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Twenty Years Later and the Socialist Heritage is still Kicking

The Case of Russia

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Abstract

Only recently, 20 years after transition to a market system, has Russia regained a similar production level it had achieved on the eve of transition in 1991. This may sound surprising, given its low productivity under central planning which dropped even lower during the last decades, and the rather high level of human capital inherited from the old regime, considered by many as the main engine of growth. The explanation may lie in Russia's difficulties and failure to transform the institutional infrastructure of the old regime to one that would support a market system and a democratic society, the second essential engine of growth. The paper surveys the difficulties of the institutional transformation using the 'new institutional economics' literature, and based on a number of international comparative studies provides evidence of the deep institutional weakness of Russia. Given the very high 'cost of transition', the question is raised whether the socialist growth strategy (as such) paid off.

Keywords: transition, institutions, Russia, economic growth, human capital, higher education, innovation

JEL classification: P30, P36, B52, T23, O50

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Acronyms

BPI	bribe payers index (of Transparency International)
CEB	Central Eastern Europe and the Baltic states
CIS	Commonwealth of Independent States
CPI	corruption perception index (of Transparency International)
EECA	East Europe and Central Asia
EIR	economic incentive regime
GCI	global competitiveness index
ICT	information and communication technology
FDI	foreign direct investment
KAM	Knowledge Assessment Methodology (of the World Bank)
K4D	Knowledge for Development programme (of the World Bank)
KEI	knowledge economy index (of the World Bank)
LIs	low-income countries
LMIs	lower middle-income countries
RLMS	Russian longitudinal monitoring survey
SC&T	social capital and trust
SOE	state-owned enterprise
TI	Transparency International
UMIs	upper middle-income countries
WB	World Bank
WDI	world development indicators (of the World Bank)
WGI	worldwide governance indicators (of the World Bank)

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1 Introduction

It took almost two decades for Russia to regain the level of its production (GDP) achieved in the late 1980s.[1] That production level, attained during the last years of the old regime, reflects the long-term inefficiencies of the communist economic system, the declining rates of growth and productivity during the last two decades of the old regime, as well as the productivity losses of the failed attempts of partial reforms under Gorbachev during the second half of the 1980s. On the basis of these, one could have expected a much faster growth after 1992, to reflect a recovery of productivity levels based on the gradual elimination of the old regime's distortions and the introduction of mechanisms and institutions of a market economy. Instead, there was a period of steep decline in output and a sequence of crises. Only since 2000 has significant growth resumed, a trend that continued until the 2008 world financial crisis, which is (currently) expected to drop output sharply. The period of impressive growth since 2000 has resulted from a series of market reforms, as well as the disorganization of the Yeltsin term being replaced by a more orderly regime under Putin. But foremost, growth can be attributed to the much higher energy and material prices, riding on the wave of the global economic boom; and a number of other short-term factors (OECD 2009; Aslund 2009).

A 'more orderly' regime under Putin, and then Medvedev and Putin, is a mixed bag of better order, some continuation of reforms and improvements in the functioning of the government and the economy, most of which ended by 2002. At the same time, it meant a recentralization of power and increased regulation, a rise in the level of government intervention (mostly as 'command and control'), and quite a significant re-nationalization of 'strategic' industries (especially in the sphere of energy and natural resources, media and defence), increased protectionism and more limited openness, a retreat in democracy and freedoms, and increased tension with the west (OECD 2009; EBRD 2008). Based on the above, it is difficult to give tribute for the recent (pre-crisis) high rates of growth. It is not impossible that some of what may be considered as the retreat of reforms had a positive, if only a temporary, impact on growth.[2] It is, however, agreed by most that the short-term growth factors are running out of steam and that growth rates will go down unless there is a serious resumption of structural and institutional reforms (EBRD 2008; OECD 2009; Aslund 2009) or a return of high energy and resource prices.

Yet, even if most of the growth in Russia during the last decade can be attributed to positive transition reforms, the achievements must be evaluated as modest, achieving at best a recovery to the initial, pre-transition GDP level. Bergson estimates the productivity loss of central planning for 1975 at about a third as compared to a market economy at a similar level of economic development (Ofer 2005: 250-3). Berliner (1993: 388-9) estimates the Soviet efficiency gap higher, at 55 per cent, to which the effect of the elements mentioned above need to be added. The recovery of these productivity gaps is still pending.

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1 Russia's GDP level in 2007 was estimated at 102 per cent of the 1989 level (EBRD 2008: table A.1), and at 108 per cent a year later. However, in 2009 Russia's GDP was projected to decline by 8.5 per cent (EBRD 2009: Table 1.1). See also Popov (2009a).

2 Some of the great laggers in terms of market reforms and democracy, like Belarus and Turkmenistan, experienced relatively high growth rates.

Moreover, the old regime bestowed to its successor a number of assets that should or at least could have contributed under favourable policies to higher growth. The most important was the significant stock of human capital, a relatively advanced educational system, research capacity and innovation *potential*. It also handed over certain material infrastructure assets (like transportation networks, e.g., railroads and aviation), and an 'advanced' industrial sector, made up of large enterprises interconnected by elaborated networks of supply and a relatively modern urban infrastructure. Taking advantage of these assets has been conditional on establishing the proper institutional setting for a market economy, an endeavour that so far has been accomplished only partially.

Total GDP, as discussed above, represents the production capacity of Russia. It should be mentioned that GDP per capita grew a bit faster because of Russia's slowly declining population, but more important, private household consumption grew much faster. This is indicative of a significant structural shift of GDP from defence, investment and other public services to private household consumption (Popov 2009: 8-12). As a result, consumption per capita declined less than output during transition's early years and grew faster than output once growth resumed (EBRD, various years). The material welfare of households increased even faster after the disappearance of shortages, queues, etc. Variety and quality of goods and services increased, including in particular the supply of housing, cars, telephones and computers, imported goods, travel abroad, media access—all items in great demand and short supply under the old regime (Guriev and Zhuravskaya 2009: table 1; Aslund 2009: ch. 3). Welfare was also enhanced by personal freedom expanding in many directions. True, structural changes in the production mix entailed short-run costs in terms of growth, but these were later partly resolved, and contributed to growth.

The transition and growth experience of Russia were shared by the other transition economies, albeit at a different pace. The group of transition economies in Central Eastern Europe and the Baltic states (CEB) generally managed higher growth rates during the last two decades (relative to their initial GDP levels), and by 2007 had reached, as a group, 150 per cent of their last socialist level; Poland with nearly 175 per cent, took first place. Another group of transition economies in the Balkans and former Yugoslavia is on average very close to Russia (attaining around 110 per cent) but most countries are below full recovery. Internal conflicts in some successor states have postponed recovery. The growth record among the transition economies of the CIS group ranges from just above 50 per cent (Georgia and Moldova) to a high of nearly 200 per cent in Turkmenistan, the highest among all transition economies (EBRD 2008: 13).

The differences in the growth record among the transition economies are explained by a number of factors. With the exclusion of countries faced with the vicious circle of poverty, growth is typically higher for the lower-income countries, reflecting their greater technological convergence potential. Growth is higher among countries that are resource-rich, as for instance Turkmenistan (boosted by high energy prices), among countries with shorter periods of communist rule (thus having a degree of modern institutional legacy); among countries that can benefit from geopolitical advantages (such as proximity to western Europe); countries that joined or are about to join the EU, and countries free of internal and external conflicts. Growth is higher also in countries that had inherited (and further developed) human capital and innovation capabilities and, last but not least, in countries that implemented better policies, economic reforms and institutional building. Many of these factors have benefited the CEB countries, and hence contributed to their growth recovery as a group. At the same time, a number of

the reform laggers (Turkmenistan, Uzbekistan and Belarus) have also exhibited quite high growth and GDP recovery records (EBRD 2008; chs. 1-3; Sinitsina et. al. 2008). Is it a question of these countries merely postponing the transition crisis or will they be able to benefit from the 'advantage of being backward' and learn from the mistakes of their predecessors (see Popov 2009).

This paper concentrates on the impact that the 'socialist heritage' had on the Russian transition process and its record of growth. From a list of many potential factors, the paper focuses on two: first, the system of institutions inherited from the old regime and its transformation and second, the inherited human capital and its innovation potential. Both are major factors that affected the transition, and are at the same time considered to be the key determinants and leading growth engines of the present era. A short but thorough recent survey on the role of institutions in the transition process is given in Murrell (2008). The institutional approach to transition, dubbed 'evolutionary institutionalist perspective', which replaced the earlier 'gradualism', is embedded in the extensive theoretical framework by Roland (2000).

The choice of Russia as the case study for this investigation is based, first of all, on its leading role as the architect of the communist system. The system was tailored in many ways to fit (at least, in the eyes of its creators) the economic character and aspirations of a large country, rich in natural resources, on the verge of an industrialization taker-off and modernization. Russia is where authoritarianism and coercion and the centrally planned and directed economic system reached near perfection and where it lasted the longest. Russia also lacked significant experience with modern institutions until the 1917 Revolution. Efforts by the Soviet Union to become a leading military superpower correlated closely with the system and made the Soviet model even more oppressive. The demise of the Russian-designed system and regime, as well as the breakup of the Soviet Union and its empire, and its decline in global status, inflicted a severe moral blow on the people. Even though most people had suffered under the old regime and many opposed it—and the leadership—there was resistance to change. At the same time, the change was embraced by the majority in other transition economies as an act of independence from a hated, oppressive colonial power, despite the difficulties of the early transition years. Thus, while other transition economies rushed to join the west, Russia developed strong sentiments of resentment and suspicion towards the west, affecting its international relations, the level of openness and, of late, its transition strategy. Russia is the largest transition country in Europe, still claiming to be a world power and inserting great economic and political influence on the other transition economies in the CIS. Russia, therefore, is of special interest and a symbol and showcase of the transition process (see Roland 2000: 338-9).

