

WAGNER'S LAW IS STILL APPLICABLE: EMPIRICAL EVIDENCE FOR SLOVENIA

Wagnerjev zakon še vedno velja: empirični dokaz za Slovenijo

Abstract

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This paper tests the validity of Wagner's law for Slovenia and the hypothesis that the government elected in 2004, despite its claims, has not significantly changed the trends in public finances. We test six empirical versions of Wagner's law for the period 1992 to 2007. Data undoubtedly confirm five of six versions of Wagner's law; therefore, we conclude that Wagner's law also holds for Slovenia. The analysis also shows that the new political orientation in Slovenia could or would not significantly change the trends in public finances.

Key Words: public spending, role of government, development, Slovenia

Izvleček

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Pričujoči prispevek testira veljavnost Wagnerjevega zakona za Slovenijo in preverja hipotezo, da slovenska vlada, ki je bila izvoljena leta 2004, kljub svoji načelni usmeritvi ni bistveno spremenila javno-finančne trende v Sloveniji. V analizi testiramo šest verzij Wagnerjevega zakona na osnovi podatkov za obdobje od 1992 do 2007. Analiza potrjuje veljavnost petih (od šestih) verzij Wagnerjevega zakona, zato sklepamo, da le-ta velja tudi za Slovenijo. Analiza pokaže tudi, da sprememba politične orientacije v Sloveniji ni bistveno spremenila javno-finančnih trendov.

Ključne besede: javnofinančna poraba, vloga države, razvoj, Slovenija

1. Introduction

Until the end of 19th century, economists believed that socio-economic development in a nation lowers the need for government intervention. Karl Marx and even Adam Smith suggested that there is a negative correlation between public expenditures and the level of a nation's development (Henrekson 1990). They believed that as a nation progresses, public intervention becomes less important or even needless. In the late 19th century, German economist Adolph Wagner (1835-1917) published two books, the first in 1883 called *Economics of Finance* (*Finanzwissenschaft*, see Wagner 1883) and the second in 1893 called *The Basics of Political Economy* (*Grundlegung der politischen Ökonomie*, see Wagner 1893). In both he introduced a new, alternative economic view of the role of government in a national economy. With time-series and cross-section analysis, he showed that development of an economy goes hand in hand with an increased role of its government. His thesis was later denoted as Wagner's law.

According to Gemmell (1990), Wagner's law is unique as it explains the increased role of government explicitly by structural factors. It considers changes in socio-economic structures (such as the level of gross national product per capita and the level of a nation's development) as causal factors. Atkinson and Stiglitz (1980) show that later on the belief in the increased role of government as a nation develops became deeply incorporated in the standard view of economists, so it was rarely empirically tested. However, if tested, it was generally confirmed (Henrekson 1990).

Prior analysis shows that Wagner's law also holds in Slovenia. In fact, Wagner's law strongly holds for the period from 1992 until 2004 (see Dolenc 2005). Empirical analysis undoubtedly confirmed five of six versions of Wagner's law. One version was confirmed partly, only for public spending and not for government spending. Regarding the obtained results, it was concluded that Wagner's law holds for Slovenia: with an increased level of the nation's development (expressed by gross national product as aggregate or per capita), the role of government (expressed by public or government spending) significantly increases.

However, when the new government¹ was elected in 2004, it announced that one of the prime goals of the new economic policy would be to lower the influence of government on economic activity. This ought to be achieved by a large wave of privatization (2nd phase), withdrawal of the government from major stakes in the economy and a major cut in public spending. The data show that some boost in privatization actually occurred (see Dolenc 2006a, Stubelj 2009, Bertonec, Kovač and Kavčič 2009 for more details), but without a significant effect on the economy (with the exception of diminishing the public debt).

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What happened with government expenses in the sense of Wagner's law? Has the last government really decreased its influence or at least decreased the level of growth of public spending? Has public spending really become less influenced by the nation's development? This paper tries to find answers to these questions. In order to lessen its influence, the new economic policy should result in at least a lower correlation between public spending and the nation's level of development (in any of the forms of Wagner's law). However, we believe and thus try to test the hypothesis that no significant change followed the new policy.

