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Private and Public Financing of Infrastructure: Theory, International Experience and Policy Implications for Russia

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Summary: This paper analyses the needs in infrastructure investment and the problems and options for private and public financing of these investments in the transition countries, especially in Russia. Insufficient progress in infrastructure reforms in Russia and the low degree of private participation provide special incentives for the investigation of this topic. Inadequate development of the Russian bank sector and domestic capital markets worsen the options for the domestic financing of long-term infrastructure investments. Foreign investment is also low due to macro and micro instability, higher risks, legislative weaknesses, and institutional constraints. Public financing of infrastructure through Public Infrastructure Programs is a partial solution to the financing problems of infrastructure projects, yet it would be wise to include private and international financing as well. The experiences of other transition countries have shown that these Private Infrastructure Programs – usually with a low fulfilment ratio - are not indispensable policy instruments to provide for long-term investment and are not automatically conducive to economic growth. Adequate infrastructure investment should contribute to sustainable economic growth of the country.

Zusammenfassung: Dieses Arbeitspapier analysiert den Bedarf an Infrastrukturinvestitionen und die Probleme und Möglichkeiten für die staatliche und private Finanzierung dieser Investitionen in den Transformationsländern, besonders in Russland. Unzureichender Fortschritt in den Infrastrukturreformen in Russland und ein niedriger Grad an Beteiligung durch den privaten Sektor geben besondere Anreize für die Forschung auf diesem Gebiet. Die unadäquate Entwicklung des russischen Bankensektors und der inländischen Kapitalmärkten verschlechtern die Möglichkeit der inländischen Finanzierung langfristiger Infrastrukturinvestitionen. Die ausländischen Investitionen sind wegen makro- und mikroökonomischer Unstabilitäten, hoher Risiken, legislativer Schwächen und institutioneller Beschränkungen ziemlich niedrig. Die staatliche Finanzierung der Infrastruktur mit Hilfe der staatlichen Infrastrukturprogramme ist nur eine Teillösung der Finanzierungsprobleme bei den Infrastrukturprojekten; es wäre sinnvoll auch private und internationale Finanzierung mit einzubeziehen. Die Erfahrungen der anderen Transformationsländer haben gezeigt, dass die staatlichen Infrastrukturprogramme – in der Regel mit einem niedrigen Ausführungsgrad – keine unverzichtbaren Instrumente der Wirtschaftspolitik für die Bereitstellung von langfristigen Investitionen darstellen und nicht automatisch das Wirtschaftswachstum fördern. Adäquate Infrastrukturinvestitionen sollten zum langfristigen Wirtschaftswachstum im Land beitragen.

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Contents

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List of Figures

List of Tables

1. Infrastructure Needs in Transition Countries

With the transition to a market economy there is a need for an expansion of infrastructure as a market system is characterized by considerable outsourcing and thus broad needs with respect to the transportation infrastructure. Moreover, while telecommunications in socialist countries was mainly a privilege of firms and of a minority of individuals, the switch to a market economy brings about a much more intensive need for telecommunications, not least of all because individuals typically represent a large share of overall telecommunications use in OECD countries. As opposed to that other infrastructure sectors such as water and energy supply as well as transport were substantially subsidised and thus practically perceived as not only public but free goods; due to the artificially low price level these goods and services were overused, and the respective infrastructure is very often in a rather poor state. Thus, there will be a gradually rising need for modernizing these sectors, especially in the energy sector once the initial transition recession is over. With the economic opening up of formerly socialist countries, international trade – partly related to both foreign direct investment and intra-MNC trade - will expand, and there will therefore be an additional need to modernize infrastructure. High foreign direct investment inflows are a crucial element for raising long term growth in transition countries, and both trade policies, (BERGSMAN/BROADMAN/DREBENTSOV, 1998) macroeconomic policies and infrastructure policy should be shaped adequately.

As post-socialist countries are expected to grow relatively rapidly, there will be a strong long term increase in the demand for infrastructure services. Better quality and a higher quantity of infrastructure is desirable in many transition countries. Improved infrastructure in transportation, for example, has the following major economic effects:

- it **reinforces spatial competition** as suppliers facing lower transportation costs from neighbouring regions will have a larger joint market area;
- it **encourages international trade** since reduced regional transportation costs also imply lower international transportation costs – and thus there will also be a higher degree of import competition;
- it **stimulates private investment** to the extent that firms have free (or subsidized) access to transport infrastructure; indeed infrastructure expenditures amount to a subsidization of private business activities.
- it allows private households to benefit from a **higher consumption level** not only through pro-competitive effects from infrastructure that imply price reductions and hence real income effects; moreover, individual travelling will rise along with per capita income so that households will directly benefit from a better transportation infrastructure.

If infrastructure services are provided in an efficient and innovative manner, such services will contribute to rising international competitiveness and economic growth. The lower the price of the use of infrastructure (and this requires optimum use of resources in building and operating infrastructure), the lower the prices of all those goods which use infrastructure services as an input. As practically all goods need infrastructure services as an input, an optimum provision of infrastructure is crucial.

Infrastructure provides services which largely feeds into the production of goods; to some extent, however, – e.g. in the case of transportation – there also are direct consumer services, namely whenever households directly use infrastructure. The most critical users of

infrastructure are typically multinational companies, as their experience in producing abroad goes along with knowledge about comparing infrastructure and infrastructure services.

As regards to infrastructure, there is a need to distinguish between several fields of activity:

- Transportation: Roads, ports and airport as well as railway networks. Here modernization investment is needed as well as investment in the context of a rising demand for transportation, which is typical for a growing market economy with considerable outsourcing dynamics and rising private transportation demand (income elasticity above unity).
- Energy: Electricity generation, the electricity grid and distribution of power; in addition, there is the field of pipeline building for oil and gas which represents a highly politicised business as far as international pipeline routing is considered. The electricity liberalization of the EU – under the Community Directive 96/92/EC (phasing in liberalization started in 1999) – is a crucial factor in Europe, as it creates the largest regional electricity market in the world; under WTO rules, Switzerland and Norway have access to this market; *as would Russia once it joins the WTO (or otherwise obtains access to EU-25 markets)*.
- Telecommunications services, which consist of fixed line networks and mobile telecommunications. Telecommunications services account for a very high share of national output in most transition countries. This is mainly due to monopolistic pricing and inefficiencies, which, however, could be overcome in the context of a careful combination of regulation and liberalization. Progress in this field is also crucial for stimulating expansion of information & communication technology, which has been a majorfactor of growth in OECD countries in the 1990s.

As regards infrastructure, decisions will have to be made with respect to

- **building** certain types of infrastructure;
- **financing** infrastructure and infrastructure expansion and upgrade;
- **providing** infrastructure services and hence operating the infrastructure;
- **expanding** infrastructure over time (and financing and operating).

Government might take a role in each of these four decisions, but there can be decisions and infrastructure fields where the government might not become involved at all as markets are working well (as seems to be the case with mobile telephony).

When the government is involved in infrastructure decisions there are certain risks with respect to inefficiencies:

- **Oversizing (or undersizing) of infrastructure**: governments have a tendency to oversize since bureaucrats are not investing their own money but that of taxpayers who have rather limited control of government. Oversized infrastructure implies higher capital costs than is necessary and impairs economic growth. The lower the budget deficit is the more government bureaucracy is likely to be overgenerous in infrastructure expansion, which often will take place in a lumpy fashion instead of using options for gradual and marginal enlargement of facilities. Such options must, however, be considered in the planning process from the outset.
- **Inflexible pricing of the use of infrastructure**: price should reflect relative demand during the 24-day and night cycle and over the year; government agencies are poorly motivated to come up with adequately differentiated pricing schemes – much in

contrast to private profit-maximizing firms. For example, highway user fees could differentiate according to day hours and night hours, namely in a way to set an incentive to reallocated traffic in a way which leads to reduced congestion. Various digital monitoring and payment systems are available in the market to achieve such optimal use of existing facilities.