The writings of Douglass North (1990, 1999) on the relationship between institutions and development are used as the main conceptual framework of the discussion on institutions. He looks at the various aspects and qualities of institutions and the mutual relationship between them as the tools and mechanisms to expand markets and reduce transaction costs and thus contribute to growth. This paper also looks at the more recent theory by North, Wallis and Weingast (2005, 2006, 2009) and North et al. (2007) on the major transition from a 'closed state' or a 'natural state'—a category that includes most of the developing countries as well as the former communist countries—to an 'open state', implying the developed markets and democratic countries. The analysis also relies on the work of Aghion et al. (2009) for an alternative theory of institutional transition and corruption, in which the outcome is quite similar to those of North.

The empirical relationship between the quality of institutions-et-governance and economic growth is well covered in the literature (La Porta et al. 1999; EBRD 2008; Barro and Sala-i-Martin 2004). In earlier papers (Ofer 2003; Keren and Ofer 2008) we extensively used the material presented in *Governance Matters* (various years) by Kaufmann, Kraay and Mastruzzi (2009) and the accompanying World Bank governance indicators database. This paper extends the empirical analysis to a number of other similar surveys: the global competitiveness index (GCI) of the World Economic Forum, and the Knowledge Assessment Methodology (KAM) survey of the World Bank's K4D programme, which presents information on the level and quality of education, innovation and ICT and how they contribute to economic growth, as well as on institutional quality (World Bank 2009d). These and the other surveys used here evaluate the quality of many individual indicators, which are then aggregated into clusters representing the fields under investigation. The contribution of the elements of the 'knowledge economy' to growth in the present era is discussed extensively in the literature and there is a growing emphasis on the key role of higher education in this process, even in the developing and transitional economies.[3]

The recent extensive study by Sinitsina et al. (2008) contains a systematic analysis of the many factors contributing to the above mentioned gap and makes an attempt to quantify it. Using methodologies similar to ours, the paper, on the basis of a long list of indicators, compares performance within the different groups of the transitional economies as well as with the performance of various EU country-groups. Therefore, the present paper concentrates mostly on a comparison of the performance of Russia with groups of countries at similar or lower (or, at times, higher) levels of economic development. The main focus of the analysis here is to compare Russia's performance with that of non-former communist countries and to subsequently study the particular character of the communist transition. See Sinitsina et al. (2008) for an extensive literature survey on most of the relevant topics discussed here.

The main proposition of this essay is that the past institutional framework of socialism and a number of other structural features of the old regime created serious obstacles to the introduction of market institutions, to their effective performance, to proper enforcement, and that these brought about weak government capabilities and misguided policies. The outcome so far has been only partially successful in taking full advantage of the valuable assets inherited from the old regime and utilizing them for economic growth. Some other structural features of the old regime made the building of new institutions urgent, and the failure to create them produced similar negative outcomes. Finally, these obstacles still persist today, after two decades, causing, among others, the retreat of the reforms that may continue to slow economic growth in the future.

The paper proceeds as follows: section 2 provides a conceptual discussion of the contradictions between the institutional structure of central planning and the requirements of rapid economic growth under authoritarian socialism, and the institutional requirements and structure needed to lead to a market economy under democracy. Using the theoretical framework developed by North and Aghion and their colleagues, the discussion concentrates on the nature and role of institutions in different economic and political regimes, on the distinction between formal and informal

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3 See, for example, Aghion et al. (2010); Aghion et al. (2007); Barro and Sala-i-Martin (2004); EBRD (2008: Ch. 3); Kuznetsov (2007, 2009); *Economist* (2005); and Ofer (2008a).

institutions and the tension between them, and on the resulting levels of corruption. Section 3 surveys the institutional levels reached by Russia by the end of the second decade of transition and their impact on its economic performance. Section 4 discusses the ability of modern Russia to develop and productively utilize the 'knowledge' assets bestowed by the old regime. Section 5 concludes.

2 Institutions under Soviet socialism, market systems and the transition

2.1 The basic theory of institutions

How well economies function is, to a large extent, a reflection of the quality of their institutions. Well-designed rules that are properly enforced, supplemented by consistent and supporting informal norms of behaviour reduce transaction costs and enhance the scope and efficiency of the market. Institutions consist of three main elements: formal institutions, the rules of the transactions game and the legal infrastructure, the informal institutions, the behavioural norms of the bureaucracy and the public and their 'culture', and of the system of enforcement. Formal institutions are normally embedded in organizations that are designed to implement the goals and missions of the institutions (North 1990, 1999). A major decline in transaction costs is triggered by a shift from transactions that depend on personal relationships to impersonal transactions based on universal rules that are enforced effectively by a third party. This can be the legal system and the government, but also members of society, based on mutual trust and confidence in the proper behaviour of others. Such trust depends on the accumulation of 'social capital', a series of civic institutions and networks that provide for common cultural norms, social solidarity and cohesiveness. The quality of government is determined, to a large extent, by its success to create good institutions, while proper informal behavioural rules complement the formal structure and further reduce transaction costs. Finally, since external conditions change all the time, institutions must also be able to evolve flexibly in order to accommodate the needed changes. Institutions with a higher level of 'adaptive efficiency' are better prepared for such changes. One problem here is that informal institutions are, in many cases, dependent on history and tradition and therefore respond with a lag to changes in formal institutions. This creates tensions, raises transaction costs, and delays the effective functioning of newly introduced or adjusted institutions.

In recent works, North, Wallis and Weingast (2005, 2006, 2009) and North et al. (2007) expand the institutional theory by dividing all countries into two types (three, actually, but we concentrate on two): the *limited or closed access* or *natural state*, which includes most of the developing and transitional economies. The second type—*open access*—encompasses the developed and democratic market economies. *Limited access* countries or *natural states* are characterized by autocratic or non-democratic rule, by a coalition of elites that control (military) power and collect rents by limiting entry of the rest of the society to productive activities, and distributing these among the different elites, thereby establishing order and stability. It is dominated by personal relationships that also limit the potential for specialization and expanding markets:

> Our perspective implies that natural states will only promote growth if it does not threaten the existing political system. Non-elites may have just as much incentive to prefer stability to disorder as the elites, since it is

> they who will do most of the suffering and dying if social order breaks down. Natural states therefore promote trade so as to achieve some gains from specialization and exchange, but they do so by limiting entry. Natural states are the natural outcome of human specialization, in which multiple political, economic, religious, and military actors form a self-enforcing agreement to provide coordinated coercion. The economic rents created by limited entry provide the incentives to make the agreement self-enforcing. Eliminate the rents, eliminate the agreement, and go back to chaos and anarchy (North, Wallis and Weingast 2005: 23).

According to North et al. (2009: 27), the transition from a state of limited access to that of open access is a discontinuing process of relatively short duration, typically around 50 years. It is created by incentives to the elite to expand access in various dimensions in order to increase its incomes, expanding markets through impersonal exchanges, collecting (higher) taxes instead of (lower) rents, by creating other open access types of institutions but with limited access that can later open up and expand entry, responding to external challenges, etc. Such moves are intended to increase revenue, but they may cause unintended changes in other, complementary spheres that could snowball into a systemic change. The risk of accompanied disorganization, and therefore failure, is always present (North, Wallis and Weingast 2006: 47-70; 2007: 17; 2009: ch. 5).

North's observations on the institutional situation in developing countries and transitional economies, all considered as limited access states, are rather bleak. The combination of the lack of knowledge, improper policies and formal rules, and the conflict between new formal rules and fragile enforcement on one side, and strongly rooted traditional informal rules on the other, produce a weak institutional environment for proper market development. These result in weak rule of law and account for the high level of corruption, dysfunctional behaviour and policies by principals and agents of the public sector (North 1999; North et al. 2007). The sad truth is that while both developing and transitional economies suffer from a greater incidence of market failures, which would warrant better government intervention, their institutions are faced with serious government failure, and this questions the merits of such intervention. In his book on globalization, Stiglitz (2002) makes a strong case with respect to the developing and transitional economies for more government intervention in a number of areas, including, among others, trade restrictions as part of industrial policy, control over the financial sector and financial flows, more limited, delayed and gradual privatization and larger budgets and more attention to public and welfare services. The dilemma is unfortunately that there may be an underestimation of the ability of these governments to pursue such policies in an effective and non-corrupt way.

This dilemma and the possibility that transition will induce greater disorder are both embedded in a model of transition developed by Aghion et al. (2009). High levels of social capital and trust (SC&T) reduce transaction costs and save on regulation and law enforcement, as well as facilitate more impersonal transactions and thus larger markets and more specialization. Low levels of SC&T, including high level of corruption or other negative externalities in the private sector, encourage people to support more regulation and government intervention, even by a corrupt government. This is explained by the fact that the cost of government corruption is deemed lower than the cost of the negative externalities inflicted by the business sector. The model produces a

case of dual equilibrium and the dynamics depends on the specific starting point: low initial levels of SC&T may deteriorate into high levels of corruption and regulation while a higher level of initial SC&T may gravitate to regulation free and honest government and markets.