The main findings of the paper are as follows. For empirical testing there exist at least six versions of Wagner's law. These versions differ mainly in the definition of the dependent variable (i.e., government or public spending) and causal factor(s) (i.e., the nation's development). All empirical versions of Wagner's law use an economic variable (such as gross national product) as an indicator of a nation's development. Our empirical analysis undoubtedly confirmed five of six versions of Wagner's law. One version was confirmed partly, only for government spending and not for public spending. Regarding the obtained results, we conclude that Wagner's law also holds for Slovenia: with an increased level of the nation's development (expressed by gross national product as aggregate or per capita), the role of the government (expressed by public or government spending) significantly increases. However, we cannot yet determine whether this finding corresponds to a longer-term relationship between the nation's development and the role of government or if it is simply the result of coincidence in the development in Slovenia in the past decade and a half since independence. For this to be tested, data would have to be available for a longer period. The main question of the study was answered as well: although announced, the previous government, which was elected in 2004, did not significantly change the dynamics of public finances in Slovenia; the correlation between economic development in Slovenia and its public finances stayed as strong as in years before.

The rest of the paper is organized as follows. The next section summarizes the conceptual framework of the analysis: possible empirical versions of Wagner's law, an explanation of the empirical analysis and a description of the data. In the third section, the main developments in Slovenia's gross national product and public finance since independence are presented. The last section before the concluding remarks constitutes the main part of the study, which presents and discusses the results of the analysis.

2. Conceptual Framework

Methodology

Wagner's definition of increased role of government was first presented in his *Economics of finance* as (Wagner, 1883, p. 8):

The law of increased role of public sector, especially government, is more and more becoming the law of increased public needs. Not only central government's spending, but also spending of local governments or municipalities (if existing and if well organized) is rising. In last periods we have perceived an increased public demand in Germany, especially from municipalities (mostly urban).

The law is the result of our empirical observations in mainly industrialized countries, especially Western-European countries. This fact results in social-economic progress and consequently changes in relative importance of public and private sector. Financial constraints can sometimes disturb the growth of public sector; therefore the public consumption is conditioned by output and not the other way around. But on long-run the desire for progress always overcomes these constraints.

His later definition in 1893 (even though more precise, see Wagner, 1893) was still rather doubtful, especially if we try to test his law empirically. Therefore, many economists argue about the causality, variables and econometric model used for testing. The question is what Wagner considered to be public need, how he defined socio-economic development, etc. Economists more or less agree that variables for econometric testing have to be economic numerical data in order to be able to form a formalized and testable model.

Over time six empirical versions of Wagner's law were accepted as representative versions. All are very similar as they all test elasticity of the dependent variable (i.e., public or government spending expressed as an aggregate, relative to gross domestic product, or per capita) with respect to the causal factor (i.e. gross domestic product expressed as an aggregate or per capita). All these versions have the form of the following potential function:

$$y = \beta_1 x^{\beta_2}, \quad [1]$$

where y denotes the dependent variable and x the causal factor (both explained above).

For empirical testing the above mathematical function is linearized to take the following form:

$$\log y = \log \beta_1 + \beta_2 \log x. \quad [2]$$

In testing Wagner's law the elasticity (β_2) is taken into consideration; the testing value, however, differs among the different versions. Mostly the following hypothesis is tested:²

$$\begin{aligned} H_0 &: \beta_2 \leq 1 \\ H_1 &: \beta_2 > 1 \end{aligned} \quad [3]$$

In Table 1 all six empirical versions of Wagner's law are presented. Besides the formal functional form of Wagner's law, the criteria for the acceptance of each individual version are also given.

Table 1: Basic characteristics of all six empirical versions of Wagner's law

Version	Functional form	Criteria
Traditional version (Peacock and Wiseman 1960)	$E = f(GDP)$	$\beta_2 > 1$
Pryor (1968)	$C = f(GDP)$	$\beta_2 > 1$
Goffman (1968)	$E = f\left(\frac{GDP}{P}\right)$	$\beta_2 > 1$
Musgrave (1969)	$\frac{E}{GDP} = f\left(\frac{GDP}{P}\right)$	$\beta_2 > 0$
Michas (1975)	$\frac{E}{P} = f\left(\frac{GDP}{P}\right)$	$\beta_2 > 1$
Combined version (Mann 1980)	$\frac{E}{GDP} = f(GDP)$	$\beta_2 > 0$

Where:

E – public or government spending, C – public or government purchases,
 GDP – gross domestic product and P – population.