- **Insufficient exploitation of complementary business opportunities** to use infrastructure. In the case of airports, ports or railway stations, each has the transportation business in the narrow sense plus the non-aviation/non-shipping/non-railway business which includes restaurants, gift shops and other shops that could generate revenue by sales to those using the transportation services.
- **Inadequate exploitation of commercialising infrastructure management skills abroad.** As regards the latter, it is quite obvious that privatisation of infrastructure business generates private companies which typically are well motivated to invest abroad in the long run and to thus raise gross national product by profits accruing from abroad. An impressive example in the airport management business is HOCHTIEF. In the field of port management, there are several companies from Singapore and Hong Kong which have engaged in foreign direct investment in Asia and Latin America.

If infrastructure is built on the basis of government decisions and later privatised, this will bring efficiency gains. In this case, however, the provision of infrastructure services should be regulated with due emphasis on competition and static and dynamic efficiency. This in turn requires adequate regulation and raises the question whether such regulation can be expected in transition countries with their many political and economic distortions. As regards airports, PETZOLD (2002) has argued that privatisation and regulation makes sense in Poland and Russia, but that in cases where no competition exists within infrastructure markets, a relatively weak rule of law suggests only a gradual liberalization strategy particularly for Russia.

Infrastructure is capital intensive and thus raises particular problems of financing. This is a formidable challenge for transition countries whose banking systems often are fragile while capital markets (stock markets in particular) are not fully developed. Moreover, political stability is often relatively weak so that both investors and government will face a considerable risk premium. Political stability can be artificially imposed through authoritarian rule, however, this then bringing with it efficiency problems that stem from a lack of political competition, which in the political system is no less important than for the economic system. No economic system can be a leading dynamic system without strong competition. Moreover, authoritarian systems tend to undermine the rule of law which, in turn, is crucial for both investment and contract enforcement. As market systems require millions of contracts to be concluded every year, the benefits from a market economy cannot be realized without strict contract enforcement (WELFENS, 1999). The weakening of the rule of law in turn will translate into low growth and an international risk premium in the long run.

To the extent that infrastructure is a multi-region public good optimum provision of infrastructure requires that infrastructure be expanded until marginal costs are equal to the sum of all regions' marginal utility. Therefore many infrastructure projects will involve both complex politics and cooperation among regions. Refinancing of infrastructure costs often could be realized by differentiated prices, and indeed prices should reflect both a marginal willingness to pay and congestion costs (negative external effects).

The following analysis takes a look at capital markets and the cost of capital.

2. Capital Markets and the Cost of Capital

2.1. Basic Parameters of Capital Markets

Investment projects require financing which in turn is possible only if investors have adequate access to domestic or foreign savings. The capital market in the form of bonds markets and stock markets is necessary to finance investment; infrastructure investment stands for long term investment and hence long term investment financing is of particular interest here. Investment financing will mainly come through bonds – or bank credits – and the issuing of stocks so that the aggregate capital costs are a weighted sum of the real interest rate r on bonds and of the costs of capital z as measured by firms relying on stock market financing. Basic parameters in capital markets are as follows:

- **Rating of government bonds:** As regards the cost of capital, the basic price of capital is normally visible from the interest rate on government bonds – assuming that government has the best rating of all sectors and actors in the economy. Since government is the natural benchmark for the costs of capital it is quite important that the government achieves a good rating. Several transition countries had achieved investor grade status in the early 21st century, which immediately stimulates capital inflows as large institutional investors in OECD countries will consider investment in the respective country.
- **Maturity distribution in bonds markets:** High inflation rates and high debt-GDP or deficit-GDP ratios of government will lead to short maturities both in the bond and bank loan markets and in some transition countries, long term credits – where maturities were not available – in the late 1990s. Achieving low inflation rates and a low deficit-GDP ratio is thus crucial for moving towards higher average maturities. Beyond the maximum time horizon of the maturity curve, the slope of the yield curve is crucial. For reasons not easily understood (WELFENS, 2003), the steepness of the yield curve - showing the interest rate as a function of debt maturity - is important. Short term interest rate should be lower than risk for long term debt.
- **Risk premia:** There is a country risk premium, a currency-related risk premium – positively related to the likelihood of devaluation – and an individual investor or project risk premium. Over a long term perspective, it is natural that a country should strive to have not only a good country rating but also to adopt monetary policy, exchange rate policy and fiscal policies (federal level, regional level and local level) that lead to a low risk premium. However, policymakers are interested in long term perspectives only to a minor extent; their main focus is on the short and medium term, so that achieving a low risk premium will not come automatically (as regards EU accession countries, reduced risk premia come quasi automatically as EU membership imposes side-constraints from Brussels, which make monetary policy and fiscal policy more conservative).
- **Distortions in capital markets:** Under competition in a liberalized banking system and in bond markets – and assuming absence of deflation – there will be positive real interest rates which adequately will partly reflect the cost of capital. Phasing in functional competition in the banking sector and in capital markets is a formidable task in transition countries, and there are some doubts that this task has been fulfilled in most transition countries.
- **Role of stock market:** While the banking business and bonds markets are important for part of investment financing, the capital market is equally important. Equity capital

is important for firms, since a high share of equity capital in overall capital is a signal that the owners of the firm are strongly committed to the success of both the investment projects financed and the firm. Stock markets are known to be subject to considerable volatility and to transitory bubbles – followed by steep falls of stock prices – so that distortions in capital markets can occur. Since the cost of capital as measured in stock markets is given by z=dividend yield minus relative change in stock market price, and since real capital and financial assets – read bonds – are substitutes from a yield perspective but complementary with respect to risk, any artificial reduction of z (e.g., in the context of a bubble with rapidly rising stock market prices) will depress the real interest rate artificially. Such distortions will be even higher the higher the bubble-related transitory rise of stock market capitalization is relative to GDP and the higher the long term ratio of stock market valuation is relative to GDP. In most transition countries, stock market valuation relative to GDP is still low. Finally, one should note that while only part of the national stock market volatility is related to national economic policy, a considerable part is related to foreign impulses (e.g., changes in the globally dominant stock market capitalization). To the extent that a US stock market bubble is raising stock market prices outside the US, the respective country will not only have artificially low costs of capital but also higher consumption (assuming that real consumption positively depends on disposable income and on the real value of assets); this thereby implies lower savings. While the latter may contribute to rising real interest rates, the overall effect of an asset bubble is still to reduce the aggregate cost of capital.

As illustrated in Table 1, the EBRD Index of banking sector reform and reform of non-bank financial institutions of Russia was close to 2 in 2002 and has hardly improved in the period from 1995 to 2002. The EBRD Index for infrastructure reforms in 2002 was 2.3, which is still lower than in Poland, but it improved over time. The lower the progress in reform in the banking sector and in financial markets, the higher the probability of inefficient financing of investment projects and the higher the possible incentives to use financial sources from abroad.

Table. 1: Banking and Capital Markets Liberalization in Selected Transition Countries

	Index of banking sector reform		**Index of reform of non-bank financial institutions**		**Index of infrastructure reform**	
	1995	**2002**	**1995**	**2002**	**1995**	**2002**
Russia	2.0	2.0	2.0	2.3	1.7	2.3
Poland	3.0	3.3	3.0	3.7	2.3	3.3
Hungary	3.0	4.0	3.0	3.7	3.0	3.7
Czech Republic	3.0	3.7	2.7	3.0	2.3	3.0
Ukraine	2.0	2.3	2.0	2.0	1.0	2.0

EBRD Index is based on the scale 1-4, pluses and minuses have been added to the 1-4 scale to indicate countries on the borderline between two categories. The 4+ is the highest index.

