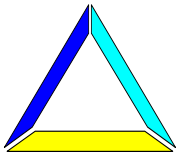
INSTITUTE FOR ECONOMIC RESEARCH AND POLICY CONSULTING IN UKRAINE
GERMAN ADVISORY GROUP ON ECONOMIC REFORM

Reytarska 8/5-A, 01034 Kyiv, Tel. (+38044) 228-6342, 228-6360, Fax 228-6336
E-mail: institute@ier.kiev.ua, http://www.ier.kiev.ua



Q12

Is Ukraine prepared to implement highway concessions?

Executive summary

Concessions are a widespread form of private capital attraction, which is still to be introduced in Ukraine. Experience of transport infrastructure concessions in Ukraine, including roads, is very limited. For now there is only one concession project in the roads sector – the Krakovets-Lviv road. Currently six additional highway concessions are prepared. Two projects - the Kyiv-Vinnytsia road and the Russian border to Kyiv-Kharkiv-Dovzhansky road - have being opened for bids since the end of 2000. However, until now they did not succeed. This result indicates that private capital will be much more difficult to attract than it was expected. Forecasted low willingness to pay for roads by Ukrainians and, therefore, low profitability of the projects will require a more significant involvement of the state than it was initially planned.

The paper describes the general principles of designing road concessions and then analyses the concrete institutional framework for road concessions in Ukraine. In order to identify the current problems with road concessions in Ukraine and to develop concrete recommendations for improving the situation in part IV of the paper the case of the Kyiv-Vinnytsia Road is analysed precisely by simulating different scenarios (models of estimating financial viability).

The basic scenario is based on the government's estimations of the costs of construction, the cost of financing (a 17% bank credit rate) and a growth rate of vehicles flow of 10%. In addition, the following assumptions are made: a duration of the concession of 30 years, a 1 % depreciation of the Ukrainian currency each year and 80% of the profit to be directed for repayment of debt to the creditor (20 % is of profit is directed to the operator[1] until the whole debt is repaid).

The main goal of using the instrument of a private road concession is to attract additional financing from private sources and to spend less budget money on road construction. In order to attract private money the concession has to be economically viable. The basic scenario made clear that under the condition that the government's share of equity financing would be 20% and the operator's share of equity financing would be 30% the concession would be viable only at a growth rate of vehicle flow of 10%, which seems to be very unrealistic. In order to make viability forecasts for more realistic assumptions two other scenarios were carried out. For all the different scenarios

[1] Concessions are successful when the income stream allows to receive revenues from the first day.

a 17% bank credit rate was taken as a basic assumption as well an operator's IRR of not less then 13% (this was drawn from the concession design of the government). Scenarios were then developed for different growth rates of vehicle flows under different shares of government participation.

Simulation of a scenario under a realistic assumption of a 4% vehicles flow growth rate showed that financial viability of the project could be achieved only at a level of more then 75% of joint operators and governments financing.

The overall **conclusions** drawn from the simulations and from the analysis of the current problems in achieving success with road concessions are the following:

1. **The Kyiv-Vinnytsia concession simulations demonstrated that the government's initial purpose of attracting external funding at low cost for the Ukrainian budget cannot be achieved**. The road is not financially viable under a realistic assumption of a 4 % vehicles flow growth and could be built only with substantial government participation. Under quite an optimistic assumption of a vehicles flow growth of 10 % the project can become financially viable with the operator and government financing both 50 % of the project. At the same time, positive externality generated by the Kyiv-Vinnytsia motorway is expected to be quite low, since it crosses remote areas and has two alternative roads. Only if several roads along the Kosyny-Kyiv rout passing Vinnytsia would be bundled into a single concession travelling time could be substantially reduced and the attractiveness of concessions could be increased. But this would also not be feasible since the total length of the bundled roads then would be 735 kilometres, which would be an expensive and therefore quite risky project.

2. Thus, the **government needs to change priorities** of roads network development **from concessions for <u>new</u> roads construction to concessions for <u>existing roads rehabilitation</u>.** Concessions for construction of new roads in Ukraine can hardly be financially viable. First, the demand for such roads still has not arisen. Second, the macroeconomic situation in Ukraine is not stable, which does not allow producing long-term forecasts of income. This is an additional substantial source of risks. At the same tome, roads rehabilitation concessions are only for 5 to 15 years and are much less expensive. Moreover, experience of such concessions would allow larger projects to be implemented.