2.2 Institutions and social capital in Russia before the transition

The task of institution-building in the economies under transition was especially burdensome and difficult for three reasons. First, the formal institutional structure under the old regime was the diametrically opposite to the one aimed for through transition. It is difficult to imagine any other situation with such extreme contradictions between two institutional systems. Second, the transition was a major non-continuing process where changes had to take place over a short period of time. This was clearly the case under the 'shock therapy' approach, but even under 'gradualism', the period for change was relatively short in comparison to an evolutionary development process that can take generations, as in many developing economies. Under a speedy transition, the conflict between new formal institutions and informal norms of behaviour widens, causing higher transaction costs and lower efficiency (Murrell 2008). Third, the main responsibility of implementing reforms falls on the government, which is often unprepared, unmotivated and weak. The government itself is confronted with similar problems at a time when it is needed the most, and can become a major part of the problem rather than the solution.

It is hardly necessary to demonstrate the contradictions characterizing formal institutions within the Soviet version of central planning and within the market system:

Central planning is based on a top-down command hierarchy with limited entry and almost no exit while the market system is based on free enterprise and initiative from the bottom up and freely agreed upon contracts; and free entry and exit;

Self-contradictory 'soft budget constraint' is king in one system, while the other thrives under the straight jacket of a hard one;

One excludes private property and the other is based on private property rights;

One uses quantities as the main allocation tool and as a base for incentives at the expense of quality and innovation, while the other depends on market prices and thrives on improving quality and providing for innovation;

One finds it extremely difficult and expensive to provide for any change, including technological innovation (see Kornai 2009) which can be very problematic during a transition period, while flexibility and change are the name of the game for the other;

One practices functional autarky and external and internal secrecy, while the other promotes openness in all directions and free trade;

Under central planning, the financial sector functions as the government accountant and auditor while under a market economy it serves as the main resource allocation agent, based on efficiency criteria and risk assessment;

Within one regime, taxes are collected as a matter of automatic accounting transactions, indeed, like rents in North's 'natural states', while under the second,

taxes have to be actively collected from the business sector and the population; and so on.

According to North et al., the transition to 'open access' state is, under natural states, facilitated by the development of organizations with 'modern' institutional regimes used exclusively by the elites but which can be opened to all after transition. These organizations consist of what is considered by North, Wallis and Weingast (2009: 158-69) to constitute one of three sets of 'doorstep conditions' that ease and smooth the transition. All that is needed is an expansion of their jurisdiction to society at large. One example is that of the modern corporation in the west, which was initially designed as a monopoly to provide rents to the elites but once corporation registration became free to all, it formed the basic foundation of a market economy. This example highlights the difference between England as it was modernizing and the transitional economies—or Russia— where under central planning the corporation, indeed the state-owned enterprise (SOE), is a very different institutional entity. The same is true with regard to banks, elections and 'democracy', as well as many other 'modern' organizations. It is especially difficult to transform *organizations* similarly labelled under the two systems, but characterized with exactly different *institutional content.*

Enforcement under a democratic and developed market system, while strict, is based on social consent, an impartial and independent legal system, and a general culture of abiding by and following informal behavioural norms. The bulk of the informal institutions operate in this manner in support of, and as complements to, formal institutions, and therefore reinforce and improve the institutional infrastructure of the economy. Under authoritarian central planning, enforcement is achieved through strict discipline, harsh sanctions and intimidation, controlled by the Communist Party. The 'legal' system, devoid of real legality, is arbitrary but always sides with the regime (Litwack 1991).

The command and bureaucratic nature of central planning, and complete government control of the economy, its assets and transactions, opened the door for corruption that could be restrained only partly with very harsh sanctions, fear and intimidation. The limited relaxation of discipline and of sanctions, both intentional and unintentional, after the death of Stalin, introduced more opportunities for corruption and other anti-system activities. Fixed plans and tight supply channels encouraged unlawful action even in efforts to meet official production targets. Corruption subsequently became more common in the production sector as well as in public services, such as education and health, where school certificates, examinations, university degrees and medical treatment, lucrative jobs were all quite freely bought like any other commodity. The same applied to law enforcement, legal and court services: officials, judges, managers and accountants considered themselves part-owners, or at least legitimate 'stakeholders', of the assets and the rents they provided.

The gully between formal and informal institutions was further widened by the hypocritical behaviour of the leadership. This manifested over time as an increasing contrast between the declared goals and values of the regime and its hidden agenda. Cynicism increased as larger segments of the population recognized the growing gap between the declared benevolent goals of the regime and the narrow self-serving behaviour of the elite. The response to such hypocrisy was evasion, a growing sense of despair and strong mistrust, which further encouraged unlawful 'informal' behaviour.

Likewise, elusion became the response to the non-existent sharing of the national product among the people. All these contributed to the development of informal norms that were based on personal relationships, and were antagonistic to the regime. As put by Ledeneva (cited in Sinitsina et al. 2008: 45):

> Social capital in the USSR took a very much specific form of the so-called *blat*, the reputation-based interpersonal networks of informal reciprocal exchange with favours of access to scarce goods and services penetrated the whole Soviet society.[4]

Informal institutions develop in societies in the context of social and civil society organizations. In this respect, the communist regime left the Soviet Union as well as other transitional economies a scorched land. It eroded all genuine institutions of civil society, decimated any remnants of social capital and positive social networking, and destroyed the basis for solidarity and voluntary compliance with the law.

2.3 And under transition

After transition and the resulting collapse of central planning and of most of the related operating tools and *raisons d'être* of the old institutions, new institutions had to be created. Void of domestic experience or traditions, new institutions had to be built on the basis of international experience, and were indeed 'imported' from abroad. Even with the best advisors, design of the new formal institutions must have been hindered by the lack of foreign and domestic expertise, particularly given the difficulties of applying foreign designs to local conditions and of coordinating their dynamic and interactive development over time.

Even with the best design, implementation faced more serious problems: the new imported rules were *terra incognita* to the officials implementing them but even more so to the public. Implementation was also hampered by the resistance of the existing bureaucracy assigned to the task. In some cases, the new institutions were manipulated to perform secondary unintended functions that contradicted their reform mission (Polishchuk 2009).

The radical change of formal institutions left informal behaviour patterns lagging behind. On the one hand, the legacy of opposing the government and circumventing its orders was now directed at the new government and unfamiliar institutions. The lure of, and incentives for, illegal action were much stronger, given the huge stock of public assets available for redistribution. Paradoxically, the 'winds of freedom' (*glastnost)* were translated into and interpreted as an extreme version of *laissez faire* and the exaggerated freedom of action. At the same time, the erosion in discipline from above was not compensated by greater interpersonal trust and social cohesion. Tension between the newly introduced formal institutions and the old established informal ones hampered the transition progress.

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4 A study by Denisova et al. (2009: 8-9) based on RLMS reports a high level of 'trust in most other people' in 1991, just before the fall of the Soviet Union. The authors themselves doubt that this was really the case.

The tension between the old and new can best be seen in the context of a number of important public organizations that are the key to successful change. The legal system needed to introduce and enforce a completely new body of private property rights and protection, especially in connection with the privatization of public enterprises and the new regime of corporate governance. It also needed to adopt the role of an honest enforcer of contracts and arbiter between governmental agencies and the public. The police and other law enforcement agencies had to change in the same way. The financial and banking sector had to reinvent itself completely from a virtual government agency into the main vehicle of financing according to sound economic criteria. This implied a revolutionary new role for the central bank. The government had to establish, virtually form scratch, a new tax system that included an effective tax collection mechanism and becoming an organization able to overcome strong resistance from the newly created business sector at paying taxes.

After privatization, the government had to change its role as top manager and owner of the production sector to that of a regulator 'at arm's length', applying measures such as material incentives and the imposition of a hard budget constraint. The government, together with the central bank, became responsible for macroeconomic stabilization, and had to keep a balanced budget. Its budget had to be reduced to new level consistent with its new capacity to collect taxes. Budget reduction was achieved by reducing or eliminating direct support to and investment in the production sector, cutting defence expenditures and by concentrating public funding to social services (education, and health), infrastructure and to social safety nets to soften the negative impact of the reforms. The newly elected parliaments should have resisted the temptation to use their newly acquired powers and should have refrained from populist measures. Kornai has coined the term 'premature welfare state' to underline the government's burden in the transition process. Others researchers show that larger social budgets seem to be correlated with a more successful transition.[5]

A weak government with limited implementation and enforcement capacities opens the door to corruption and to 'state-capture' (Hellman et al. 2000) and the growth of substitute private contract enforcement organizations. The large volumes of assets waiting to be privatized and of legislation to be enacted in a context of antagonistic informal institutions and behaviour by the government bureaucracy and by the production managers provided ample opportunities for such behaviour (La Porta et al. 1999: 17, 28-9). A strong government, which could be a democratic one, can avoid the low level and corrupt equilibrium described above, and can aim towards a reform- and growth-oriented high level equilibrium. Capacity of the government to act in this manner may depend, to some extent, also on the size of its budget, and the initial pressures to initiate sharp budgetary cuts are partly eased later (Popov 2000, 2009).

3 Russia's transition record: building new institutions

In this section, information is collected from a number of surveys on the quality of governance and the institutional development of various countries in order to evaluate the extent of institution-building in Russia during transition thus far. As already mentioned, the paper compares Russia's success in this sphere with that of a group of

5 See among others, Popov (2000, 2009); La Porta et al. (1999); EBRD (2008: ch. 3).

countries at a similar GDP per capita level, i.e., the 'upper middle-income' countries (UMI) according to the WB classification.[6] Comparisons with other groups of developing countries are also used, although comparisons with other groups of transitional economies are limited, since much of these data have recently been analysed in great detail (EBRD; Sinitsina et al. 2008). A consistent finding of this literature is the 'great divide' with respect to the transition performance between the CEB and CIS countries, including Russia.

