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**WORKING PAPER**

# MOTORWAY CONSTRUCTION AND ITS MACROECONOMIC AND DEVELOPMENT EFFECTS ON ECONOMY

**(review of Slovenian experience)**

**Žan Oplotnik, France Križanič**

**Working Paper are preliminary and are circulated to promote discussions and comments. Any reference should state that the paper is preliminary.**

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**France Križanič. Ph.D.director EIPF,** assistant professor
**Zan Oplotnik,Ph.D,** assistant professor, researcher
Economic Institute of the Law School (EIPF) - Presernova 21- 1000 LJUBLJANA
tel:+386 1 25 21 688 fax.:+386 1 425 68 70 - http://www.eipf.si
Faculty of Economics and Business (EPF) - University of Maribor
Razlagova 14 - 2000 MARIBOR - Slovenia (SI)
tel:+386 2 22 90 320 fax.:+386 25 10 461 - http://epf.uni-mb.si/
e-mail: zan.oplotnik@eipf.si, france.krizanic@eipf.si

# MACROECONOMIC AND DEVELOPMENT CONSEQUENCES OF MOTORWAY CONSTRUCTION IN SLOVENIA

**Žan Oplotnik, France Križanič**

During recession, various instruments can be used to even aggregate demand with aggregate supply. One of them is the modernization of national road infrastructure. Motorway construction has already proved its incentive role for the economic growth enhancement in Slovenia (stagflation crisis before 1994), and it seems that it will have the same role in the future. Investments in economic infrastructure have a positive influence on most sectors of the national economy over the mutual effects of economic multiplicator and accelerator. Next, good motorway network opens new possibilities of development for nearer local communities and enables greater connectedness with major regional centres and foreign countries. Total size of investments in motorway construction in Slovenia, between 1994 and 2001 was €2,1 billion, which on the yearly basis represents around 1,3% of GDP in Slovenia. With these funds, 220 km of roads were finalized, which represents 40% of total planned. Construction of the remaining 334 km will increase gross investments for another € 3,8 billion. Most extensive investments are planned for the period between 2004 and 2008.

Consequences of the National Motorway Construction Programme (NMCP) in Slovenia were mostly on average beneficial. Empirical analysis showed that in the absence of the NMCP the gross investments would be smaller for 7,8% per year, GDP for 0,9% per year and employment on average for 0,7% per year. The influence on inflation was negligible. On the other hand, a negative influence on the current account was indicated (on average, a deficit rise for -1,4% per year), but its potency gradually decreased (from 1,8% in 1994 to 0,5% in 2002).

Next to that, a possibility of concessions financing within the NMCP was also assessed. A short empirical analysis showed that in the case of smaller countries and short sections of motorways with low traffic volume (less than 20.000 vehicles per day), such construction is unreasonable. In this case, a considerable subvention should be granted from the state budget or the existing motorway network. Next, concession procedures are costly and long lasting. Therefore it is more reasonable to grant concession in the subsequent phases, like in the process of managing and maintenance of national motorway network.

## I. Introduction

The construction of the motorway network in Slovenia has started in the seventies. Since then, the building of around 200 km of motorways was completed until 1994. After 1994, Slovenia constructs its motorway network according to the National Motorway Construction Programme (NMCP). Originally, around €2,2 billion was needed for 499 km of motorway sections. For more than 50%, the programme should have been financed from its own sources (tolls and the so-called Petrol tolar[1]) and the rest from external sources as EBRD and other investment bank loans, national and supranational fonds, etc. In this way, 208 km of new sections has been built till 2001, which represents around 37% of 561 km planned in the revised NMCP. The analysis of programme implementation carried out in 2000 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 in Slovenia was set at around €5,8 billion. The Petrol tolar remains the main financial source of construction and in 2002 it was reaffirmed by the Government at € 160 million per year till the end of the NMCP. Unfortunately, from the last year, tolls were almost completely used for managing and the maintenance of the existing motorway network, so they were not sufficient as a source of financing.

[1] Similar to the Petrol tax. Initially, upon the 'Act on the Provision of Funds Earmarked for the Construction of National Roads', 20% of every litre of petrol sold should be earmarked for NMCP, but because of the budgetary problems, the Government usually limited this amount. The Petrol 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.

Table 1: Finalized and planned motorway sections according to the NMCP till 2010

| In km | 1994-2001 | 2002-2010 | revised NPIA |
|---|---|---|---|
| **Motorways** | 208 | 311 | 561 |
| **State roads** | 12 | 23 | 35 |
| **In total:** | **220** | **334** | **596** |

Source: Interim data DARS[2] (2001)

In the past decade, Slovenian economy was faced with some strong challenges, like transition process, privatization, 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[3].

