

## **National motorway construction program (NMCP) in Slovenia (financing, impact on national economy and realisation)**

assist.prof. dr. Zan Oplotnik, prof. dr. France Krizanic<sup>1</sup>

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**Summary and final conclusions:** Slovenia has been building motorways since 1970, but the construction was really speed up in 1994, when parliament enacted the first NMCP, in order to provide an adequate road system, ensure integration with the broader EU area and boost economic growth. Since then, around 300 km of modern motorways have been given over to traffic which represent around 50% of total planned in the new, revised NMCP. New NMCP was adopted in 2004. According to it, motorway construction should be completed till 2013, of which the essential sections, called also 'Slovenian Motorway Cross' (connecting East with West and North with South part of the country and located at the crossroad of fifth and tenth pan-European traffic corridor) are anticipated to be completed till 2008. The estimated investment value of the overall program is € 5,6 bill, of which € 2,3 bill. were already spent. Main sources of financing, according to first NMCP, were budget funds, tolls and foreign and domestic credits. Since tolls are currently almost in total spent for repaying debt, administration and maintenance of the existing motorway network, in the future, long-term bonds will be issued to finance the rest of the program. Although there were some attempts to disburden government budget through concession granting, analyses showed that appropriate rate of return could not be assured to concessionaire, while non-profit concessions are to costly for the government. The principal company in charge of financial engineering, preparing, organizing and managing construction and maintenance of the motorway network is DARS (Motorway Company in the Republic of Slovenia), established by law in 1993. DARS is a joint-stock company, currently still 100% owned by the state. Due to relatively vast resources invested in motorway construction, NMCP is also of special importance for Slovenian economy from macroeconomic point of view. It is proved, that in the past, the program of motorway construction had a significant impact on the most macroeconomic aggregates in Slovenia (employment, economic growth, current balance, etc). This influenced the debate that motorway construction should be in function of macroeconomic development also in the future and that terms of its realization should be coordinated with the achievement of optimal investment impacts on national economy, avoiding high annual oscillations and rendering the realization of the program possible, regardless of the state of national finances. Recently adopted revised NMCP comprise all mentioned components, anticipating annual investment at the level of 1,6% of GDP during the next five years, with sustainable decline in annual resources invest in the program afterwards.

**Keywords:** motorway construction, investments, Slovenia, macroeconomic impacts, economic infrastructure, traffic and transport, project financing

**JEL:** E22, H50, H43, H54, R42

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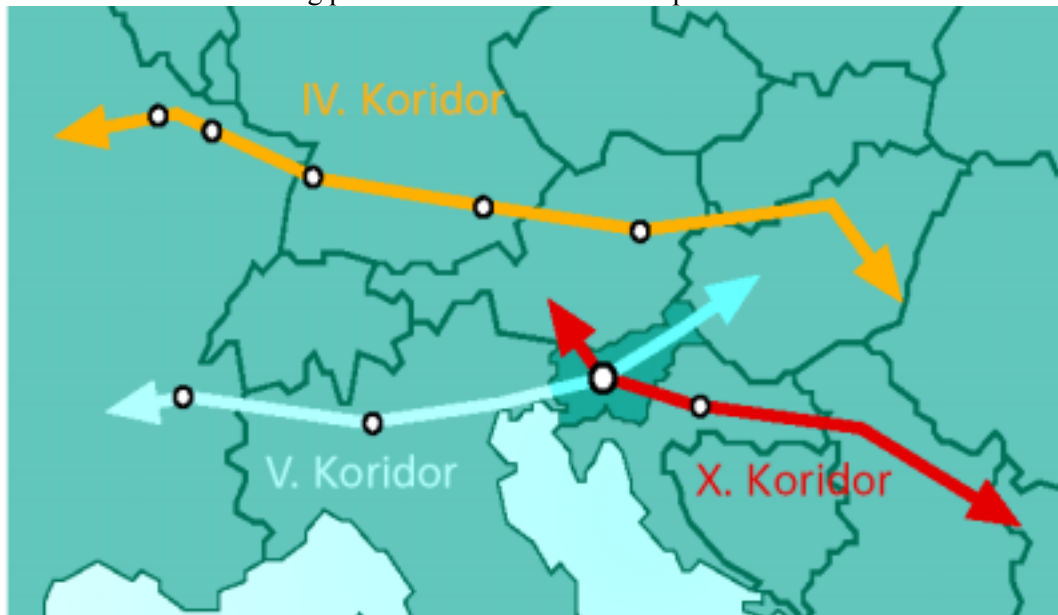
<sup>1</sup> Žan Oplotnik, Ph.D., employed as a researcher at the EIPF (Economic institute of the Law School) and as an assistant professor at the University of Maribor, Faculty of Economics and Business. France Krizanič, Ph.D. is the director of EIPF (Economic institute of the Law School) and habilitating professor at the University of Ljubljana, Slovenia.

## I. Introduction in to Slovenian NMCP (National Motorway Construction Program)

Appropriate traffic and transport infrastructure is of a vital importance for national economy. It represents veins of economic and social organism and enables it to integrate into wider socio-economic area. Due to that reasons it can be consider as one of the major factor of regional development. With a good transport infrastructure, socio-economic development can begin, although sometimes a 'chicken and egg' dilemma can be rise. For Slovenia as a small, but geographically very heterogeneous country, development of an appropriate infrastructure is even more important, since in the absence of good routes and connections some regions and areas become almost totally isolated. Appropriate development of traffic and transport infrastructure is also in correlation with symmetrical regional economic development and decentralization. Especially in Slovenia in the last years many critics has been pointed at too centralized development and concentration of all economic power and wealth at Ljubljana region.

Slovenia is positioned in the center of crossing V. and X. Pan-European traffic and transport corridors (V.-Lisbon-Venice-Kiev and X.-Hamburg-Salzburg-Solun) what makes it an important area as a logistic and a crossing center for the Central and Eastern Europe, especially after its integration in to EU in the May 2004 and restoration of South Schengen border.