We tested all six versions of Wagner's law using the regression function from Equation [2]. Because of the nature of the data (quarterly time series), we removed the trend and seasonal component from each of the data series using the following regression function:

$$y_t = \beta_1 + \beta_2 \cdot t + B_3 D_t + e_t, \quad [4]$$

where:

y_t – data series,
 β_2 – regression coefficient for time variable,
 t – time variable (= 1, 2, ..., 64 [=16·4]),
 B_2 – vector of regression coefficients for seasonal component,
 D_t – matrix of three dummy variables for seasonal component,
 e_t – regression residual.

Regression residual (e_t) in fact represents data series with the trend and seasonal component excluded. These data series were then used as representative data series in testing the hypothesis. However, Equation [2] had to be expanded in order to test the hypothesis and test if there was in fact some specific break in the relationship between variables; therefore, we used the following regression function:

$$\hat{y}_t = \beta_1 + \beta_2 \cdot x_t + B_3 \cdot D + B_4 \cdot D \cdot x_t, \quad [5]$$

where

\hat{y}_t – estimated dependent variable (depending on the empirical version) in logarithmic form,
 x_t – explanatory variable (depending on the empirical version) in logarithmic form,
 B_3/B_4 – vectors of regression coefficients matrix of three dummy variables,
 D – matrix of three dummy variables for each of the three tested breaks (end 2005, end 2006, and end 2007, respectively).

We were interested in three possible breaks (end 2005, end 2006, and end 2007, respectively), and using dummy variables we tested when (if at all) the shift in the relationship between dependent and explanatory variables (depending on the empirical version) became statistically significant. If any (or all) of the partial regression coefficient from B_3 was statistically significant and negative, this would prove the decreasing influence of the government from the perspective of Wagner's law in Slovenia.

Data Sources

Wagner's law is usually tested on long-run data. For Slovenia, however, such testing was not possible because until 1992 Slovenia was a part of Yugoslavia. Therefore, we were quite limited in the empirical analysis. In order to obtain sufficient degrees of freedom, we performed the analysis on quarterly data for the period from 1992 until 2007. The following variables were used:

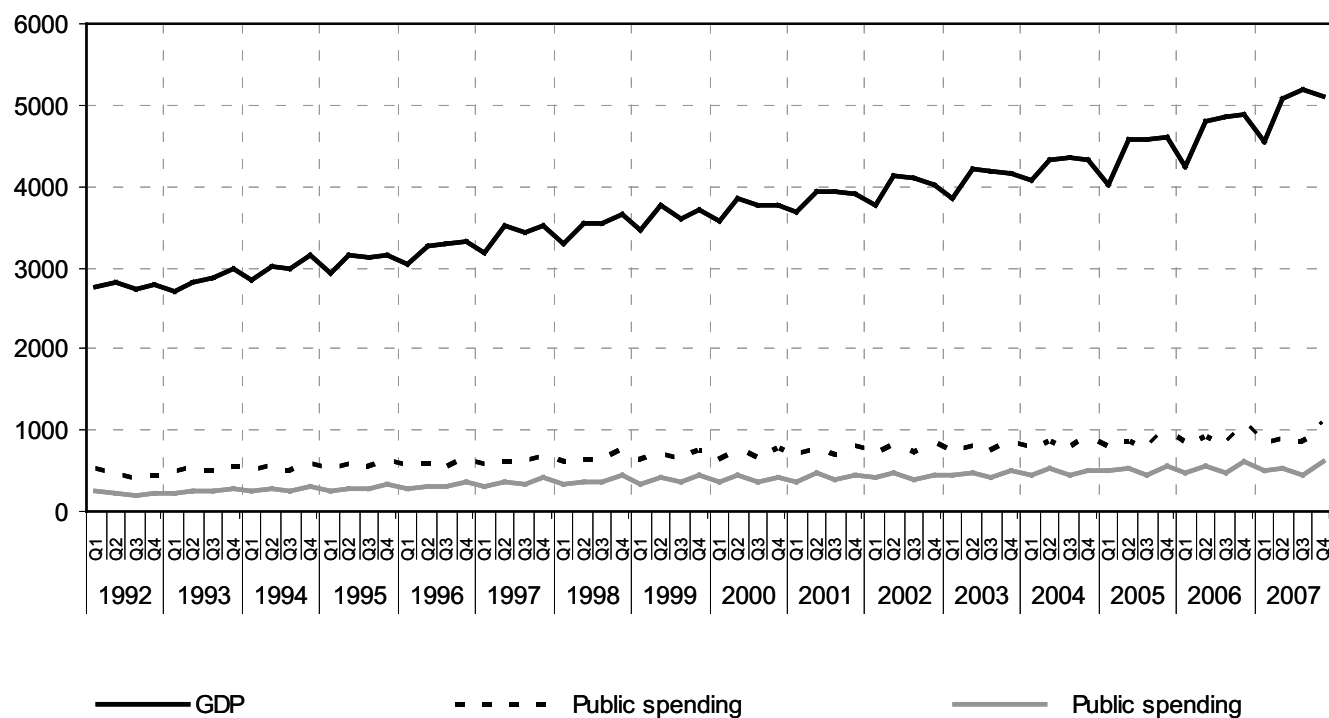
- *Data on public and solely central government spending and purchases.* The quarterly data (in current prices) were obtained from official and internal data of the Ministry of Finance of the Republic of Slovenia. The category *public and solely central government purchases* includes public or government expenditures on goods and services and capital expenditures.
- *Data on gross domestic product.* The quarterly data (in current prices) were obtained from the official database of the Statistical Office of the Republic of Slovenia.
- *Data on population.* The quarterly data for the period from 1996q1 to 2007q4 were obtained from the official database of the Statistical Office of the Republic of Slovenia, and the quarterly data for the period from 1992q1 to 1995q4 (not available otherwise) were calculated with linear interpolation from data for 31 December 1991 and 31 December 1995.