3.1 The transition indicators from the EBRD

Despite the foregoing, we believe it appropriate to start with a review of Russia's transition record, as given in the *Transition Report*, developed and reported annually by the EBRD. The index is made up of nine economic indicators related to the transition of enterprises, markets, financial sector and infrastructure. Recently, these nine indicators have been classified into the three stages of market-building under transition: *market enabling*, *market deepening* and *market sustaining* (EBRD 2008; ch. 1). Transition progress is measured by scores ranging from 1 to 4+, the level achieved by a mature market economy. The transition score is divided into three 'upgrades' per unit and a total of ten upgrades per indicator. This scale is clearly somewhat mechanistic but is still indicative.

Table 1 summarizes Russia's achievements along the three stages.[7] Russia has reached 55 steps of a total of 90 since 1991. Most of the steps were achieved prior to 2000 (45/90) and only 10 upgrades have taken place since then (as of 2008). As could be expected, transition was more prominent in the area of basic (market enabling) reforms, which included price liberalization, small-scale privatization, and openness to trade and to capital flows. However, in this last indicator Russia lags behind with a score of only 3+, implying a retreat due to increased trade protectionism and control over capital flows during the last few years. Thus, the total score is 25/30 and there has been no *net* advancement since 2000.

Russia's achievements to date with regard to reforms for market deepening and sustaining—both more difficult to implement—are a modest 17/30 and 13/30, respectively. In all three categories of market deepening, Russia lags behind. Haste and shortcomings in the initial privatization process of large-scale enterprises helped to concentrate ownership into the hands of a few dozen oligarchs. This development provided the government with the excuse and opportunity to renationalize key enterprises in 'strategic' areas (energy and other natural resources, and the media). The modern structure of the Russian industry, consisting mostly of large enterprises and elaborate input-output networks, called for early privatization and restructuring of the financial sector but only partial reforms have taken place so far (more on this later). Unlike most of the transitional economies in Eastern and Central Europe, Russia did not invite western banks to take over the bulk of its banking sector. Therefore, *market*

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6 There are 42 UMI countries, ten of which are transitional economies in East Europe, the Baltics, Kazakhstan and Russia (World Bank 2009a: 351). Back of the envelope calculations showed that the impact of transition economies on the averages of the UMIs is not significant.

7 The analysis here is based on EBRD 2008 and 2009. EBRD (2009) came out after the draft of the paper was ready. In EBRD (2009: 4-5), there are no score changes in any of the indicators for Russia or for Estonia and Hungary.

deepening in this sphere is also trailing behind, with total advancement of only 17/30 over the entire period, four upgrades since 2000, and a final score of three by 2008 (see also OECD 2009: ch. 4; Aslund 2009: 51).

Transition efforts for *market sustaining* involve reforms in three areas: improving enterprise governance and enterprise restructuring in the production sector, setting up an effective competition policy and improving, or at times creating from scratch, the infrastructure for transportation, electricity and water and telecommunications, including ascertaining their proper governance. By 2008 Russia was far behind on corporate governance and competition policy (with a score of 2+ for each). There was only limited progress in the former, a decline in regulation and competition policy, both internally and externally, and only a modest advancement in a number of infrastructure areas.

All in all, by 2008 Russia had reached the mid point on the road to becoming a modern market economy, a task already accomplished in Hungary (albeit having started the process already in 1968), and almost achieved even in Estonia (Table 1). Unfortunately in a number of areas—privatization and government intervention, regulation and competition policy—there have been recent retreats (Aslund 2009; OECD 2009).

Table 1
Transition scores for Russia

	Russia					Hungary	Estonia
	89-2000	2000-08	2008	2000	2008	2008	2008
Enabling markets	22/30	3/30	4+	4-	4-	4+	4+
Deepening markets	13/30	4/30	4-	2+	3	4-	4-
Sustaining markets	10/30	3/30	4-	2+	2+	4-	4-
Total	45/90	10/30	4	3-	3	4	4

Source: EBRD (2008) and EBRD database, available at: www.ebrd.com.

3.2 The World Bank (WDI) and worldwide governance indicators (WGI)

The worldwide governance indicators (World Bank 2009c), well-known and extensively used, consist of six clusters of different aspects of governance at the national level for 212 countries. The clusters are calculated as the aggregation of an extensive list of available studies and surveys relevant to each particular governance cluster. This is the most comprehensive, albeit aggregated, assessment of the levels of broad institutional categories. The institutional levels are given in two forms: as percentile ranks among all the countries and on a scale of absolute score, ranging between -2.5 to +2.5. See Table 2 and Figure 1 for the list of clusters and levels for Russia for the period 1996-2008.

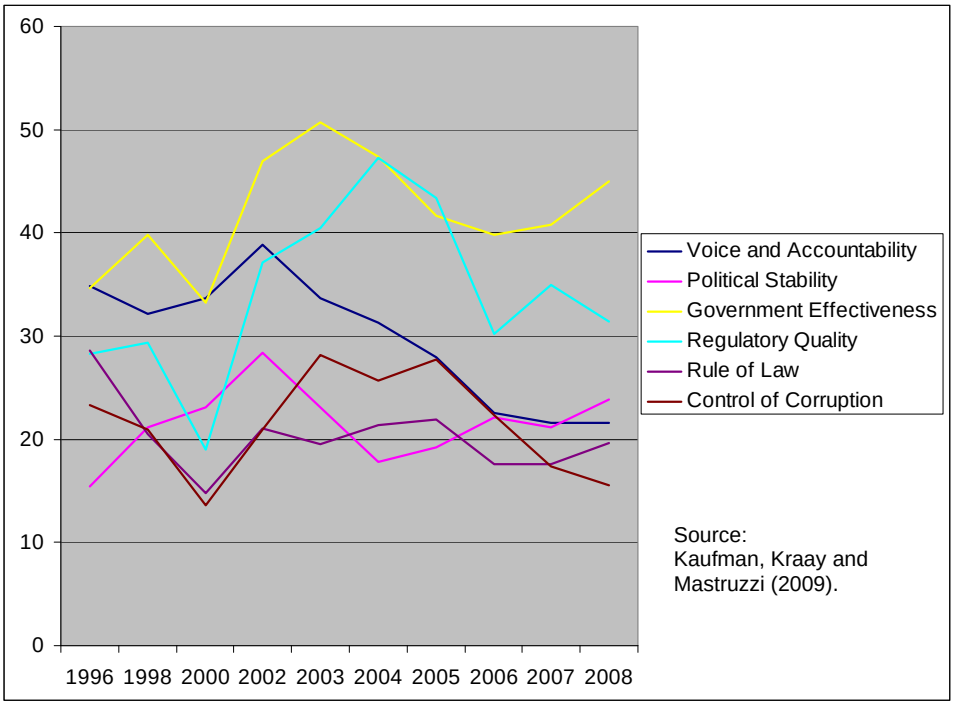
The table and the figure depict a gloomy picture in two respects: first, all scores are negative, and according to the most recent survey, are below the 25th percentile, the bottom quartile among all countries. Second, there is no significant positive trend (beyond the statistical confidence limits) except perhaps for one indicator. Indeed, there are a few recent setbacks from the higher levels achieved during Putin's early years. The first two clusters, *voice* and *political stability*, denote the quality of democracy and political institutions, and the main point to note here is the significant retreat of *voice* since the early 2000s, in both the level of democracy and the range of civic freedoms. Can this be the flip side of the significant increase in the measure of *government effectiveness* since the early 2000s? At the same time the levels of the *rule of law*, *regulatory quality* and the *control of corruption* are currently very similar to their

Table 2
Governance indicators (WGI)

Governance indicator	Year	Percentile rank (0-100)	Governance score (-2.5 to +2.5)	Standard error
Voice and accountability	2008	21.6	-0.97	0.11
	2003	33.7	-0.57	0.15
	2000	33.7	-0.46	0.21
	1996	34.9	-0.43	0.23
Political stability	2008	23.9	-0.62	0.2
	2003	23.1	-0.80	0.23
	2000	23.1	-0.72	0.23
	1996	15.4	-1.04	0.32
Government effectiveness	2008	45.0	-0.32	0.17
	2003	50.7	-0.21	0.15
	2000	33.2	-0.58	0.17
	1996	34.6	-0.51	0.23
Regulatory quality	2008	31.4	-0.56	0.16
	2003	40.5	-0.37	0.16
	2000	19.0	-0.78	0.19
	1996	28.3	-0.39	0.23
Rule of law	2008	19.6	-0.91	0.12
	2003	19.5	-0.92	0.13
	2000	14.8	-1.06	0.13
	1996	28.6	-0.67	0.18
Control of corruption	2008	15.5	-0.98	0.12
	2003	28.2	-0.76	0.13
	2000	13.6	-0.99	0.15
	1996	23.3	-0.80	0.21

Source: World Bank (2009c).

Figure 1
Governance indicators for Russia, 1996-2008 (percentiles)



Note: The governance indicators presented here aggregate the views on the quality of governance provided by a large number of survey respondents in industrial and developing countries. These data are gathered from a number of survey institutes, think tanks, non-governmental organizations and international organizations.

Table 3
Governance indicators (WDI), Russia and UMIs, 2008

Governance indicator	Percentile rank (0-100)	Income average, percentile	Governance score (-2.5 to +2.5)	Standard error
Voice and accountability	21.6	62.8	-0.97	0.11
Political stability	23.9	61.7	-0.62	0.20
Government effectiveness	45.0	61.2	-0.32	0.17
Regulatory quality	31.4	60.0	-0.56	0.16
Rule of law	19.6	59.9	-0.91	0.12
Control of corruption	15.5	59.9	-0.98	0.12

Source: World Bank (2009c).

respective 1996 levels, with the first two exhibiting some improvement during the early 2000s but then, in recent years, retreat.