3. The **government should take a more active position in designing concessions**. First, the government needs better financial evaluations of concession projects. Project preparation and demand forecasting is a very important and usually quite costly part of a concession preparation. Before announcing the concession the government needs to have detailed vehicles' flow forecasts, also the government's participation in the investment should be determined in advance.

4. It would be advisable to change the principles of government's partnership in concession projects. Namely the **provision of tax privileges for the potential investors needs to be replaced by possibilities of government investment**. The problem of tax privileges is that they become a significant instrument only at later stages of a project implementation, while most financial support is needed at earlier stages. Government financing can also reduce risks and the cost of project financing.

5. With a legislative requirement to have alternative roads **tolls are unlikely to work under current conditions in Ukraine**, because of the demand uncertainty generated by alternative roads. An optimal solution would be to abolish alternative road legislative requirement. In the case of the planned Kyiv-Vinnytsia road this would not help, but it could help in the case of concessions for road rehabilitation. However, the rehabilitation of the Lviv-Kyiv road would further reduce attractiveness of the construction of the Vinnytsia-Kyiv road. If for political reasons it is impossible to abolish alternative roads requirement, then shadow tolls can be proposed as a second best solution.

I. Introduction

Private participation in infrastructure projects is in general considered necessary in order to obtain fiscal relief and higher efficiency in construction. However, in transition and developing countries the scope of private participation in transport infrastructure has been limited thus far by slower than expected economic development and an unstable institutional context. Exclusively private project financing, initially considered as a way to attract capital quickly, has failed as an instrument of infrastructure development. New ways of public-private partnership are necessary to be developed to overcome the current investment blockade in infrastructure.

Concessions are a widespread form of private capital attraction, which is still to be introduced in Ukraine. Experience of transport infrastructure concessions in Ukraine, including roads, is very limited. For now there is only one concession project in the roads sector – the Krakovets-Lviv road. The respective agreement was concluded in 1999, while legislation on roads concessions in Ukraine was developed only after the project had started - in 1999 and 2000. Now the road is in construction phase and is widely supported by the government, since it is regarded as a pilot project. In fact the level of government participation in the project has increased to over 40%.

Ukraine plans to substantially upgrade and develop the system of international transportation corridors with private financing. Currently six additional highway concessions are prepared. Two projects – the Kyiv-Vinnytsia road and the Russian border to Kyiv-Kharkiv-Dovzhansky road - have being opened for bids since the end of 2000. However, until now they did not succeed. This result indicates that private capital will be much more difficult to attract than it was expected. Forecasted low willingness to pay for roads by Ukrainians and, therefore, low profitability of the projects will require a more significant involvement of the state than it was initially planned.

II. General Principles of Road Concessions Design

Financial viability of a concession on the supply side depends on the cost of construction, the cost of financing and the cost of operation of a concession. Besides, demand is an important factor, importance of which is traditionally underestimated when a concession is designed. The ability of a road to pay for itself depends on daily traffic volumes and the willingness to pay tolls.

The cost of project's financing is not solely determined by its underlying construction costs and demand, but also on supply of financing and on project risks. Recent years concessions financing became much more costly and of shorter term, thereby adding refinancing risk. Project sponsors and creditors worldwide experienced difficulties due to macroeconomic factors including financial crises. The result is that required returns for toll road projects appear to have risen from 15 % in the early 1990s to 20 % or more. Cost of financing also heavily depends on country or political risks, which are the country and concession environment or the nature of public-private risk management.

Concession contracts are different in many ways, in particular in toll charges, concession period, concession award criteria and risk sharing between the concession authority and a concession company. It should be stressed that besides technical and financial requirements to concession contracts renegotiation procedures should be provisioned in advance, since the problem of renegotiation often arises and credible, rule driven

decisions are always easier to implement. Below we will shortly summarise road concession experience relevant to Ukraine.