Source: EBRD (2003), Transition Report, London

2.2. Financing Abroad: Key Problems

For many projects, relatively poor transition countries rely partly or fully on foreign capital inflows. With a formally or de facto fixed exchange rate, the country will get relatively cheap access to foreign funds as government will be able to borrow abroad slightly above LIBOR rates. The fixing of the nominal exchange rate, however, to some extent is totally artificial – as opposed to stable exchange rates in a system of flexible exchange rates which, however, has its own problems. Fixing the nominal exchange rate reduces the price of risk in domestic capital markets. The country pays a quadruple price on this:

- there is **no monetary policy autonomy** so that monetary policy cannot be used to fight an economic recession;
- there could be a **silent real appreciation** of the currency as soon as the domestic price level – more strictly, the price of tradable goods – begins to rise faster than the world market price. The trade balance will then become negative, and output could fall over time;
- there are **no incentives in the banking system and in domestic capital markets to develop adequate domestic risk pricing mechanisms**. This leads to the problem that financial market instruments will remain focussed on short term and medium term financing so that the maximum length of the maturity curve remains much below that in OECD countries.
- long term domestic financing is thus available for neither private investors nor for government projects, so that there will be balance sheet mismatch for private investors. They will finance long term investment mainly through short term and medium term instruments, at least to the extent that they rely on the domestic capital market. At the same time, they will partly rely on long term financing abroad, which is associated with a potential devaluation risk – **a currency mismatch** - which became relevant in the Russian crisis in 1998 and in 1997/98 in the Asian crisis. When we write about long term financing abroad, this might indeed be a loan for only 3 or 4 years with an additional put option for another n years. In some cases there could, however, be long term external financing of certain projects (e.g. airports, water system projects).

Flexible exchange rates have certain advantages, but also the risk that there can be temporary exchange rate overshooting. For resource rich countries whose exports are dominated by natural resources – with prices known to be rather volatile – the optimum exchange rate literature suggests that flexible exchange rates are adequate. According to the KENEN-criterion only with diversified exports, which imply that random shocks from abroad would be likely to cancel out, would fixing the exchange rate be without major problems.

Financial Innovations: International Issues of Rouble Denominated Debt Instruments

A delicate issue in international financing concerns the question of international debt instruments denominated in domestic currency. While even advanced Newly Industrializing Countries have not been successful in this respect, Russia might nevertheless consider this option. In Western Europe the prospective eastern enlargement of the Euro zone reduces the opportunities for currency diversification on the side of international investors. It would be worthwhile to issue medium-term and long-term asset-backed rouble bonds on the international market and to try to get support from the EBRD and major private banks for this. Russia could pave the way by making the rouble an international currency by allowing

selected trading partners to pay – within long term contracts – a limited amount of Russian oil and gas exports in rouble. Prior to this move, the Russian inflation rate should be brought down close to 3%. Other financial innovation could be that the principal (the interest payment) is in rouble while the interest payment (principal) would be in dollar. However, the past performance of Russian bonds and the volatility of the Russian capital market (see e.g. the crash in 1998) make foreign placements of bonds a challenging task. Also, a private placement of private (quasi)equity (e.g., through the issuance of Global Depository Receipts, GDR) has proved to be an option for only a very limited number of Russian companies (e.g., Gazprom).

International Organizations as a Source of Financing

Foreign capital for infrastructure financing in many cases will include funds from international organizations such as the World Bank, the EBRD or the European Investment Bank. Often these institutions are used as debt and partly also equity providers for project financing, i.e. financing packages which solely focus on the cash generating capacity of a certain project without taking recourse (or with only limited recourse) to the project's sponsors. Project financing limits the financial risks for the (private) sponsors and is thus often the only chance to realise certain projects; however project financing packages are very often more expensive than 'normal' corporate loans which draw back on a company's whole balance sheet and cash generating power. To get such international organizations on board for project financing is useful for four reasons:

- such organizations have not only **considerable experience** in infrastructure financing but also a broader technical background of experience upon which transition countries can draw;
- banks and other private sources of capital consider involvement of an international organization a **positive signal** for private co-financing the project;
- international organizations have top ratings so that transition countries get access to relatively **cheap sources of funding**.
- inclusion of such international financing and/or donor organisations furthermore provides a certain degree of **investment security** for private investors as they have larger negotiation power in relations with governments and thus let governments act more carefully when it comes to fulfilling contractual obligations.

Many infrastructure projects involving foreign capital are based upon BOT. Build-operate-transfer is a typical arrangement for financing infrastructure projects in transition countries and in many other countries as well. To the extent that this effectively means that the infrastructure facility becomes government property after the transfer has occurred, the BOT approach is on the one hand poor since the next step should be – possibly after a few years of transition - privatisation whenever possible. On the other hand, BOT approaches such as in general concessions with a timely limited entrepreneurial responsibility of private partners offers the chance to overcome the most risky first years of transition and thus allows for a reallocation of infrastructure afterwards to private investors at a much lower risk premium (and thus more exact privatisation prices).

2.3. Privatization and Infrastructure Regulation

From the perspective of efficiency, it is clear that infrastructure should be privatised in as many cases as possible; even if the government is the owner of the infrastructure facility,

private service provision can bring benefits provided the company is subject to transparency and is efficiently managed. The former can be achieved best if the respective firm is listed on the stock market which in turn raises the problem of whether government has conducted economic policy which helps in developing a broad and functional stock market. Only if privatisation of the facility or private service provision is not possible or inadequate should government play a role as an owner and in service provider. There is no doubt that national and regional plus local government must be involved in the financing of certain infrastructure projects. Whenever there is a direct local (regional) benefit from the infrastructure project, the local authority (regional) authority could be involved in part of this financing. Local or regional infrastructure projects which have local or regional spillovers should be involved in the financing arrangements of those neighbouring regions which are expected from the infrastructure measure.

Government ideally should establish a regulatory framework for the operation of infrastructure and implement the principles of non-discrimination and of competition policy. To the extent that government is the operator of the infrastructure facility, there is a natural conflict that government will be reluctant to introduce those principles and competition policy.

In resource rich countries, there could be particular problems with privatisation since those countries are known to often suffer from widespread corruption which in turn is associated with the economic rents accruing to owners of natural resources sites and government's role in the natural resource sector. With widespread corruption, there are naturally special problems in the privatisation process since there will be several groups – among managers or employees – of the state-owned facility or the government-organized service provision – which can extract economic rents that in turn give an incentive to pay bribes for not privatising.

Privatization is a complex process and must be carefully organized. There is considerable experience in privatisation of infrastructure both from OECD countries and NICs as well as some transition countries. Not all privatisation projects were a full success and this underlines the fact that that careful preparation is necessary.

Privatization can mean the full privatization of the respective transportation facility. A trade sale to one major national or international investor is likely to yield higher privatisation revenue than simply bringing the infrastructure company to the stock market which might lead to rather dispersed ownership. Privatization will not only have one-off revenue for government but should yield long term revenue increases through efficiency gains in the infrastructure business which feed into all product markets and thus stimulate output and tax revenue.

In network industries, separating the network from provision of services might be considered. Competing companies could use the same network which in principle is the case in the electricity sector and in telecommunications. Vertical dismemberment is not easily achieved as resistence on the side of integrated companies and part of the political system will be high. Moreover, vertical dismemberment or unbundling requires the replacement of intra-firm transactions by a system of contract management as both the grid company – in the case of telecommunications – and the telecommunications company will have to conclude contracts with all service providers. As long as the legal system in a country is not working properly and as long as there are uncertain property rights, it might be preferable to have vertical integration since the alternative of vertical disintegration could go along with higher transaction costs – including exhortation payments - than the present state of vertical integration. The result would be higher prices for infrastructure services which is not

desirable. If vertical disintegration is considered, a politically independent regulatory authority is needed.

In telecommunications, there is no reason not to fully privatise fixed network operators; phasing in full competition within an approach of regulated competition – as has been adopted in the EU and the US – is a useful approach to bring about more competition to telecommunication services. Regulatory authorities should operate on the basis of clear rules and non-discrimination. Newcomers should be allowed to rent access, and the resale of capacity should also be allowed as this leads to efficiency gains.

