inflows in Gross Capital Formation has increased indeed, but after reaching its maximum in 1997 by 25.4% fall to 19.3 % in 2000. The further investigation on the destination of FDI (both to countries and sectors) show that inflows mainly went into the mineral (oil and gas) exploration and transportation sectors in resource-rich countries such as Azerbaijan, Kazakhstan, Russia and Turkmenistan (IMF Staff Country Reports, CIS Statistical Committee, 2003). As for the declined trend, it owed to two movements in the structure of FDI flow: decrease after the main phase of investing in the oil/gas sector and outflow with the start of profit repatriation (Economic Trends, 2001).

Additionally, privatisation, which was seen as a mean to transform state-owned enterprises of FSU into the productive entities[37], failed to bring the expected boost in efficiency (Havrylyshyn and McGettigan, 1999)[38]. Moreover, it prompted the deterioration of the material base since the easiest way to get profits by the new owners was found in selling the equipment as a scrap (Levine and Wallace, 2000).

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36 Kazakhstan, Kyrgyz Republic, Tajkistan, Turkmenistan and Uzbekistan

37 Since soviet enterprises were estimated to be a inefficient and incapable to respond to the market (Brada, 1996, others)

38 By the 2002 estimates, 65-70% of GDP is in private sector hands in Armenia, Georgia, Kazakhsta n, Russia and Ukraine, 60-50% in Azerbaijan, Kyrgystan, Moldova and Tajikistan, very little progress is made in Belarus and Turkmenistan (Economic Commission for Europe, 2003), however profits did not rise

Trade

In examining trade, firstly, the decline in level attracts attention. Though in 1998 CIS exports were about 30% higher than in the trough year (1994), they represented only 15% of 1990 exports (Campos and Coricelli, 2002). As it was mentioned, collapse of CMEA trade was the main cause of the tremendous disruption in the international trade of these countries. In 1990-1993, inter-Republic trade fell by 67% from $189bn in 1990 to $62bn in 1993. In addition, FSU trade with the rest of the world fell by 48% in US$ terms over the same period (Senik-Leygonie and Hughes, 1994).

Secondly, trade patterns show a reorientation towards the industrialised countries (Breton and Gros, 1997; Kaminski et al, 1996). According to the calculations of some studies such as the work of Campos and Coricelli (2002), the share of CIS exports to industrial countries has increased from the 15% in 1990 to 25% in 1998.

Chart 3.5. Changes in Shares of Commodity Groups in CIS Exports, Average 1992-2001

—□—Share of Food and Agricultural Raw Materials in Exports
▪ ▪ Share of Fuesl, Ores and Metals in Exports
———Share of Manufacture in Exports
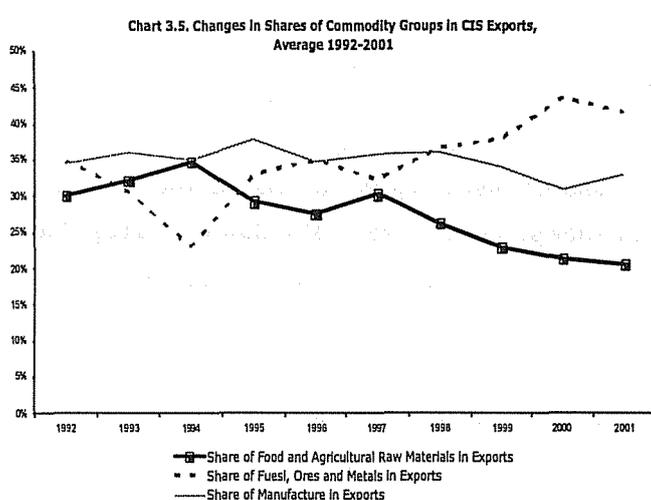
Source: own calculations based on UNCTAD export data

Chart 3.6. Changes in Shares of Commodity Groups in CIS GDP, Average 1992-2001

—□—Share of Food and Agricultural Raw Materials in GDP
▪ ▪ Share of Fuesl, Ores and Metals in GDP
———Share of Manufacture in GDP
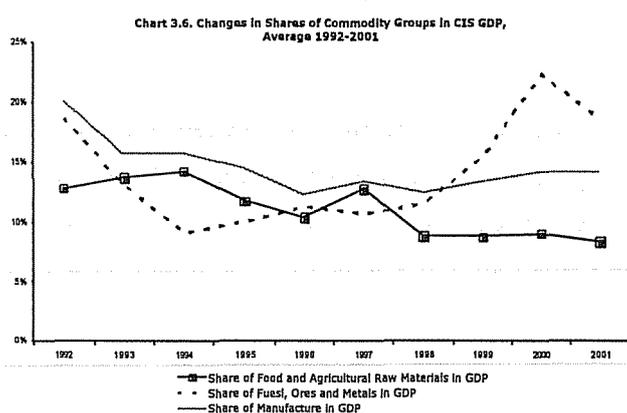
Source: own calc. based on UNCTAD export data and WDI 2003

Thirdly, the structure of the trade has changed. On average, from 1992 to 2001 the mineral-products-share in exports has increased by 7% and that of agricultural products has decreased by 10%. At the same time, the share of manufacture products has remained broadly the same (see charts 3.5 and 3.6). However, the average figures do not capture the extent of cases such as transformation in individual country increase of share of mineral products in exports in Azerbaijan from 34% to 92%, decrease of share of manufacture product in exports in Kazakhstan from 53% to 18%, changes in shares of agriculture products in Georgia, Moldova and Tajikistan, etc. (see Annex 4.2 and 4.3).

Lastly, in the beginning of their independence, as a part of structural reform, the majority of CIS countries[39] liberalised trade along with prices of most goods and services, foreign exchange rate regime and enterprise and land privatisation (Ofer and Pomfret, 2003). Some of

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39 With exceptions of Turkmenistan, Ukraine and Uzbekistan. They also barely implemented structural reforms.

them are members of WTO such as Kyrgyztan (from 1998), Georgia (from 2000) and Armenia (from 2003). Others except Turkmenistan are observers (WTO, 2003).

Debt

Table 3.3. CIS External Debt Data

Present value of debt (% of GNI)	2001	Level of Indebtedness*
Armenia	30.0	Less Indebted
Azerbaijan	19.0	Less Indebted
Belarus	6.7	Less Indebted
Georgia	33.8	Less Indebted
Kazakhstan	67.4	Less Indebted
Kyrgyz Republic	90.9	Severely
Moldova	71.2	Moderately
Tajikistan	83.2	Severely
Turkmenistan**	78.0	Moderately
Russian Federation	48.9	Moderately
Ukraine	31.1	Less Indebted
Uzbekistan	40.2	Moderately

* according to the WDI 2002
** latest figure (for 1998)
Source: GDF, 2002

More than a decade later, starting with no debts in the beginning of the transition, all CIS face serious external debt problems. Some of them are severely indebted such as Tajikistan and Kyrgystan, others less (see table 3.3). Concerns over the debt accumulation are augmented by the fact that it has taken place under the auspices of monitoring and lending by the International Financial Institutions (Helbling et al, 2003).

Reasoning goes back to the balance of payment problems, caused by the trade imbalances during the earlier years of transition. De Melo et al (1997) correctly indicate that, disruption had especially adverse effects for the smaller republics of USSR that were mostly orientated toward intra-USSR trade. External shocks such as the Russian financial crises in 1998 (Gaston and Sahay, 2000), armed conflicts and expansionary macroeconomic policies are blamed as well (Helbling et al, 2003). Debt sustainability analysis shows that seemingly, the only realistic option is the debt rescheduling.

Institutions

One of the main concerns of studies evaluating the transition progress is the development of institutions, which ensure "the exercise of political, economic and administrative authority to manage nation's affairs and reflect citizens' preferences" (quoted from UNDP, 1997 in Economic Survey of Europe, 2003). The rationale, as it was briefed in the previous chapter, is that those institutions decrease the likelihood of governments to be "captured" by interests to act towards gaining from market distortion and prevent them from forming the laws or policies to their advantage. With this logic, the topic of the spreading corruption comes into the play as an important cause behind the unsatisfactory results of reforms in transition. The vast majority of works evaluating the degree of corruption, using different methods and indices[40], find CIS among the most corrupt regions of the world (World Bank, 2000; Kaminski and Kaminski, 2001). Exploration of indicators by Kaufmann et al (2003) reveals the most corrupt countries in CIS as being Tajikistan and Turkmenistan by 1996-1998, joined by Azerbaijan and Russia by 2000 and Georgia by 2002 estimates. The measure used (control of corruption, see annex 5.5

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40 From the quantitative ones developed by the World Bank (Kaufmann, Kraay and Mastruzzi, 2003), World Bank and EBRD (Hellman et al, 2000), Freedom House to the qualitative assessments of elections (Economic Survey of Europe, 2003), etc.

for description) reveals the general trend of increased spread of corruption for in majority of CIS countries (except Belarus, Tajikistan and Turkmenistan).

3.3. Conclusion

The analysis of the outcomes of transition indicates to the fundamental changes in economic structure of CIS countries. The analysis of output, labour and trade dynamics indicate on the decreased role of industry in the economy. The primary sector dominance is also of note. Additionally, the findings reveal the increased importance of natural resource based exports.

Moreover, the change in human capital and high share of foreign capital in mineral-based industries (which is considered to be an enclave in economy) is not supportive to the future perspectives of the economic revival of countries in transition. On top of all, unsustainable debt and indices of high spread of corruption weakens the negotiation power of them with IFIs and other bilateral donors. In the light of this evidence the recommendations based on the natural resource curse analysis becomes more important for the future prospects of the CIS countries' economic performance. Therefore, the investigation of the relevance and the degree of considering the region-specific factors become a valid further target.

CHAPTER 4. THE IMPACT OF NATURAL RESOURCES ON ECONOMIC GROWTH: EMPIRICAL STUDIES

4.1. Introduction

Similar to the theoretical studies, there is a vast bulk of empirical work that inquires into the nature of relationship between resource abundance and economic growth. Among them are works on transitional economies. For the most part the empirical evidence appears to support the negative relationship hypothesis. Nevertheless, considerable doubts can be raised as to what concerns their validity. And it is the aim of this chapter to find out the relevance of these studies in CIS case. Thus, a review of the empirical literature will be undertaken with a view of assessing how well it translates the theoretical models and explains the stylised facts. Additionally, the channels that find sufficient empirical support will be selected to be tested further.

The chapter is organised as follows. Firstly, the findings and shortcomings of the empirical literature on the relationship of natural wealth and economic performance will be explored. As it was stated before, this paper focuses on the empirical studies outlining the indirect channels singled out in the theoretical part of this paper. Secondly, empirical studies on resource-driven transitional economies will be reviewed. Lastly, the conclusions will be made on the implications of the findings of the chapter.

4.2. How Do Empirical Studies Reflect The Natural Wealth Impact Hypothesis?

The large body of work that proves the relationship between abundance of natural resources and poor economic performance is more explicit in their attempt to find out the channels through which the adverse effects of resource wealth are taking place. Most of them build on the influential work of Sachs and Warner (1995), which found a negative relationship between natural resource exports and growth in the period of 1970-1990, based on a sample of 95 developing countries. The multitude of ensuing works, while confirming the finding, augment it with the observation that point-source resource abundant countries are among the weakest performers in a range of resource-dependent ones (Auty, 2001; Easterly and Levine, 2003; Murshed, 2002; Perälä, 2003).

The methods are mostly limited to the usage of econometrics, whereas exploratory data analysis (EDA) is applied more rarely . It has to be noted, that the majority of the studies that employ multiple regression, include the variables through which natural resources could have effect on growth along with the natural resource abundance indices. The argument is to test whether they are significantly associated with growth once natural resources are taken into account. One can argue that simultaneous regressions seem to be a more plausible alternative. This would serve the purpose of testing the theoretical argument in both ways: first, whether

the indirect linkages are explained by the natural resources and second, how much they explain the economic performance. Some studies acknowledge the drawbacks of used techniques and apply the simultaneous regressions such as Sachs and Warner (1995, 1997) and Murshed (2003). Others rely on advancement of econometrics methods that give a possibility to first use multiple regressions to measure the effect of each explanatory variable on the dependent one while keeping other explanatory variables constant and second, to correct for the data problems[41] arising when with the various tests. One additional critical point is that these models look, and might be, manipulative since instead of building on theoretical underpinnings, they seek for statistically significant coefficients and high coefficient of multiple determination (R^2) by excluding and adding up variables. It does not mean, however, that econometrics is of no use: testing of theoretically solid arguments with the available evidence is a powerful way of accepting or rejecting the hypothesis. Rather, it indicates that theories are not sound enough to explain the reality.