Figure 1: Slovenia as a crossing point for V. and X. Pan-European corridors



Source: Ministry of Transport of the Republic of Slovenia

**Road infrastructure in Slovenia.** Public roads in Slovenia are classified into state roads owned by the central government, and local roads owned by municipalities. The total length of public road network is 20.236 km of which 16.236 km is asphalt covered. Municipalities own 68,7% of them and 31,3% pertain to states roads, including the most important like motorways (412 km) and fast roads (94 km). Total length of State roads is 6.349 km. The Directorate of the Republic of Slovenia for Roads, DRSC, is in-charge of directing, maintaining and developing the national network (main and local roads), The Company for Motorways, DARS, is responsible for the management, maintenance and development of motorways and some expressways (Oplotnik, Krizanic, 2004).

**Motorways and fast roads:** Slovenia has been building motorways since 1970. The first motorway section Vrhnika - Postojna, was built and given over to traffic on 29 December 1972. In 24 years (from 1970 to 1 January 1994), there were altogether 198 km of four and two lane motorways built. In order to provide an adequate and efficient road system, improve road safety, ensure integration with the broader European area and to boost economic growth (strategic goals), maximize economic effects and minimize the pollution of the environment, ensure greater economic, social and tourist benefits, and at the same time maintain the existing motorway infrastructure (structural goals), the National Assembly, in 1994, enacted the National Motorway Construction Program (NMCP) and we started to implement it in order to connect East with West and North with South part of the Country (complete so called '*Slovenian Motorway Cross*'). During the first eight years, National Assembly enacted some amendments to the NMCP (Official Gazette of the RS 11/98) and under mentioned programs, from 1994 to 2003, a total of 259 km of motorways and other roads were built and given over to traffic. Once all the planned motorways are completed, Slovenia will have app. 600 kilometers of motorways and expressways (or app. 1 km per 3300 inhabitants).

Table 1: Finalized and planned motorway sections according to the NMCP till 2012

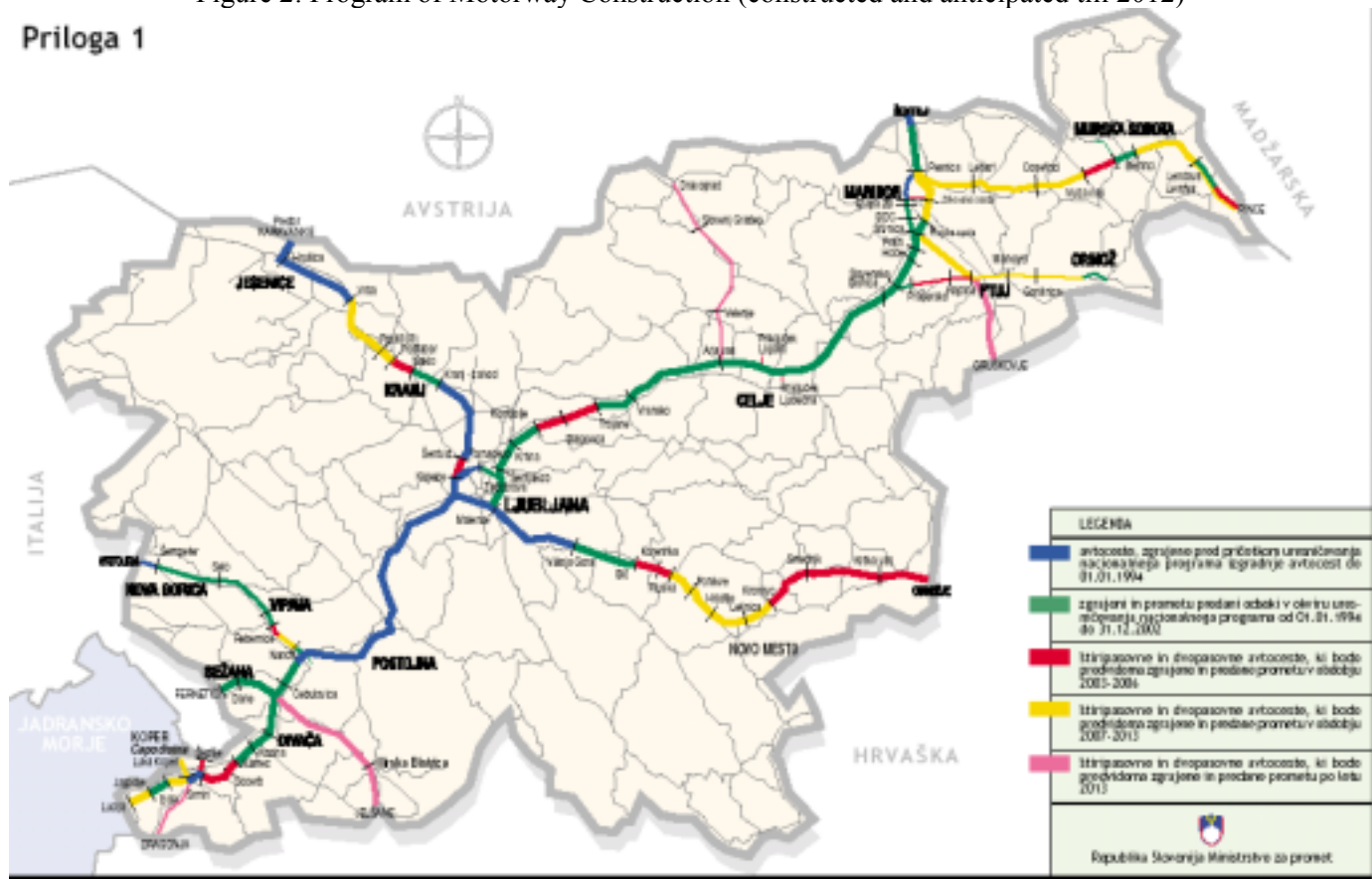
km	1972-1994	1994-2003 (First NMCP)	2004-2013 (New NMCP)	Total (1994-2013)
<b>Motorways</b>	182	230	311	541
<b>Expressways</b>	16	29	23	52
<b>In total:</b>	<b>198</b>	<b>259</b>	<b>334</b>	<b>600</b>

The National Program includes also reconstruction and completion of those main and regional roads sectors which will temporarily assume the role of uncompleted motorway network, facilitate joining and connecting of greater urban areas to motorway system and enable greater transportability within mentioned all-European traffic and transport corridors.