Generally, the main benefit from privatisation should be more efficient investment planning with respect to the expansion of infrastructure and a more efficient provision of services. This will generate positive output effects and will contribute to higher tax receipts. A more efficient infrastructure in turn can be an important argument for both domestic and foreign investors to invest more in the medium and long term. If private providers of infrastructure services develop owner-specific advantages – considered to be a natural starting-point for foreign investment – there would also be favourable prospects for long term foreign investment abroad.

In cases where privatisation is not feasible, a first step in the reorganization of state-owned facilities would be to consider the involvement of regional and local government where political control often is better than at the federal level, which is more complex. Those who use the facilities should have a voice, namely through surveys which ideally could be made by independent organizations or groups of researchers. Prudent regulation thus will always start with the three principles that:

- annual reports must be published over the internet;
- annual surveys among users should be made and published regularly;
- regulatory policy should be scientifically evaluated which would indicate international comparative analysis

Based on this information, some benchmarking also becomes possible so that room for improvement becomes obvious.

3. Theoretical Aspects of Private and Public Financing

High investments in the field of infrastructure will obviously be needed, but more investments will not in itself avoid wasteful inefficiencies, improve maintenance or increase user satisfaction. The organizational form of the infrastructure provision, in particular the model of infrastructure financing plays a crucial role in the effective financing of infrastructure investments. In this section, we will present the organization models of infrastructure financing and the possibility of public and private participation in the financing process. Then the problems of risk allocation and risk analyses in infrastructure projects will be shortly discussed. This is significant with respect to the fact that infrastructure projects are large, long-term and politically sensitive where risk management is the most important factor of successful financing. Finally, the economic view of infrastructure financing will be presented with respect to the favorable conditions of financing from state or financial organizations and the role of such financing in transition economies.

3.1. Organization Models of Infrastructure Financing

Before looking at the models of infrastructure financing, a short overview of the institutional options will be given, representing different allocation of ownership, financing, operation, and maintenance responsibilities as well as allocation of risk between government and private sector. Figure 1 presents the spectrum of options for ownership and operation of infrastructure (WORLD BANK, 1994).

Figure 1: The main institutional options for provision of infrastructure

	Option A					**Option B**		**Option C**	**Option D**
		Public enterprise							
Function	Government department	Traditional	Corporatized and commercial	With service contract	With management contract	Leasing contract	Concession contract	Private(including corporative) ownership and operation	User or community provision (self-help)
Ownership of assets	Public		Public(majority)			Public(majority)		private (majority)	Private or in common
Sectoral investment planning, coordination, policymaking, regulation	Internal to government	By parent ministry	Parent ministry or separate public authority			Public authority negotiated with private operator		None or public authority	None or public authority
Capital financing (fixed assets)	Goverment budget	Subsidies and public loans	Mainly market-based financing			Public	Private operator	Private	Private
Current financing (working capital)	Government budget	Mainly subsidies	Mainly internal revenues			Private operator		Private (goverment may pay for public service obligation)	Private
Operation and maintenance	Government	Public enterprise		Private operator for special service	Private operator	Private operator		Private	Private
Collection of tariff revenues	Government	Government or public enterprise	Public enterprise			Private operator		Private	Private
Other characteristics: Managerial authority	Government		Public enterprise		Private operator	Private operator		Private	Private
Bearer of commercial risk	Government		Public enterprise		Mainly public	Private operator		Private	Private
Basis of private party compensation	Not applicable			Fixed fee based on services rendered	Based on services and results	Based on results; net of fee paid by operator for use of existing assets		Privately determined	Privately determined
Typical duration	No limit			fewer than 5 years	About 3-5 years	5-10 years	10-30 years	No limit	no limit

Source: WORLD BANK (1994), World Development Report

The borders between these options are blurred. In many cases, state institutions as well as private participants take part in providing infrastructure services at different stages. Figure 1 illustrates the overhang from the pure state ownership, financing, operation, and maintenance (Option A) to the hybrid forms, where some functions are assumed by the state while others lie in the hands of the private entity and finally, to the pure ownership, financing, operation and maintenance of the private entity or community (users) (Options C and D).

The following analysis focuses on the aspect of infrastructure financing and main possible models of infrastructure financing are presented.

3.1.1. Public Financing, Ownership and Operating of Infrastructure

The public financing, ownership and operating of infrastructure is often viewed as an original form of providing infrastructure services. In fact, however, the finance of some infrastructure sectors was only private in their first stages (EICHENGREEN, 1994). Government subsidies and external finance were integral but only in addition to the process of infrastructure development. The typical example here is the American railway. The state took over the function as coordinator later. The latter idea was connected to the existence of market failures such as market power, externalities and information asymmetries on the infrastructure markets. But the pure state model has revealed many disadvantages, most of these related to low productive and dynamic efficiency (ESTACHE, DE RUS, 2002).

Based on this form of financing, the state decides about the disposition of budget resources in terms of a plan, but this process is usually strongly connected with political processes and lobbying. The company's efficiency in the framework of the provision of infrastructure by the state can be improved, for example, through management contracts or the outsourcing of some activities (WORLD BANK, 1994).

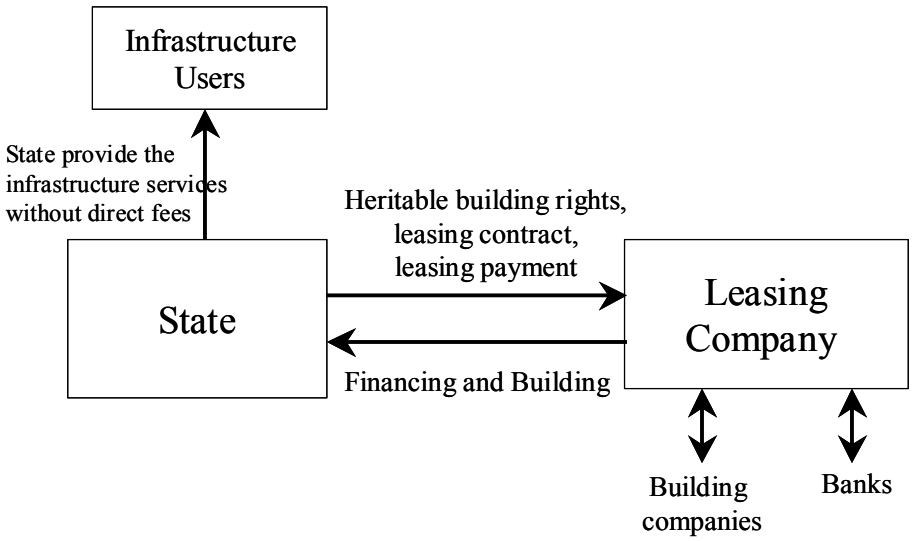
3.1.2. Hybrid Models with Private Participation

The hybrid models contain leasing and concession contracts. The advantage of these models consists of low transaction costs by private participation. Leasing and concessions permit private sector management and financing without the dismantling of existing organizational form or immediate crafting of an entirely new regulatory framework. Moreover, this can create competition for the right to provide certain services.

- **Public financing with private participation: Leasing models**

There are two different ways for understanding the leasing models. In the Anglo-Saxon literature, the leasing models explain the lease-and-operate (or affermage) contract. These models have a higher degree of private participation but at the same time the state keeps financing of fixed assets and organizational sovereignty. The private entity is responsible at its own risk for provision of service, including operating and maintaining the infrastructure, typically against payment of a lease fee. In the German literature, the leasing models are seen as the models, whereby the state is a client of the private leasing company which takes over the building and sometimes operation and other functions (e.g. collection of tariff revenues) of an infrastructure object and pays the leasing rates agreed upon ex-ante to this company.