How does the institutional level of Russia compare with other countries at the same level of economic development? Russia is classified by the World Bank as a upper middle-income country (UMI).[8] A comparison of the UMI country-group for 2008 is given in Table 3, which shows that the average UMI levels converge around the 60th percentile for all six clusters. This is, by a wide margin, significantly higher than for Russia, where the best result is for government effectiveness, but still trails behind the UMI level. Russia's institutional level is also lower than the average of the lower middle-income country group (LMIs) and parallels the average of the low-income countries (LIs), located between the 20th and the 30th percentile points. Even here only two of Russia's indicators, government effectiveness and regulatory quality, are above the LIs levels. According to these measures, Russia is still in the early stages of institution-building and has a long way to go to overcome the institutional barriers imposed by its inheritance.

3.3 The global competitiveness index (GCI) and the knowledge economy index (KEI)

As mentioned above, the WGI is composed of data provided by various individual surveys that examine the institutional and other attributes of countries around the world. Two of these are presented here. The global competitiveness index (GCI) is compiled by the World Economic Forum, with special emphasis on the competitive capabilities of countries as gauged by many indicators, including institutional quality. The knowledge economy index (KEI)—created by the World Bank using the Knowledge Assessment Methodology (KAM) of its Knowledge for Development (K4D) programme—evaluates the contribution of knowledge and innovation capabilities of a country to its growth potential. Institutional indicators are included in both surveys as the major determinants of competitiveness and of knowledge, respectively, and their contribution to growth.

In what follows, we do two things: first, with the GC index supplemented with the K4D, we study Russia's institutional position in a comparative context. Next, we use the K4D survey to estimate and compare the levels of its knowledge and innovation indicators. Here K4D leads and GCI supports.

8 See footnote 6.

The GCI is composed of 12 pillars indicating competitiveness, among which only one is labelled *institutions*, but institutions are present in the other pillars, i.e., those capturing aspects such as the efficiency of various markets (for goods, labour, financing), business sophistication, etc. The indicator levels are identified according to their ranking position among the 134 countries and according to a grade (or score) ranging between 1 and 7, from worst to best. Table 4 presents a detailed account of the *institutions* pillar and Table 5 the GCI overall rank position and scores for all the 12 pillars.

A quick glimpse at Table 5 demonstrates that the pillars with large institutional content assign the lowest ranks for Russia, far below the corresponding ranks of countries at Russia's income level. Russia is ranked 110th (out of 134) on the *institutions* pillar with a score of 3.3 out of 7.0. The pillar of *financial markets* ranks the country even lower, at 112th place with a score of 3.6. Also, the pillar of *goods market efficiency* assesses Russia in 99th place and that of *business sophistication* 91st. All these ranks are characteristic of the range of 42 low-income countries (LIs).[9]

The first pillar—*institutional competitiveness*—includes 18 indicators covering most spheres of economic and government activities (Table 4). Here Russia is ranked 122nd for the definition and protection of property rights, the cornerstone of a market system and a free society, and 98th on the same regarding intellectual property. Positioned near or below Russia on property rights are a few Central Asian transitional economies as well as countries at much lower economic development levels in Africa, South Asia and Latin America.

A number of indicators explore the quality performance of the government: public corruption (diversion of public funds), state capture (favouritism in decisions of government officials) and trust of politicians. Here Russia's scores reduce its rankings to or below 100. The same is obvious with respect to the (bureaucratic) burden of regulation, ranked 118th, the efficiency of budget allocations, ranked 82nd and the transparency of policymaking, ranked 119th. With respect to enforcement, the GCI evaluates the judicial system as being highly influenced by politicians and business, and the legal system's enforcement of contracts as extremely inefficient. Likewise, the police are found to be unreliable to uphold law and order (ranked 105th).

The conduct of firms, also part of pillar 1 (Table 4) is no better: the level of ethical behaviour is ranked 112th, with a score of 3.5, auditing and reporting standards are low, ranked 108th with a score of 3.8, and minority stockholders rights are poorly protected, ranked 128th and a score of 3.3. In view of this, it is rather surprising that the survey finds the efficacy of corporate boards high and ranks Russia 35th with a score of 5.1 out of 7 (investors and boards exert strong supervision of management decisions). These are also supported by the rather poor showing of the Russian business sector in a WB survey of *Doing Business* (2009b). On the total costs of doing business, a concept similar to transaction costs, Russia is ranked 120th out of the total of 181 countries, of which 104 are either low-income or lower middle-income countries; 32nd out of 35 upper middle-income countries and 22nd among the 25 transitional economies. Russia's ranking is especially low with regard to construction permits (180th), payment of taxes

9 Based on the assumption of a close correlation between the income level and the quality of institutions among the developing economies.

(134th) and cross-border trading (161st) but is doing better in enforcing contracts (18th) and registering property (49th).

In the following, we survey the institutional showing (CGI) in three major markets: financial, goods and labour markets. As we have seen, Russia ranks 112th among 134 countries in the 8th pillar of *financial market sophistication*. We already discussed the particular importance of an early transition of the financial sector in order to replace the government as it existed under central planning and to provide financial services for a fast recovery of orderly production, supply and economic growth. We have also seen the low transition scores allotted by the EBRD to Russia's financial services. Thus, despite some minor recent improvements (the establishment of deposit insurance, expansion of consumer credits, better functioning of the central bank), Russia's financial services in 2008 were at the level of the South Sahara African countries. Russia ranks 107th in the soundness of its banks, 110th on the quality of regulations of securities and exchanges, 125th on restrictions on capital flows, 86th on the ease of getting loans, etc. (see also Aslund 2009; OECD 2009: 97-124).

Three groups of indicators demonstrate the weak competitiveness of the goods markets in Russia: Its high concentration (limited dominance), poor competition, weak anti-monopoly policy, and a high burden of support to agriculture, ranking 79th, 108th, 95th and 104th, respectively. Likewise, obstacles created by the tax system are ranked in the 90s-range, and barriers to international trade rank Russia above 100, as high as the 129th position. The levels of customer orientation by businesses and of customer sophistication are also low, ranked in the 70s-range. The extent of time that it takes to start a business is still somewhat high, but the number of steps required to obtain a license is relatively low (44th rank).[10]

Table 4
GCI 1st pillar: institutions

		Rank (out of 134 countries)	Score (ranging from 1 to 7)
1.01	Property rights	122	3.3
1.02	Intellectual property protection	98	2.9
1.03	Diversion of public funds	102	2.9
1.04	Public trust of politicians	111	1.9
1.05	Judicial independence	109	2.9
1.06	Favouritism in decisions of government officials	88	2.8
1.07	Wastefulness of government spending	82	3.2
1.08	Burden of government regulation	118	2.5
1.09	Efficiency of legal framework	107	2.9
1.10	Transparency of government policymaking	119	3.2
1.11	Business costs of terrorism	100	5.1
1.12	Business costs of crime and violence	80	4.5
1.13	Organized crime	105	4.3
1.14	Reliability of police services	105	3.2
1.15	Ethical behaviour of firms	112	3.5
1.16	Strength of auditing and reporting standards	108	3.8
1.17	Efficacy of corporate boards	35	5.1
1.18	Protection of minority shareholders' interests	128	3.3

Source: GCI database, available at: www.weforum.org.

10 See the RF table in CGI. A detailed discussion on the high level of regulation and intervention by the Russian government in the goods market is included in OECD (2009: ch. 5 and Annex 5.A1).

Russia is ranked high (27th position) in the contribution of its labour market to competitiveness. This surprising evaluation is due, in the first instance, to considerable flexibility in hiring and firing (ranked 23rd), to the low cost of firing (28th), and to high correspondence of wages to productivity (11th on a global scale). The main factor that pulls down Russia's ranking is the high level of non-wage social costs, a direct remnant from the old regime (at 31 percent of wages, ranked 112th). Also contributing to the poor ranking are low cooperation in labour-employer relations (82nd) and relatively high rigidity of employment (87th), which apparently contradicts the low ranking for hiring and firing above. The competitive features of the labour market in Russia (and other CIS countries) reflect mostly the failure to replace the command nature of the old regime's labour market with a more cooperative format of these relations as in many market economies (e.g., creation of unions and of collective bargaining), and the pro-labour legislation that imposes constraints and limits free competition in labour markets in developed economies, especially in western Europe. This is not the place to discuss what might constitute optimal competitiveness in the labour market: it well may lie somewhat to the 'left' of the present 'free' market situation in Russia. The point to be made here is that after 20 years into the transition, the Russian labour market has failed so far to reorganize itself to free market conditions. On the other hand, the heritage of the old regime also includes the relatively high burden of non-wage social costs (that many employers still try to evade) as well as the high participation rate of women in the labourforce, a clear advantage, and the relatively low level of braindrain (rank 44th), thus testifying to some extent to the relatively good quality of the educational and research infrastructure.

Table 5
Global competitiveness index, 12 pillars

		Rank (out of 134 countries)	Score (1-7)
GCI 2008–09		51	4.3
GCI 2007–08 (out of 134)		58	4.2
GCI 2006–07 (out of 122)		59	4.1
Basic requirements		56	4.5
1st pillar	Institutions	110	3.3
2nd pillar	Infrastructure	59	3.7
3rd pillar	Macroeconomic stability	29	5.6
4th pillar	Health and primary education	59	5.6
Efficiency enhancers		50	4.3
5th pillar	Higher education and training	46	4.4
6th pillar	Goods market efficiency	99	3.9
7th pillar	Labour market efficiency	27	4.7
8th pillar	Financial market sophistication	112	3.6
9th pillar	Technological readiness	67	3.4
10th pillar	Market size	8	5.7
Innovation and sophistication factors		73	3.6
11th pillar	Business sophistication	91	3.7
12th pillar	Innovation	48	3.4

Source: GCI database; available at: www.weforum.org.