**North-South.** This motorway section connect tunnel Karavanke (border between Slovenia and Austria) and Obrežje, a settlement on the Slovene - Croatian border. In this direction 100 km of motorways have still to be build. Motorway sections in the direction north-south are compatible with ten pan-european corridor, which is one of the most important connections between North/Central and South Europe.

**East-West.** This motorway route connect Slovene coast with city Lendava on Slovene-Hungarian border. It has additional sections towards Sežana (Italian border), Nova Gorica (Italian border), and Šentilj (Austrian border). Most motorway sections in the direction East-West are compatible with fifth pan-european corridor (Lisbon-Kiev), which is one of the most important connections between western and eastern Europe. The importance of this connection for the Slovene economy must not be neglected because it connects port of Koper and Trieste with the inland (including two biggest cities: capital Ljubljana and Maribor) and wider with all Central-Eastern Europe.

Figure 2: Program of Motorway Construction (constructed and anticipated till 2012)



	motorways and fast roads built before the beginning of the programme until 01.01.1994 (198,4 km)
	motorway and fast roads sections built within the programme from 01.01.1994 until 31.12.2002 (236,7 km)
	motorway and fast roads sections under construction in the year 2003 and 2004
	motorway sections and fast roads anticipated for completion in the period between 2007-2010
	motorway and fast roads sections planned after the year 2010

Source: Company for Motorways in the Republic of Slovenia, DARS (2004)

## II. Organisational and financial aspect of the NMCP

**Competent authorities in NMCP implementation.** Authorities, the most responsible for the NMCP implementation and their respective duties are Ministry of Transport and DARS: (Motorway Company in the Republic of Slovenia). Besides that a process itself demand co-ordination and cooperation with other ministries and institutions.

*Ministry of Transport* is the main authority. It gives initiative for route identification, supervises traffic regime, co-ordinate the most appropriate variant selection, together with Ministry of Environment and Spatial Planning and with other ministries, public initiatives and municipal authorities, etc, while *DARS* is the principal company in charge of financial engineering, preparing, organizing and managing construction and maintenance of the motorway network. DARS was established by law in 1993 and it is a joint-stock company, currently still 100% owned by the state. In co-operation with other institutions (Ministry of Transport, Economy, Finance, Spatial Planning, Municipalities, etc), DARS prepares complete short, medium and long term plans, that consist of; feasibility studies production, investment programs drafting, organization of public discussions and public presentation of draft site plans, organization of tenders and contract award procedure, land and other property acquisition, works executions, organization of maintenances and operation of constructed motorway, etc. It can be said that DARS is actually a government agent.

**Financing motorway construction (old NMCP, 1994-2004).** Originally it was set that NMCP should cost no more than €2,2 billion for 440 km and that more than 50% of the program should have been financed from its own sources (collected tolls and Gasolin Tolar<sup>2</sup>) and the rest from external sources. Until now, the following financial resources for construction were used:

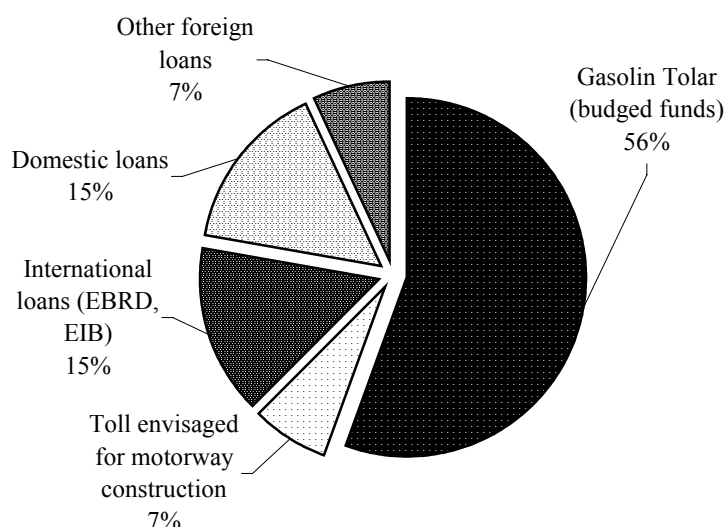
- purpose related funds (56%),
- share of tolls and other domestic funds (7%),
- domestic financial credits (15%)
- other foreign financial credits (7%)
- credits from international financial institutions (EIB, EBRD;15%).

Of all financial resources, 62% were internal and 38% external, 78% were domestic and 22% foreign. In this way new sections has been built till 2004. The analysis of programme financial implementation carried out in year 2002 showed that original assessments were highly underestimated due to extremely rational technical solutions and anticipation of a fierce foreign competition. Neither the first nor the last presumptions have realized, so the revised value of NMCP was set again, this time at around €5,6 billion. The Gasolin Tolar remains the main financial internal source of construction and in 2003 it was reaffirmed by the Government at €160-200mill. per year till the end of the NMCP (app.2013). Unfortunately, from the last year, tolls were almost completely used for repaying debt, managing and maintenance of the existing network, so they were not sufficient any more as a source of financing (more about new NMCP financing and realization in continuation).

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<sup>2</sup> Similar to the Gasolin tax. Initially, upon the 'Act on the Provision of Funds Earmarked for the Construction of motorways', 20% of every litre of Gasolin sold should be earmarked for NMCP, but because of the budgetary problems, the Government usually limited this amount. The Gasolin tolar from the state budget has so far provided only 85.6% of the funds designated by law and the Slovenian NMCP for the purpose of motorway construction between 1994 and 2000.

Figure 3: Sources of finances for NMCP from 1994 and 2003



Source: Company for Motorways in the Republic of Slovenia, DARS (2003)

Table 2: Realized investments (DARS operations included) in the NMCP framework

mill €	Tolls	Budget	Debt	Other	Total in mill €
<b>1994</b>	17,16	120,29	0,32	0,00	137,77
<b>1995</b>	15,71	149,12	9,37	0,63	174,83
<b>1996</b>	19,81	137,86	88,41	1,52	247,6
<b>1997</b>	23,04	134,32	135,21	3,66	296,23
<b>1998</b>	26,51	159,21	72,97	3,00	261,69
<b>1999</b>	17,35	181,55	134,71	2,56	336,17
<b>2000</b>	20,41	126,46	170,28	2,72	319,87
<b>2001</b>	4,21	115,85	112,66	3,20	235,92
<b>2002</b>	0,00	139,44	152,29	2,83	294,56
<b>94-02</b>	<b>144,20</b>	<b>1.264,09</b>	<b>876,77</b>	<b>20,12</b>	<b>2.305,18</b>

Source: Resolution of NMCP (2003)

**Possibility of concessionary construction within the NMCP.** As one of the options of unfinished motorway sections construction (and financing) in Slovenia, concessions were also mentioned in the past. This is quite often way of financing found in some EU countries like Italy and France, while in the rest of the EU it does not represent a major share in motorways construction (sometimes ranging up to 15%, like in Belgium, Denmark, Luxemburg, Germany, etc). Concession period lasts for around 40 years and concessions are formed as ‚real toll concessions‘, ‚subvention concessions‘ or ‚shadow toll‘ concessions, where users do not pay any toll, while the government is obligated to pay to the concessionaire an amount relating to the contract and/or actual traffic volume.