Before exploring how the distinct links outlined in theory are proved and supported by the empirical studies, the indices of natural resource abundance and economic growth shall be inquired into. To capture the natural resource abundance/intensity, mostly single indices are used. Among them are ones related to:

- exports, such as the share of primary exports in GDP (Sachs and Warner, 1995) and the share of primary exports in total exports (Isham, 2002);
- production, such as the share of primary sector employment/labour force (Gylfason et al, 1999) and the share of mineral production in GDP (Papyrakis and Gerlagh, 2002);
- and resource reserves, such as per-capita land area (Wood and Berge, 1997), per-capita cropland greater than 0.3 hectares (Auty, 2001) and the ratio of total land area to population (Stijns, 2001).

Less frequently used are dual measurements such as export orientation and country size (Syrquin and Chenery, 1989) and per-capita cropland and country size[42] (Auty, 2001). Additionally, to proximate the type of the natural resource, shares of commodity groups in export, sectoral shares in GDP (Auty, 2001; Isham et al, 2002; Murshed, 2002), sectoral shares in total employment (Auty, 2001) and dummies for crops and minerals (Easterly and Levine, 2003) are employed. As for the economic growth, its measure follows from the agreed starting point that growth failure is considered to have occurred in economies that attained their contemporary income level during the 1960s or before. Therefore, studies mostly make use of averages or level indices for economic growth within a time span from 1960 onwards.

The way natural resources are defined and proxied and the chosen period for assessing the economic performance can be a matter of critic. Firstly, it seems that the indices of natural resource reserves assume an automatic translation of them into exports, which is dubious.

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41 Among which are multicollinearity, heteroscedasticity, autocorrelation, etc
42 Country size is measured in terms of GDP

Secondly, although natural resource abundance is mostly measured by agriculture-related proxies (such as per-capita cropland and employment in the agricultural sector), later the results are generalised to the other types of resources whereas the resource-type development is stressed on repeated occasions. As for the capturing the growth collapse, the analysis is acknowledged to be sensitive to the period chosen. The reasons behind it are the evidence of faster growth of resource-rich countries (Auty, 2001) and similar pattern of growth in all developing countries before the 1970s.

The Real Exchange Rate Channel

Only few studies (such as Gylfason et al, 1999; Murshed, 2003; Easterly and Levine, 2003), that identify the policy measures taken by resource-rich countries to counteract the Dutch disease, use the real exchange rate dynamics as an explanatory variable. Others identify Dutch disease with de-industrialisation and use various proxies to capture the dangers to economy from increased inflows that are highlighted by this hypothesis. For instance, Sachs and Warner (1995) single out the propensity of countries with resource booms to develop protectionist strategies when trying to combat Dutch disease effects. Following from that, their analysis exploits the trade openness indicator, measured by the fraction of years that country was integrated into the world economy[43]. With the same logic, other works use trade inflows (Gylfason, 2001) and openness defined as a difference between the actual and predicted ratio of exports to GDP[44] (Gylfason, 1999).

Despite the puzzling ways to capture the theoretical arguments, in most cases, the hypothesis are claimed to prove right. Consequently, the conclusion is drawn that growth failure is explained by poor policies (most notable from protectionism) rather then natural wealth itself. Even if the difficulty to see the logical link from the real exchange rate to the protectionist policies was overcomed, the finding of open trade policies (in sense of lower tariffs and non-tariff barriers to trade) to be significantly associated with economic growth could still be challenged. Indeed, various studies characterise the claim as having "a little evidence" (Rodriguez and Rodrik, 1999; Walde and Woods, 1999).

The Human Capital Channel

Employing the measures of human capital as secondary school enrolment (Gylfason et al, 1999; Kronenberg, 2001), secondary school achievement in initial year (Isham et al), public expenditure on education relative to national income, expected years of schooling and school enrolment (Gylfason, 2001), studies prove the human capital deterioration to be the right channel of natural wealth's adverse effect on economic growth.

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43 Following Sachs and Warner, 1995 the indicator is used in most of the natural resource studies. It is based on definition that "county is said to be open if it maintained reasonably low tariffs and quotas and did not have an excessively high black market exchange rate premium". The reasonable trade restrictions are believed to be average tariffs lower than 40%, quotas and licensing covering less than 40% of total imports. As for the black market premium, it must be less than 20%.

44 The predicted export-to-GDP ratio=86.3 -5.7 ln(population)

However, hconspicuously, in most works the idea of introducing a time (usually five-year) window between human capital observation and the other explanatory variable to mitigate risks of reverse causality is neglected.

The Policy/Institutions Channel

To model the theoretical argument of weak institutions (including social cohesion) having a high probability to make for poor policies, empirical studies mainly focus on quality of governance and civic social capital. Rarely, policy failures are applied as proxies as well. Among the governance indicators (see annex 5.5) are those measured by World Bank indicators (voice and accountability, political stability, government effectiveness, regulatory quality, control of corruption); Transparency International indicators (Political Rights, Civil Liberties, Freedom of the Press, Corruption Perception Index); World Bank and EBRD indicators based on BEEPS (Quality Of Public Institutions, Institutional Obstacles to Business, State Capture, Corruption, etc); Freedom house indicators (especially ones for countries in transition such as Democratisation, Rule of Law And Economic Liberalisation); ICRG indicators (Quality of the Bureaucracy and Law and Order Tradition, etc); Composite Index of Quality of Bureaucracy based on indices of Business International (Sachs and Warner, 1995); Institutional Quality Index[45] (Mehlum, 2002); Democracy index from Polity dataset of Gurr and Jaggers (Murshed, 2003), etc. Almost all of these works find governance malfunctioning to be an important explanatory variable for the growth underperformance of resource-rich countries.

Another group of studies uses civic social capital as an explanatory factor for the economic performance of natural resource abundant countries. Among the proxies are: a) direct measures such as membership rates of organisations and participation in organisations (used by Narayan and Pritchett, 1999; Robert Putnam, 1993) and measures of trust[46] (Knack and Keefer, 1997) and b) indirect measures such as income, distribution measures, English/European language spoken and ethnic fractionalisation/heterogeneity, etc.

The group of studies that accentuates on policy failures as a channel usually argues that there is a bigger possibility for high rents from natural resources to be translated into wasteful investments, which allegedly leads to the failure of macroeconomic policies. Therefore, policy failures are captured by inflation (Gylfason, 1999; Easterly and Levine, 2003) and average investment-to-GDP ratio (Auty, 2001), etc. Using those indices, the channel is found to be supportive for the resource curse hypothesis.

A number of questions can emerge on this issue as well. Firstly, the studies using corruption indices face the fact that the assumed causality from corruption to growth and from natural

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45 The index is an unweighted average of 5 indexes based on data from Political Risk Services: a rule of law index, a bureaucratic quality index, a corruption in government index, a risk of expropriation index, and a government repudiation of contracts index

46 Answers on question do you think people can be trusted

resources to corruption is not so clear-cut. Indeed, some authors acknowledge the possibility of other factors influencing corruption and suggest to model economic growth using instrumental variables instead of usual indices of natural resources and corruption (Kronenberg, 2001). Additionally, the selection of indicators of institutional quality and governance is not well argumented, being rather motivated by issues of their availability. Moreover, a range of studies that have not relied on advanced statistical techniques are singling out the problems with the works that emphasise the importance of policy or institutional variables. Namely, the majority of institutional variables are said to have weak predictive powers to explain growth (Przeworski and Limongi, 1993 and Brunetti, 1996 cited in Kenny and Williams, 2001). In addition, the fact that policies change too slowly to explain the volatility of shorter-term growth rates and too fast to explain the stability of longer-term growth rates was observed by Easterly et al (1993). As for the social cohesion, starting from its definition[47] it is difficult to grasp the rationale behind the way in which the civic social capital is captured. Namely, the way the degree of aptitude for collaboration among people is proxied by the share of people speaking English/European language or ethnic fractionalisation is rather speculative.

The Poverty/Inequality Channel

The inequality and poverty channel is not as much used in multiple regression type of analysis. Rather, it is subjected to the separate investigation (Ross, 2001a; Fields, 1989; Gylfason, 2002). Usually, inequality is captured by income or social inequality indices such as Gini, deciles or quintiles ratio, share of income gains to middle 60% of population, etc. Further, the testing of inequality channel results in either dropping it on the grounds of statistical insignificance (Sachs and Warner, 1995) or finding out its linkage to the other independent variable (such as conflicts in Murshed, 2003; education in Gylfason, 2002; institutions in Easterly, 2001). The same applies to the poverty channel, although it is even less investigated. The empirical studies that use the inequality/poverty channel do not attempt to clarify the mechanisms through which natural resource abundance effects adversely the economic growth through increased poverty and inequality.

Others

The other channels applied, in most part, include armed conflicts (proxied by the dummies for the armed conflicts/war prone countries, etc.) and geography (captured by the dummies of landlockness and belonging to region, distance from equator or developed countries). Studies, in general, confirm their significance in supporting the resource curse hypothesis. However, some of the results are sensitive to the resource type. The work of Soysa (2001) states that the predicting power of mineral wealth in incidence of conflicts is significant whereas relative

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47 See footnote 13

availability of total natural resources is not associated to conflicts. As for the geography variables, they are open to the dispute as fair measures (Kenny and Williams, 2001).

In short, the empirical studies on indirect channels between natural wealth and economic performance neither contribute to the theoretical debate in conclusive manner, nor they clarify the ambivalent effects of some channels such as inequality and poverty one.

4.3. What Do Studies of Natural Resource Impact on Transition Economies Exhibit?

Since the studies of the impact of natural resource on economies in transition are few, there is an opportunity to analyse all relevant ones in detail. It should be noted that all of them proved the relevance of the curse hypothesis to the transition as well as found an explanation for the poor growth performance of resource abundance transition countries. Three of these studies are of special interest due to the fact that they pertain to all transition countries: Auty (2003), Gylfason (2000) and Kronenberg (2001)[48]. Case studies such as ones done on Azerbaijan (Petersen and Budina, 2002; Rosenberg and Saavalainen, 1998), Kazakhstan and Uzbekistan (Petersen and Budina, 2002; Auty, 2001) and Russia (Markandya and Averchenkova, 2001) are important as well.

These studies, in general, reproduce models and methods described in the first part of this chapter. Hence, the same doubts apply to them. Following the trend, the research into resource-rich transition countries tries to test possible channels through which the natural resources retard growth. Consequently, institutions and policies, real exchange rate and human capital are found to be the most influential ones.

The institutions/policy channel is the one most often claimed to be of high importance, impeding the possibility of positive translation of resource rents to growth. Indeed, interlinked analysis of rent-seeking activities, natural resources and economic growth prove right the negative impact of resources on growth through governance malfunctioning (Gylfason, 2000; Kronenberg, 2001). In addition, the inquiry into the cases of Kazakhstan and Azerbaijan support the finding, emphasising, however, on different extent of it according to the resource type, i.e. in crop-driven Uzbekistan the transition goes smoother compared to the mineral-driven Kazakhstan and Azerbaijan (Auty, 2001). The analysis is based on research of oil revenues, shadow economy size, EBRD Governance, State Intervention, Corruption and Bribe tax indices (Auty, 2003) and State Corruption Perception Index (Gylfason, 2000; Kronenberg, 2001).

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48 Methodologically, study of Gylfason (2000) and Auty (2003) exploit exploratory data analysis whereas the one of Kronenberg (2001) makes use of the stepwise regression approach.

The studies that focus on policy failures in transition countries, similar to general trend, outline the link between high resource rents from natural resources and soaring inflation. Reasoning from this, the relations between resource abundance and annual inflation rate as well as between inflation and economic growth is investigated. The results show a significant, although not impressive coefficient of positive correlation (Gylfason, 2000). At the same time, the lack of any clear association between natural resource abundance and inflation on a world scale suggests that correlations are spurious. In a different way, the coherence of economic policies is found to be diminished by point-source resource abundance rather than diffused one through its detrimental impact on democracy (Auty, 2003).

Interestingly, instead of highlighting the adverse effect of natural wealth on social cohesion, Markandya and Averchenkova (2001) and Auty (2003) outline the devaluation of social capital and increase of inequality as a consequence of the policy failure in resource-rich countries. The latter point over indicates on contested causality of inequality/social cohesion channel.