Figure 2: Leasing of infrastructure in the German practice



Source: SCHMIDT (1993)

There are many design options of the leasing models in the German practice. According to the fund-leasing (*fonds-leasing)* model, a private entity builds an infrastructure object financed by the internal and external capital from the created fund. The state rents (or leases) this object. Additionally, the state maintains the right to buy or continue renting. The operation can be completed by both the state and the private company. In the case of *concession-leasing* model, the state has the ownership of the infrastructure object from the very first moment and provides leasing rates to the building company. Financing is mostly external, and the leasing rates can be used as a guarantee. In addition, there are also *mixed models* where a private entity can have a concession and at the same time own this infrastructure object for a certain period, then giving it over to the state.

- **Public-private partnership**

Public-private partnership set-ups are partnerships built between public authorities and private-sector firms/investors with the overall aim of designing, planning, financing, building and operating infrastructure projects, which are usually developed through more conventional market mechanisms such as public procurement procedures (PERROT, CHATELUS, 1994). A private entity in the public-private partnership plays more of a supporting role than that of an independent subject and follows not only the function of financing capital investment but also brings private-sector skill and managerial expertise in building and operating of the infrastructure object.

(1) Private financing: concession models

The concession models represent the next step in private participation, as a private entity makes investments and has significant investment risks (SHAW, GWILLIAM, THOMPSON, 1996). Under these models, the state or municipality grants the right and the obligation to provide infrastructure services to the private sector, yet retains some control over the sector. The state receives the infrastructure object back only after a long period of time. The private operator finances, builds, maintains, and operates this infrastructure object. The state keeps the rights of sector investment planning and ownership of this infrastructure object (but not always). The operating models are a part of the concession models, whereby a private entity

operates (among other things the functions of planning, financing, building) the infrastructure object (classical BOT-Model). The term BOT (build-operate-transfer) is often used to refer to Greenfield concessions, and ROT is sometimes used to describe concessions in which investments entail primarily rehabilitation rather than construction (GUISLAIN, KERF, 1995). After the first operating period, the infrastructure object can be contracted out again or taken over through state ownership or remain under the control of the same operator (BOOT-Models).

(2) Project financing

Many projects in infrastructure are built by "special-purpose corporations". These bring together private sponsors and other equity holders. Project financing suggests that financing, building and operation during the project will be carried out only by the project participants. This permits sponsors to raise funds secured by the revenues and assets of a particular project (WORLD BANK, 1994). The advantage of this model is that the potential for risk is mixed according to the possibility and wishes of each participant. The project finance structures can be used by companies to limit their financial risk to a project based on the amount of their equity investment (STRONG, ESTASHE, 1998). The disadvantages of project financing result in relatively higher transaction costs; often contentious negotiations on various aspects as well as monitoring by all parties even after financing is closed is a problem. An example of project financing for infrastructure is the Channel tunnel between England and France, which amounted to costs of about 5.5 billion pounds Sterling.

In general, the hybrid models of infrastructure financing have seen both many successful and less successful experiences. Some examples include the following. The concessions on the toll road in Chile were mostly successful, unlike the experience in Mexico, where the reasons for difficulties included inadequate traffic and revenue forecasts as well as debt maturities adapted poorly to projects needs. The biggest part of success in Chile related to the program's design and implementation. Chilean programs used some innovations in tendering mechanisms used to award projects, such as the Least Present Value of Revenues (LPVR) auction and multi-variable tendering procedures (STRONG, ESTACHE, 2000). Many other examples of hybrid financing in the telecommunications and energy sector exist around the world. The leaders in the hybrid financing are regions of Latin America and East Asia. Not much experience can be found in the transition countries. A typical example of the project financing is the toll-road in Hungary, which reached financial completion in the 1990s, but even this project did not work out as expected.

3.1.3. Private Ownership and Private Financing of Infrastructure

The last model of infrastructure financing is private financing. The owning of infrastructure and the providing of infrastructure services by private companies are indicators of independent private financing. This option does not present any problem in case of a large degree of competition on the market. However, the private provision of infrastructure services is also possible in the case of a monopoly but with effective regulatory institutions (CARBAJO, FRIES, 1997).

One of the forms of private financing is the club model, where provision, planning, financing, building and operation lie with the private company. A group of infrastructure users or the community can set up a club for project ownership, financing, operation and maintenance.

The possible disadvantage of the private financing models is the risk of change and transaction costs. However, they decrease with the spread of privatization (i.e., approximation to the private model).

3.2. Risk Management by the Financing of Infrastructure

Due to the fact that the infrastructure projects are very complex, long-term and politically sensitive, there are many risks associated with infrastructure investment. They are comprised of many political and economic (including technical) risks. The creation of an appropriate risk-sharing structure is critical. The general principle is that each risk should be carried by the party best able to assume or mitigate it (SHAW, GWILLIAM, THOMPSON, 1996). EWERS, TEGNER (2000) argued according to the principle of stimulation conformity that risks should be allocated in such a way that there are incentives for the risk giver and taker to maximize the balance from the existence of this risk. Generally with state participation, the allocation of risk on the state is the most important factor for success in the infrastructure project, because the state thereby has influence directly - through technical and legislative rules - and indirectly – through regional policy - on the infrastructure projects.

Risk allocation is complex and difficult, and for all practical purposes it is a negotiated process. For example, STRONG, ESTACHE (2000) argue that with respect to project financing, the government is responsible for changes in the law, yet in reality this risk and its consequences are often shifted to the private sector. Or the central bank may have the greatest responsibility for inflation and interest rates, yet it is often the project developers, creditors, and equity providers bearing the interest rate risk. There are numerous other risks that do not necessarily end up in the hands of the party best able to manage it.

Additionally, infrastructure projects, especially the private-public-partnership, require a lot of different contracts. This is the reason for the existence of information asymmetries and the applicability of principles of the principal-agent-theory. The typical relation of the principal-agent-theory such as moral hazard, adverse selection and signaling should be taken into account by the contracts (RICHTER, FURUBOHT, 1996). The method of sharecropping (revenues or profit share) is used to overcome the problem of information asymmetries, whereby a participant takes over a part of the risk.

Fundamentally, this is not the most efficient model of infrastructure financing. This is related to the types of risks, transaction costs and changing risks, which can often limit the spreading of private participation in infrastructure. The former refers to the costs by the setting and security of ownership rights and rights of disposal. The latter represents the cost of reform processes in the form of decision and teaching effects. The implementation of reform cannot always be pareto optimal and brings with it some winners and losers. These groups of risks are especially strong in transition and developing countries, where ideas about retaining monopolies for a certain period of time or only gradually liberalizing certain sectors are prevalent. ARMSTRONG, VICKERS (1996) provide theoretical and VON HIRSCHAUSEN (2002) empirical support on this issue.

3.3. Infrastructure Financing and Subsidizing

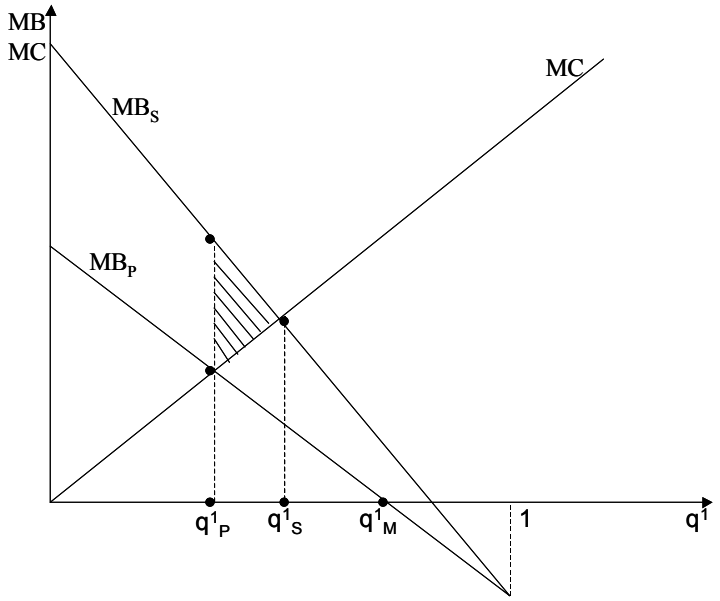
The financing of infrastructure from state or international financial organisations is often provided on favourable conditions, and these represent direct subsidies. In general, the policy of supporting and subsidizing industries can bring about negative results. The typical macroeconomic argument - increasing of employment - can reveal due to this fact that the

competition ability of the subsidizing enterprises on the liberalized market is decreasing and this is a reason for the fall of employment in this sector in the long run. Moreover, infrastructure projects may not be financially viable, often leading to allocative and sometimes productive inefficiencies and as a result to high costs of provision (WORLD BANK, 1994). These issues are contrary to the aim of economic policy, and generally there are no reasons for subsidizing infrastructure. However, a couple of valid justifications for subsidizing do exist. The corrections of market failures related to stabilisation and distribution aims through subsidizing in most cases are not justified. The corrections of the allocative market failures, such as externalities, market power and lack of information through subsidization are more often justified. In the transition economies it is usually not possible to immediately use hard budget constraints, because many enterprises could not come over the restructuring crises. The subsidizing policy should exist for a certain period of time (SCHWARZ, 2001). As a result of transformation processes, some market failures are especially strong, and subsidizing with the aim of correcting such market failures is in such cases justified.