- The duration of the concession may either be set in advance by the government or be part of the selection criteria in selecting the concessionaire. Tipical Build-Operate-Transfer concessions are 20 to 30 years in length and maintenance concessions are 5 to 15 years in length.
- Winning bid criterion should as simple as possible to avoid subjectivity and corruption in decision-making. Major criteria are minimum toll in the duration is specified, or minimum duration if the toll is fixed. However both criteria have significant incentive problems[2]. The best theoretically developed alternative is the least present value of revenue throughout the life of concession. The duration of the concession ends when the concessionaire receives planned return.
- Concessions are successful, first, when tariffs are revenue-maximizing and toll escalation formulas are invoked, second, when income stream allows to draw revenues from day one. In this case risk distribution will be easier to achieve.
- The general principle of risks distribution is that project risks and responsibilities are assigned to the party that can bare them best. For example, the government is more effective in supplying the right of way and environmental clearance.
- Privately supported toll road projects work best when experienced, well-capitalized firms have some discretion over design and confidence in toll policy in order to accept the construction risk and some degree of traffic risk.
- Renegotiation procedure should be provisioned. Financial equilibrium clause enables contractors to renegotiate contract terms if major design changes are required, as it was, for example, the case in Brazil.
- Roads bundling into a single concession may increase the attractiveness of a concession, since they guarantee better vehicles flow.

It is obvious that a project's physical characteristics are the primary determinants of its cost. The longer the road is and the more complex the landscape is, the more expensive is the project. In Ukraine roads listed for concessions are roads along planned international transportation corridors. They are directed through remote areas and have characteristics of development roads, which link remote areas with urban centres or major transport routs. Intercity arterial roads or development roads are usually expensive to built, since they are long, of high capacity and aimed to serve heavy trucks[3]. Development concession roads, like the planned Vinnitsa-Kyiv road in Ukraine, create positive externalities for those areas, and can be justified if the externality is large enough.

To achieve the externality effect the government should create a feeder road network. Bundling such necessary roads, as connecting roads, source roads and interchanges into a single concession may increase the attractiveness of a highway concession. The construction of such a network is an additional cost for a local community, but it generates benefits for its development. Otherwise, neither local inhabitants can use the concession road, nor can the road attract more users. In any case, traffic volumes are not financially viable in remote areas in the early years to support concession roads.

[2] Bidding on the basis of the minimum toll may result in poor price signals in congested corridors, and traffic congestions are a result. Bidding on the basis of the shortest concession duration causes setting of higher tolls to finance the project, which results in traffic diversion and users complains. Introduction of alternative roads makes the situation even worse, since concession then turn not to be financially viable.

[3] For these particular roads are especially important tolling decisions between different types of user groups.

Therefore, such roads are usually regarded as risky investments that require substantial public participation.

Demand for Roads and Alternative Roads

In the world the traffic volume is constantly growing at nearly 3 % per year due to increasing incomes and technological advances in the industry, and environmental externalities not being included in travelling costs which make road travelling cheaper[4]. More and more freight transportation switches to roads, which on one the one hand increases road demand and on the other hand makes roads financially viable. In 1999 in Europe 17009 km (33% out of total 51242 km) of motorways were concessioned.

Standard assumptions behind roads tolling are users' willingness to pay high tolls to compensate for reductions in travel time and vehicle operating costs[5]. Overall, average daily traffic exceeding 10000 to 15000 vehicles per day seems to be required to cover construction, operation and financing costs and to attract private capital. But quite often the traffic volume is overestimated, especially for new roads, since it is difficult to estimate demand for what does not exist. Moreover, any government should make sure that investments are driven by demand rather than short-term concerns of construction profits[6] or some political motives[7].

Traffic volumes are sensitive to income and economic growth. At the same time motorization and vehicle-kilometres travelled tend to increase faster than income levels. This high income-elasticity, especially for leisure trips, makes toll roads especially sensitive to macroeconomic conditions.

Existence of alternative roads further increases income elasticity of demand elasticity for roads and, therefore, the probability of wrong road demand estimation[8]. Traffic levels in most developing countries cannot sustain duplication from free alternative routes. Toll road traffic in such cases has generally fallen well below projections. For Mexican toll road with a parallel route, launched in 1985, forecasts suggested that 20 to 45 % of the traffic would come from trucks, but it turned out to have been only 5 %.