Table 2: Some yearly statistics of gross domestic product in the period 1992 to 2007

Year	Current prices (in mio EUR)	Index $I_{1992} = 100$	Nominal growth rate (in %)	In fixed prices from mid 1992 (in mio EUR)	Index $I_{1992} = 100$	Real growth rate (in %)
1992	11,114	100.0		11,114	100.0	
1993	11,997	107.9	7.9	11,391	102.5	2.5
1994	13,325	119.9	11.1	11,998	108.0	5.3
1995	15,496	139.4	16.3	12,375	111.3	3.1
1996	16,095	144.8	3.9	12,949	116.5	4.6
1997	17,240	155.1	7.1	13,622	122.6	5.2
1998	18,602	167.4	7.9	14,069	126.6	3.3
1999	20,011	180.1	7.6	14,535	130.8	3.3
2000	20,740	186.6	3.6	14,941	134.4	2.8
2001	21,925	197.3	5.7	15,426	138.8	3.2
2002	23,492	211.4	7.1	16,017	144.1	3.8
2003	24,592	221.3	4.7	16,413	147.7	2.5
2004	25,919	233.2	5.4	17,071	153.6	4.0
2005	28,243	254.1	9.0	17,771	159.9	4.1
2006	30,453	274.0	7.8	18,784	169.0	5.7
2007	33,542	301.8	10.1	19,930	179.3	6.1

Source: Ministry of Finance of the Republic of Slovenia, Statistical Office of the Republic of Slovenia, own calculations.

Figure 1: The movement of gross national product, public spending and government spending on a quarterly basis in the period from 1992q1 to 2007q4, in fixed prices from mid 1992 in millions of EUR



Source: Ministry of Finance of the Republic of Slovenia, Statistical Office of the Republic of Slovenia, own calculations.

All data (except population) were price deflated to fixed terms (mid 1992 = 100) with the quarterly CPI index obtained from the official database of the Statistical Office of the Republic of Slovenia.

3. Developments in Slovenian Gross Domestic Product and Public Finance

From the time of independence, Slovenia has made quite some progress in the sense of increased economic standard. Nominal gross domestic product more than tripled. However, because of high inflation through at least the end of the 1990's,³ real gross domestic product has risen by almost 80 percent. Slovenia experienced 3.6 percent average annual real growth of gross domestic product in the period from 1992 until 2007. Table 2 shows some yearly statistics of gross domestic product in the observed period, and Figure 1 shows the movement of gross national product on a quarterly basis.

Not only has gross domestic product been rising, but also public (government) spending has increased in these years. In the observed period, public spending has increased almost 6.5-times (nominally), which means more than 100 percent real growth or 4.3 percent yearly (on average). Data for solely government spending shows similar results (see Figure 1). In Table 3 yearly data on public and solely government spending are presented, and in Figure 1 the movement of these data on a quarterly basis is plotted (in addition to the movement of gross national product).

Simple data observation confirms that in Slovenia the role of public finance has risen since independence. To clarify the picture we plotted in Figure 2 indexes of all three categories with mid 1992 as the base period. It is obvious that public and government spending not only follow gross domestic product but also grow faster. Not to be misled with subjective opinions based on visual data presentation, we empirically analyze in the next section the law of increased role of government for Slovenia.