Subsidizing for the correction of a lack of information by financing infrastructure in transition countries is justified, especially in the case of high uncertainly. This problem is discussed by the HUMMEL et al. (1993), where potential investors take a "wait and see" position and investment is delayed or not had at all. Here the role of the state in attracting investment is important. The model of investment in such cases of uncertainty in the specific conditions of transformation was presented by THIMANN and THUM (1999). In transition countries, uncertainty linked to investment is much higher compared to investment in well developed markets. Even though the overall conditions – such as political stability and credibility of reform – in a given country may be favourable, the investor is still left with the difficult choice of a region or location within the country. The investor generally needs to know the quality of inputs into this region, such as support by local authorities, administrative efficiency, quality of the labour force, the provision of infrastructure and ecological quality. Given the macro- and micro- uncertainties and the lack of information available from other investment projects, "waiting and learning" about other investors' experience remains the dominant strategy for all potential investors. This situation can result in an investment blockade. THIMANN and THUM (1999) argue that in this situation, time-limited subsidies of early investment may be justified in order to reduce the level of uncertainty about investment conditions in the recipient country. As a result, supporting infrastructure projects in the early transformation phase can have a particular impact, as this plays a particular role in directly triggering productive investments.

The theoretical model of THIMANN and THUM will not be introduced here. Only a short overview of their results will be presented in Figure 3. This figure compares the Marshallian trigger solution (q_m^1, all investors with input requirement below q_m will undertake the uncertain investment, all others will leave their capital in riskless financial assets), the private solution under laissez-faire (q_p^1), and the socially optimal solution (q_s^1). By initiating a larger amount of first period projects than in the private solution, the state can improve welfare (the shaded area).

Figure 3: The social optimum in the THIMANN/THUM model



Source: THIMANN, THUM (1999),

Generally, there are two assumptions contained in this model. Firstly, the social planner is well informed in which region the investment subsidies can trigger the largest positive results and secondly, that the limited time horizon of subsidy to private investors should be credible. Both assumptions are not necessarily fulfilled in the transition countries. The decision for the former point is determined more by political pressure and for the second could stop with low probability. For this reason, financing from international organizations might be more useful (VON HIRSCHAUSEN, 2002).

The empirical evidence of the results from public support in the early infrastructure investment period is really weak. Hungary may serve as an example here. In this country, the privatization process proceeded relatively quickly, but the share of the public infrastructure investment is not higher there than in the other countries. On the contrary, the strong support of Russian infrastructure has not seemed to yield positive results (VON HIRSCHAUSEN, 2002).

After looking at some theoretical aspects and experiences of private and public infrastructure financing, the next section presents an infrastructure financing survey of Russia and mentions the most important issues in this field.

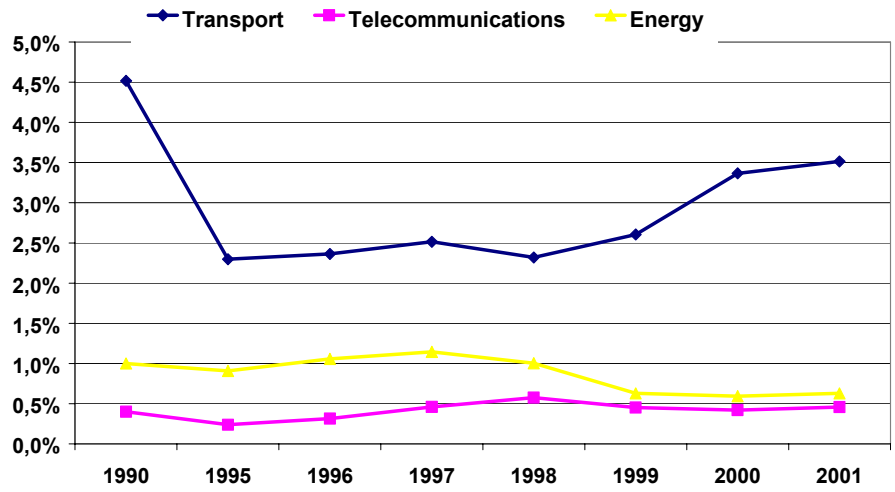
4. Public and Private Infrastructure Financing in Russia

The economic transformation, change in the supply and demand of infrastructure in particular, and constraints by the integration of Russia into the world economy are all reasons for high investments in Russian infrastructure. There are many estimates of the amount of infrastructure investment. In the energy sector, an estimated US$ 5-7 billion in annual investments is needed over the next 10-15 years as well as UES investment of between US$ 2.5 and US$ 7 billion a year up to 2010 (EBRD, 2001). In the telecommunications sector, according to the Russian Ministry of Communications this indicator accounts for US$ 33

billion over the next 10 years (about 13% of GDP). In the transport sector, the needs of financing according to the Russian Ministry of Transport make up about US$ 20 billion each year.

According to Russian statistics, investment in the infrastructure sectors shows the following trends (Figure 4). These include public and private investment in Russian infrastructure. The figure shows that the largest part of investments is the investments in the transport sector and that the shares of infrastructure investments in the telecommunications and energy sectors are comparatively limited. In addition, this figure illustrates the decreasing level of investment shares in the transport and energy sectors. Investments in the telecommunications sector suffer less from the transition, but it should be taken into account that the telecommunications sector is growing faster in this period than within the former two sectors.

Figure 4: Russian infrastructure investments in percent of GDP

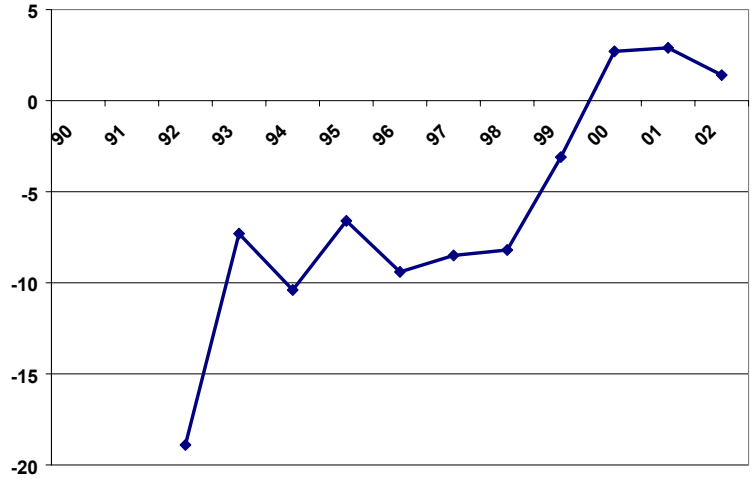


*Telecommunications investments include investments in postal services as well.

Source: Goskomstat (2003), Rossiisky Statistichesky Eshegodnik and own calculations

The financing of infrastructure in the transformation process are limited by public and private sectors. The public sector did not have enough money due to the budget deficit and the reduction of state revenue, especially in the early stages of transition. The development of the former in Russia is illustrated in Figure 5.