The next channel that is tested for relevance is the real exchange rate one. For that, openness indicator is employed (here, the difference between the actual and predicted exports-to-GDP ratio[49]). However, after failing to exhibit a significant relationship, the conclusion of no direct impact of real exchange rate movements on the growth performance of transition countries is reached (Gylfason, 2000). The opposite conclusion is derived by the work of Kronenberg (2001). Building on the relative price effect common to the Dutch disease type of analysis, it employs the general price level as a proxy for the relative price, calculated as a ratio of country's purchasing power parity exchange rate to nominal exchange rate[50]. The findings indicate the positive correlation between resource abundance and price level, but no influence of any on growth in case of transition countries. In order to explain the puzzle of positive correlation between the price level and growth one could turn to the observed government abilities by example of Russia to adjust policies so that resources could work in favour of economic development (Markandya and Alesina, 2001). These conclusions, however, do not match the predictions of the Rosenberg and Saavalainen's research (1998) that transitional conditions add speed to real exchange rate appreciation. Overall, the findings as well as the methods to test for the real exchange rate overvaluation channel are rather divergent.

Further, human capital channel is tested using secondary school enrolment. The results, on the one hand, turn out significant, but sensitive to the inclusion of Albania (Gylfason, 2000) and, on the other, insignificant (Kronenberg, 2001). The rationale of the latter one is quite plausible: as it was stated in the previous chapter, human capital indices are generally high in transition counties and, therefore, difficult to use as an explanation for the divergent economic

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49 See footnote 3

50 This general price level is used as a proxy for relative price one based on the usual assumption that prices of tradables is internationally determined and same everywhere

performance. Rather, investments in education seem to be relevant to inquire into. Similarly, importance of time-lagged analysis has to be stressed.

The other channels such as inequality/poverty and armed conflict/war ones are not subjected to tests in the transition country cases.

3.4. Conclusion

To summarise, the empirical studies of both general and transition country specific evidences of resource-rich countries' economic performance prove the existence of natural resource curse. In the case of transition countries, natural resources are found to be an important explanatory factor of growth divergence along with the remoteness from dynamic markets, extent of exposure to central planning (Auty, 2003), initial conditions (initial income level in Kronenberg, 2001 and social capital in Auty, 2003) and growth of exports (Kronenberg, 2001). In addition, Auty (2003) suggests that resource type matters for the avoidance of growth failure: diffuse resource base economies can escape it.

As for the channels, tests unanimously distinguish only one, the institution/policy channel, as an explanatory factor of resource curse in transition countries. Secondly, proxying policy failure by capital investment and inflation-related measurements has been proved unsound, hence more appropriate indices are desirable. The human capital channel could be better tested by using other proxies or techniques than secondary school enrolment. Additionally, despite disputed effects on growth, a real exchange rate appreciation is alleged to occur in the resource-abundant transitional countries, with the possible adverse outcomes for the economic development. Lastly, the armed conflicts/war and poverty/inequality channels are not considered of importance in explaining natural resource-led economic performance of transition countries. The latter point coupled with the theoretical drawbacks is the reason of not pursuing those channels any further.

Consequently, recommendations are mainly concerned with institutions/policy matters that, in general, emphasise on trade and market liberalisation policies and measures to ensure the transparent and accountable governance.

Although, the recommendations are more or less in line with the theoretical and empirical work on this subject, their highlighted caveats confirm the necessity of further investigation. Therefore, the next chapter will test the singled out channels on the CIS case. Additionally, this will correct for the omissions of earlier studies such as exclusion of five out of twelve CIS economies from the sample of transition economies (Kronenberg, 2001).

CHAPTER 5. TESTING THE PREDICTIONS OF THE THEORIES AND EMPIRICAL STUDIES

5.1. Introduction

The previous part of this paper presented that the channels through which natural resources allegedly influence economic performance are debatable. There are few studies on the resource curse in transitional economies, but generally they do not shed more light on the subject. However, policy decisions to counteract Dutch disease and adverse rent management practices are found to be crucial for the further development of resource-rich transition economies (Auty, 2003; Gylfason, 2000; Rosenberg and Saavalainen, 1998; others). Therefore, the present chapter aims at testing both the predicted impact of natural resource abundance and the channels through which the impact takes place, on CIS case. The final selection of channels, based on the findings of the previous chapter, includes real exchange rate overvaluation, policy/institutions and human capital ones. Conclusions will be drawn on whether the theoretical explanations and empirical studies on transition countries can be generalised to the CIS case.

5.2. Methodology and measures

Before testing the prediction of studies on natural resource and growth, a few points should be clarified. First of all, this chapter makes use of EDA. The rationale behind it is threefold: 1) the critical evaluation of the models used to explain the economic performance in transition economies (Stevens, 2003); 2) the mentioned limitations of econometrics methods (see section 4.2) and 3) the small size of the sample and time (12 years of transition) and overall poorness of data. Second of all, despite the mentioned drawbacks of econometrics analysis, in order to explain the economic performance of CIS countries through natural resources endowments, a model of multiple regression is employed. This necessitates due to the limitedness of data possibilities to exploit other alternatives. In this case, certainly, the possible multicollinearity problem is solved by making use of the interaction term. Last of all, overall, the predictions are tested by comparison of resource-rich to resource-poor CIS economies.

The analysis, in most part, covers the time period from 1992 to 2001. The main reason behind the choice of starting date is related to the availability of data, among which crucial ones are figures on exports. From its side, this is explained by the absence of independent national accounting before 1992 (CIS countries were part of USSR).

Economic growth is captured by average per capita growth (annual % change), calculated on the basis of GDP per capita in LCU (data source is WDI 2003: NY.GDP.MKTP.KN).

Natural resource abundance is measured using two indices: a) primary export share in total exports and b) primary exports share in GDP (see annex 4.2 and 4.3). The latter is relevant since it is coherent with the analysis of sectoral composition of GDP and employment. Additionally, both indices encompass agricultural and mineral resources. Hence, they are not limited to the one type of natural resources, yet create an opportunity to check for resource type specific developments. The share of primary exports in total exports is calculated using three digit level export data from UNCTAD for 1992-2001 years (see annex 4.1 for classification of the commodity groups based on SITC[51]). To follow the argument on economic development, that are specific to natural resource type, a further distinction between agriculture products (food and agricultural raw materials), minerals (fuels, ores and metals) and manufacture products are made. As for the second measure of natural resource abundance, i.e. primary exports share in GDP, it is computed using the same data and the share of exports of goods and services in GDP from WDI 2003 (NE.EXP.GNFS.ZS).

To check for the governance channel, the widely employed (Easterly and Levine, 2002; Isham et al, 2002; World Bank, 2000, Wyatt, 2002) World Bank governance indicators are applied. This choice is made due to the following reasons. First, it allows the largest sample with maximum number of observations for CIS countries. Second, according to the latest explanatory work on governance indicators (Kaufmann et al, 2003) those indicators cover all aspects of governance as well as they build on all available indices of other agencies. It should be note that first, there are four observations of 1996, 1998, 2000 and 2002 years and second, all scores of governance indicators lie between -2.5 and 2.5, with higher scores corresponding to better outcomes. This paper employs two of the World Bank governance indicators: Government Effectiveness and Control of Corruption. The former measure is used as it captures the quality of public services, among others, in terms of its independence from political pressures (Kauffman et al, 2003). Indeed, both theoretical and empirical studies of the institutions/policy channel highlight the importance of policy decisions to be free from pressures of groups that are interested in seizing resource rents. Indices of shares of human, natural and physical capital in national wealth come from their World Bank calculations (World Bank, 1995). The Control of Corruption Index captures the perception of corruption conventionally defined as the exercise of public power for private gain (Kaufmann et al, 2003). The rationale for choosing the latter is due to the fact that studies on transitional economies widely apply it to back up their theoretical arguments. The observation of year 2000 it is one of the latest observations and more appropriate for the time-span that is analysed in this paper than that of 2002.

Further, the real exchange rate channel is tested employing real exchange rate dynamics, based on own calculations (see annex 5.1). These calculations consider indices of trade

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51 Groupings are based on Commodity Codification according to the Standard International Trade Classification (SITC), rev.3. The same groups are used in the World Development Indicators (see Isham et al, 2002).

partners and competitors (Nicholas, 2003). This particular channel is tested only for the sample of resource-rich countries, eight in total (Uzbekistan is excluded due to the data problems). Additionally, the time span is 1995-2001 due to the poorness of nominal exchange rate and inflation data.

Lastly, the human capital channel is checked using the decrease in tertiary school enrolment rates (TSER) from 1995 to 1997 (source of data is WDI 2003: SE.TER.ENRR). The choice of that index is based on the limited possibility to make use of secondary school enrolment rates to capture change in human capital in CIS countries (see section 3.3). Additionally, alternative measures such as government and private expenditure on education are hard to get for the whole sample. That limits the pool of relevant choices to TSER. Further, considering recommendations on the using human capital indices with time lag, decrease of TSER in 1995-1997 is associated with the economic performance in 2001.

To capture the effect that natural resources have on economic growth in CIS, the shares of natural, physical and human capital in national wealth in 1990 are regressed with economic growth per capita in PPP terms in 2001 (source is WDI 2003: NY.GDP.PCAP.PP.CD). Since all studies point out the high importance of governance, the measure of its quality from World Bank is included as an additional explanatory variable in the model. At the end, to correct for the multicollinearity, human capital and natural capital shares are interacted.

5.3. Testing the Channels

To check for the relevance of natural resource curse for the CIS countries, predicted by the theoretical and empirical studies, let us start with looking into the relationship between natural resource abundance and economic growth. Scatterplots show no trend in association between those variables (see chart 5.1/5.2), which makes it rather obvious that natural resource abundance is not sufficient to explain the economic performance in CIS countries in 1992-2001. Therefore, we should find the extent of the effect on economic growth that can be

Charts 5.1 and 5.2 Natural Resource Abundance and GDP Per Capita Growth
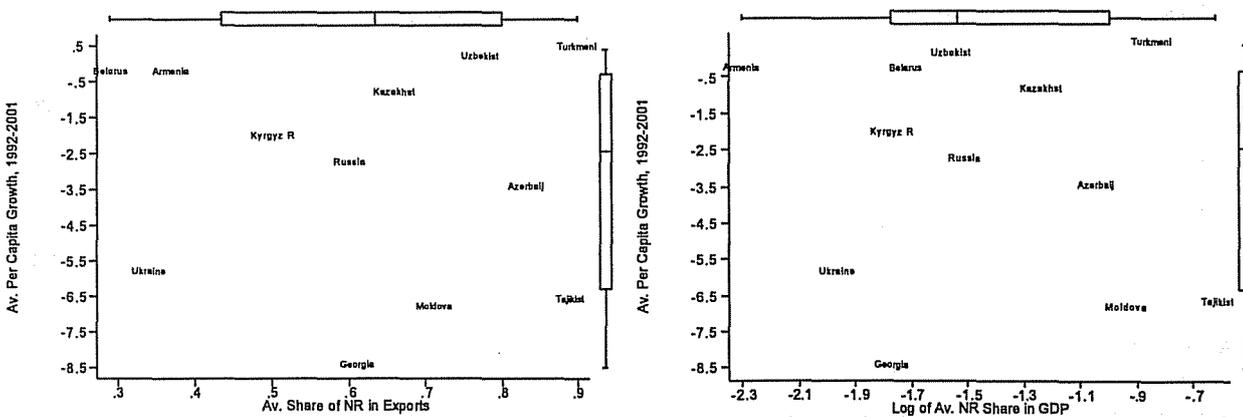
accounted for natural resource endowments along with physical and human capital and governance effectiveness. The results, presented in annex 5.6a, are significant at 1% level of significance and explain 93% (see adjusted R^2) of the growth performance in 2001. Due to the output fall in most of the observation time, the signs of national wealth shares are, as expected, negative. The coefficients indicate more or less similar effect of them on growth. It has to be noted, however, that physical capital is slightly large in absolute terms than human and natural capital. Also, the governance quality turns to be relevant and positively correlated to growth factor. In this mode, to look at the modified effect that human and natural capitals have on growth separately, the dummy for resource-rich and resource-poor CIS countries is interacted with the share of human capital in national wealth. In this way, the positive sign of the interaction term indicates to the higher relevance of human capital for the growth performance of resource-rich countries compared to resource-poor ones.

In brief, the growth performance in CIS countries from 1990 to 2001 can be explained, more or less similarly, by of shares natural, human and physical capital in national wealth and the quality of governance. For some part, the combination of natural and human capitals are responsible, the latter being especially important for resource-rich countries.