Within the NMCP, the possibility of concessions was discussed several times and the feasibility of their implementation has already entered the basic framework for a new revision of the NMCP. With regard to the revised programme, for the completion of all planned motorway sections built until 2013, Slovenia would need additional €3,5 billion. Around 72% of missing resources would be assured from the current sources, while around €1 billion still missing. For this amount, a concessional construction seemed as one of the

possible option. It was suggested to license two sections under constructions. The section from the Austrian border (frontier crossing-point Šentilj) to the Croatian border (frontier crossing-point Gruškovje) and the section from Maribor to the border with Hungary (frontier crossing-point Pince). Both sections are, in total, 163,8 km long and less frequent (daily traffic volume does not exceed 12.000 vehicles per day on average).

Short empirical analysis has been done, dealing with question of concession. Its reasonability rests on net present value (NPV) calculation of the project, where a kilometre of motorway section is constructed and managed by the concessionaire. A few different situations were simulated: a) traffic volume vary from 5000 to over 20.000 vehicles per day, b) the state offers an additional subvention to the concessionaire from 0% to 100% of its income, whether from the budget or from the existing motorway network. In addition, a few necessary presumptions were anticipated: a) project internal rate of return is 5,9%, b) toll for 1 km of motorway use amounts to €0,045, c) the anticipated increase in traffic volume is 2% per year, d) construction costs of 1 km of motorway amounts to € 8 million and e) the maintenance cost for 1 km of motorway amounts to €0,07 million. We were interested in break-even point, where the net present value of a project is being positive. The results were for the concession period of 40 years and they are listed in Table below.

Table 3: The results of the simulated situation for the concession period of 40 years

Subvention needed (v %) → Traffic volume ↓	0	25	50	75	100
	In 1000 €	In 1000 €	In 1000 €	In 1000 €	In 1000 €
<b>5.000</b>	-4.967	-4.536	-4.105	-3.674	-3.242
<b>12.000</b>	-3.460	-2.597	-1.734	-872	-9
<b>16.000</b>	-1.952	-658	+636	+1.930	+3.224
<b>20.000</b>	-444	+1.281	+3.007	+4.732	+6.457
<b>25.000</b>	+1.064	+3.220	+5.377	+7.534	+9.690

The acquired results indicated that, at the current traffic volume, a positive NPV cannot be assured to the concessionaire, even if the government would offer a 100% subvention or it would grant the concession for 40 years. Simulation showed a negative NPV of the project from €5 million in the case of no subvention and the traffic volume of 5000, to €3 million in the case of a 100% subvention. Break-even point appear at around 25.000 vehicles per day in the case of no subvention and at around 16.000 vehicles per day in the case of a 50% government subvention. We believe that the government subvention which exceeds 50% of actual concessionaire income is not reasonable and causes too high opportunity costs for the state. Even in the case when the subvention would be in the form of the existing motorway sections, granted to the concessionaire into managing and exploitation, this means a certain degree of toll income cut for DARS and, consecutively, its harder position.

With regard to the analysed results it can be concluded that, at least in construction phase of Slovenian motorway network, concessions are not reasonable. Instead of this it is better issuing a long term bonds, since motorway construction is a project concerning more than one generation and for that reason, the construction burden should be fairly split among them. In favour of this statement some additional arguments can be given:

- Motorway construction by concession is far from being inexpensive. We should not forget that private investors demand profit. Such lost profits could otherwise be used for few additional motorway sections,
- Slovenia have only two million residents, which consecutively means that except during the holiday and daily rush hours around larger towns, traffic volume is low. In such circumstances motorway sections represent a superior public good, while construction costs are the same whether traffic volume is high or low,
- Concession procedures are costly and long lasting. Costs of those procedures are estimated to a few millions of euros and may last at least two years.
- The majority of financial constructions for planned motorway sections have already been closed, so a better idea is an adjustment of time structure in order to finalize the whole programme. Next, it is worth to reconsider some alternative sources of financing like long-term infrastructure bonds, revolving of existent loans, additional funds drawn from the EU cohesion funds, etc. As far as concessions are concerned, it is more reasonable to grant concession in the subsequent phases (e.g. in the process of managing and maintenance of the motorway network).

### **III. Economic aspects of NMCP (revision of an old, '98 NMCP in Slovenia).**

In the past decade, Slovenian economy was faced with some strong challenges, like transition process, privatisation, institutional reorganization, restoration of a new markets, technologies, EU accession, etc. All listed events have their repercussions in economic activity. At the beginning of Slovenian independency, the GDP growth rate was strongly negative (-8,9% in 1991 and -5,4% in 1992) while the rate of inflation was almost at the level of hyperinflation (117,7% in 1991 and 201,3% in 1992). In economic theory such situation is called stagflation.