Table 2: Main economic indicators for Slovenian economy

| | GDP (current prices) | GDP Growth | Inflation Rate | Gross Investment | Investment Growth Rate | Current Account | Employment Growth Rate |
|---|---|---|---|---|---|---|---|
| | Bill. Of SIT | In % | In % | In % of BDP | in % | % BDP | v% |
| **1991** | 349 | -8,9 | 117,7 | 16,9 | -15,7 | 1,3 | n.a. |
| **1992** | 1.018 | -5,5 | 201,3 | 17,6 | -3,7 | 7,4 | n.a. |
| **1993** | 1.435 | 2,8 | 32,3 | 19,3 | 20,5 | 1,5 | -7,6 |
| **1994** | 1.853 | 5,3 | 19,8 | 20,9 | 15,8 | 4,0 | -5,1 |
| **1995** | 2.221 | 4,1 | 12,6 | 23,3 | 23,0 | -0,5 | -3,1 |
| **1996** | 2.555 | 3,5 | 9,7 | 23,4 | 3,9 | 0,2 | -3,3 |
| **1997** | 2.907 | 4,6 | 9,1 | 24,1 | 10,4 | 0,1 | 2,1 |
| **1998** | 3.254 | 3,8 | 7,9 | 25,6 | 12,4 | -0,7 | -0,8 |
| **1999** | 3.648 | 5,2 | 6,1 | 28,4 | 18,9 | -3,8 | 1,7 |
| **2000** | 4.036 | 4,6 | 8,9 | 27,8 | 0,2 | -3,1 | 0,9 |
| **2001** | 4.566 | 3,0 | 8,4 | 24,9 | -3,7 | 0,1 | 1,5 |
| **2002** | 5.045 | 3,0 | 7,5 | 25,1 | 3,3 | 1,3 | 1,9 |

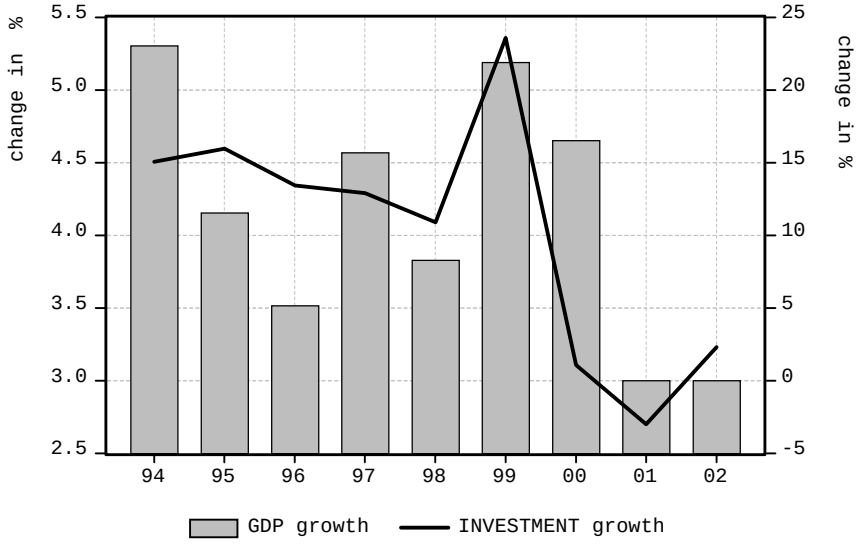
Source: SURS, EIPF, UMAR

Between 1994 and 2002, The National Motorway Construction Programme (NMCP), on average, contributed around 5,5% of total gross investments per year, amounted in total to €2,1 billion. Highest shares were noted in 1997 (around €280 million or 1,69% of GDP), in 1999 (around €360 million or 1,85% of GDP) and in 2000 (around €420 million or 1,91% of GDP), while in 2001, the amount of these investments declined by 26% (at 1,37% of GDP) thus dropping almost to the level from the beginning of motorway construction. On average, between 1994 and 2002, around €250 million per year was invested in the NMCP, which represented around one fifth (21,7%) of total value of construction put in place in Slovenia.

[2] DARS – the Motorway Company of the Republic of Slovenia.