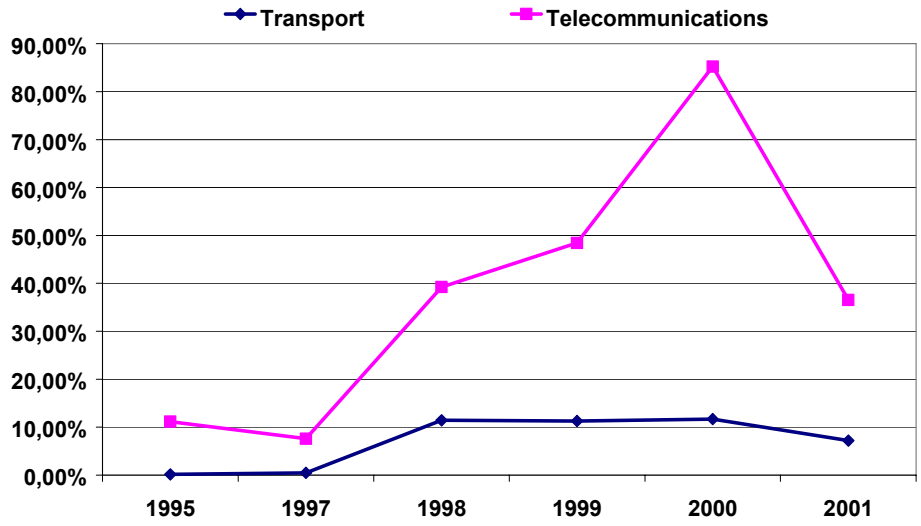
Figure 5: General government balance (in per cent GDP)



Source: EBRD (1999), Transition Report

During the transition process, the Russian state revenues fell down to 10% relative to GDP, and only at the beginning of the new century did they achieve a pre-transition level. A solution in this situation was the reduction of government capital expenditure. According to the EBRD (1996), the share of public capital expenditure fell from 5-10 percent to 2-3 percent. Data from the WORLD BANK (2001) shows the increase of this share in Russia in 2000 to 7.6%. Private financing is also limited due to the underdevelopment of capital markets – this issue was analyzed in chapter 2.1. - and high uncertainty and risk, which are significant for infrastructure financing. For the domestic investors, these are often too risky to provide financing for a long-term project by the high real interest rate. For foreign private investors, there is a bundle of macro-, micro- and political risks. Only some of the investors can accept this risk level. The participation of the foreign private investors is definitely low (in relation to GDP) and depends on the infrastructure sectors. The next figure presents the shares of FDI in the total investment amount in the telecommunications and transport sectors. As the figure illustrates, the trends in these sectors are very different. The share of FDI in the telecommunications sector is sufficiently.

Figure 6: Shares of FDI in the total sectoral investments



Source: Goskomstat (2003), Rossiisky Statistichesky Eshegodnik and own calculations

The other group of possible investors – international organizations – can provide a certain level of financial support needed to trigger investment from other parties, but it is not enough to meet the requirements of Russia alone. According to VON HIRSCHAUSEN (2002), infrastructure investments from international organizations in Russia (firstly from World Bank, EBRD and EIB) made up the largest share of about the approximate $5.5 billion spent among the countries of Eastern Europe and the CIS. However, relative to the population of the country and GDP, this is low compared to some other countries such as Poland.

The main sources of infrastructure financing in Russia are public. The Russian government has started a series of large Public Infrastructure Programs (PIP) in each infrastructure sector. The main amounts of financing in these programs come from the Russian government. The volumes of these programs are impressive but the problem is whether these programs will be carried out or whether this is only a written plan. These programs are typical for Eastern European countries and are analyzed by VON HIRSCHAUSEN (1999) with respect to the Baltic countries, where similar programs were started but carried out with only a low degree of success (e.g., in 1995 only 29 % of PIP in Lithuania was realized). A better result can be seen in Estonia, with a fulfillment ratio of the 1995-1997 PIP in this country of 95.5 %. This, however, seems to be strangely similar to the Soviet-type plan fulfillment ratio. In the opinion of VON HIRSCHAUSEN, efficient infrastructure investment policies are more easily "planned" than actually carried out and his lesson is not to waste time or resources drawing up the "plans" as long as they can be only marginally executed and are not conducive to the success of individual projects anyway. This would serve as a good motto for the Russian government when developing such programs.

The current results in Russia show that PIP in the transport sector, started by the Ministry of Transport in 2002 (financing about US$ 152 billon from 2002 to 2010), was only partially carried out in 2002 at the rate of 63% (MINTRANS RF, 2003). The main PIP in the telecommunications sector is the program "Elecronay Rossia" (financing about US$ 2.6 billion from 2002 to 2010). In 2002, the ratio of fulfillment of this program from the federal budget made up only 72% (MINSVYAZ RF, 2003). The important PIP in the Russian energy sector suggested a financing volume of about US$ 230 billion. In 2002, this program was also only partly achieved, with the ratio of completion being about 50% (MINENERGETIKI RF, 2003). The problems with fulfillment of these programs are obvious.

In the Russian infrastructure sectors, data about the shares of public and private financing are limited and mixed. To assess the level of private financing in Russia first of all we can use a database from the World Bank "Private Participation in Infrastructure in the Transition and Developing Countries". The next table summarizes all projects with private participation in infrastructure in the Russian Federation with respect to the type of private participation and the relevant quantities involved.

Table 2: Private Participation in the Infrastructure Projects in Russian Federation from 1990 to 2002

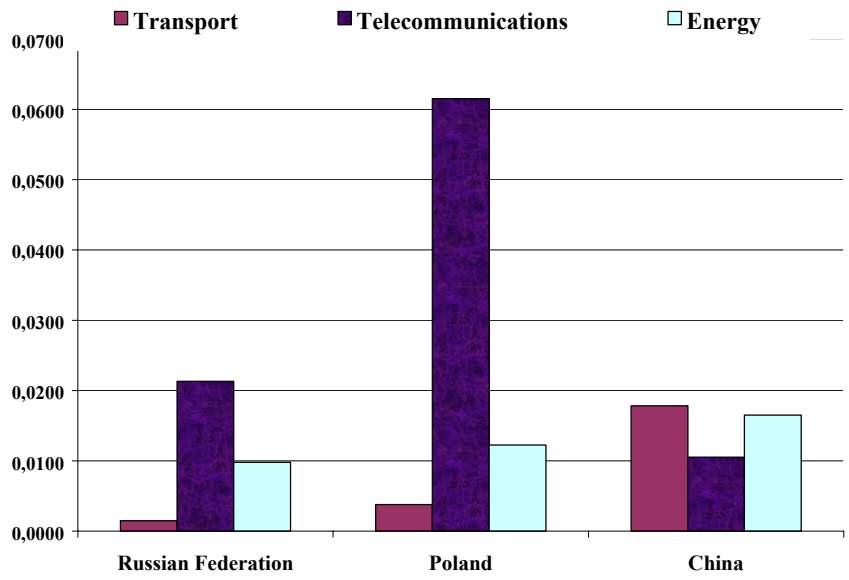
Type of PPI	Number of projects	Total Investment in Government Assets (US$ millions)	Total Investment in Facilities (US$ millions)	Total Investment (US$ millions)
Telecommunications				
Divestiture	85	1 895,00	795,7	2 690,70
Greenfield project	92	403,1	4 291,40	4 694,50
Total for Telecom	177	2 298,10	5 087,10	7 385,20
Transport				
Divestiture	11	0	502,6	502,6
Greenfield project	1	0	12,8	12,8
Management and lease contract	1	0	0	0
Total for Transport	13	0	515,4	515,4
Energy				
Divestiture	68	2 425,30	970	3 395,30
Total for Energy	68	2 425,30	970	3 395,30
Water and Sewerage				
Greenfield project	2	0	108	108
Total for Water and sewerage	2	0	108	108

Source: World Bank (2004), PPI Database

This table indicates that divestiture is often being used as a form of private participation. For example, in the Russian energy sector divestiture is the only form of private participation. The energy sectors of other transition and developing countries show greenfield projects as having the largest share, followed by divestitures (WORLD BANK, 2003). The former were not implemented in the Russian energy sector. A similar situation exists in the transport sector, where concessions or greenfield projects are used worldwide as a favorable form of private participation. The telecommunications sector reveals a different situation. Both in Russia and worldwide the largest amount of private investment is concentrated in this sector. Typically in the telecommunications sectors, divestiture and greenfield projects are equally often implemented forms of private participation (WORLD BANK, 2003). In Russia, private participation in telecommunications infrastructure is most often seen in greenfield projects, followed by divestitures.