Table 4: Main economic indicators for Slovenian economy

Year	GDP per capita	GDP growth Growth	Inflation Rate	Gross Investment	Investment Growth	Current Account	Employment Growth
	In €	In %	In %	% GDP	In %	% GDP	In %
1991	6.331	-8,9	117,7	16,9	-15,7	1,3	n.a.
1992	6.275	-5,5	201,3	17,6	-3,7	7,4	n.a.
1993	6.366	2,8	32,3	19,3	20,5	1,5	-7,6
1994	7.205	5,3	19,8	20,9	15,8	4,0	-5,1
1995	7.797	4,1	12,6	23,3	23,0	-0,5	-3,1
1996	8.082	3,5	9,7	23,4	3,9	0,2	-3,3
1997	8.677	4,6	9,1	24,1	10,4	0,1	2,1
1998	9.383	3,8	7,9	25,6	12,4	-0,7	-0,8
1999	10.088	5,2	6,1	28,4	18,9	-3,8	1,7
2000	10.425	4,6	8,9	27,8	0,2	-3,1	0,9
2001	11.007	3,0	8,4	24,9	-3,7	0,1	1,5
2002	11.775	3,0	7,5	25,1	3,3	1,3	1,9
2003	12.273	2,4	4,6	25,3	1,2	0,1	-0,8

Source: SURS, EIPF, UMAR

In spite of the listed problems, economic policy succeeded in normalizing the situation and the GDP growth rate was positive in 1993 (+2,8%), while the rate of inflation dropped below 10%. Gross investments growth rate data are of special importance as they have been an engine of economic growth in Slovenia since 1993. Till 1999, gross investments rose on average by 12,2% per year in Slovenia. The share of gross investments in GDP was rising



from 16,9% of GDP in 1991 to 27,4% in 1999. After this year, the gross investments growth rate declined. In 2000, the growth of gross investments stopped, reaching a 0,2% and a year after that it was negative (-3,7%). Current gross investments as a share of GDP in Slovenian economy amount to around 25%. Next to private sector investments, public investments are very important, especially those aimed at economic infrastructure construction. They are of special interest in developing countries that are found below the limit of their potential full economic employment. Investments in economic infrastructure have a positive influence on many sectors of the national economy over the mutual effects of economic multiplier and accelerator. Next, such investments can serve as an instrument for the national government to even aggregate demand with aggregate supply and so lead a successful economic policy between recessions<sup>3</sup>.

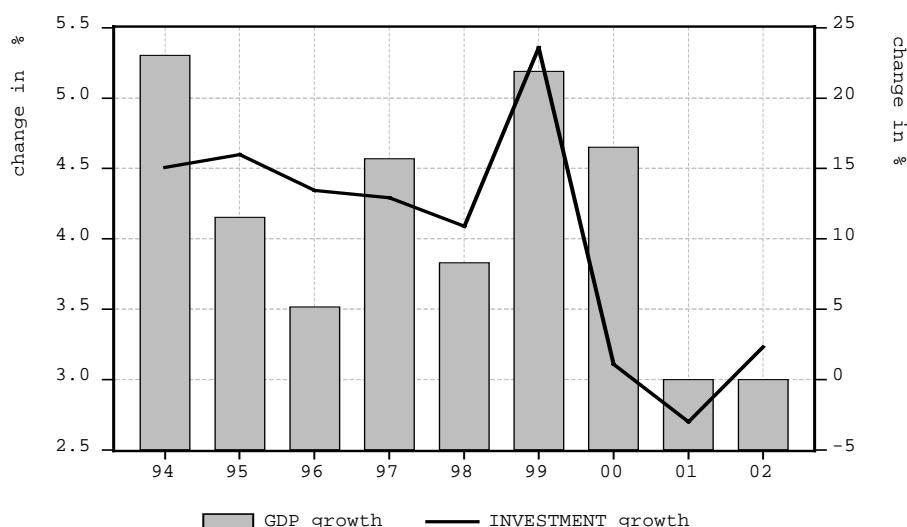
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<sup>3</sup> **Theoretical framework of road construction.** The construction of road infrastructure in general plays an important role in the growth and development of economy. On one hand, it enables an easier and more efficient entry of economic subjects into international trade flows and assures a greater quality and security in the field of transport, while on the other hand, it accumulates and releases vast resources, which, through a mutual accelerator and multiplier function, affect various macroeconomic aggregates (GDP, value added in construction sector and sectors linked to it, employment, taxes, current account, presence of foreign capital, etc.). When on the national level decisions on the volume and place of investments to economic infrastructure are made, one must be aware of certain "potential" threats and traps these activities carry along. On one hand, there is the problem of low investment and non-investment (resulting in the under-exploitation of the existing capacities), while on the other hand we have the problem of over-investment (e.g. an increased appetite for getting political points and merits or the "overvaluation" of positive investment impacts on the national economy disregarding its natural limitations). Economic theory directs us to the "absorption capacity problem of the economy", which sets limitations for theoretically infinitely great investment. It concerns limitations resulting from certain parts or markets of a developing economy ("bottlenecks"). In the given moment, latter are (still) incapable of absorbing increased resources and transforming them into growth. In case of civil engineering construction, underdeveloped activities turn up in construction or in parallel markets, necessary for the absorption of investments in the sector of civil engineering construction (labour market, state administration, capital market, real estate market, etc.). The underdeveloped parts of economy reach the limits of full employment, resulting in general increase of prices and in an inefficient transfer of investments to other macroeconomic aggregates. It is possible that something like this was happening during the first years of motorway construction in Slovenia. In theory, the problem is known as the "problem of un-harmonized growth" (Križanič et al., 1995). An estimate how close a certain branch of economy is to "full employment" (inflation dam), is very important in making of economic policy. When approaching it, an anti-inflationary, stabilizing policy is needed. With the inflation dam still far away, the policy should be more expansive, at the same time taking into account the "bottlenecks", which need time and a harmonized development policy for their adaptation. In addition to this, over-ambitious and uncoordinated investments in economic infrastructure can result in the following undesired effects:

- "crowding out" of investments in the private sectors of economy, which because of their market role are incapable of generating projects with a profit margin covering the increased price of financing (interests), while the non-market sector has this capability. Consequently, more and more economic subjects start looking for their share in public tenders, while the number of those eager to compete in the international market grows smaller.
- The problem of over-dimensioned capacities. The accelerator means investment into other economic sectors, deriving from increased investment in the primary investing sector. Uncoordinated, disproportionate and sub-optimal national investment causes over-expansion of capacities, directly incorporated into the project. Cutting down the number of projects leaves performers over-dimensioned (without work).
- Over-indebtedness. Wishing for certain set objectives to be visible as soon as possible can push the state into over-indebtedness. The problem becomes even more significant in case of underdeveloped domestic capital markets (bottleneck), unable to support projects and in case of absence of resources, based on home savings.
- The "moral hazard" problem. Increased investments of the state bring along the danger of irrational allocation of funds, especially in case of poor financial control.