Let us now investigate further the natural-resource-specific economic developments of CIS countries. In following that aim, first, export data shall be disaggregated. As a result, three manufacture-based economies among CIS countries[52] are distinguished. Those are Armenia, Belarus and Ukraine (further referred to as MG). By further subdivision of the primary product based CIS economies (further referred to as PPG), the groups are delineated according to the extent of the agriculture and mineral product shares in their exports. Resulting from it, three agriculture-based (Kazakh Republic, Moldova and Uzbekistan, further referred to as AG) and six mineral based CIS economies (the rest, further referred to as FOMG) are discerned (see

Chart 5.3. GDP Growth Index, CIS Countries (1989=100, Group Average)   Chart 5.4. GDP Growth, CIS Countries (1989=100, Group Average)

—◆—Av. PPG   —※—Av. MG   —※—Av. MG   —●—Av. AG   — ›Av. FOMG
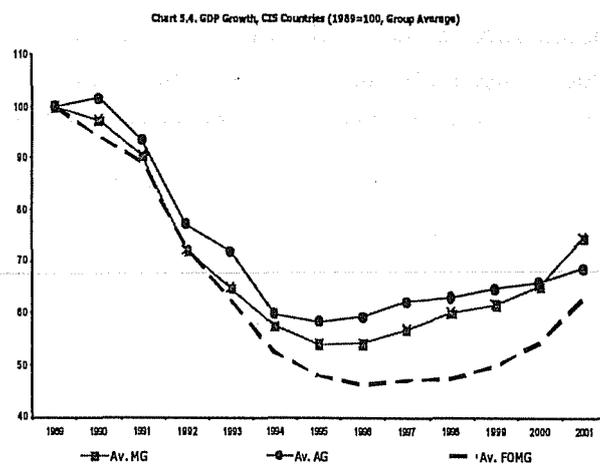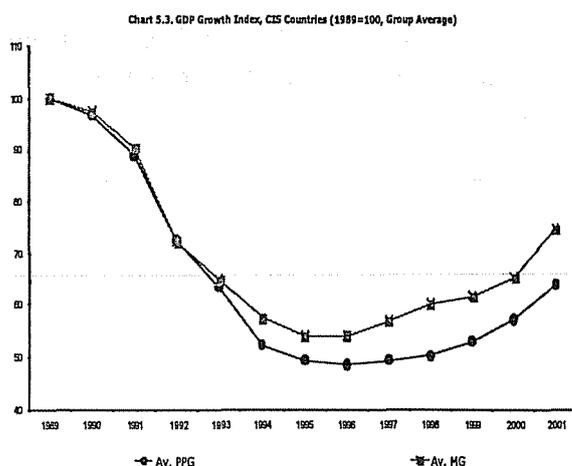
Source: WDI, 2003

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52 Same trend in commodity shares in export and in GDP makes possible to distinguish between groups and keep both indices of natural resource endowment

annex 5.2). In accordance with the theory, MG and AG countries do exhibit divergent economic performance of resource-rich states (see chart 5.3). Indeed, manufacture based economies, on average, recover sooner and grow better than primary product based ones. However, with the further bifurcation of PPG into AP and FOMG, changes in the group's growth pattern can be observed. Namely, AG outperforms MG during 1989-2000 years. As for the FOMG, they exhibit the worst growth picture in line with predictions. Let us turn to the unexpected part of the EDA. Analysis of AG countries in greater detail reveals well-developed interlinkages between agricultural and manufactured sectors in Kyrgystan and Uzbekistan. Here, high revenues from the cotton sector were used to develop industrial sector (see annex 5.3). Based on the analysis, we can conclude: the explanations of CIS growth performance depends on interlinkages between natural resource and other sectors[53].

Let us explore further the channels that were singled out in earlier chapters. Theoretically, resource booms cause real exchange rate appreciation and, through it, de-industrialisation and a further collapse of growth. Therefore, the analysis of the impact of the real exchange rate on economic performance starts with looking for the evidence of the de-industrialisation in CIS economies. On general level, the data shows a decreasing trend in the share of industry in GDP as well as in the share of employment in industry (see section 3.3). Further inquiring into GDP and employment sectoral composition change (see annex 5.3 and 3.5) shows the same trend in APG countries: they have experienced a decrease in sectoral share of industry, construction and, to a lesser extent, agriculture. At the same time, employment in agriculture has increased. it is Important to note that APG countries were agriculture-based before the transition also (with approximately 40% of GDP in 1990-1992). Having considered that, it can be inferred that in APG countries there is a crowding out of industry (approximately 30% share in GDP and 17% share of employment in 1990-1992) by trade and services sectors. In FOMG countries the trend is the same as in PG, with exception of Azerbaijan where we observe the raise in shares of industry and construction in GDP. The explanation for it is the fact that both industry and construction is boosted by the fuel sector, which is the main industry of the country historically (EIU Country Report, 2002). Thus, the growth of industry in Azerbaijan does not reflect an increase in the manufacturing sector. On the contrary, manufacturing sector has decreased from 60% in 1997 (with re-start of oil intensive oil exports) to 33% in 2002 (EIU Country Report, 2003). Therefore, the same conclusions can be drawn: industry

Charts 5.5-5.7 Real Exchange Rate with Natural Resource Abundance and Economic Growth
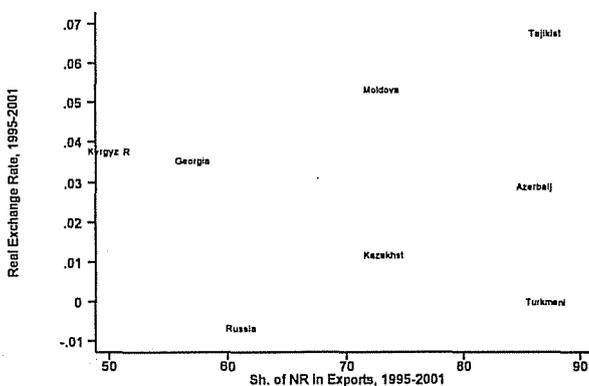
53 For further readings see Ofer and Pomfret, 2003

(especially manufacturing) is crowded out in FOMG and APG countries and resources moved to Trade and Catering and Service and Other sectors. Additionally, labour moved to agricultural sector.

Furthermore, as the calculations show, real exchange rate is, indeed, overvalued in most of the PPG countries in 1995-2001 years (see annex 5.1)[54]. Let us look if the latter has a role to play in de-industrialisation by checking for correlation between real exchange rate overvaluation and natural resource abundance and economic growth (see charts 5.5 - 5.7). Charts show highly scattered pattern, meaning the real exchange rate overvaluation in resource-rich CIS countries is neither explained by the natural resource abundance nor is it accounted for the economic growth performance. In conclusion, the real exchange rate movement is explained by other macroeconomic factors than resource abundance. Next channel to test is the institutions/policy one. Although the governance channel proved to be relevant as measured by the government effectiveness index, the high incidence of attributing growth failures to the corruption in transition countries, makes testing for the empirical support of the argument tempting. Not only does corruption seem to be the most important channel of weak institutions/policy failure, but also one of the few tested to support it. Therefore, the use of
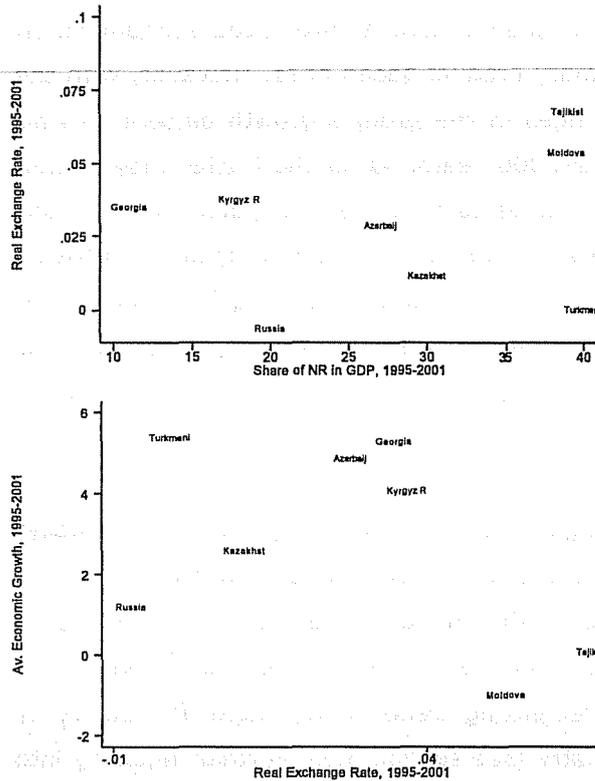
Chart 5.8 and 5.9 Plots of Natural Resource Abundance for 1992-2000 with Control of Corruption for year 2000
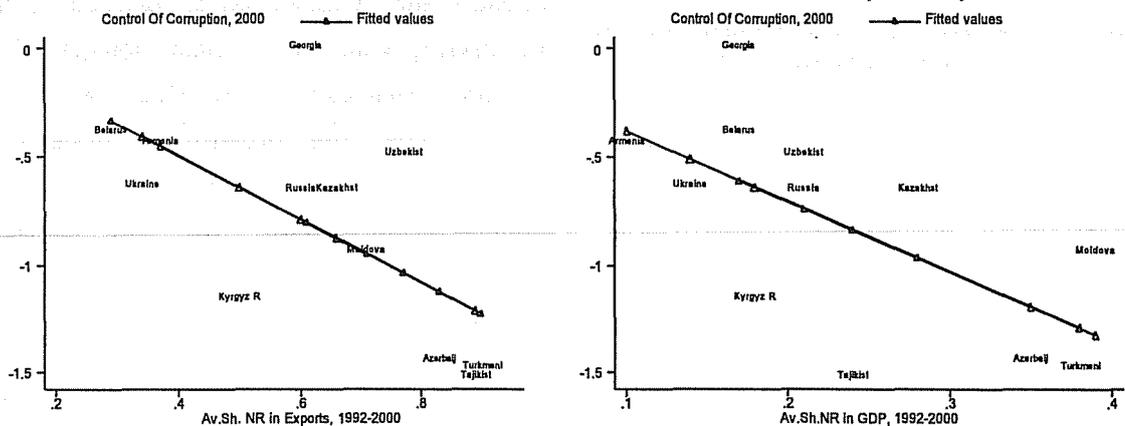
Chart 5.10 Plot of Control of Corruption with Economic Growth, 2000
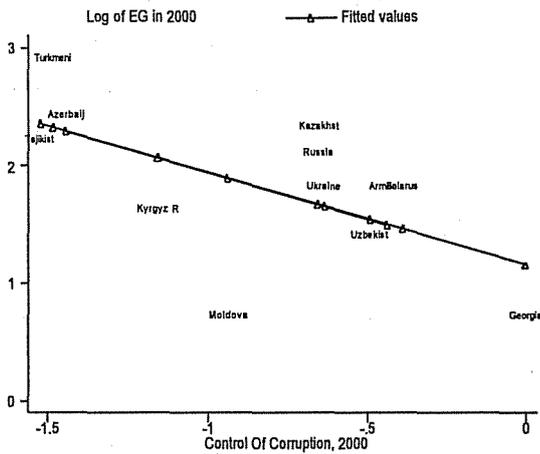
Control of Corruption Index is made. Following theoretical arguments, to check how corruption is associated with natural resource and growth · performance, the Control of Corruption Index in 2000 is plotted against average natural resource abundance in 1992-2000 years. Plots (see charts 5.8 and 5.9) show some degree of negative correlation between a natural wealth and control of corruption, i.e. increase in average share of natural resources is associated with the decrease in control of corruption. Specifically, a variation in natural resource abundance explains at least 34% of variation in control of corruption (see the adjusted R^2s in annex 5.6b/c). To inquire into the relationship between corruption and economic growth, keeping the logic of the argument, indices for both in 2000 have been plotted. The alternatives are limited by the difficulty to use difference between the corruption indexes as an explanatory variable in cross country analysis. The reason behind it is that the difference in corruption indices captures only the extent of change and not the degree of corruption. For instance, countries with more corruption that remained at the same level of it will be shown as better off than less corrupt countries whose indices have increased.