The requirement of an existing alternative road as a precondition for roads concession in most cases, including Ukraine, arises as an instrument of social protection of road users. However, at the same time it increases uncertainty with estimation of the demand for roads and, consequently, increases the cost of road financing and decreases the concession attractiveness. Therefore, to guarantee social protection it is usually advised to introduce tariffs differentiation for usage of toll roads instead of requiring the existence of free alternative roads.

---

[4] Cheap roads transportation is a consequence of not incorporation of negative externalities, as deteriorating environment conditions and traffic congestions. These are additional costs to the society, which need to internalised by automobile transportation providers.

[5] Experience of Latin America and Eastern Europe shows that factors determining willingness to pay not as realistic as many would like them to be. Additional factors may be: relative importance of toll in the overall budget of the user and willingness to pay with the distance covered.

6 Estache, Antonio and de Rus, Gines (eds.) (2000): Privatization and regulation of transport infrastructure: guidelines for policymakers and regulator. The World Bank Institute for Development Studies. p. 250.

[7] . In case of Ukraine there are strong political pressure for development of trans European motorways.

8 The Dulles Greenway, outside Washington, D.C., only attracted a third of its expected daily volume. Even after a toll reduction of 40 %, the Greenway still was only able to achieve two-thirds of its originally forecast volume. The Dulles Greenway experience suggests a toll price elasticity of –2.3, a very high sensitivity. This result is due in part to the upgrading of a parallel alternative route. Other estimates range from –1.4 to –2.5, quite income inelastic in all cases.

To alleviate the alternative road problem the introduction of shadow tolls can be advised. The advantages of shadow tolls are: they do not shift traffic onto other roads and no expenses are associated with toll collection. However, the major disadvantage of shadow tolls is that they do not generate new funding sources and eventually, the cost of a new road provision is covered by the government. At the same time, shadow tolls make it easier for a government to finance road construction because of the regular distribution of shadow tolls. Otherwise the government would need to provide huge investment at one time.

III. Legislative Basis of Road Concessions in Ukraine

Ukrainian legislation provides only a general framework of concessions design, including road concessions. The legislation mostly regulates the procedures of tendering, but leaves details of concession contracts design to the government body, which announces concessions.

Meanwhile there is some serious deficit of regulation. First of all it is not explicitly regulated what are the criteria for the winning bids selection. It can be derived only that the winning bids should provide the highest payment to the government. Second, the law provisions fixing the maximum of toll payments, but does not regulate fixing the period of concession, except that it can be from 10 to 50 years. Third, government cooperation in the project is considered to be provided through privileged taxation rates for the concessionaire, while participation through government direct investments is not regulated. Fourth, the legislation contains a free alternative roads requirement, which substantially increases demand estimation uncertainty.

Since the concession's length is not fixed in concession announcements in Ukraine a concessionaire would tend to minimise the concession's length thereby increasing the risk of a project default. Besides, different lengths of projects proposed by different bidders during the tender make them hard to compare. To alleviate these problems it can be advised to use least present value of revenue (LPVR) auction, which is an innovative approach already used in Chile.

As we have seen above, bids selection in Ukraine is based on the criterion of the highest payment to the government and at the same time tax privileges are provisioned. These two regulations work in opposite directions. It can eventually lead to mutual settlements, which would make the public-private partnership relationship non-transparent. Both regulations seem to be sub-optimal.

The criterion of highest payment to the government can work only in the case if the government's participation in investment is not needed. This is rarely the case. International experience shows that most often the criterion of winning the bids is the lowest toll or the lowest government investment under a fixed concession period, or least present value of revenues for changing concession periods.

From the point of view of project participants government investment is superior to tax privileges, although theoretically there can be financing schemes when the present value of government investment is equivalent to the present value of privileged taxes. Tax privileges become significant only at later stages of a project implementation, while most support is needed at earlier stages. Experience of concession projects in other countries suggests quite broad public-private partnership opportunities, but never

through tax privileges. Further concession's simulations are produced with different assumptions of government investment rather than tax privileges.

Analysis of the legislation reveals that the purpose of the government using road concessions is to attract private financing in order to create a system of international transportation corridors at no cost for the government. The roads seem to have very small positive externalities for the local communities. Therefore the government regards them as private goods. For the government being explicit about the final goals of concessioning is important in such case, since the roads should not be financed from the state budget if this does not generate profits for the society[9]. The forms of public-private cooperation should be determined by the fact that then the roads would have the character of a private good. As a consequence, road concessions should be purely profit oriented or they should not be carried out at all.