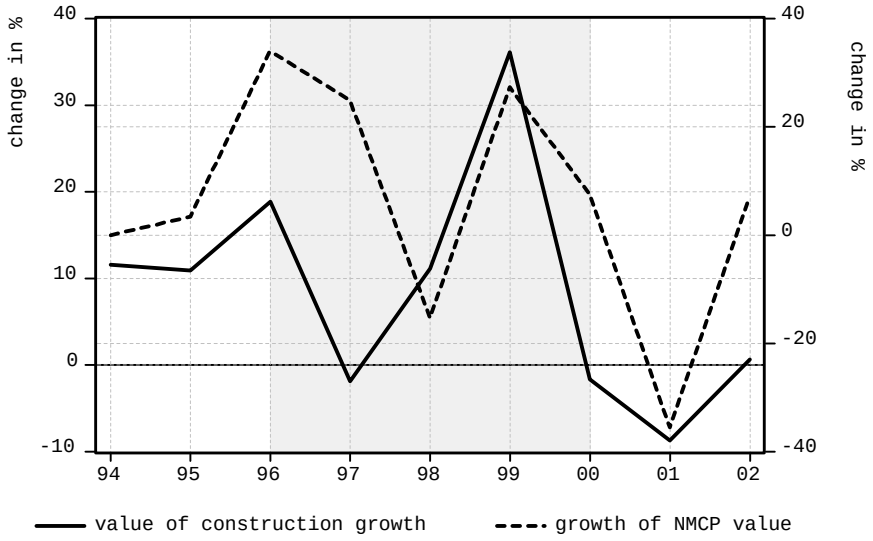
[3] In spite of the listed problems, economic policy succeeded in normalizing the situation and the GDP growth rate was positive in 1993 (+2,8%), while the rate of inflation dropped below 10%. 1999 can be regarded as the most successful year for Slovenian economy, as the GDP growth rate reached 5,2%, the rate of inflation was 6,1%, employment growth rate was 1,7% and the growth rate of gross investment was 18,9%. As early as in 2000, the rate of inflation rose to 8,9%, GDP growth rate decreased to 4,6% and the growth of gross investment almost completely stopped, even though it was relatively good in comparison with 2001, when it dropped to –3,7%. 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 and Slovenia almost reached economies, well known for high economic growth and substantial gross investments (Asian tigers[3], Hungary, the Czech Republic, etc). The share of gross investments in GDP rose 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 also 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.

Picture 1: GDP and Gross investment growth in Slovenia between 1994 and 2002




In Picture 1, strong correlation between GDP growth decline and Gross investment can be noted. However, strong acceleration of the motorway programme is planned for the next years, due to the approaching date of its completion in 2010. Because of this, around €3,8 billion will be needed the dynamics of which should reach its peak between 2004 and 2006. In this period, the NMCP should reach almost one third or more of the total value of construction carried out in Slovenia. Total value of motorway programme is currently set at €5,8 billion which is an approximate value of gross investments in Slovenia in 2002 or a quarter of GDP in the mentioned year[4].

Picture 2: Growth rates of construction value carried out in Slovenia and the NMCP




[4] When the Government decides on the extent and speed of investments in economic infrastructure it has to be aware of some potential obstacles that are likely to appear. On the one side there is a *problem of insufficiency or total absence of public investments* and consecutively unexploitedness of existing capacities, and on the other side, there is a problem of *too extensive public investments*, either because of the increased political appetites or due to overestimations of positive effects of such investments. The latter causes a problem of *absorption ability of national economy*, which sets serious limits for theoretically infinite public incentives through public spending. Practically, too-extensive public investments cannot be efficiently absorbed due to deficiencies in different sectors of developing economy. Those deficiencies can be called bottlenecks and are currently still unable to absorb the given amount of available demand and transform it into economic growth. In the case of construction, such deficiencies could appear in connection with construction expert departments (technical operative) or in any other parallel market necessary for efficient completion of construction project (e.g. labour market cannot offer enough qualified workforce, slow state administration, (too) expensive technology, underdeveloped capital market that does not offer suitable range and depth of financial instruments, etc). Underdeveloped parts of a national economy meet their own limits of potential full employment, which results in an increased rate of inflation (inflation spiral) and inefficient transmission of positive investment effects on other macroeconomic aggregates.