Along this, we should point out the capital intensity of projects. The bigger the capital ratio in the branch, the more capital an activity needs in order to increase its capacities and the more difficult it is to keep the inflation dam back. Together with the capital intensity and the absence of own financial resources accumulated through savings, the costs of financing increase, resulting in an inefficient transfer of positive impacts of investments on the economy. The question, whether to invest into economic infrastructure or not, is therefore too narrow. It has to involve at least the time-dimension, the rate of capacity (un)exploitation and the development of partial markets. The volume and pace of investments should therefore be equivalent to the point of optimum, that is, to the rate delivering maximal benefits at given inputs and limitations.

Figure 4: GDP and Gross investment growth in Slovenia between 1994 and 2002



The analyses of the realization of the motorway construction program in Slovenia exhibit, that beside technical, legal and organizational, also the economic and macroeconomic point of view of construction are of major importance. It is proved that the motorway construction in Slovenia between 1994 and 2002, had a significant impact on most macroeconomic aggregates (total investments, economic growth, employment, current balance). From 1994 to 2002, the NMCP directly contributed 2,3 bill. € to the overall investments. The biggest shares were in 1997 (1,7% of GDP), 1999 (1,9% of GDP) and 2000 (2% of GDP), while the year 2001 share decreased by real 26% (1,9% of GDP) and thus reached the level it had, when the construction started. In the framework of the overall construction works value, the construction of motorways represented on average 22% yearly. Close correlation of investments and GDP growth can be observed from Figure 4, while detailed analyses showed, that in the absence of the NMCP the GDP growth would be on average smaller by 0,9% per year and employment on average by 0,7% per year. The influence on inflation was insignificant. On the other hand, a small negative influence on the current account was indicated, but its potency gradually decreased (Oplotnik, Krizanic, 2003).

Table 5: NMCP as a share of different macroeconomic categories between 1994 and 2002

	NMCP	NMCP growth	NMCP/GDP	NMCP/inv*	NMCP/cons*
	mill. of €	In %	In %	In %	In %
<b>1994</b>	137,7	-	1,0	4,6	17,1
<b>1995</b>	174,8	16,8	0,9	4,0	16,4
<b>1996</b>	247,6	61,8	1,3	5,6	20,8
<b>1997</b>	296,2	41,1	1,6	6,8	28,4
<b>1998</b>	261,7	-8,1	1,3	5,2	22,1
<b>1999</b>	336,2	40,5	1,7	5,9	22,8
<b>2000</b>	319,9	16,6	1,8	6,4	25,3
<b>2001</b>	235,9	-19,6	1,3	4,9	20,4
<b>2002</b>	294,6	12,4	1,3	5,0	22,6
<b>Average 94-02</b>	<b>253,8</b>	<b>-</b>	<b>1,3</b>	<b>5,4</b>	<b>21,7</b>

\*Inv – investments, cons - construction value put in place in Slovenia

Source: EIPF, SURS, DARS internal data (2003)

Listed analyses influenced the reconsiderations about the future construction of Slovene motorways and raised the question, what would a few years of construction prolongation mean from the macro-economic point of view. Namely, the old NMCP anticipated the realization of the program till 2007. Its unreality displayed soon after the adoption, as the actual dynamics of construction were significantly lower from the anticipated (anticipated 542 mill.€ in 1999, realized 336 mill. €). Similar things happened in 2000/01. Especially in the year 2001, the "set-back" in the construction proved to be a hard blow to the entire economy. Herewith, a need to amend the old program emerged. The proposal of the new program was made in 2001, anticipating the realization until 2010, but still leaving the dynamics of construction strongly under question. It turned out that the planning of the annual dynamics, based on political aspirations and technical capacities did not coincide with financial reality and economic optimum of national economy. In continuation, a new proposal was done, trying to combine all the viewpoints of motorway construction in an optimal way. The latter was adopted in February 2004, and thus from now, motorways in Slovenia are constructed according to it, which anticipates the realization of all sections until 2013, and the realization of connections within the V. corridor yet in 2008. Thus, placing construction into wider macroeconomic space, following assumptions can be obtained:

- NMCP realization has to be coordinated with the achieving of optimal impacts of investment on the economy. Therefore the terms, dynamics and structure of financing have to be adapted to the conditions and needs of Slovene economy (balanced volume approximately 1,6 % of GDP yearly; approximately 400-450 mill.€)<sup>1</sup>.
- NMCP realization has to be set in a manner to avoid excessive annual oscillations of investments, since these have proved harmful. Along with this, the principle of "soft landing" should be followed, meaning the investments to decrease gradually.
- NMCP realization has to be set in a way, which will allow finding long-term and stable sources of financing in harmony with the inter-generation nature of the project, making realization of the program possible, regardless of the state of national finances.

From the listed assumptions, we can see that program '98 was inadequate while the motorways should be completed until 2007, with annual dynamics between 345 mill. € and 590 €. After the adoption of the document, the planned dynamics remained unrealized, leaving an impact on the national economy. Furthermore, the historical analyses exhibited that 98 Program was breaching several more assumptions and was obviously prepared in haste, instead of being the result of interdisciplinary research (Krizanic, Oplotnik, 2001).

Table 6: Investment flow of the NMCP realization in view of the 1998 Program (mill.€)

Anticipated	Investment	Source of financing				
	In NMCP	Tolls	Budget	Debt	Other	Total:
1999	542.8	50.9	235.5	253.7	2.7	542.8
2000	590.8	62.2	242.5	283.4	2.7	590.8
2001	559.3	30.9	249.9	275.7	2.7	559.2
2002	549.6	17.3	257.4	272.2	2.7	549.6
2003	504.7	42.7	265.0	194.3	2.7	504.7
2004	368.2	58.6	270.4	39.2	0.0	368.2
2005	364.2	88.5	275.8	0.0	0.0	364.3
2006	345.0	63.7	281.3	0.0	0.0	345.0
2007	345.9	58.6	287.3	0.0	0.0	345.9
<b>SKUPAJ:</b>	<b>4,170.5</b>	<b>473.4</b>	<b>2,365.1</b>	<b>1,318.5</b>	<b>13.5</b>	<b>4,170.5</b>