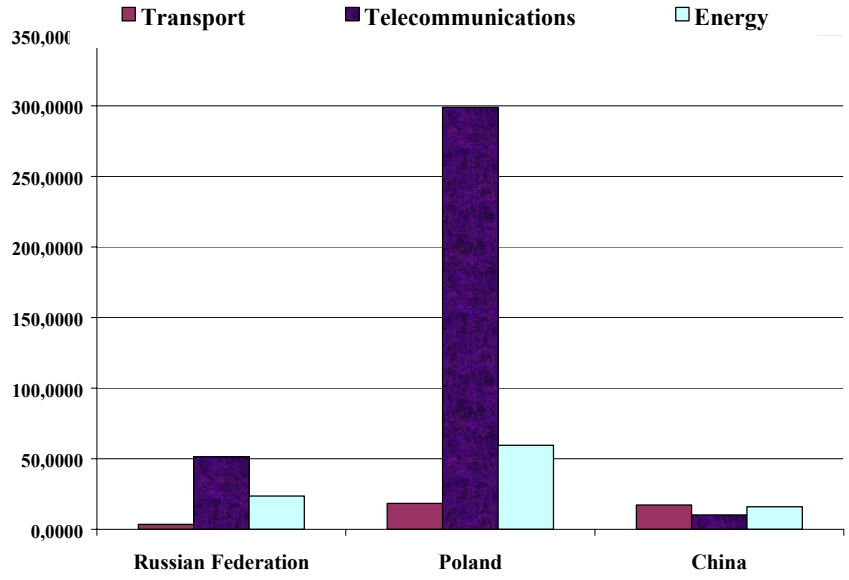
Existing data does not allow for any conclusions on the extent of private participation in Russian infrastructure due to the differences in the accounting system of the World Bank and the Russian Statistical Agency. However, the general conclusion about the extent of private participation can be provided by an analysis of next two figures, which present a comparison between the amount of private participation in infrastructure in Russia and other countries.

Figure 7: Cumulated Infrastructure Investments in the Projects with Private Participation (1990-2002) in million $ per billion $ of GDP in 2002



Source: World Bank (2003), PPI Database

Figure 8: Cumulated Infrastructure Investments in the Projects with Private Participation (1990-2002) per Capita (2002) in million $



Source: World Bank (2003), PPI Database

Russia has a low level of private participation, in particular in the transport sector but in the other sectors as well. There is room for increasing these indicators. China and Poland serve as examples here. These countries, however, also have a rather low degree of private participation in comparison to the leading countries, such as Argentina, where the degree of private participation makes up roughly US$ 0.15 million per billion of GDP in the transport sector and about US$ 0.25 million per billion of GDP in the telecommunications and energy sectors.

This analysis still confirms a strong reliance of the Russian infrastructure sectors on public financing. However, private participation and privatization have started, but there are still too few successful results. The level of private financing is not high, and efforts on the part of the Russian government, which prefers to use PIP as a solution in the problem of financing, to increase this level have not been seen.

5. Policy Implications for Russia

Russia has enjoyed high growth in the period form 2000 to 2004 (GAVRILENKOV/ODING/WELFENS, 2003) and is likely to continue experiencing considerable growth for about a decade or so, since economic restructuring and pro-competitive impact of economic opening up as well as high oil and gas prices stimulate both investment and growth. Russia needs a broad modernization of its transportation and energy as well as the telecommunications network.

Modernization of the transportation network should put emphasis on modernization of the highway and the railway system on the one hand and on ports and airports on the other. Ports and airports as well as highways and the railway system are most crucial for an expansion of both Russia's domestic and international trade.

For various reasons, corruption is a serious problem in Russia (WIEGERT, 2003). There is no reason why ports and airports could not be gradually privatised. As regards infrastructure financing in the case of ports and airports, a deterioration of the privatised company rating is rather likely, however. This problem could be overcome either through a gradual building up of an excellent performance record or by taking a strategic investor on board. To generate a favourable rating, it might suffice to launch two or three pilot projects with foreign investor participation while emphasizing efficiency gains in other projects through strict benchmarking and the introduction of incentive compatible management contracts.

As regards Russia's capital market one should in general notice that there are no long term maturities for rouble denominated bonds. The whole Russian banking system is in a rather strange state as Sberbank almost has a monopolistic position in deposits in many regions. Without more competition, efficient banking and financial innovations cannot be expected. Herein lies a major challenge for Russia. This does not rule out the possibility that major railway projects and other infrastructure projects could be financed by international bond issues. As the rouble is likely to face a long term appreciation – according to the Balassa-Samuelson effect (narrowly defined, it emphasizes the relative rise of nontradables prices in the context of economic growth, broadly defined it suggests a real appreciation in parallel with per capita income) – there are prospects that international borrowing could be made at low effective interest rates. The latter is the sum of the foreign interest rate and the appreciation rate.

Oil and gas companies have no problems in getting dollar denominated loans or selling dollar denominated bonds. By contrast, firms from the manufacturing sector are in a more difficult position as they cannot easily get access to foreign loans which require adequate ratings as well as some additional conditions; in the domestic bonds market they cannot gain access to long term loans. Under such conditions there is a risk of a long term Dutch disease, namely that Russia will increasingly become a country whose development is dominated by

oil and gas. As long as oil prices stay above USD 20, this approach might work for a while. However, one cannot rule out the possibility that one day the oil and gas price will fall to a price in line with competition, probably meaning a price of some USD 15. The leverage of the OPEC will work as global demand trends for oil and gas are stable, which is likely as long as OECD countries as well as China and India continue to grow. However, Russia is not Saudi-Arabia (with 20 million inhabitants only – and a rather unstable political and economic situation where the latter includes failure to diversify from oil), and if Russia is to have a strong international political role, it must seek to remain a diversified economy.

A high oil price will contribute to sustained growth for several years and also could help to reduce Russia's foreign debt. Both the growth and the foreign debt aspect will help in achieving a low budget deficit ratio which in turn should help reduce the risk premium on Rouble bonds. Moreover, a low debt-GDP ratio will alleviate fears of future inflationary policy.

Russia has many options to improve infrastructure policy. Besides a long term framework planning – already in existence – there is a need to plan for the privatisation of existing infrastructure in a careful way. Privatization does not rule out that users themselves have a broader stake in their respective infrastructure. The revenues of privatisation should be not less than the real price of company assets, or the new share should be offered at competitive prices. Among other conditions for increasing the share of private participation in infrastructure projects, it is very important to improve the law in contract designing (e.g., concession contract). For BOT projects, legislation should be implemented which requires the government to consider privatisation of the project within two years after transfer has been completed.

Additionally, PIP in the Russian infrastructure sectors and how it was mentioned above should be reconsidered, and one should not waste resources for future plans if this cannot be realized. These programs are not an indispensable policy instrument for increasing long-term investment, nor do they automatically promise economic growth. The adequate infrastructure policy seems to be in attracting private investment. The latter is possible through the commercialization of infrastructure, phased deregulation of former monopolies, the gradual privatisation of companies or their parts and price liberalisation.

Enhancing Russia's infrastructure in a consistent and efficient way will be a vital contribution to high long term growth in Russia.

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