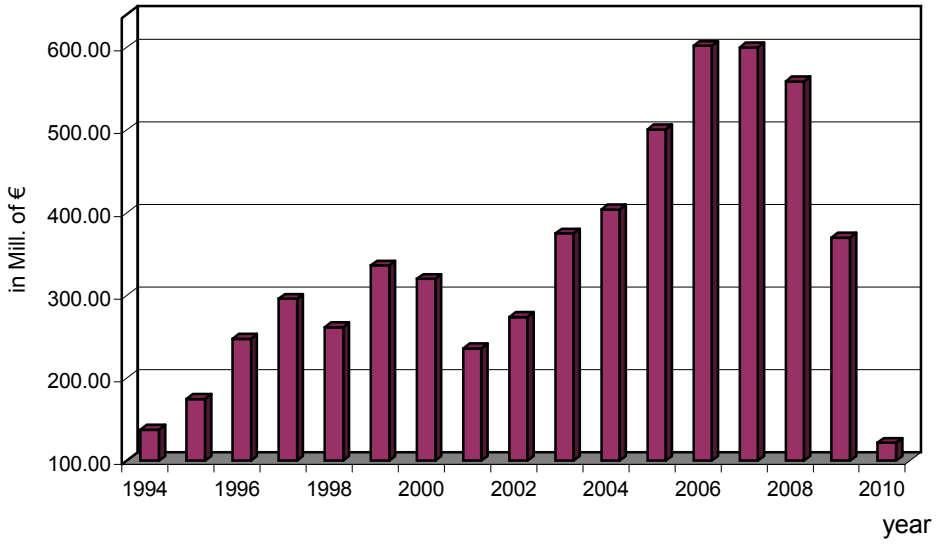
Table 3: The NMCP as a share of different macroeconomic categories between 1994 and 2002

| | NMCP | NMCP growth | NMCP/GDP | NMCP/inv* | NMCP/cons* |
|---|---|---|---|---|---|
| | mill. of € | In % | In % | In % | In % |
| **1994** | 137,7 | - | 1,0 | 4,6 | 17,1 |
| **1995** | 174,8 | 16,8 | 0,9 | 4,0 | 16,4 |
| **1996** | 247,6 | 61,8 | 1,3 | 5,6 | 20,8 |
| **1997** | 296,2 | 41,1 | 1,6 | 6,8 | 28,4 |
| **1998** | 261,7 | -8,1 | 1,3 | 5,2 | 22,1 |
| **1999** | 336,2 | 40,5 | 1,7 | 5,9 | 22,8 |
| **2000** | 319,9 | 16,6 | 1,8 | 6,4 | 25,3 |
| **2001** | 235,9 | -19,6 | 1,3 | 4,9 | 20,4 |
| **2002** | 273,9 | 12,4 | 1,3 | 5,0 | 22,6 |
| **Average 94-02** | **253,8** | **-** | **1,3** | **5,4** | **21,7** |
| *Inv – investments, cons - construction value put in place in Slovenia | | | | | |

Source: EIPF, SURS, DARS internal and interim data (2001)

Efficient economic policy therefore demands a precise assessment of how far or near is a specific sector of a national economy to the limits of their potential full employment or to the so-called ‚inflation dam'. Too ambitious and poorly planned with regard to time, public investments in economic infrastructure can result in detrimental effects like: crowding-out of private investments, excessive capacities, excessive indebtedness which stems from the request to achieve set plans as fast as possible, moral hazards due to irrational managing of public resources and the lack of auditing, etc.

Picture 3: The amount of resources put into the NMCP between 1994 and 2002



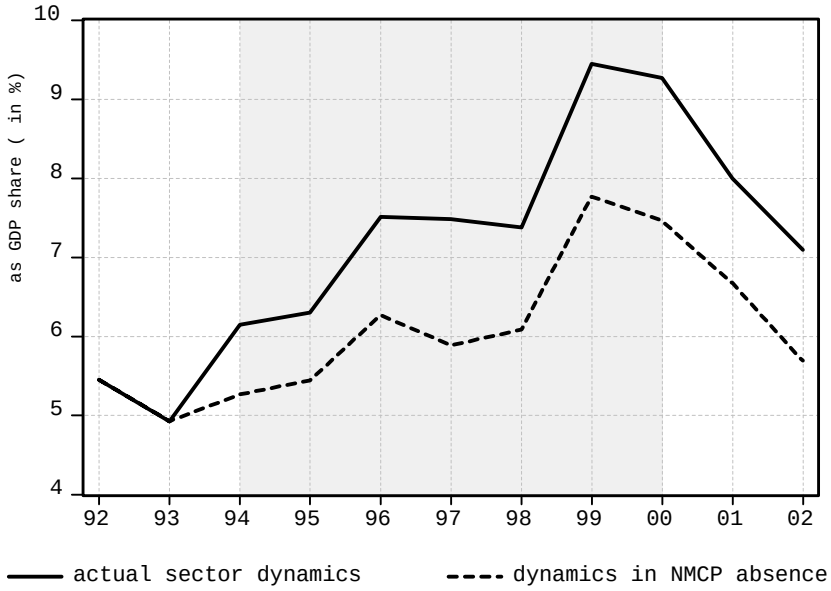

Source: DARS interim data (2001)