Source: Revision of NPIA, 1998 (Ur.l.RS, št.41/98)

Despite the fact that investments between 1999-2003 were anticipated in a considerably proportionate volume (app. 2,7% of GDP annually), this amount was too high and did not correlate with the optimal absorption capacity of Slovene economy; that is, the point where national-economic benefits are the greatest (see endnote1). As a consequence, it was impossible to ensure adequate financial sources for the anticipated financial needs and keep an adequate ratio between internal and external sources of financing. The related problems, burdening the NMCP would (or did) only increase (performers increasing prices, incapacity of ensuring the anticipated volume of purpose related funds from the budget, decreasing of the toll share allocated for new construction, etc.). The second deficiency of the old program is a sharp decline of investments from 1,9% of GDP in 2003 to 1,2% of GDP in 2004. The latter could cause a setback in growth of GDP. At this point a question arised, which are those new and optimal feasibilities the terms of NMCP realization should have, to meet all the stated assumptions and to do away with the disharmonies.

In continuation, new NMPC, adopted in 2004, is presented and analyzed from two viewpoints: a) national-economic point of view, taking into account the assumptions stated in the beginning of the chapter, b) taking into consideration the realization capacity of investment and financial flows submitted by DARS and the state.

#### **IV. New NMCP, adopted in 2004 – future highways construction in Slovenia**

**Realisation of the motorway cross until 2013 (new NMCP, adopted in 2004).** The new program is based on assumptions from analyses of construction impacts on economy between 1994 and 2002. According to this, the construction should be harmonized with real investment possibilities, national-economic needs and current conditions, forming in this segment of development dynamics (harmonization with EU policies, agreements with neighboring countries, needs for smaller or greater investment on the part of the state in view of the condition of economic activity, etc.). The construction must enable a steady, harmonious regional and economic development of all Slovene regions and further development of the state as a whole; it must make the multiplication of its own impacts possible. Priorities of the motorway network construction should be based upon the criteria for the definition of priorities; the construction should be founded on economically and technically acceptable solutions, coordinated with macroeconomic capabilities and national interests. The construction should advance gradually, where this is economically legitimate and technically feasible.

With the listed facts, we are approaching the principle of interdisciplinary. According to this scenario, the new NMCP should be realized until 2013 (Oplotnik, krizanic, 2004). The construction will progress gradually; it will be divided into periods and coordinated with annual plans. Herewith the principle of flexibility, which is of crucial importance, is introduced to the program. Altogether 660 km of motorways, state roads, toll stations and missing road junctions will be constructed. The construction of 106 km of roads will be accomplished until the end of 2006 and of another 228 km between 2007 and 2013. After 2013 the "additional program" will be accomplished - the connection of the remaining regions to the main network (Ilirska Bistrica, Pyhrin road, etc.).

**Financial resources, anticipated for future NMCP realization.** The newly estimated investment value of the overall program (in the period 1994 - 2013) is now set at 5,6 bill. €, with additional 3,5 bill. € (in the period 2003 - 2013) coming from the following sources: a) purpose related funds (42,6%), b) bonds (45,9%), c) domestic and foreign credits (10,7%), other (0,8%)<sup>4</sup>. The problems concerning deficiency of financial resources and the structure of sources will be solved by the introduction of the "inter-generation principle" into the model and by the issue of long-term bonds. In this way, one part of the financial burden will be transferred to the future generations, which will enjoy the positive effects of today's investment and should therefore carry a part of the burden. It is also important that the costs of principal repayment do not overlap with the investment period and are shifted to the period after 2013, when the whole project will be relieved of investment costs.

The estimate of the financial feasibility of the new NMCP implementation is based on the following starting-points: a) analysis of physical and financial realisation of the NHCP in the period from 1994 to 2002, b) analysis of Slovenia's current macroeconomic capabilities and national-economic interests, c) analysis of current conditions in international financial markets, d) a valid law assuring the provision of purpose related resources, e) analysis of the estimate of required funds relating to the issued bonds and other sources.

The annual investment values are in the framework of assumptions, be it from the viewpoint of the absorption capacity (1,6% of GDP annually) and annual values balance or from the viewpoint of the sustainability of financial sources structure and the "inter-generation nature"

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<sup>4</sup> **Purpose related funds:** the allocation of purpose related funds up to 100% of the legally provided amount of 1,76 bill. € is forecasted for the period between 2003 and 2012, with the legal standpoint of 160 mill. €. The projection for the allocation of purpose related resources after the year 2012 anticipates the following: a) allocation up to 92,3% of the legally provided amount in 2013, b) allocation up to 51,3% of the legally provided amount in 2014 and c) a gradual decline with symbolic allocations (from 10-25% of the legally provided funds). **Tolls:** from 2002 and on the overall sum of collected tolls is not sufficient for investments into new motorways and is being used for the administration and maintenance of the existing road network and for the repayment of financial obligations relating to financial sources. In the period between 2003 and 2013, an inflow of 1,83 bill. € is anticipated from this source and additional 5,46 bill. € in the period after the realization of construction (between 2014 and 2033). **Domestic and foreign credits and infrastructure bonds:** As the main source of financing of the rest of the motorway network in Slovenia, the existing domestic and foreign credits (in the amount of 0,5 bill. €) and long-term infrastructure bonds (maturity in 20 years) are anticipated in The Resolution on the NMCP. In view of the altered conditions in home economy, domestic financial markets (the appearance of institutions with the relevant demand) and international financial markets (trend of decline of interests), a transfer to this way of financing as the main source of financing of the rest of construction and repayment of the NMCP obligations in the amount of 2,1 bill. € for the period 2003-2012 is anticipated. In this framework, an issue of ten (10) consecutive issues of bonds with a 20-year maturity is planned. Herewith, the previously outlined favorable conditions of the international environment will be used to our advantage in the period in question. A possibility is left open for swapping one of the issues or its part with a more favorable credit from one of the international financial institutions (EIB, EBRD, etc.). Other sources: For the construction of the remaining part of the motorway network in Slovenia, as planned in the Resolution on the NMCP, a total amount of 46,30 mill. € is anticipated (co-financing of the motorway program on the part of local communities, cohesion funds, granted concessions and other national and supranational institutions having interest in a faster construction of motorway connections in Slovenia; surpluses and interests from deposits relating to tolls, purpose related funds, etc.). **Concessions:** Analyses made so far show, that different forms of profit concessions for the remaining highway sections, adequate for concessionary construction (a) Pomurje section: Maribor (Dragučova junction) - Pince (Slovene-Hungarian border), b) section Štajerska and Podravje: Šentilj (Slovene-Austrian border) - Slivnica junction-Gruškovje (Slovene-Croatian border); are hardly a possibility in view of the current and forecasted average daily traffic (FADT) on the parallel main / regional state road network and already constructed motorway sections. The analyses also show that even with a 100% state-aid and a 30-40 years concession period the anticipated internal rate of return - approximately 6% for such projects - could not be assured. A possibility of a so called non-profit concession, if one of the EU Member States would show interest, seems to be more plausible - especially from the point of view of closing the construction of traffic connections in the territory of the EU (international traffic corridors V and X), whose sections connect to the Slovene territory. Since concessionary constructions of this kind are still undefined, the sources of concessionary construction are not anticipated (yet allowed) in the structure of the NMCP financing (Oplotnik, Krizanic, 2003).