Plotting economic growth and Control of Corruption in 2000 shows unexpected results (see chart 5.10). Namely, at 5% significance level, the improvement in controlling of corruption is responsible for the decrease of economic growth by about 30 % (see adjusted R^2 in annex 5.6d). The results are different from the theory: corruption is said to have detrimental effect on growth. Here, alternative hypothesis can be used to explain the picture. Namely, that in the presence of other distortions, corruption can be a second-best solution to the original

Charts 5.11-5.13 Plots of Natural Resource Abundance with Decrease in TSER, Average 1995-1997

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Economic Growth, 2001 —▲— Fitted values

.25 — Belarus Uzbekist

.2 — Georgia

Moldova Rukyigyz R

.15

Ukraine

.1 — Tajikistan Armenia

Kazakhst

.05 — Turkmeni

-4 -2 0 2
Decr. in TSER, 1995-1997
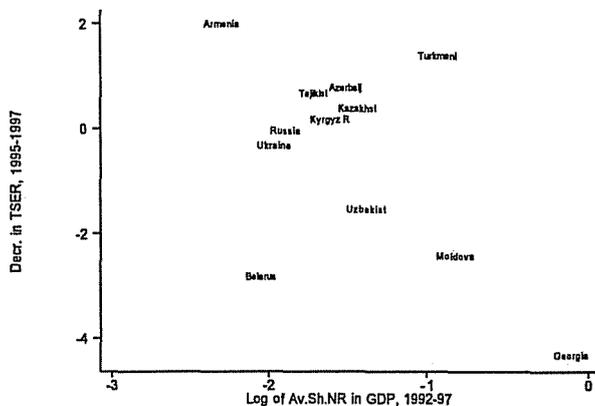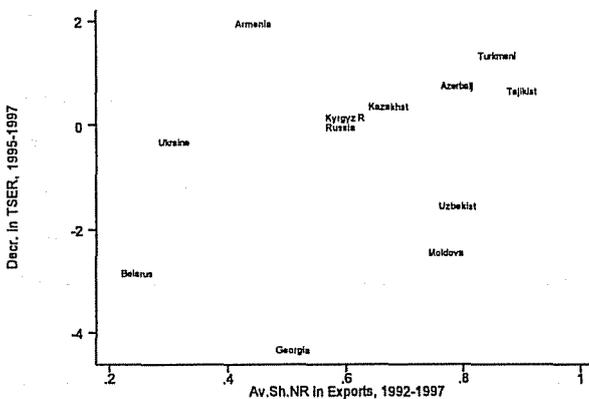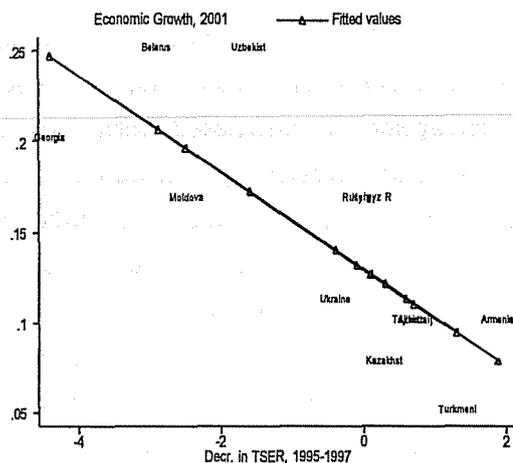
distortions: it may actually increase efficiency, among other things, by buying the political decisions that are beneficial in otherwise highly bureaucratic environments (see section 2.3).

Lastly, tests of human capital show that although decrease of TSER in 1995-1997 can explain a part of the growth in 2001, natural resource abundance has no role to play in

it (see charts 5.11-5.13). As for the human capital measured in TSER as part of explanation of economic performance of CIS countries, with 55% of explanatory power it shows that increase in growth is caused by less decrease in human capital (see annex 5.6e). At this point, the previous finding of human capital importance for resource-rich countries shall be returned to. The explanation for these different outcomes could be found in the fact that, as was argued on repeated occasions, since 1990 importance of natural resource for CIS countries has changed. Namely, more countries and in more extent, start to be dependent on natural resources. Hence, the starting positions of CIS countries in terms of "endowments" were neutralised by the turbulent changes during transition times and at this point natural resources alone have little to say in explaining human capital dynamics.

5.4. Conclusion

As the analysis shows, the hypothesis of indirect channels through which natural resource abundance should have been responsible for divergent growth performance of CIS countries, was not supported by evidence available at present. Indeed, neither real exchange rate, nor human capital and institutions channels performed well to the test: neither of indexes used indicate strong and predicted association with both, natural wealth and economic growth.

Similarly, natural resource abundance as measured by shares of natural resources in exports and GDP has failed to explain economic growth pattern in CIS countries' transition to a market based system. However, at the same time, manufacture-based CIS economies did show better economic performance than natural resource dependent ones. Moreover, mineral based economies display worst performance of all. Therefore, the development of the manufacturing sector proves to have a definite positive influence on growth. An additional finding of the paper is that of the importance of interlinkages to Kyrgystan and Uzbekistan[55] to escape growth collapse, despite being diffused resource economies. This leads to the conclusive point of the

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55 Especially, Uzbekistan's growth attracts attention: with mild crises and full recovery to 1989 level in 2001 (see annex 3.2). The fact that this state has not liberalised trade and commodity prices is an additional argument (see footnote 38).

high importance of decisions that national governments took to use resource rents to support industrial sector. On top of all, the results show that, quite contrary to the whole body of literature of the importance of institutions, corruption, here partly explained by natural resources, has some positive impact on growth. Having said that, first, the importance of other macroeconomic factors and second, the limited focus area of this paper has to be stressed. Indeed, corruption might have positive impact on growth but a detrimental effect on welfare.

In short, the empirical part of the paper gives a possibility to infer that both the analytical framework and the policy recommendations for resource-rich CIS have to be different from the present ones. The growth performance in those countries is seems to be in most part explained by the traumatic experience of transition than indirect channels outlines in the natural resource literature. Additionally, it is also evident that policies do have a say in determining the sustainable economic growth in CIS. However, here the right policy is the one directed at industrial revival, especially in light of the evidence of overall de-industrialisation.

CHAPTER 6. POLICY IMPLICATIONS AND CONCLUSIONS

As mentioned, resource-rich countries of CIS are recommended to liberalise the international trade, capital and natural resource markets and pursue tight fiscal and monetary policies. These recommendations are based on theoretical arguments and empirical findings that emphasise high probability of growth collapse of countries with natural wealth though different channels. As the analysis in the present paper shows, empirical evidence of CIS countries does not support this theoretical rationale. Additionally, the current study identified high need for re-industrialisation in CIS countries. Consequently, the recommendations have to be revised and corrected. This chapter aims at sketching the general framework of policy implications of the findings of this paper. Before arriving at this result, however, the logic and content of the current advises are important to be demonstrated. This is explained by the necessity to reveal the effect they might have on CIS re-industrialisation and related to it policies. The recommendations are considered in accordance to the channels singled out in the previous part of this paper.

Real Exchange Rate Overvaluation
The focus of policy recommendations concerning the real exchange rate overvaluation consist of primary interest in spending efficiency and in open trade promotion. Macroeconomic policies to avoid or reduce exchange rate appreciation mostly include sterilisation measures such as accumulating foreign reserves and matching these with additional savings in the form either of a government current account surplus or of greater private savings (Petersen and Budina, 2001; Rosenberg and Saavalainen, 1998). As for the open trade part, its importance is believed to be twofold: first is to avoid the danger of application of import substitution strategy to protect the shrinking manufacture sector and second, to stabilise the resource revenues. It should be noted that following the recommendations and examples of other resource-rich countries experiences (Kuwait, Norway, Botswana, etc.), Kazakhstan and Azerbaijan have created special funds (Petersen and Budina, 2001).

It is important to recognise that these recommendations are based on the (Neo) Classical assumptions of the market and trade liberalisation. Indeed, the argument builds on increased savings and free trade as the foundations of sustained growth. Following comparative advantage doctrine, resource-rich CIS countries should develop primary sector, since they are relatively endowed with it. However, if the assumptions are questioned and contrary to the belief, for instance, primary products can not be sold without limits at international price, resource-rich CIS economies end up being trapped in the dependency on their natural resources. The latter possibility can be considered seriously, since the theoretical rationale of the discussed channel was not supported by the empirics in CIS case. Therefore, the alternative views have good chances to be accepted. In most part, they advocate the

development of the industrial basis, simultaneously, calling for the adequate state intervention to develop dynamic trade structure (Sarmiento, 1988). Those views are backed up by the empirical evidence of the state-led export-promotion based success of Asian economies (World Bank, 1993). On top of all, the supportive evidence exists that no developed country achieved the present-day level without having promoted their industries in the past (Chang, 2002).

Therefore, instead of saving revenues from the natural resources, they rather are used to provide subsidies for the tradable sectors. At the same time, some from of tariffs should be used to improve chances of the industrial development.

Weak Institutions and Poor Policies
The institutions and policies are evaluated from the same stand of revenue management. Apparently, creation of funds neither guarantees an appropriate fiscal stance nor substitutes for sound fiscal and macro-economic management. Concern over here is governance of the funds' operation and their independence from political circumstances. Therefore, the fiscal discipline and political reforms to ensure transparency and accountability of institutions and fight corruption, is highly recommended. The topic has two important sub-issues. First one is the control of the way the money from these funds is invested. It goes as far as calling for international community to the refuse investments in predatory states. Another sub-issue is the avoidance of the increased borrowing.

To respond to it, the findings of the pervious chapters of this paper shall be used: corruption is neither inherent nor detrimental factor for the CIS economies. In this case, stricter rules, among other possible positive outcomes, can inhibit the government input into policies of industrialisation and diversification of the economy. Again, experience of Asian tigers supports the importance of this option (World Bank, 1993). As for the foreign borrowing and related indebtedness, although unsustainable debt is detrimental on the long run, however the possibility to get financial resources in times of need is equally important. It would be better if recommendations considered the significance of investable funds for the CIS countries at this stage and allow for the development of sustainable strategy of using the foreign aid and own resources rather then wait for the benefits allegedly accrued from the FDI or ensure transparency. Having said that, the significance of the quality of public institutions shall not be undermined.

Deteriorated Human Capital
The main problem from the point of view of this channel is a little investment in human capital, negatively enforced by lack of the incentives to skilled labour. Therefore, the main reasoning comprises of the providing for the increase in education among public by encouraging the private sector. It is backed up by the belief that privatisation of public education is a definite way to increase the efficiency of the sector.

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However, the negative outcomes of privatisation experience of educational sector in CIS such as the decreased secondary and tertiary education in CIS countries calls for the different approach. It seems easier to support the educational attainments than to build it all over again, the need for which can be the reality of CIS countries if the trend is not reversed. Again, public investments are crucial in the absence of the other realistic sources to contribute to the sustainable level of human capital, which proved to be important to the growth performance (see section 5.3).

In a word, the current study stresses the importance of the industrial, trade and technology policies in resource-rich CIS economies to avoid the growth collapse as a consequence of resource-dependency. However, these findings should be revisited to assess the longer path of transitional experience and its peculiar impact on growth perspectives.

ANNEXES

Annex 3.1 Selected Indicators for CEE, Baltic and CIS Countries

Croup/Country	Based on GNI in 2000	Population in 2000 (thousands)	Armed Conflicts/War Affected[56]	Years under central planning[57]	Start of Stabilisation Programme	Share of CMEA trade in 1990 GDP[58]
CEE and Baltic						
Albania	Lower middle income*	3,411	No	47	August 1992	102
Bosnia and Herzegovina	Lower middle income	3,977	Yes	-	-	-
Bulgaria	Lower middle income	8,167	No	43	February 1991	15
Croatia	Upper middle income**	4,380	Yes	46	October 1993	6
Czech Republic	Upper middle income	10,273	No	42	January 1991	10
Estonia	Upper middle income	1,369	No	51	June 1992	27
Hungary	Upper middle income	10,022	No	42	March 1990	10
Latvia	Lower middle income	2,372	No	51	June 1992	31
Lithuania	Lower middle income	3,695	No	51	June 1992	34
Macedonia, FYR	Lower middle income	2,031	Yes	47	January 1994	6
Poland	Upper middle income	38,650	No	41	January 1990	17
Romania	Lower middle income	22,435	No	42	October 1993	3
Slovak Republic	Upper middle income	5,402	Yes	42	January 1991	18
Yugoslavia, Fed. Rep.	Lower middle income	10,637	Yes	-	-	5
CIS						
Armenia	Law income***	3,803	Yes 1992-1994 war with Azerbaijan	71	December 1994	21
Azerbaijan	Law income	8,049	Yes 1992-1994 war with Armenia	70	January 1995	33
Belarus	Lower middle income	10,005	No	72	November 1994	45
Georgia	Law income	5,024	Yes 1989-1994 internal conflicts	70	September 1994	19
Kazakhstan	Lower middle income	14,869	No	71	January 1994	18
Kyrgyz Republic	Law income	4,915	Yes 1990 Ethnic Violence in Osh	71	May 1993	21
Moldova	Law income	4,282	No	51	September 1993	25
Tajikistan	Law income	6,170	Yes 1992-1997 civil war	71	February 1995	22
Turkmenistan	Lower middle income	5,285	No	71	-	34
Russian Federation	Lower middle income	144,000	Yes 1992-1993 internal conflicts in North Caucasus	74	April 1995	18
Ukraine	Law income	49,501	No	74	November 1994	25
Uzbekistan	Law income	24,752	No	71	November 1994	24

*   Upper-middle-income economies are those in which 2000 GNI per capita was between $2,996 and $9,265 (38 economies in total),

**   Lower-middle-income economies are those in which 2000 GNI per capita was between $755 and $2,995 (54 economies in total),