4. Empirical Testing of Wagner's Law for Slovenia

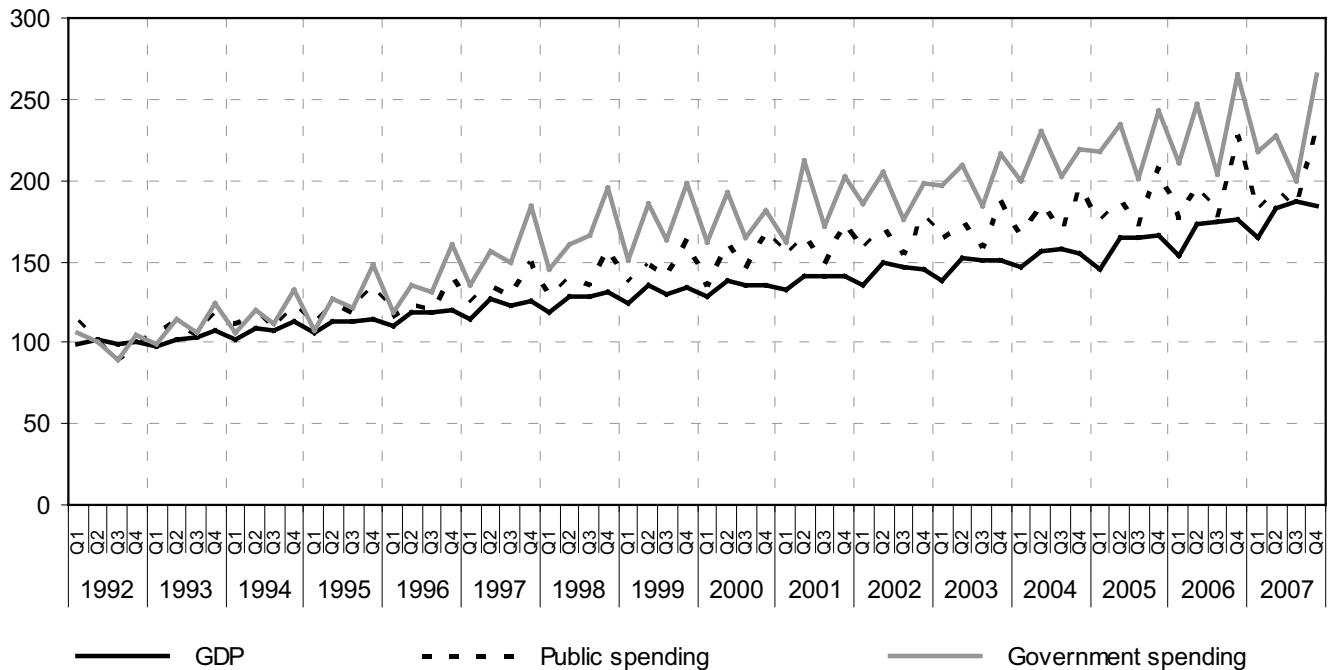
According to Mann's suggestions (Mann 1980), which tested Wagner's law in the case of Mexico for the period from 1925 to 1976, we tested all six empirical versions of Wagner's law. Regarding Wagner's unclear definition of "public sector," all tests were done twice: first on the basis of consolidated data of all public spending, and second on the basis of solely government spending. Therefore, we believe that we can get the most thorough insight into the background of Wagner's law and can most comfortably accept or reject the validity of the law for Slovenia. Results of the analysis are summarized in Table 4. It is important to notice that tests for assumptions of regression analysis (in our case the Durbin-Watson test for autocorrelation, the Jarque-Bera test for normal distribution and the White test for heteroscedasticity) imply that the selected analysis is statistically appropriate in this case.