of the NMCP (in period 2004-2012, nine issues of bonds are anticipated, followed by a 12 year break, then in 2026-2030 a new generation of long-term infrastructure bonds is planned). Between 2003 and 2006, the investment values range from 1,4% to 1,6% of GDP annually, then dropping to 1,2%-1,3% of GDP annually and reaching the level of 0,9% - 0,6% of GDP annually between 2010 and 2013-soft-landing principle (Oplotnik, Krizanic, 2004).

Table 4: New NMCP until 2013 (program adopted in February 2004), (mill.€)

Anticipated:	Investment	Sources of financing				
	In NMCP	Bonds	Budget	Debt	Other	Total:
2003	388,9	27	151,4	207,9	2,6	388,9
2004	424,4	70	158,2	206,9	2,4	437,5
2005	421,9	255	163,1	44,1	4,2	466,4
2006	405	285	168,1	21,6	3,7	478,4
2007	403	300	173,4	13,8	4,2	491,4
2008	366,7	310	178,3	0	6,7	495
2009	354,7	310	184,3	0	4,9	499,2
2010	320,6	280	190	0	4,3	474,3
2011	200,6	150	194,9	0	0	344,9
2012	198	125	202,5	0	0	327,5
2013	69,9	0	195,4	0	0	195,4
<b>Total:</b>	<b>3.553,7</b>	<b>2.112,0</b>	<b>1.959,6</b>	<b>494,3</b>	<b>33,0</b>	<b>4.598,9</b>

**The analysis of economic impacts in view of different terms of realization** is based on the assumptions, that the term of realization should be coordinated with the achievement of optimal investment impacts on economic infrastructure and set in a way to avoid excessive annual investment oscillations. Recently revised and adopted NMCP in Slovenia, propose realization until 2013, and it seems to be more harmonized with listed facts. The new NMCP is more stable in comparison to the old NMCP, which showed strong oscillations by periods.

## 5. Sources and literature

- Berndt, E. R. (1991), *Explaining and Forecasting Aggregate Investment Expenditures*, The Practice of Econometrics: Addison-Wesley, str.224-305,
- Križanič, F., Holz, E., Jakoš, A. et. Al. (1995), *Multiplikator, akcelerator in omejitve zmogljivosti pri gradnji cest na slovenskem*, v knjigi: Človek in cesta – vpliv gradnje cest na gospodarstvo Slovenije, str. 59-152, Prokonto, Ljubljana,
- Križanič, F., Oplotnik, Ž. (2001), *Analiza vzrokov upadanja investicijskega povpraševanja v Sloveniji*, review Gospodarska gibanja, no.332, pg.25-37, EIPF, Ljubljana,
- Oplotnik, Z., Križanič F, (2003) „*Macroeconomic and development consequences of motorway construction in Slovenia*”, Est-Ovest review, vol. 32, no. 3, ISDEE, Istituto di Studi e Documentazione sull’Europa comunitaria e l’Europa orientale, Italy
- Oplotnik, Z., Križanič F, (2004) „*Impacts of the National Motorway Construction Program in Slovenia in view of different terms of realisation*”, Est-Ovest review, vol. 33, no. 3, ISDEE, Istituto di Studi e Documentazione sull’Europa comunitaria e l’Europa orientale,
- Oplotnik, Z. (2004); *‘Infrastructure development in Slovenia: The Status and Planning of Traffic and Transport Flows’*, in Boehm, Frisch, Steiner; Slovenia and Austria: Bilateral Economic Effects of Slovenian EU Accession.

<sup>i</sup> The function of the optimal investment volume into the motorway infrastructure is shown in Table A1. The simulation displays that when observing the influence of different investment volumes on the growth of GDP, the break-even point appears with the investment volume of approximately 400 mill. EUR (1,6% of GDP), where the marginal modification of the dependant variable is the greatest (0,36% increase in comparison to the previous value). If the annual investment volume is being furtherly increased, the value of the marginal modification starts dropping despite the fact, that the cumulative modification of value of the dependent variable (GDP) is increasing due to the increasing of the value of independent variable (investments into MW). The function of dependence of the GDP increase and investment volume into infrastructure is based on the study: "Macroeconomic impact...." (Oplotnik, Krížanič, 2002). Beside the function of the influence of investment volume into construction on the GDP, the impact of investment on inflation was observed. At the function of influence of investment volume on the increase of inflation the dependant variable (INFL) is in positive correlation with the independent variable. The function is increasing; a break-even point or maximum could not be noted.

**Tabel A1: The function of optimal investment volume**

Investment		<i>Change of GDP</i>	marginal change	Change of INFL	marginal change
%BDP	mio €	GDP growth change		dotatna rast INFL v %	
0,8	200	0,51	0,26	0,02	0,02
1,2	300	0,82	0,31	0,06	0,04
1,6	400	1,18	0,36	0,10	0,04
2,0	500	1,39	0,21	0,15	0,05
2,4	600	1,53	0,14	0,21	0,06
2,8	700	1,62	0,09	0,27	0,06
3,2	800	1,65	0,03	0,35	0,08
Asumptions of a model: GDP= 25 bill € and exchange rate : 240 SIT/€					