3.4 Formal and informal institutions: corruption and (dis)trust

Most of the institutional indicators in pillar 1 as well as those included in other pillars reflect their formal structure, in terms of new laws and policies and the establishment of

the proper organizations, etc., as well as their informal side, reflecting the quality of behaviour of the relevant agents and its consistence with the requirements of the new formal institutions. It is clear from the low ranking positions and scores that whatever the state of the formal institutions, the required informal behaviour frequently did not fully follow. Moreover, in view of the lag in the establishment of new formal institutions, it is no wonder that informal behaviour followed a negative and opposing stance towards them. The visible conflict between formal and informal institutions is apparent, for example, in pillar 1 where the efficacy of corporate boards received high marks at a time when minority rights were poorly protected and the ethical behaviour of firms was ranked 112th.

The most explicit manifestation of poor quality and non-cooperative informal institutions is the low level of social capital, expressed as the overall lack of trust and corrupt behaviour and state capture. Some of this may be the outcome of the unfamiliar nature of the new institutions, many of which were imported, and of the new and unfamiliar roles played by entrepreneurs, employers and 'businessmen' (no longer *Rukovoditeli*), bureaucrats, and fellow citizens. Much of this negative reaction and lack of trust were relics of the old regime's behaviour patterns. We have already seen the very poor position of Russia with respect to control of corruption of the WGI indicators, as well as the GCI ranking of Russia in positions 102nd, 111th, and 88th regarding the diversion of public funds, the public trust of politicians and organized crime, respectively (Table 4). According to the GCI survey, corruption is also the most serious problem with respect to conducting business in Russia, as indicated by 19.4 per cent of the respondents.

3.5 Transparency International's corruption perception index (CPI)

Transparency International (TI) grades Russia with a score of 2.1 out of 10, placing it as 147th out of 180 countries, on par with Kenya, Bangladesh and Syria. Transparency International's bribe payers index (BPI) grades Russia the last (first among paying bribes in other countries) out of the twenty-two countries included (TI 2009).

More evidence on the corruption and low levels of trust and of social capital is provided by Sinitsina et al. (2008). This plus evidence of the increased support for more government regulation and intervention is provided in Aghion et al. (2009) and Denisova et al. (2009) The two latter studies also show evidence of an increase in the level of corruption since 1989 in the transitional economies, particularly Russia (Denisova et al. 2009). It is claimed that this trend represents a shift towards a bad 'uncivil' equilibrium where people demand greater government intervention even while recognizing that the government itself is also highly corrupt. People resent the negative externalities and bad behaviour of the new business entrepreneurs. The rationale is that increased government intervention limiting the negative behaviour of the business community, even at the cost of more corruption is the lesser of two evils. Note that according to the model, greater government intervention and regulation will intensify the level of corruption and erode trust and social capital. All that it takes in order to start such a process is a sufficiently high initial level of distrust and corruption, a condition easily characterizing Russia. The weak institutional base and considerable corruption during the last two decades of the new regime offered minimal opportunity to change courses. It takes a very bold move by a (new) government to reverse this trend.

A similar story can be told using the recent conceptual framework developed by North, Wallis and Weingast (2005, 2006, 2009) and North et al. (2007). The move by Gorbachev to introduce partial reforms intended to expand entrance to the existing state of 'limited access' got out of control, spilled over to other spheres and brought about a much broader systemic change. The many obstacles to the creation of new institutions, some of them particularly relevant for Russia, created 'disorganization', prolonged the process of transition and raised the risks of failure. Measures taken to ascertain that the changes were irreversible, like privatization, later backfired, and encouraged the government to partly reverse the process. In a way, it was a return to 'limiting access' on this score, foreign investors included. Weak formal institutions and enforcement and a high level of corruption encouraged antagonistic informal institutional behaviour and made things worse. North et al. believe it will take 50 years or so to accomplish a transition to 'open access. In Russia, the transition may have to use most of this time.

4 Human capital, education and innovation

The Soviet Union was a world power with regard to R&D and innovation, even though the majority of this effort was directed to the military at the expense of the civilian sector. Innovation effort was supported by an excellent educational system at all levels and a network of top research institutes, made up of the largest number of scientists and engineers in the world and very generous R&D budgets. Military innovation network was promoted through top research centres that were favoured with the best in scientists and engineers, materials and other inputs as well as priority status in planning and supply. This priority treatment partly compensated for the basic systemic defect and many other obstacles to innovation that characterized the centrally planned system.[11]

The role of human capital in economic development and growth has been recognized for a long time. Under the acknowledged view, developing countries devote most of their innovation effort to the importation and absorption of existing technologies for the production of goods at the lower end of the product cycle and hence their main educational efforts should have been focused on elementary and secondary schools. Developed countries, positioned at the technological frontiers, concentrate more on pushing this frontier outward and onward to top-level production and new products. Thus, they concentrate on higher education and top research centres (Acemoglu, Aghion and Zilibotti 2006; Aghion et al. 2009). However, lately, in addition to the above, the importance of high-level tertiary 'centres of excellence' for learning, research and innovation has been recognized also in connection with the developing countries. Their active involvement in frontline innovation is considered important for growth as well as for limiting the braindrain of the best scientists and for engaging the scientific diasporas in 'brain circulation'. Tertiary education and research, thus, are no less important than elementary and secondary schools.[12] This is considered relevant for countries such as India, China and Brazil, thus Russia should and can definitely aspire to become a front runner among the transitional and developing-country economies on the education and

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11 See Kornai (2009) for a recent detailed account of the innovation deficiencies under central planning. See also Ofer (1987).

12 World Bank (2002); Chawla, Betcherman and Benerji (2007: ch. 6); Kuznetsov (2007, 2009); Aghion et al. (2007); *Economis*t (2005); Ofer (2008a).

innovation frontiers. In order to achieve this, Russia needs (i) to preserve and strengthen its education and research capacities and the organizations inherited from the old regime, and (ii) to replace the old institutional and structural settings with those that complement market economy and democratic society. These include measures such as transforming the incentive structure, the forms of governance and modes of operation to open, more flexible systems, improving the curricula contents and the methods of study and of doing research, refocusing innovation efforts from military to civilian targets and designing better methods of disseminating innovations to the production sector, and engaging the private sector as a partner to the innovation effort.

The GCI ranks Russia's overall competitiveness level in 2008-09 in 51st place out of 134 countries, much above the institutional ranks and scores indicated above (see Table 5 and GCI). Russia's higher performance in a number of other areas (see pillars below) explains its higher overall rank but also includes, as expected, factors related to human capital: education, research and innovation. We return to these factors shortly.

A similar contrast between the quality of general institutions and of the levels of education and innovation in Russia is apparent also in the World Bank assessment of its K4D indexes of the knowledge economy index (KEI) and the knowledge index (KI). The K4D indexes assess the development (growth) potential of countries on the basis of three knowledge pillars: level of education, innovative capacity, and the level of information and communication technology (ICT). The three knowledge pillars are aggregated into KI (the knowledge index). An additional pillar, economic incentive regime (EIR), is combined with the KI to create the overall index, the knowledge economy index (KEI), the potential contribution of knowledge of growth, given the institutional setting. The EIR includes, among others, many general institutional indicators that make up the system tools that enable the knowledge indicators to contribute to economic growth.

Table 6 includes data on Russia's rankings according to each of the six indexes listed above. Here too, as before, Russia's recent rank with respect to the incentives (*institutional*) pillar EIR is 124th out of 134 countries with a score of 1.55 (lower than in 1995), while its KI rank is 41st, indicative of its good performance on the *education* and *innovation* pillars. The overall KEI index, however, pushes Russia down to 61st position, 20 steps lower. Considering the approximate nature of the two assessments (GCI and K4D) and the differences in their individual focus, the evaluations are consistent with each other.

The most significant observation in the two surveys is the high ranking and scores for the knowledge indicators. In the K4D study, Russia stands 37th on education, 38th on innovation but lower, 55th, with regard to its ICT level. These levels and the corresponding scores (over a range of 1-10, see Figure 2 and Appendix Table), are

Table 6
Russia's ranking, KAM indexes, 1995 and recent

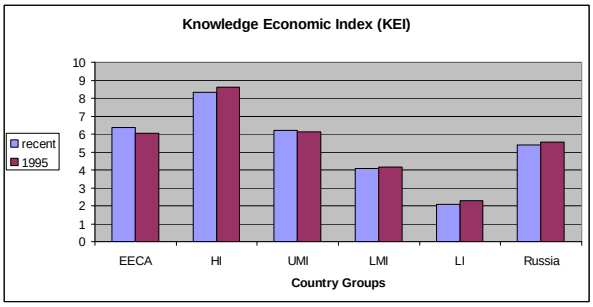
	KEI	KI	Economic incentive regime	Innovation	Education	ICT
Recent	61	41	124	38	37	55
1995	56	—	112	55	25	—

Note: Innovation indicators weighted by population, 140 countries; recent = 2007 or nearest year.

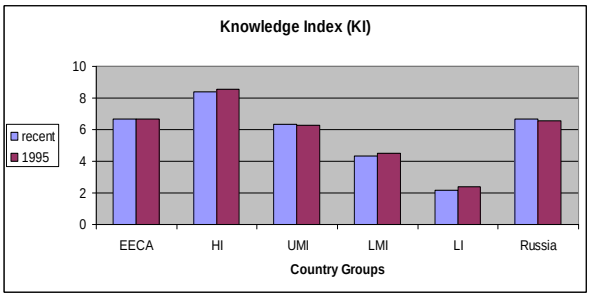
Source: World Bank, KAM database.