***   Low-income economies are those in which 2000 GNI per capita was $755 or less (63 economies in total)

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56 Source: Economic Survey of Europe, 2003:145

57 Source: De Melo et al, 1997

58 Source: Gerard, 2001

Annex 3.2 CIS GDP Growth Index (1989=100), by Country

Armenia Real GDP (1989=100)

Azerbaiajan Real GDP (1989=100)

Belarus Real GDP (1989=100)

Goergia Real GDP (1989=100)

Kazakhstan Real GDP (1989=100)

Kyrgyz Real GDP (1989=100)

Moldova Real GDP (1989=100)

Russia Real GDP (1989=100)

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Tajikistan Real GDP (1989=100)

Legend: Average CIS — Tajikistan

Turkmenistan Real GDP (1989=100)

Legend: Average CIS — Turkmenistan

Ukraine Real GDP (1989=100)

Legend: Average CIS — Ukraine

Uzbekistan Real GDP (1989=100)

Legend: Average CIS — Uzbekistan

Source: World Development Indicators, 2002

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Annex 3.3 CIS GDP Per Capita Growth (Annual % Change)

GDP per capita growth (annual) base on constant LCU	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	Average
Armenia		-12	-42	-9	5	7	6	3	7	3	6	10	-1.3
Azerbaijan	-12	-1	-26	-23	-20	-12	1	6	10	7	11	10	-3.9
Belarus	-1	-1	-10	-8	-12	-10	3	11	8	3	6	4	-0.5
Georgia	-15	-20	-40	-39	-42	3	11	11	3	3	2	5	-10.0
Kazakhstan	-5	-11	-5	-9	-13	-8	0	2	-2	3	10	13	-2.1
Kyrgyz Republic	6	-8	-14	-15	-20	-5	7	10	2	4	5	6	-2.0
Moldova	-2	-16	-29	-1	-31	-1	-6	2	-7	-3	2	6	-7.2
Russian Federation	-3	-5	-15	-9	-13	-4	-3	1	-5	5	8	6	-3.0
Tajikistan	-1	-7	-29	-16	-21	-12	-17	2	5	4	8	10	-6.2
Turkmenistan	1	-5	-5	-10	-17	-7	-7	-11	7	17	18	20	0.0
Ukraine	-6	-8	-10	-14	-23	-12	-10	-3	-2	0	6	9	-6.2
Uzbekistan	2	0	-11	-2	-5	-1	2	3	4	4	4	4	0.2
CIS Average GDP Growth (annual)	**-3.3**	**-7.9**	**-19.6**	**-13.0**	**-17.6**	**-5.4**	**-1.1**	**2.9**	**2.7**	**4.2**	**7.1**	**8.6**	**-3.5**

Annex 3.4 CIS GDP Sectoral Composition Change, 1990-2001

Country	Agriculture		Industry		Construction		Transport and Communication		Trade and Catering		Services and Other	
	Av. 1990-1991	Av. 1999-2001	Av. 1990-1991	Av. 1999-2001	Av. 1990-1991	Av. 1999-2001	Av. 1990-1991	Av. 1999-2001	Av. 1990-1991	Av. 1999-2001	Av. 1990-1991	Av. 1999-2001
Armenia	19.8	21.2	32.8	25.7	14.5	8.8	6.3	9.0	5.1	8.3	21.6	26.5
Azerbaijan	28.5	13.7	22.8	30.2	7.4	11.7	7.2	15.7	4.1	5.3	30.6	23.4
Belarus	21.7	6.6	39.1	29.0	7.7	27.6	5.9	14.5	5.5	2.8	20.5	19.6
Georgia	28.3	21.3	24.8	14.7	8.3	3.8	6.9	13.5	6.8	17.1	24.8	29.4
Kazakhstan	38.1	8.9	29.1	30.7	14.8	5.2	9.1	11.7	7.0	12.7	3.9	31.5
Kyrgyztan	35.9	34.7	24.0	22.0	6.9	3.7	5.5	3.7	28.1*	36.0*	-	-
Moldova	41.8	26.6	36.0	18.8	8.0	3.3	4.3	10.1	8.1	15.4	2.0	25.8
Russia	14.7	8.0	36.5	31.5	9.1	6.5	8.4	9.0	8.9	20.7	22.6	24.4
Tajikistan**	27.1	17.1	36.4	19.8	9.0	2.9	4.6	2.6	5.0	12.5	17.9	45.3
Turkmenistan***	27.5	21.6	46.3	35.1	14.6	12.1	6.3	11.0	0.0	5.5	5.5	14.7
Ukraine	30.4	13.2	41.8	28.1	10.3	3.7	5.5	11.6	7.1	9.1	5.0	34.5
Uzbekistan	44.7	34.0	26.8	16.0	13.6	7.0	4.8	0.0	7.9	0.0	2.5	43.0
Average	29.5	18.8	34.5	24.9	9.6	8.0	6.0	12.2	6.4	11.4	13.5	27.6

*   Figures include share of services and other
**   Figures for the 1997 (latest available)
***   Figures for the 2001 (only available in the period of 1998-2002)

Source: Statistical Yearbooks of Interstate Statistical Committee of CIS States, Economist Intelligence Unit Country Reports and IMF Country Reports with Selected Issues and Statistical Appendixes

Annex 3.5 Sectoral Distribution of Labour Force (% of Total Employment) for CIS Countries, Averages for 1990-1992 and 1998-2000

Country	Agriculture, Hunting, Forestry and Fishing		Industry		Construction		Education, Health, Social, Personal Services, Public Administration and Defence		Transport, Storage and Communication		Trade, Personal and Household Goods Repair, Hotels and Restaurants		Finance, Insurance, Real Estate and Business Services		Undefined Sectors	
	Av. 1990-1992	Av. 1998-2000	Av. 1990-1992	Av. 1998-2000	Av. 1990-1992	Av. 1998-2000	Av. 1990-1992	Av. 1998-2000	Av. 1990-1992	Av. 1998-2000	Av. 1990-1992	Av. 1998-2000	Av. 1990-1992	Av. 1998-2000	Av. 1990-1992	Av. 1998-2000
Armenia	24.0	42.4	27.8	15.0	10.2	4.2	22.7	25.7	4.7	3.7	5.6	8.4	3.0	-	2.0	-
Belarus	21.7	21.0	29.4	28.7	8.9	5.9	21.9	23.4	7.1	6.4	6.9	11.6	0.6	1.2	4.3	3.4
Ukraine	20.0	20.5	30.9	26.0	8.9	5.6	24.1	19.2	7.0	7.6	7.4	11.8	3.7	3.5	1.3	5.8
Average MG	21.9	28.0	29.4	23.2	9.3	5.2	22.9	22.8	6.3	5.9	6.6	10.6	21.9	2.5	3.1	0.0
Azerbaijan	33.2	42.3	12.8	7.0	6.5	4.2	15.3	22.0	5.6	4.6	10.2	17.1	0.3	2.9	4.3	-
Georgia	28.4	50.9	17.0	8.3	8.6	1.6	24.9	21.2	7.2	4.1	6.0	10.2	3.1	3.0	2.6	0.6
Kazakhstan	22.9	23.1	15.8	14.8	3.8	4.1	18.2	21.6	10.0	9.1	25.1	23.7	4.2	3.6	-	-
Russia	14.5	11.8	31.1	22.0	10.4	6.0	21.3	31.7	7.8	9.2	8.2	13.2	8.6	4.5	-	-
Tajikistan	44.8	65.7	14.0	7.8	7.6	2.5	21.2	17.2	4.6	2.5	5.4	3.3	1.5	0.2	2.0	0.8
Turkmenistan	42.8	48.5	10.2	12.3	10.4	5.9	23.7	19.4	-	11.2	-	-	-	1.0	7.4	1.6
Average FOMG	31.1	40.4	16.8	12.0	7.9	4.1	20.8	22.2	5.9	6.8	9.2	11.3	6.8	2.7	0.5	0.0
Kyrgystan	35.5	51.5	17.9	9.0	7.8	2.7	23.6	23.0	5.3	3.9	6.5	7.5	3.4	1.6	-	0.1
Moldova	35.1	49.9	20.9	10.8	7.6	2.9	21.2	18.7	5.2	4.5	6.7	10.8	2.1	2.4	-	0.6
Uzbekistan	41.5	39.0	14.4	11.7	8.1	6.5	22.2	22.0	4.8	4.2	5.6	8.2	1.5	0.6	1.4	6.9
Average PG	37.4	46.8	17.7	10.5	7.8	4.0	22.3	21.2	5.1	4.2	6.3	8.8	37.4	0.5	2.5	0.0
Average PPG	33.2	42.5	17.1	11.5	7.9	4.0	21.3	21.9	6.3	5.9	9.2	11.8	3.1	2.2	3.5	1.8
Average CIS	30.4	38.9	20.2	14.5	8.2	4.3	21.7	22.1	6.3	5.9	8.5	11.4	2.9	2.2	4.4	2.5

Sources: Own Calculations based on data from International Labour Organisation, Euromonitor and Statistical Yearbooks of Interstate Statistical Committee of CIS States. For the way different classifications were readjusted to fit into the main grouping of labour source sectoral distribution (Euromonitor) see annex 3.6

Annex 3.6 Sources of classification of labour force sectoral distribution

Groups from Euromonitor	Groups according to ISIC[59] rev.2, ILO	Groups according to ISIC rev.3, ILO	Statistical Yearbooks of Interstate Statistical Committee of CIS States
Agriculture, Hunting, Forestry and Fishing	1	A+B	**Agriculture and Forestry**
Community, Education, Health, Social, Personal Services, Public Admin and Defence	9	L+M+N+O	from **Non-material Sphere** (housing, public utilities and personal services, health care, social security, physical culture and sports, education, culture and arts, general administration and defence, private non-profit organisations)
Construction	5	F	Construction (from **industry and construction**)
Manufacturing	3	D	Industry (from **industry and construction**)
Mining And Quarrying	2	C	
Electricity, Gas and Water Supply	4	E	
Finance, Insurance, Real Estate and Business Services	8	J+K	from **Other** (information services), from **Nonmaterial Sphere** (science and scientific research, credit, insurance)
Transport, Storage and Communications	7	I	from **Other** (transport of goods, road maintenance, communication); from **non-material sphere** (passenger transport, communication)
Trade, Motor Vehicles And Personal And Household Goods Repair, Hotels And Restaurants	6	G+H	from **Other** (Wholesale trade, Retail trade and catering, material supply, procurement)
Undefined Sectors	0	P+Q+X	from **Other** (other services)

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59 ISIC stand for International Industrial Classification of all Economic Activities; rev.2 was done in 1968, rev.3 in 1990.

Annex 3.7 Educational Composition of Unemployment in CIS countries

Unemployed labour force (% of Total)	With Higher Education		With Special Secondary Education		With General Secondary Education		With Primary Education	
	1992	2001	1992	2001	1992	2001	1992	2001
Armenia	17.1	12.4	27.2	24.5	47.4	56.9	8.3	6.2
Azerbaijan	16.7	25.5	34.8	34.6	41.3	35.4	7.2	4.5
Belarus *	9.6	7.9	19.8	15.3	61.8	62.8	8.8	14.0
Georgia	-	-	-	-	-	-	-	-
Kazakhstan	11.9	8.0	28.8	20.7	50.3	49.8	9.0	7.9
Kyrgyztan	30.8	10.1	31.3	23.4	29.9	57.1	8.0	9.4
Moldova	16.8	7.2	27.7	41.7	38.9	32.9	16.6	18.2
Russia	13.2	4.6	24.7	18.6	48.8	61.3	13.3	15.5
Tajikistan	-	-	-	-	-	-	-	-
Turkmenistan	18.0	12.8	27.4	24.3	37.8	49.2	16.8	13.7
Ukraine **	15.0	10.1	52.5	54.4	27.1	29.9	5.4	5.6
Uzbekistan	14.8	5.5	28.8	25	47.1	.54.2	9.3	153
Average	16.4	10.4	30.3	28.3	43.0	49.0	10.3	11.0
Median	15.9	9.1	28.3	24.4	44.2	52.0	8.9	11.6

* Earliest available observations are for 1995
** Earliest available observations are for1996

Source: Statistical Yearbooks of Interstate Statistical Committee of CIS States

Annex 4.1 Classification of Commodity Groups based on Commodity Codes of the Standard International Trade Classification (SITC), rev.3.