The discussion about the importance of investments in economic infrastructure and potential obstacles of too extensive and disproportionate dispersion of resources, leads us to the intensity of such projects. Larger than the capital quotient of the sector (project) is, more capital is need to expand the capacities and ‚inflation dam' is harder to retain. Simultaneously with capital insensitivity the costs of financing also rise and in the absence of internal sources of financing (best if accumulated by savings), a transmission of positive effects on to other sectors of national economy is feeble. The question most often posed: "Investments in economic infrastructure, yes- or no-?" is thus too narrow and at least some other dimensions have to be included in it, like time-structure, the level of sectoral employment and exploitation, underdevelopment of different segments of national economy, etc.

## II. Simulation of macroeconomic consequences of the NMCP

With the intention of establishing how the NMCP influenced Slovenian economic performance between 1994 and 2002, an econometric model of national economy has been built and corresponding simulations have been done. It was presumed in simulations that Slovenia has not implemented any NMCP and that the GDP, otherwise earmarked for motorways sections, has not been used for investment purposes. Consequences of these presumptions have been observed at eight, most important macroeconomic categories: GDP change, gross investment, industrial production, final consumption, external equilibrium over current account change, external competitive position over exchange rate dynamics, change in price stability and at the labour market. Suggested hypotheses that we wanted to reject was that: 'in absence of any investments within the NMCP, any significant changes of main macroeconomic categories would not happen'.

Picture 4: Actual and simulated (in the case of the NMCP absence) value of construction carried out

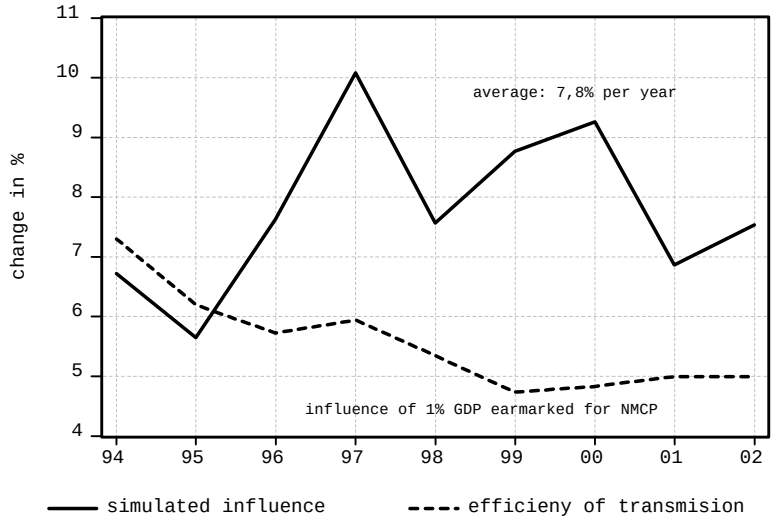



**The consequences of the NMCP on gross investments**: The results indicated a favourable influence of motorway constructions on gross investments. Due to the realized constructions, gross investments, on average, increased by 7,78% per year. The strongest influences were indicated between the most intensive motorway constructions (from 1997 till 2000), while from the point of view of efficiency of positive effect transmissions[5], the most favourable were the first years of motorway construction programme (when, for example, 1% of GDP, earmarked for the NMCP increased gross investments by 6,05% in 1995 and even by 7,35% in 1994). From this point of view, resources used for motorway constructions were less benevolent exactly in the years of the most extensive constructions (in 1999, when for example 1% of GDP, earmarked for the NMCP increased gross investments only by 4,74% and in 2000, when the same input increased gross investments by 4,84%). On average, 1% of GDP earmarked for the NMCP between 1994 and 2002, increased gross investments by 5,6% per year. Efficiency oscillation can be ascribed to many different factors, also to higher absorption ability of the construction sector in Slovenia, during the first year of the NMCP.