IV. Financial Viability of Road Concessions – The Case of the Kyiv-Vinnytsia Road

This chapter will study if one of the projects proposed for concession – Kyiv-Vinnytsia Highway – is based on realistic assumptions and if it is financially viable. The concession project announced by the government has the following characteristics:

- The length of the road to be built is 146 km.
- Total investment for six years is EURO 418 million[10], operation cost is EURO 2.4 million a year with EURO 8 million maintenance costs every four years[11]
- The number of vehicles per day in 2015 is planned to reach 25000, while in 2002 it is estimated to be 6000. This assumes a vehicles' flow growth rate of 10 % per year.
- The toll is fixed by the government and is UAH 0.32 per kilometre for cars and UAH 0.74 per kilometre for heavy trucks[12].
- Bank credit rate is assumed to be 17 % a year.
- The duration of the concession is not fixed.

Assumptions of the Simulation Model

Costs of construction and operation, the investment amount are obtained from the concession announcement of the government.

Vehicles' flow growth rate: We assume a 10 % growth will continue till 2017, then it will slowly decrease and stabilize in 2032. To cover the costs of the project it is estimated that the flow should be over 16,000 vehicles per day, which under assumption

[9] Government assistance for a concession is legitimate as the economic utility of a project is generally greater than its return on equity (Bousquet, F., Fayard., A. Road Infrastructure Concession Practice in Europe, 2001).
[10] For comparison, the average infrastructure project value in developing and transition countries for 1990 until 1997 was USD 187 million, for transition countries it was USD543 million and for developed countries it was above USD 750 million.
[11] It is less than 10% of toll resources, for comparison in Italy and France 25-27% of toll resources are allocated to to maintenance and operation.
[12] It is 0.06 Euro/km for cars, for comparison toll charges for cars in Italy are 0.05 Euro/km, in Greece in Italy are 0.05 Euro/km, average in France and Spain are 0.06 Euro/km. Heavy trucks tolls are 2-3 times higher than those for cars.

can be achieved by 2013. However, such a growth rate seems to be too optimistic, because of strong effect of alternative roads[13]. A more realistic assumption would be a growth rate of 4 % constantly. Then a vehicle flow about 16,000 will be achieved only in 2027.

Tolls: For the purposes of simulation an average toll of UAH 0.46 per kilometre was used. For cars and heavy trucks the cost of travelling along a 146 km highway is UAH 47 and UAH 108 respectively.

Concession duration: In the simulation model it is assumed that the concession project starts in 2002, the construction period ends in 2007 and the concession ends in 2032. It is further assumed that the road depreciates within 30 years after the start of its operation (till 3037). Also an alternative 40 years concession (2002-20042) was simulated.

Bank credit rate: The bank credit rate, which is indicated in the government's announcement is optimistic, but it is used for the simulation model for purposes of comparability. Although in Ukraine current bank credit rates in foreign currency are 17%, returns for toll road projects in the world are 20% or more, which is also realistic for Ukraine as a country of high political risks.

Currency depreciation rate: The rate of currency depreciation and growth rate of traffic flow are the most difficult to forecast, because they heavily depend on macroeconomic developments in Ukraine. We assume the difference between the depreciation rate and the Hryvnia inflation rate is 1 % per year, which should be quite realistic in the long run. Behind our assumption also is that infrastructure capital is borrowed at international markets and is converted into Ukrainian Hryvnias, later the debt repayments are converted back into foreign currency.

Additional parameters of the simulation model are the **shares of the operator's and government's investment in total investment**. Operator's equity financing normally is more expensive then debt financing due to additional equity risk premium. However, operator's participation positively redistributes revenues flow, since the investment is repaid from profit at later stages of a project implementation, after the debt was repaid. In the model we make different assumptions about the shares of operator's and government's investment in total investment.