Commodity Codes			Corresponding SITC Codes, Rev.3
Manufacture Products		–	**5** (Chemicals and related products)
		–	**6** (Manufactured goods classified chiefly by material) excluding division **68** (Non-ferrous metals)
		–	**7** (Machinery and transport equipment)
		–	**8** (Miscellaneous manufactured articles)
Primary Products	Agricultural Products	–	**0** Food and live animals
		–	**1** Beverages and tobacco
		–	**4** Animal and vegetable oils, fats and waxes
		–	**2** (Crude materials, inedible, except fuels) excluding divisions **27** (Crude fertilizers, other than those of division 56, and crude minerals (excluding coal, petroleum and precious stones) and **28** (Metalliferous ores and metal scrap)
	Fuels, Ores and Minerals	–	**27** (Crude fertilizers, other than those of division 56, and crude minerals (excluding coal, petroleum and precious stones)
		–	**28** (Metalliferous ores and metal scrap)
		–	**68** (Non-ferrous metals)

Annex 4.2 Shares of Commodity Groups in Export for CIS countries (in %), 1992-2001
(own calculations based on UNCTAD Export Data)

Countries/Commodity Groups	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Armenia										
Agricultural Products	6	2	15	16	16	16	16	12	20	14
Fuels, Ores and Metals	29	10	8	28	28	28	28	23	35	23
Manufacture	66	88	76	56	56	56	56	65	45	63
Azerbaijan										
Agricultural Products	54	46	42	27	13	23	17	9	6	3
Fuels, Ores and Metals	34	42	25	43	68	63	70	82	88	92
Manufacture	11	13	33	30	20	14	13	9	6	4
Belarus										
Agricultural Products	13	17	6	12	12	12	12	11	10	11
Fuels, Ores and Metals	34	24	7	10	14	14	14	14	24	22
Manufacture	52	59	20	74	72	72	72	71	63	65
Georgia										
Agricultural Products	5	8	29	25	30	29	29	29	30	28
Fuels, Ores and Metals	82	65	19	14	26	29	29	29	37	35
Manufacture	13	27	52	61	44	40	40	40	32	34
Kazakhstan										
Agricultural Products	6	6	6	13	15	15	10	9	8	8
Fuels, Ores and Metals	41	48	56	49	53	57	64	63	73	73
Manufacture	53	45	37	38	32	27	23	25	18	18
Kyrgystan										
Agricultural Products	14	35	35	35	40	40	40	22	22	22
Fuels, Ores and Metals	9	23	23	23	22	22	15	18	18	18
Manufacture	57	41	41	41	38	38	45	20	20	20
Moldova										
Agricultural Products	27	68	68	73	79	74	77	70	65	65
Fuels, Ores and Metals	23	4	4	4	1	1	1	3	2	1
Manufacture	51	28	28	23	20	25	23	27	33	34
Russia										
Agricultural Products	10	9	5	5	5	5	5	5	4	5
Fuels, Ores and Metals	52	51	53	53	53	56	54	53	60	62
Manufacture	24	27	26	26	26	23	28	25	22	22
Tajikistan										
Agricultural Products	69	55	57	29	25	62	16	16	16	16
Fuels, Ores and Metals	28	39	32	69	72	14	67	67	67	67
Manufacture	3	6	11	2	4	23	13	13	13	13
Turkmenistan										
Agricultural Products	62	78	66	25	11	14	26	20	10	10
Fuels, Ores and Metals	30	20	30	73	57	78	60	65	81	81
Manufacture	8	2	4	2	2	8	14	12	7	7
Ukraine										
Agricultural Products	7	6	18	19	20	13	12	14	11	10
Fuels, Ores and Metals	52	30	14	13	13	15	17	19	20	14
Manufacture	41	64	68	67	66	70	69	64	67	73
Uzbekistan										
Agricultural Products	88	54	70	70	65	61	53	56	52	53
Fuels, Ores and Metals	6	13	6	18	13	11	22	19	19	10
Manufacture	6	5	15	8	17	16	21	19	20	28
Average Agricultural Products	30	32	35	29	27	30	26	23	21	20
Average Fuels, Ores and Metals	35	31	23	33	35	32	37	38	44	42
Average Manufacture	34	36	35	38	35	36	36	34	31	33

Annex 4.3 Shares of Commodity Groups in GDP for CIS countries (in %), 1992-2001

(own calculations based on UNCTAD Export Data and WDI 2003)

Countries/Commodity Groups	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Armenia										
Agricultural Products	2.2	1.0	6.0	3.8	3.7	3.2	3.0	2.6	4.6	3.5
Fuels, Ores and Metals	11.4	4.5	3.2	6.7	6.4	5.6	5.3	4.8	8.0	6.1
Manufacture	26.3	41.5	29.8	13.5	12.9	11.2	10.7	13.6	10.4	16.4
Azerbaijan										
Agricultural Products	46.5	26.2	26.7	8.6	3.2	6.6	3.8	2.6	2.2	1.3
Fuels, Ores and Metals	29.2	23.7	15.9	13.7	16.9	18.3	16.2	23.0	35.2	38.8
Manufacture	9.6	7.1	21.3	9.7	4.9	4.1	3.0	2.4	2.6	1.7
Belarus										
Agricultural Products	7.8	11.5	4.0	5.9	5.3	7.0	6.9	6.5	7.2	7.7
Fuels, Ores and Metals	20.2	16.1	5.0	4.9	6.6	8.6	8.5	8.3	16.8	15.2
Manufacture	30.8	40.2	14.0*	37.2	33.3	43.4	42.7	41.7	43.3	44.4
Georgia										
Agricultural Products	1.8	3.8	16.9	6.6	3.9	4.4	4.7	5.5	7.0	6.1
Fuels, Ores and Metals	29.3	30.4	11.0	3.7	3.4	4.4	4.7	5.5	8.4	7.6
Manufacture	4.7	12.6	29.9	15.8	5.7	6.0	6.4	7.6	7.4	7.4
Kazakhstan										
Agricultural Products	4.5	2.4	2.4	4.9	5.3	5.2	2.9	3.9	4.7	3.7
Fuels, Ores and Metals	30.1	18.4	20.6	19.1	18.4	19.9	19.2	26.3	42.9	33.4
Manufacture	39.4	17.2	13.8	14.8	11.3	9.3	7.0	10.3	10.3	8.1
Kyrgystan**										
Agricultural Products	5.0	12.1	12.1	10.3	12.3	15.1	14.6	9.2	9.2	8.1
Fuels, Ores and Metals	3.1	7.7	7.7	6.6	6.7	8.2	5.2	7.4	7.4	6.5
Manufacture	20.7	14.0	14.0	11.9	11.9	14.6	16.2	8.5	8.5	7.5
Moldova										
Agricultural Products	23.8	26.6	38.2	44.1	43.5	40.4	36.0	37.2	32.4	32.5
Fuels, Ores and Metals	20.2	1.5	2.1	2.3	0.4	0.4	0.3	1.4	0.8	0.6
Manufacture	45.0	10.9	15.7	13.6	11.1	14.0	10.6	14.4	16.7	16.9
Russia										
Agricultural Products	5.4	3.3	1.4	1.4	1.3	1.1	1.6	2.0	2.0	1.7
Fuels, Ores and Metals	29.4	18.2	14.9	14.9	13.3	13.4	16.7	23.4	27.2	22.8
Manufacture	13.5	9.8	7.3	7.3	6.5	5.5	8.7	11.0	10.0	8.2
Tajikistan										
Agricultural Products	-	-	-	-	-	43.0	7.9	10.5	13.6	10.5
Fuels, Ores and Metals	-	-	-	-	-	9.9	32.3	43.0	55.8	43.0
Manufacture	-	-	-	-	-	16.1	6.2	8.2	10.7	8.2
Turkmenistan										
Agricultural Products	-	44.2	31.1	8.9	8.5	5.4	7.9	8.2	6.1	4.8
Fuels, Ores and Metals	-	11.5	14.1	25.4	42.7	30.4	18.0	27.2	48.8	38.3
Manufacture	-	1.3	1.8	0.7	1.6	3.3	4.1	5.0	4.1	3.2
Ukraine										
Agricultural Products	1.6	1.6	6.1	8.9	9.2	5.4	4.9	7.4	6.7	5.7
Fuels, Ores and Metals	12.5	7.7	4.8	6.3	5.8	6.0	7.0	10.2	12.2	7.9
Manufacture	9.8	16.6	23.7	31.4	30.5	28.5	29.0	34.5	41.6	41.0
Uzbekistan										
Agricultural Products	29.9	18.2	11.9	25.8	18.1	16.4	11.7	10.0	13.0	14.8
Fuels, Ores and Metals	1.9	4.3	1.0	6.5	3.7	2.9	4.8	3.5	4.7	2.9
Manufacture	2.1	1.8	2.5	2.9	4.9	4.3	4.7	3.4	5.1	7.8
Average Agricultural Products	13	14	14	12	10	13	9	9	9	9
Average Fuels, Ores and Metals	19	13	9	10	11	11	12	15	22	19
Average Manufacture	20	16	16	14	12	13	12	13	14	14

* other commodities, that belong to group 9 approximately 68 % of exports in not included (s pecial transactions)

** other commodities, that belong to group 9 are not included (special transactions and gold)
***   figures are for 1997, the earliest observations available
****   figures are for 1993, the earliest observations available

Annex 5.1 Real Exchange Overvaluation/Undervaluation Computations for PPG Countries[60]

| Overvaluation(+)/Undervaluation(-)	1995-2001	Trading Partners	Competitors
Azerbaijan	36.3	European Union, Iran, Russia, Turkey, Turkmenistan	Kazakhstan, Turkmenistan, Russia
Georgia	29.3	Azerbaijan, Germany, Russia, Turkey, USA	Armenia, Moldova
Kazakhstan	91.8	China, Italy, Russia	Azerbaijan, Russia, Turkmenistan
Kyrgyz Republic	27.3	China, Germany, Kazakhstan, Russia, Switzerland	Moldova, Georgia
Moldova	19.3	Germany, Romania, Russia, Italy, Ukraine	Armenia, Georgia, Russia
Russian Federation	-134	China, Germany, Italy, Kazakhstan, USA	Azerbaijan, Kazakhstan, Turkmenistan
Tajikistan	14.9	Russia, Germany	Uzbekistan
Turkmenistan	-953.8	Georgia, Germany, Kazakhstan, Russia, Turkey	Azerbaijan, Russia, Kazakhstan
Uzbekistan	-	-	Tajikistan

Annex 5.2 CIS countries grouped according to commodity shares in exports, 1992-2001

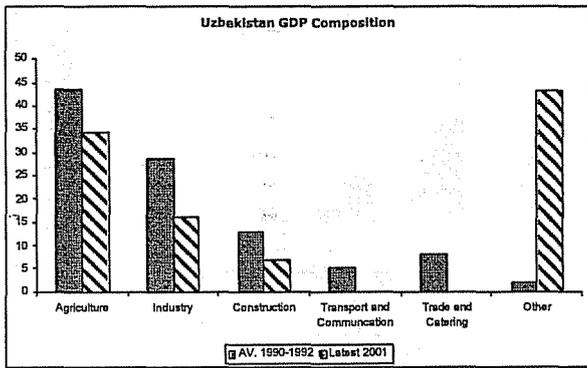|	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Manufacture Based										
Armenia	66%	88%	76%	56%	56%	56%	56%	65%	45%	63%
Belarus	52%	59%	n/a	74%	72%	72%	72%	71%	63%	65%
Ukraine	41%	64%	68%	67%	66%	70%	69%	64%	67%	73%
Primary Product Based										
Azerbaijan	88%	87%	67%	70%	80%	86%	87%	91%	94%	95%
Georgia	87%	73%	48%	39%	56%	58%	58%	58%	67%	62%
Kazakhstan	47%	55%	62%	62%	68%	72%	74%	72%	81%	81%
Kyrgyz Rep.*	23%	58%	58%	58%	61%	55%	39%	39%	39%	39%
Moldova	49%	72%	72%	77%	80%	74%	77%	73%	66%	66%
Russian Fed.	62%	60%	58%	58%	58%	60%	59%	58%	65%	66%
Tajikistan	97%	94%	89%	98%	96%	77%	84%	84%	84%	84%
Turkmenistan	92%	98%	96%	98%	68%	92%	86%	84%	92%	92%
Uzbekistan	93%	66%	76%	88%	78%	72%	75%	75%	71%	63%
Agriculture Commodity Based										
Kyrgyz Rep.*	14%	35%	35%	35%	40%	40%	40%	22%	22%	22%
Moldova	27%	68%	68%	73%	79%	74%	77%	70%	65%	65%
Uzbekistan	88%	54%	70%	70%	65%	61%	53%	56%	52%	53%
Fuels, Ores and Minerals Based										
Azerbaijan	34%	42%	25%	43%	68%	63%	70%	82%	88%	92%
Georgia	82%	65%	19%	14%	26%	29%	29%	29%	37%	35%
Kazakhstan	41%	48%	56%	49%	53%	57%	64%	63%	73%	73%
Russian Fed.	52%	51%	53%	53%	53%	56%	54%	53%	60%	62%
Tajikistan	28%	39%	32%	69%	72%	14%	67%	67%	67%	67%
Turkmenistan	30%	20%	30%	73%	57%	78%	60%	65%	81%	81%