Figure 2
Knowledge scores for Russia and various country-groups, recent and 1995

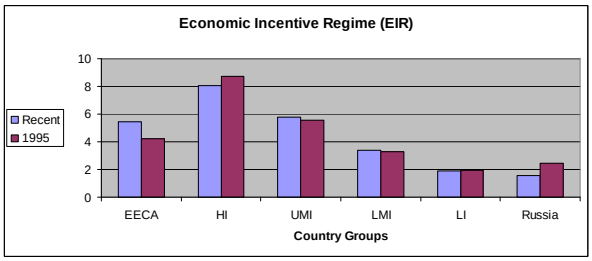
Knowledge Economic Index (KEI)



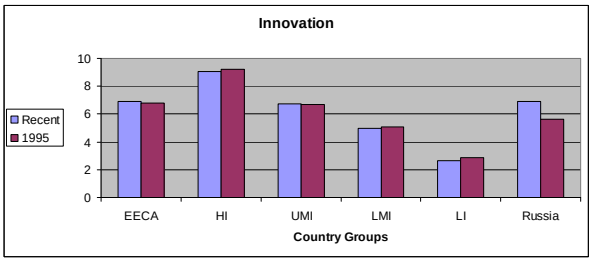
Knowledge Index (KI)



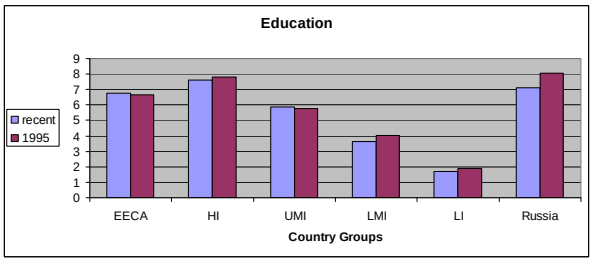
Economic Incentive Regime (EIR)



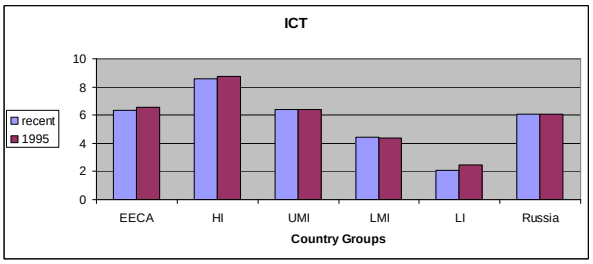
Innovation



Education



ICT



Note: Innovation indicators weighted by population size; recent = 2007, or the nearest year.
Source: World Bank, KAM database and Appendix Table.

above for education and on par for innovation and ICT as compared with the average levels of the UMI country-group, and also with the transitional country-group of East Europe and Central Asia (EECA). The great divide is much narrower as far as Russia's knowledge indicators are concerned. Unlike Russia's institutional level, its knowledge indexes rank way above the lower-income country-groups (LMIs and LIs). At the same time, these knowledge scores are still significantly below those of the high-income countries, somewhat less so with respect to education (Figure 2 and Appendix Table). At first glance this may be surprising, given the priority granted to research and education under the old regime. It may reflect some retreat having taken place during the transition years (see below).

Similar results, albeit somewhat less positive, are observed for Russia in the GCI survey (Table 5), in which it is ranked 46th on the *higher education and training* pillar and 48th on *innovation*, both just marginally above its overall rank of 51.[13] Russia is ranked

[13] Russia's overall rank of 51st in the GCI is due to other favourable factors: its market size (8th), a natural advantage, its labour market efficiency (27th) (discussed above), its success in achieving

just 67th on *technological readiness* and 91st with respect to *business sophistication*, the institutional underpinning for innovation. Another positive indicator is the *quality of primary education* (31st, see GCI). Based on the GCI, Russia is positioned somewhere near the bottom of the UMI group, an adequate position but far from outstanding and yet considerably above its institutional ranking.

The K4D survey goes back to the year 1995 and thus provides a picture of Russia's progress in its knowledge capabilities during transition in a comparative context (Figure 2 and Appendix Table). The most worrisome observation is the decline in the level of the *education* pillar, down from 25th to 37th position, and score dropping from 8.05 to 7.09. The initial (1995) significant advantage over the UMI group had almost disappeared over the next dozen years.[14] In contrast, there was an improvement in the rank and score of the *innovation* pillar (from the 55th to 38th position and from a score of 5.6 to 6.9). In this case, the significant initial lag to the UMI has been fully bridged. The score of the *technological readiness* pillar remained unchanged over the period, staying around 6, in both cases at the same level as the UMI average, which should also be heeded as a warning. Figure 2 and Appendix Table, showing the K4D scores for the group of high-income countries, indicate that Russia is quite far behind on innovation (but is catching up) as well as on ICT, and trailing slightly on education, where it nevertheless is losing ground.

In recent years, the main detailed indicators that make up score of the *education* pillar (according to K4D, and as compared with the UMI group, Table 7) are literacy levels, average years of schooling, enrolment rates, especially in higher education, number of teachers and relatively high achievements and quality teaching in the sciences and the mathematics.[15] Totalling just 3.6 per cent of GDP, the very low public funding at all educational levels limits its quality and pulls down the ranking. The education budget stayed low, despite sharp cuts in military spending and the avalanche of oil revenues. The combination of increased enrolment and low budgets reduced the level of spending per student (Sinitsina et al. 2008: 85) which subsequently must have reduced quality. This may be also the explanation for the low level of internet access in schools and of staff training, and poor quality of governance and management of schools and universities (Table 7). The same factors that keep the educational score down are likely to be responsible also for its decline during the transition period. Reversing the negative trend can be achieved by increasing budgets (some increases have taken place recently) but only in conjunction with a radical institutional and structural reform of governance in order to better conform to the demands of the new economy, polity and society. What is needed is a greater degree of decentralization and independence, academic freedom and openness, both within Russia and outside, a broader curriculum, more self-study

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macroeconomic stability (29th), due to a considerable extent to oil and gas revenues (OECD 2009: Ch.1), and in spite of its poor position (109th) with regard to high inflation rate. The level of infrastructure, ranked 59th, pushes Russia's overall ranking somewhat down, mostly due to bad roads (104th) and quality of air transport and port facilities (88th and 76th, respectively).

14 A number of recent studies testify to this declining trend in the quality of the educational system in Russia (Sinitsina et al. 2008: 80-7; EBRD 2998: 56-61).

15 There was a decline during the 2000s in the ranking of Russia with respect to the Pisa tests in mathematics, sciences, and reading, but not in the average grades of the Russian students. These were however slightly lower than the OECD average of 500 in all subjects (See EBRD (2008: 59), and Sinitsina et al. 2008: 86).

and orientation towards problem solving, and combining teaching and research at least in the top universities.[16]

According to the K4D indexes, the score of the *innovation* pillar improved during the transition after 1995, despite the declining trend in education, and the static position of ICT (Figure 2 and Appendix Table). The early transition years triggered a deep crisis in the research sector, caused to a large extent by budget cuts, but also by the general

Table 7
Detailed knowledge indicators: Russia and UMI, 2007 or most recent year

	Russian Federation		Income	
	Score (1-10)	Actual	Score (1-10)	Actual
Innovation				
FDI inflows as % of GDP, 2000-05	2.78	1.6	7.03	4.11
Researchers in R&D/mil. people, 2006	8	3.246.21	4.83	967.41
Total expenditure for R&D as % of GDP, 2006	6.91	1.07	5.1	0.61
Manuf. trade as % of GDP, 2005	1.31	18	6.88	49.3
University-company research collaboration (1-7), 2007	5.97	3.2	6.32	3.3
Scientific & technical journal articles/mil. people, 2005	7.19	100.68	6.87	76.84
Availability of venture capital (1-7), 2007	5.48	3.1	5.93	3.28
Patents granted by USPTO, avg 2002-06	8.29	194.4	7.54	31.82
Patents granted by USPTO/mil. people, avg 2002-06	7.14	1.34	7.04	1.22
High-tech exports as % of manuf. exports, 2005	5.97	8.1	6.47	10.03
Private sector spending on R&D (1-7), 2007	6.37	3.4	6.09	3.34
Firm-level technology absorption (1-7), 2007	2.1	4.1	4.88	4.66
Value chain presence (1-7), 2007	1.3	2.6	5.15	3.68
Education				
Average years of schooling, 2000	9.1	10.03	6.35	7.57
Gross tertiary enrolment rate, 2006	8.84	72.28	6.25	44.01
Internet access in schools (1-7), 2007	5.97	3.7	6.15	3.8
Public spending on education as % of GDP, 2006	2.64	3.6	4.64	4.55
8th grade achievement in mathematics, 2003	7.35	508	3.37	455
8th grade achievement in science, 2003	5.92	514	3.37	455.71
Quality of science and math education (1-7), 2007	7.1	4.7	4.95	4.09
Extent of staff training (1-7), 2007	2.82	3.3	5.81	3.9
Quality of management schools (1-7), 2007	4.19	3.8	5.62	4.26
Braindrain (1-7), 2007	6.29	3.7	5.7	3.41
ICT				
Total telephones per 1,000 people, 2006	6.64	1120.0	6.07	952.96
Mobile phones per 1,000 people, 2006	7.07	840	6.32	738.89
Computers per 1,000 people, 2005	6.09	120	6.7	141.92
International internet bandwidth (bits/person), 2005	5.44	99.86	6.73	482.44
Internet users per 1,000 people, 2006	5.5	180	6.45	238.15
Extent of business internet use (1-7), 2006	6.61	4.1	5.99	3.93
ICT expenditure as % of GDP, 2006	1.6	3.2	4.87	6.84

Source: World Bank, KAM database.