**Consequences of the NMCP on GDP growth:** The acquired results indicated benevolent influence of motorway constructions on GDP growth in Slovenia between 1994 and 2002. In the absence of the mentioned activities, the GDP growth would be, on average, lower by 0,91% per year than it actually was. The NMCP contributed the most in 1998 (1,14%) and in 2000 (1,27%). The investments in motorway sections were the most benevolent between 2001 and 2002, due to the recession in Slovenian economy, when the mentioned activities acted as additional incentives to relatively poor internal and external economic situation (see also Table 2 and 4).

[5] Efficiency of positive effects transmission or, from here on, simply 'efficiency', indicates how much the dependent variable changes due to the amount equal to 1% of GDP in the current year, earmarked for the NMCP.

Picture 5: Consequences of the NMCP on gross investment growth rate




**Consequences of the NMCP on industrial production:** Results from the analysis indicated a relatively weak but positive influence of motorway constructions activities on industrial production growth rate. On average, the influence was 0,24% per year. The influence was the strongest between 2000 and 2002 (0,5% to 0,6%), which indicates that Slovenian industrial sector started to exploit the advantages and potentials of the programme only in the last years. The latter is confirmed also by a decline in imports, induced by demand in construction sector (see also consequences of the NMCP on the current account). Imported goods and services were obviously replaced by domestic supply and industrial activity. This is indicated also by the increased efficiency of investment transmissions, which was on average 0,16% per year at the beginning of motorway constructions and it reached its peak in the last years of programme implementation (0,44% in 2001 and 0,35% in 2002) (see also Table 5).

Table 4: Consequences of the NMCP on Slovenian economy between 1994 and 2002[6]

| | NMCP | cINV | cGDP | cIP | cINF | cFC | cEXR | cEMP | cCA |
|---|---|---|---|---|---|---|---|---|---|
| **Year** | % Of GDP | In % | In % | In % | In % | In % | In % | In % | In % |
| **94** | 0,9 | 6,7 | 0,5 | 0,0 | 0,00 | 0,3 | 0,1 | 0,3 | -1,7 |
| **95** | 0,9 | 5,6 | 0,5 | 0,0 | 0,02 | 0,7 | 0,2 | 0,5 | -1,5 |
| **96** | 1,3 | 7,6 | 0,7 | 0,2 | 0,03 | 0,8 | 0,4 | 0,6 | -1,8 |
| **97** | 1,7 | 10,1 | 1,0 | 0,0 | 0,04 | 1,3 | 0,6 | 0,8 | -2,3 |
| **98** | 1,4 | 7,6 | 0,9 | 0,1 | 0,06 | 1,3 | 0,8 | 0,7 | -1,4 |
| **99** | 1,8 | 8,8 | 1,1 | 0,2 | 0,13 | 1,2 | 0,9 | 0,7 | -1,4 |
| **00** | 1,9 | 9,3 | 1,3 | 0,5 | 0,16 | 1,8 | 1,1 | 0,9 | -1,6 |
| **01** | 1,3 | 6,9 | 1,0 | 0,6 | 0,09 | 2,1 | 0,6 | 0,9 | -0,9 |
| **02** | 1,4 | 7,5 | 1,0 | 0,5 | 0,09 | 1,8 | 0,0 | 0,7 | -0,8 |
| **Av** | **1,4** | **7,8** | **0,9** | **0,2** | **0,07** | **1,3** | **0,5** | **0,7** | **-1,5** |

**Consequences of the NMCP on inflation:** The construction of motorways influenced price level by 0,07% on average, per year. Transmission of influence was the strongest during the years of most extensive constructions (in 1999, by additional 0,13% and in 2000 by additional 0,16%). Notwithstanding it can be resumed that extensive investments within construction of motorways have not essentially influenced the price level. The transmission of mentioned influence is closely related to current situation of economy, its absorption ability, speed of adjustment and openness of the national economy. **Consequences of the NMCP on final consumption:** The simulation indicated a strong and positive influence of programme on final consumption. On average the final consumption was 1,25% higher that it would be in the absence of motorway construction activity. Influence was the highest in the last years of constructions. In year 2000, final consumption increased by 1,78%, in 2001 by 2,09% and in 2002 by 1,79%, which indicates that the NMCP helped to reduce a recession tendency after 1999. The latter can also be confirmed by the analysis of effectiveness which shows that 1% of GDP, earmarked for motorway

[6] cINV- change of investments, cGDP- GDP growth rate change, cIP- industrial production change, cINF- change of inflation rate, cFC- change of final consumption, cEXR – change of exchange rate, cEMP-change of employment, cCA-Balance of payment current account change, av – average for the listed period.