* Kyrgystan's natural resource export share of 20% in 1999-2001 do not fall in any category, reported under the Group 9 (export of gold and special transactions)

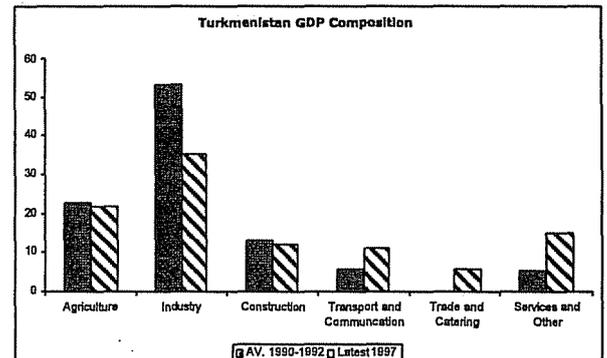60 Weighs are assigned on a trade weighted basis
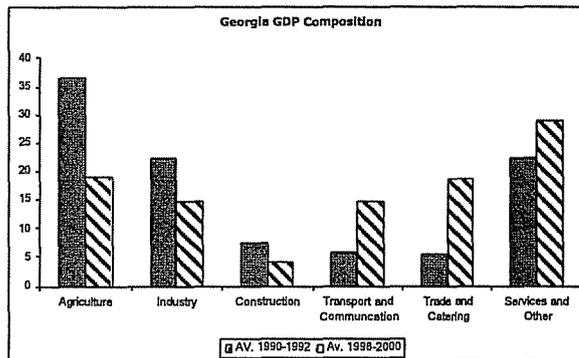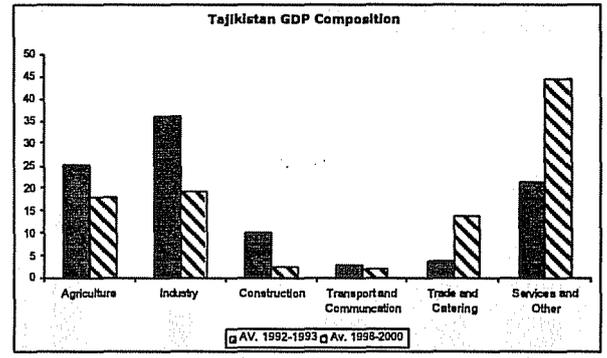
Annex 5.3 Agriculture Product Based Group GDP Sectoral Composition Change 1990-2001

Kyrgyztan GDP Composition

Moldova GDP Composition
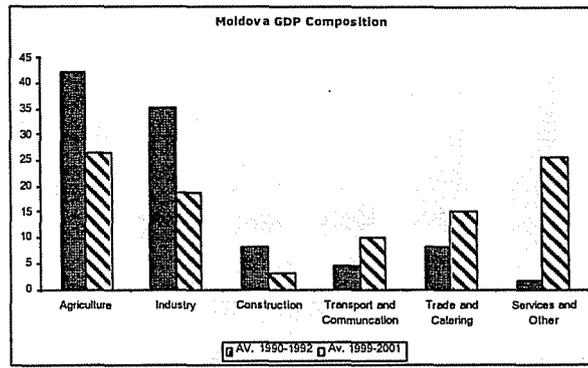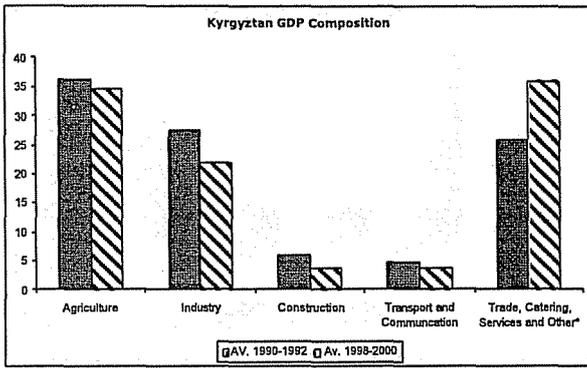
* Kyrgystan GDP is difficult to decompose further

Uzbekistan GDP Composition

Annex 5.4 Fuel and Mineral Based Group GDP Sectoral Composition Change 1990-2001

Azerbaijan GDP Composition

Russia GDP Composition

Kazakhstan GDP Composition

Tajikistan GDP Composition

Georgia GDP Composition

Turkmenistan GDP Composition
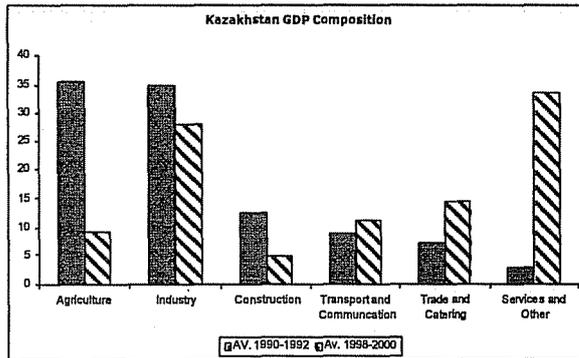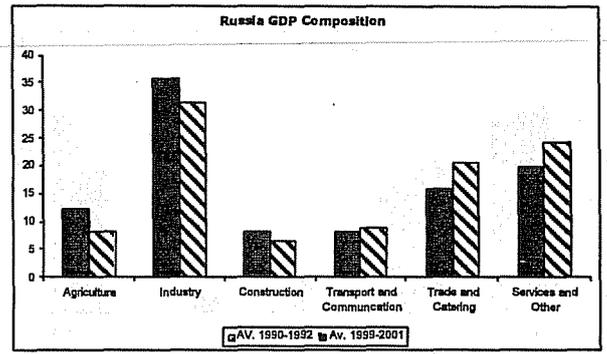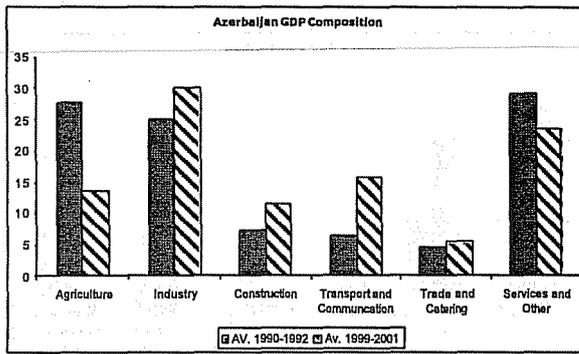
Source: CIS Handbook of statistics (if there is one for 1996-2002), EIU country reports and selected country statistics from IMF

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Annex 5.5 Governance Definition and Its Indicators

World Bank defined "governance" as encompassing: the state's institutional arrangements; the processes for formulating policy, decision-making and implementation; information flows within government; and the overall relationship between citizens and government (World Bank, 1989 cited in Woods, 2000)

Source	Indicators	Measured Aspects
World Bank: Kaufmann, Kraay and Mastruzzi, 2003	Voice and Accountability	political process, civil liberties and political rights to measure extent to which citizens of a country are able to participate in the selection of governments, the independence of the media
	Political Stability and Absence of Violence	quality of governance in sense of likelihood of wrenching changes in government by possibly unconstitutional and/ or violent means, including domestic violence and terrorism
	Government Effectiveness	quality of public service provision, the quality of the bureaucracy, the competence of civil servants, the independence of the civil service from political pressures, and the credibility of the government's commitment to policies
	Regulatory Quality	incidence of market-unfriendly policies such as price controls or inadequate bank supervision, perceptions of the burdens imposed by excessive regulation in areas such as foreign trade and business development.
	Rule of Law	perceptions of the incidence of crime, the effectiveness and predictability of the judiciary, and the enforceability of contracts to measure the success of a society in developing an environment in which fair and predictable rules form the basis for economic and social interactions, and importantly, the extent to which property rights are protected
	Control of Corruption	measures perceptions of corruption, conventionally defined as the exercise of public power for private gain
World Bank and the European Bank for Reconstruction and Development: Business Environment and Enterprise Performance Survey (BEEPS)	Quality of Governance	- macroeconomic governance (political stability, inflation and exchange rate), - microeconomic governance (taxes and regulations), - physical infrastructure, - law and order (corruption, organised crime, street crime and functioning of judiciary)
	State Capture (Share of Firms Affected by State Capture)	the actions of individuals, groups, or firms both in the public and private sectors *to influence the formation* of laws, regulations, decrees, and other government policies to their own advantage as a result of the illicit and non-transparent provision of private benefits to public officials
	Administrative Corruption (Bribes as a Share of Annual Revenues)	the intentional imposition of distortions in the prescribed *implementation* of existing laws, rules, and regulations to provide advantages to either state or non-state actors as a result of the illicit and non-transparent provision of private gains to public officials
Freedom House	Democratisation	- Political Process (the fairness of national executive and legislative elections, the development of multiparty systems, and popular participation in the political process); - Civil Society (the growth of nongovernmental organizations, their organizational capacity and financial sustainability, etc); - Independent Media (legal framework for and actual state of press freedom, including harassment of journalists and editorial independence, the emergence of a financially viable private press, and Internet access for private citizens); - Governance and Public Administration (the authority of legislative bodies; decentralization; the responsibilities, election, and management of local government bodies; and legislative and executive transparency)
	Rule of Law	- Constitutional, Legislative and Judicial Framework (constitutional reform and human rights protection, criminal code reform, the judiciary and judicial independence, and the status of ethnic minority rights) - Corruption (perception of corruption in the civil service, business interests of top policy makers, laws on financial disclosure and conflict of interest, and anticorruption initiatives)
	Economic Liberalization	- Privatisation (the legal framework for and the actual state of the privatisation process); - Macroeconomic Policy (tax reform, fiscal and monetary policy, and banking reform); - Microeconomic Policy (property rights, price liberalization, the ability to operate a business, international trade and foreign investment, and the energy sector)
	Social Sector	unemployment rates, pension systems, income levels, the educational system, infant mortality, birth rates, life expectancy, divorce and suicide rates, the health care system, and poverty rates.

Annex 5.6 Regression Results

(Note: Note: * and ** stand for significance at 1 and 5 % level of significance respectively

a)   Dependent Variable GDP Per Capita in 2001 (in International PPP terms)

	Coefficient	t
HC	-0.4363*	-4.82
PC	-0.5843*	-5.44
NC	-0.4359*	-4.74
Interaction	0.0248*	3.62
GE2000	0.7494*	3.82
Constant	48.0591*	5.20
No. of Observations	10	
R^2	97.07%	
Adjusted R^2	93.41%	

HC, PC and NC stands for Human, Physical and Natural Capital shares in national wealth respectively.

Definitions from World Bank (2003)[61]:

Capital (capital assets) - a stock of wealth used to produce goods and services. Modern economists divide capital into physical capital (also called produced assets), natural capital, and human capital.

Physical capital (produced assets) - buildings, machines, and technical equipment used in production plus inventories of raw materials, half-finished goods, and finished goods.

Human capital - the knowledge, skills, and experience of people that make them economically productive. Human capital can be increased by investing in education, health care, and job training. HC is one of the components of Human Resources, other being the "raw labour," determined mainly by the number of people in a country's labour force.

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61 Natural capital is defined in the introductory part of this paper

b)   Dependent Variable Control of Corruption in 2000

	Coefficient	t
AvShNrX9200	-1.4640**	-2.58
Constant	0.0931	0.25
No. of Observations	12	
R^2	39.95%	
Adjusted R^2	33.94%	

AvShNrX9200 stands for Average Share of Natural Resources in Exports in 1992-2000 years

c)   Dependent Variable Control of Corruption in 2000

	Coefficient	t
AvShNrGDP9200	-3.2544**	-2.59
Constant	-0.0534	-0.17
No. of Observations	12	
R^2	40.22%	
Adjusted R^2	34.24%	

AvShNrGDP9200 stands for Average Share of Natural Resources in GDP in 1992-2000 years

d)   Dependent Variable Economic Growth (% change) in 2000

	Coefficient	t
CC2000	-0.7943**	-2.35
Constant	1.1520*	3.61
No. of Observations	12	
R^2	35.52%	
Adjusted R^2	29.07%	

CC2000 stands for the Control of Corruption in 2000

e)   Dependent Variable Economic Growth (% change) in 2000

	Coefficient	t
DifTSER	-0.0268*	-3 .81
Constant	0.1291*	9.68
No. of Observations	12	
R^2	59.15%	
Adjusted R^2	55.06%	

DifTSER stands for the difference in TSER from 1995 to 1997

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