Basic model: The basic scenario is based on the government's estimations of the costs of construction, the cost of financing (a 17% bank credit rate) and a growth rate of vehicles flow of 10%. In addition, the following assumptions are made: a duration of the concession of 30 years, a 1 % depreciation of the Ukrainian currency each year and 80% of the profit to be directed for repayment of debt to the creditor (20 % is of profit is directed to the operator[14] until the whole debt is repaid). The simulation model also accounts for such factors as depreciation, value added tax, profit tax, land tax, and other local taxes. We control for benefit of three project participants – project's operator, crediting bank and the Ukrainian government. The indicator of a participant's benefit is the internal rate of return. We also control for the total debt to the bank. If there is debt, than the project is considered not to be financially viable. Therefore, in our

[13] Existence of alternative roads makes vehicle flow estimation very complicated and generates high degree of uncertainty.
[14] Concessions are successful when income stream allows to draw revenues from day one.

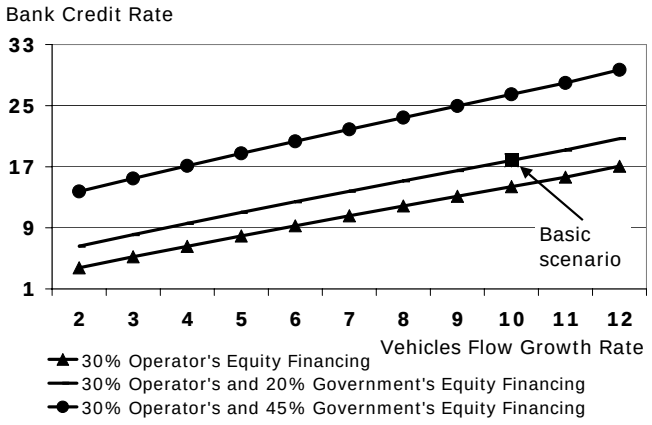
basic simulation scenario we also have to assume a 20 % share of the government in financing to make the project financially viable[15].

Results of the Simulations

A 17 % bank credit rate for our basic model can be achieved only when the joint participation of the operator and the government would be of 50% (Graph 1). Let's assume that the government's participation rate is 20% and the operator's is 30%, then the operator's IRR is 13.09%, the bank's IRR is 27.33% and the government's IRR is 10.08%. A 20% investment participation of the government is about EURO 15 million annually. When we produce similar calculations for a 40-year concession instead of a 30-year concession a 17 % bank credit rate can be paid at a 45% joint share of the operator and the government in project financing (operator's IRR 12.77%, bank's IRR 27.64%, government's IRR 10.7%).

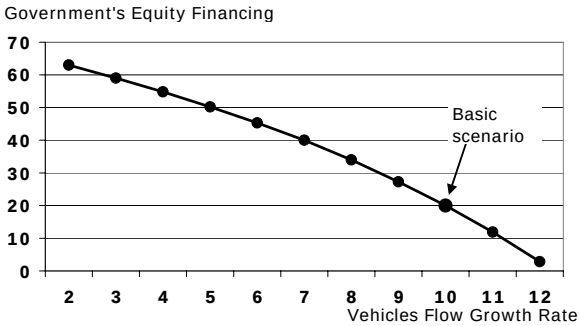
Our major concern is the correct demand forecasting. If the demand is not forecasted correctly but the project has already started, then at later stages renegotiations are inevitable. However, above we concluded that for the government the participation rate should be minimised and cannot be increased later. Therefore, in Graph 1 we present which minimum bank credit rates can be achieved in 30-years concession for different vehicles' flow forecasts under different government participation scenarios. A 17% bank credit rate we consider to be a floor. The basic simulation scenario is marked in Graph 1.

Graph1. Vehicles Flow Ensuring Concession's Debt Covering at Different Equity Financing Levels



If we turn to a more realistic assumption of a 4 % vehicles' flow for the initial period the project's financial viability can be achieved only an a level of more than 75 % of joint operator's and government's financing (See Graph 1). (EURO 40 million a year from the government during the construction period if the government finances 45% of the investment), when the operator's IRR is 4.38%, the bank's IRR is 26.98%, and the government IRR is 1.11% The result means that the project cannot be financially viable until substantial equity financing is provided. When we produce similar calculations for a 40-

Graph 2. Government's Equity Financing Share to Guarantee 13% IRR for the Operator



[15] We believe that a bank credit rate at 17% is the absolute minimum. Under such a condition the government's basic model becomes financially viable only at 13.11% bank credit rate (operator's IRR 13.56%, bank's IRR 21.40%, government's IRR 15.81%).

year concession instead of a 30-year concession the result is almost the same.