sections constructions, increased final consumption by 1,53% in year 2001 and by 1,25% in year 2002, though those years were not also the years of the most extensive construction. A similar effect has been found by observing consequences on GDP and industrial production, where Slovenian enterprises started to exploit the benefits of additional public spending, only when recession appeared. **Consequences of the NMCP on exchange rate:** The simulation indicated slight depreciation tendencies of Slovenian currency, induced by resources put into the NMCP. On average, motorway construction contributed to slight depreciation of 0,5% per year. The influence on additional depreciation was the strongest in 1999 (+0,93%) and in 2000 (1,13%). Under circumstances of regulated exchange rate regime by the Slovenian national bank, the Bank of Slovenia, we have to take these results with a certain amount of reservation. **Consequences of the NMCP on Employment:** The acquired results indicated clearly positive influence on labour market and employment during the entire period of motorway construction. On average, additional public spending, induced by the NMCP, increased employment by 0,7% per year. The increase in the employment rate amplified a few years after the programme had started, but it was strongest in 2000 (0,95%) and 2001 (0,90%) (see Table 4).

Table 5: Efficiency of transmission of 1% of GDP, earmarked for the NMCP on observed variables[7]

| | NMCP | cINV | cGDP | cIP | cINF | cFC | cEXR | cEMP | cCA |
|---|---|---|---|---|---|---|---|---|---|
| **Year** | % Of GDP | In % | In % | In % | In % | In % | In % | In % | In % |
| **94** | 1,0 | 7,4 | 0,5 | 0,0 | 0,00 | 0,3 | 0,1 | 0,3 | -1,9 |
| **95** | 1,0 | 6,1 | 0,5 | 0,0 | 0,02 | 0,7 | 0,3 | 0,5 | -1,6 |
| **96** | 1,0 | 5,7 | 0,5 | 0,2 | 0,02 | 0,6 | 0,3 | 0,4 | -1,4 |
| **97** | 1,0 | 5,9 | 0,6 | 0,0 | 0,02 | 0,8 | 0,4 | 0,4 | -1,4 |
| **98** | 1,0 | 5,3 | 0,6 | 0,0 | 0,04 | 0,9 | 0,6 | 0,5 | -0,9 |
| **99** | 1,0 | 4,7 | 0,6 | 0,1 | 0,07 | 0,7 | 0,5 | 0,4 | -0,8 |
| **00** | 1,0 | 4,8 | 0,6 | 0,3 | 0,08 | 0,9 | 0,6 | 0,5 | -0,8 |
| **01** | 1,0 | 5,0 | 0,7 | 0,4 | 0,06 | 1,5 | 0,5 | 0,7 | -0,7 |
| **02** | 1,0 | 5,2 | 0,7 | 0,4 | 0,07 | 1,3 | 0,0 | 0,5 | -0,6 |
| **Av** | **1,0** | **5,6** | **0,6** | **0,2** | **0,04** | **0,9** | **0,4** | **0,5** | **-1,1** |

**Consequences of the NMCP on current account balance:** The results of the analysis indicated negative influence of additional public spending induced by the NMCP on external-trade balance. Analysis showed a certain degree of increase of exports and imports, yet the latter exceeded the first. Current account deteriorated by 1,49% on average per year, although negative influence diminished during the observed period. Diminishing trend can be the consequence of the fulfilled capacities which the Slovenian construction sector had to import to meet the requirements of motorway construction. On the other side, the mentioned trend reveals gradual entry of Slovenian construction equipment producers on the market, which has already been pointed out, and which explains the increase in industrial production. Negative trend of negative effects transmission can be clearly seen in Table 5 (cCA). Additional negative balance of current account, indicated by a 1% of GDP, earmarked for the NMCP, was 1,86% in 1994 and only 0,57% in the last year observed, namely 2002.

**Final conclusions and the résumé of simulation analysis:** Within the acquired results of econometric analysis, the hypothesis suggested at the beginning that 'in the absence of any investments within the NMCP, any significant changes of main macroeconomic categories would not happen', can be rejected. Presented results explicitly indicate that there were certain positive and negative consequences of motorway construction, through additional public spending trough the NMCP in Slovenia. Most beneficial were the consequences on gross investments (increased, on average, by 7,78% per year), GDP growth rate (average increase of 0,91% per year), industrial production (0,24% per year), final consumption (1,25% per year) and employment (0,68% per year). The less beneficial were the consequences on price stability (on average, an additional increase in inflation by 0,07% per year) and current account balance (on average, a decrease by an additional –1,49% per year, even diminishing trend was indicated and only 0,57% of additional excessive imports was indicated in the last year of observation, 2002).