16 For more on the problems and issues of reform in higher education in general and in Russia, see Kuznetsov (2007, 2009); Ofer (2008a); Sinitsina et al. (2008: 80-7); Kotkin (2007); *Economist* (2005); Aghion et al. (2007); World Bank (2002); Chawla, Betcherman and Benerji (2007).

disorganization of the systems. Scientists immigrated abroad or gave up their careers to look for (any) position in the newly formed business sector. As a result, the number of scientists and scientific workers declined by half within a few years (Sinitsina et al. 2008: 95). Only in recent years has some reorganization taken place, budgets have been increased and a programme was put forth to establish centres of excellence (Kotkin 2007: 6-8).[17] According to the GCI survey, the *innovation* pillar now surpasses the overall competitiveness rank of Russia in almost every individual indicator except one: innovation capacity, quality of the research institutions, company spending on R&D, university-industry research collaboration, utility patents and, of course, the number of scientists and engineers (Tables 5; GCI). To these, the K4D survey adds the relatively high level of total R&D spending (recently above 1 per cent of GDP), as compared with the UMI average. Russia's innovation capacity is weaker with respect to the production of, and trade in, high-tech products, the notorious issue of lack of diversification, availability of the latest technology, low inflow of FDI and of technology transfer, firm-level technology absorption, lower government procurement of high-tech products, and a weak 'value chain presence' (Figure 2; Tables 7 and A1) These shortcomings, very common under the old regime in the civilian sector, now exist also in the sphere of ICT. Russia has some advantage over the UMI group in telecommunications, but lags behind in most IT indicators: fewer computers, less internet usage, lower ICT expenditures as per cent of GDP, and less legislation related to ICT.

As can be seen above, the overall ranking of Russia with respect to the knowledge economy index (KEI) at 61st place is 20 steps below the 'pure' KI index, all due to internal (inside the sector) and general institutional weaknesses. This is one example of how weak institutions and high levels of corruption reduce the potential contribution, in this case, of the knowledge assets to the country's economic development. This pattern repeats itself in other spheres where productive assets inherited from the old regime cannot be utilized to their full potential because of internal and general institutional weaknesses. Other examples are the governance and the industrial structure of public utilities and infrastructure, the functioning of the financial sector, the low competitive level of the market for goods and services, etc. Sinitsina et al. (2008: 192-7) highlight this 'imbalance in the levels of development' among the various pillars and call for a policy to balance them. The emphasis, in my view, should not be on 'balanced growth', but on bringing up the institutional level to bridge the gap with the other growth engines as soon as possible—in this case, the knowledge assets. A more balanced institutional growth in tandem with the economic development is, indeed, a great advantage for the many developing economies that are progressing along an evolutionary path and gradually establishing new institutions as the need for them arises (Ofer 2004).

5 Discussion and conclusions

The process of transition in Russia is faced with great difficulties in establishing the new solid institutional infrastructure needed for the efficient functioning of a market economy and for economic growth. Many of the difficulties originate from the extreme

[17] In October 2009 the Ministry of Education and Science of the Russian Federation awarded the status of a 'national research university' to twelve winners of a national competition. The winners will receive generous grants from the federal budget over a period of ten years (The Ministry's website, 7 October 2009 in Russian).

contradiction between the institutional structure inherited from a regime of central planning and authoritarian rule, and the one needed for a market economy and democracy. Special attention has to be given to the rigidity, high cost and aversion to changes that are embedded in the old system, as well as the growing gap between formal and informal institutions. There is also a contrast in the nature of enforcement: coercion, intimidation and harsh sanctions under the old regime versus compliance based on social capital and trust, supported by 'democratic' enforcement methods of the new system. The extreme slowness in the creation of a new institutional base , and weak enforcement during transition, have kept the 'transaction costs' of market operations higher and lasting longer, making it more difficult for Russia to take advantage of its valuable assets—human capital, innovation and other assets—inherited from the old regime.[18]

In a recent paper, Popov (2009) comes back to a discussion that took place throughout the transition and was already mentioned above, namely, the desired level of the government budget during transition. The theory is that given the difficulties of creating new institutional infrastructure, governments needed more resources, first of all, for effective enforcement but also for preserving the stock of human capital and innovation capacity, as well as healthcare and other safety net services. I fully agree. Prudent use of Russia's energy revenues should make this feasible. However, additional resources should be strictly and effectively conditioned upon the implementation of the needed structural institutional reforms in the economy, the bureaucracy, society and polity at large, but also within the sectors that are responsible, for example, for human capital and innovation. As Popov concludes—and confirmed, in fact, by many—the allocation of energy revenues so far has not been adequate for this purpose and that the abundance of natural resources was more of a curse than a blessing in more than one way (Polterovich, Popov and Tonis 2008), indeed, facilitating and encouraging the recent retreat of reforms. This demonstrates that while more money is essential, the crucial issue is guaranteeing its proper use. This is illustrated in the following excerpts from a report on the quality of higher education in recent years in Russia:

> Fifteen years into independence, the universal problem in Russia remains the need for good management and good governance (of universities). A poor governance and incentive structure at universities threatens to skew the Russian state's now-ambitious plans for and major new investments in higher education (Kotkin 2007: 6).

And:

> Amid all the rhetoric about 'disintegration', the university system (like many other subunits) did not disintegrate. On the contrary, the state system proved it could absorb fantastic sums of grant money and more or less continue on its merry way (ibid.: 8).

What is true for higher education is valid for most other entities where old institutions need to be replaced by the new (see Murrell 2008).

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18 The GCI for 2009-2010 has just been issued as this paper is being published. Over the last year, Russia continued to retreat along the competitiveness scale, moving back twelve places on the overall GC index from 51st to 63rd position. Almost all the relevant indicators discussed in this paper retreated.

One outcome of the difficulties in establishing new institutions in Russia was lower rates of growth. Other consequences were the entrepreneurs and bureaucrats capitalizing on the disorganization and weak enforcement, and the disappointment of many people (and some leaders?) in the virtues of the new system. All this leads towards a low level equilibrium (as identified by Aghion et al. 2009) or to renewed efforts by powerful groups to revert to *limit access* (a la North et al.) to collect rents through the (re)creation of (new) barriers on ownership, trade, free information, power or, just rent-grabbing activity related to the Dutch disease, created by the oil boom. This trend has become more visible in recent years when the government became much stronger (even more 'efficient', as we have seen), but diverted its efforts away from the badly needed structural reforms (Aslund 2009; OECD 2009). The recent withdrawal from reforms need not become permanent. Any of the three conceptual frameworks mentioned above (based on Aghion et al.; North et al., or a simple Dutch disease model) may reverse itself by forces within the present or future regime. They may all still occur within the 50-year timeframe suggested by North et al. Even Murrell, who lauds the fast institutional advances in the transitional economies of the CEB group, acknowledges the slow pace, and even the retreat in institutional reforms in Russia and other CISs (2008).

Dmitry Medvedev fully recognizes the transition problems existing in Russia today, which can and should be addressed by his version of 'modernization'. According to his prognosis of the problem, it is the question of 'should a primitive economy based on raw materials and endemic corruption accompany us into the future?' To change this situation, he proposes replacing the 'humiliating dependence on raw materials' with knowledge and innovation-based production and growth (dubbed by many as 'diversification') that are founded on both inherited and imported scientific infrastructure; honest (non-corrupt) markets and democratic institutions, with less paternalistic government intervention and more private entrepreneurship, and active civic society (Medvedev 2009a; see also Medvedev 2009b). Medvedev is at present the leading westernizer in Russia, while Putin is leaning more towards a Slavophil stance, supporting a strategy labelled 'conservative modernization' (OSC 2009). Time will tell which approach will prevail and to what extent rhetoric can be translated into action. It is interesting to note how the quest for knowledge-based 'intensive growth' that haunted the Soviet Union for decades, is still present, although the 'culprit' now is the above mentioned 'humiliating dependence on raw materials'.

The difficulties and the costs involved in attempts to jump over the cliff separating the two contrasting institutional edifices of central planning and the market raise the issue of whether the entire communist episode has paid off in terms of a faster pace of modernization and growth.[19] A comparison by this author (2004, 2008b) on the long-term economic growth of the Soviet Union and Russia with a counterfactual alternative, gives a negative answer. In this paper we have shown in greater detail the impact of the difficulties of institutional transition to this outcome.

19 On the cost of switching growth strategies and institutions, see Aghion and Howitt (2009: ch. 11) and Acemoglu, Aghion and Zilibotti (2006).

Appendix

Appendix Table
Scores for Russia, EECA and UMI, recent and 1995

	KEI		KI		EIR		Innovation		Education		ICT	
	Recent	1995	Recent	1995	Recent	1995	Recent	1995	Recent	1995	Recent	1995
EECA	6.35	6.06	6.65	6.67	5.44	4.22	6.88	6.82	6.74	6.65	6.33	6.55
HI	8.31	8.61	8.41	8.58	8.03	8.70	9.05	9.22	7.60	7.81	8.58	8.72
UMI	6.21	6.11	6.35	6.29	5.78	5.57	6.76	6.69	5.89	5.76	6.41	6.40
LMI	4.10	4.18	4.33	4.49	3.41	3.26	4.95	5.11	3.61	4.02	4.43	4.35
LI	2.08	2.29	2.15	2.41	1.88	1.95	2.63	2.90	1.71	1.87	2.10	2.46
Russia	5.40	5.54	6.69	6.57	1.55	2.43	6.89	5.62	7.09	8.05	6.08	6.05

Note: Innovation indicators weighted by population; recent = 2007 or nearest.
Source: World Bank, KAM database.

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