Now let us approach the situation from the point of view of a private operator. The bank credit rate is constant at 17%. In the basic simulation model the operators' IRR is 13%[16]. The government can maintain constant operator's IRR at different vehicles flow levels only with higher investment participation (Graph 2). The basic simulation scenario is marked on Graph 2. Under an optimistic vehicles flow growth rate of 10% the government should supply 20% % of the concession financing. To support the same level of IRR for the operator at a realistic 4% vehicles flow growth rate the government has to supply 55% of investments to the concession project.

V. Conclusions and Policy Recommendations

The Kyiv-Vinnytsia concession simulations demonstrated that the government's initial purpose of attracting external funding at low cost for the Ukrainian budget cannot be achieved. The road is not financially viable under a realistic assumption of a 4 % vehicles flow growth and could be built only with substantial government participation. Under quite an optimistic assumption of a vehicles flow growth of 10 % the project can become financially viable with the operator and government financing both 50 % of the project. For the government it can mean 20 to 45 % participation or providing EURO 15 to 40 million annually during a six-years construction stage. At the same time, positive externality generated by the Kyiv-Vinnytsia motorway is expected to be quite low, since it crosses remote areas and has two alternative roads. The Vinnytsia-Kyiv road is just 50 kilometres shorter if starting from Vinnytsia. Most of the vehicles on their way from the Western border to Kyiv actually use the existing Lviv-Kyiv motorway passing Zhytomyr. This way can be even shorter than a motorway passing Vinnytsia.

Only if several roads along the Kosyny-Kyiv rout passing Vinnytsia would be bundled into a single concession travelling time could be substantially reduced and the attractiveness of concessions could be increased. But this would also not be feasible since the total length of the bundled roads then would be 735 kilometers, which would be an expensive and therefore quite risky project.

Thus, the **government needs to change priorities of roads network development from concessions for new roads construction to concessions for existing roads rehabilitation.** Concessions for construction of new roads in Ukraine can hardly be financially viable. First, the demand for such roads still has not arisen. Second, the macroeconomic situation in Ukraine is not stable, which does not allow producing long-term forecasts of income. This is an additional substantial source of risks. At the same tome, roads rehabilitation concessions are only for 5 to 15 years and are much less expensive. Moreover, experience of such concessions would allow larger projects to be implemented.

The **government should take a more active position in designing concessions**. First, the government needs better financial evaluations of concession projects. Project preparation and demand forecasting is a very important and usually quite costly part of a concession preparation. Before announcing the concession the government needs to have detailed vehicles' flow forecasts, also the government's participation in the investment should be determined in advance.

[16] This figure is too low for the operator. As we mentioned above an operator would like to have higher returns then a crediting bank. But this figure is obtained from the government's basic model simulation.

It would be advisable to change the principles of government's partnership in concession projects. Namely the **provision of tax privileges for the potential investors needs to be replaced by possibilities of government investment**. Government investment is superior to tax privileges, although in theory there can be financing schemes when the present value of government investment is equivalent to the present value of privileged taxes. The problem of tax privileges is that they become a significant instrument only at later stages of a project implementation, while most financial support is needed at earlier stages. Besides, government financing can reduce risks and the cost of project's financing.

With a legislative requirement to have alternative roads **tolls are unlikely to work under current conditions in Ukraine**, because of the demand uncertainty generated by alternative roads. An optimal solution would be to abolish alternative road legislative requirement. But in the case of the planned Kyiv-Vinnytsia road it would not help because alternative roads do already exist. However, it would help in the case of concessions for road rehabilitation, for example the Lviv-Kyiv road passing Zhytomyr. And it should be noticed, that rehabilitation of the Lviv-Kyiv road would further reduce attractiveness of the construction of the Vinnytsia-Kyiv road. If for political reasons it is impossible to abolish alternative roads requirement, then shadow tolls can be proposed as a second best solution. However, this as well does not meet the initial purpose of road concessions in Ukraine, which is generation of new funds.

Kyiv, December 2001

P.S., C. v. H., Lector P.O.