[7] Efficiency of positive effects transmission indicates how much the dependent variable changes due to the amount equal to 1% of GDP in current year, earmarked for the NMCP.

## IV. Summary and final conclusions

During recession, various instruments can be used by the national government to even aggregate demand with aggregate supply. One of them is the modernization of national road infrastructure. Motorway construction has already proved its incentive role for the economic growth in Slovenia (during the stagflation crisis before 1994). So it seems that construction of a motorway network will have the same role in the future. Investments in economic infrastructure have positive influence on most sectors in the national economy over the mutual effects of economic multiplicator and accelerator. Next, good motorway network opens new possibilities of development for nearer local communities and enables greater connectedness with major regional centres and with foreign countries.

When the Government decides on the extent and speed of investments in economic infrastructure it has to be aware of some potential obstacles. On the one hand, there is a *problem of insufficiency or total absence of public investments* and consecutively unexploitedness of existing capacities, and on the other hand, there is a problem of *too extensive public investments*. The latter can cause a problem of *absorption ability of national economy*, which sets serious limits for theoretically infinite public incentives through public spending. Thus, efficient economic policy demand a precise assessment of how far or near is a specific sector of an economy to the limits of their potential full employment or to the so-called ‚inflation dam'. Too ambitious and untimely and poorly planned public investments in economic infrastructure can result in detrimental effects like: crowding-out of private investments, excessive capacities, indebtedness which stems from the request to achieve set plans as fast as fast as possible, moral hazards due to irrational managing of public resources, etc.

Between 1994 and 2001, the total size of investment in motorway construction in Slovenia, was €2,1 billion, which on the year basis represents around 5,5% of gross investments or 1,3% of GDP in Slovenia. With these funds, 220 km of roads were finalized, which represents 40% of total planned. The construction of the remaining 334 km will increase total gross investments for another €3,8 billion. Most extensive investments are planned for the period between 2004 and 2008. The consequences of realization of the NMCP in Slovenia were mostly beneficial. The empirical analysis showed that in the absence of the NMCP the gross investments would be on average smaller by 7,8% per year, GDP by 0,9% per year and employment on average by 0,68% 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 (from 1,8% in 1994 to 0,5% in 2002).

Next to that, the possibility of concessions financing has also been assessed. The empirical analysis showed that in the case of smaller countries and short sections of motorways with low traffic volume (less than 20.000 vehicles per day), such construction is unreasonable. In such cases a considerable subvention should be drawn off the state budget or the existing motorway network. Next, concession procedures are costly and long lasting. Therefore it is more reasonable to grant a concession in subsequent phases, like in the process of managing and maintenance of the national motorway network.

## References


**Berndt**, E. R. (1991), *Explaining and Forecasting Aggregate Investment Expenditures*, The Practice of Econometrics: Classic and Contemporary, Editor: Addison-Wesley,

**Motorway Company in the Republic of Slovenia (DARS),** (2001c), *Razvojni program graditve avtocest v Republiki Sloveniji za obdobje 2002-2005,* internal staff report, Celje, Ljubljana,

**Motorway Company in the Republic of Slovenia (DARS),** (2002), *Strokovne podlage za pripravo rebalansa nacionalnega programa izgradnje avtocest v RS*, staff report, Celje, Ljubljana,

**Križanič**, F (1995), *Multiplikator, akcelerator in omejitve zmogljivosti pri gradnji cest na slovenskem*, in book: **Holz**, E., et.al.(1995): Človek in cesta – vpliv gradnje cest na gospodarstvo Slovenije, pg. 59-152,

**Križanič**, F., **Oplotnik**, Ž. (1999); *Model investicijskega obnašanja v pogojih liberalizacije menjave in gibanja kapitala v Evropi*, Gospodarska gibanja, no.316, pg.25-40, EIPF, Ljubljana,

**Križanič**, F., **Oplotnik**, Ž. (2001a), *Analiza vzrokov upadanja investicijskega povpraševanja v Sloveniji*, Gospodarska gibanja, no.332, pg.25-37, EIPF, Ljubljana,

**Križanič**, F., **Oplotnik**, Ž. (2002), *Makroekonomski in razvojni učinki izgradnje avtocestnega križa*, 6th Slovenian Road and Transportation Congress, Portorož,

**Prah**, L., (2001), *Portugalska, izkušnje pri koncesijski graditvi avtocest*, internal staff report DARS