Table 3: Some yearly statistics of public spending in the period 1992 to 2007

Year	Current prices (in mio EUR)	Index $I_{t/192} = 100$	Nominal growth rate (in %)	In fixed prices from mid 1992 (in mio EUR)	Index $I_{t/192} = 100$	Real growth rate (in %)
1992	1,874	100.0		1,874	100.0	
1993	2,726	145.5	45.5	2,063	110.1	10.1
1994	3,469	185.1	27.2	2,160	115.3	4.7
1995	4,173	222.7	20.3	2,288	122.1	5.9
1996	4,705	251.1	12.8	2,349	125.3	2.6
1997	5,442	290.4	15.7	2,507	133.8	6.7
1998	6,160	328.7	13.2	2,630	140.3	4.9
1999	6,974	372.2	13.2	2,751	146.8	4.6
2000	7,713	411.6	10.6	2,849	152.1	3.6
2001	8,811	470.2	14.2	3,001	160.1	5.3
2002	9,733	519.4	10.5	3,084	164.6	2.8
2003	10,666	569.2	9.6	3,202	170.9	3.8
2004	11,552	616.5	8.3	3,348	178.7	4.6
2005	12,276	655.1	6.3	3,471	185.2	3.7
2006	13,209	704.9	7.6	3,644	194.4	5.0
2007	13,915	742.6	5.4	3,705	197.7	1.7

Source: Ministry of Finance of the Republic of Slovenia, Statistical Office of the Republic of Slovenia, own calculations.

Figure 2: The movement of gross national product, public spending and government spending on a quarterly basis in the period from 1992q1 to 2007q4, fixed index (mid 1992 = 100)



Source: Ministry of Finance of the Republic of Slovenia, Statistical Office of the Republic of Slovenia, own calculations.

Table 4: Summary of empirical testing on the validity of Wagner's law for Slovenia

Version	Criteria	Data	Estimated elasticity	Value of t-test for testing elasticity against criteria	Estimated determination coefficient	Acceptance (✓) / rejection (×) of the version	Sig. of the break at end 2005	Sig. of the break at end 2006	Sig. of the break at end 2007	Durbin-Watson test*	Jarque-Bera test**	White test***
Traditional version	$\beta_2 > 1$	Public spending	1.17	4.21	0.93	✓	0.91	0.89	0.90	2.83	3,06	2,32
		Government spending	1.46	9.67	0.94	✓	0.48	0.45	0.44	3.13	4,85	2,74
Pryor	$\beta_2 > 1$	Public purchases	0.89	-1.92	0.80	×	0.48	0.33	0.31	2.46	4,10	2,02
		Government purchases	1.55	4.57	0.73	✓	0.32	0.35	0.30	2.19	3,74	2,76
Goffman	$\beta_2 > 1$	Public spending	1.18	4.28	0.93	✓	0.90	0.90	0.89	2.82	2,44	1,91
		Government spending	1.47	9.67	0.94	✓	0.48	0.32	0.31	3.11	3,63	2,44
Musgrave	$\beta_2 > 0$	Public spending	0.18	4.67	0.26	✓	0.66	0.62	0.57	2.65	4,13	2,04
		Government spending	0.48	11.30	0.67	✓	0.65	0.62	0.60	3.02	3,71	1,99
Michas	$\beta_2 > 1$	Public spending	1.17	4.12	0.93	✓	0.91	0.88	0.89	2.83	3,50	2,51
		Government spending	1.47	9.51	0.94	✓	0.49	0.44	0.45	3.13	3,43	1,78
Combined version	$\beta_2 > 0$	Public spending	0.17	4.70	0.26	✓	0.65	0.61	0.57	2.67	4,23	2,32
		Government spending	0.48	11.30	0.67	✓	0.65	0.62	0.60	3.02	4,44	3,07

Notes:

* The Durbin-Watson test is used for testing the autocorrelation in the regression – $d_L=1.55$ and $d_U=1.62$ at 5% significance.

** The Jarque-Bera test is used for testing the hypothesis of normal distribution. The test value in this case is 5.99 at 5% significance.

*** The White test is used for testing the hypothesis of heteroscedasticity. The test value in this case is 3.84 at 5% significance.

Source: Own calculations.

Empirical results show that five of six empirical versions of Wagner's law (except Pryor's version for public spending) can be undoubtedly confirmed. The value of the t-test for testing elasticity against criteria was in all these cases extremely high, confirming the rejection of the null hypothesis for estimated elasticity (from [3]) with negligible significance. For Pryor's version,⁴ we could not confirm that elasticity of public purchases grows at a higher rate than gross domestic product, although it was confirmed for government purchases. The significance of the t-test, however, was only bordering on statistical acceptance (approximately 0.08). The results are not surprising and are very similar to those obtained from data series until 2004 (see Dolenc 2006a).

One can notice that Goffman's and Michas' versions of Wagner's law give practically identical results as the traditional version, and that Musgrave's and the combined version also have similar results. The reason for this is the fact that population – a demographic variable that rarely changes in the short-run – was fairly stable in the testing period. Coefficient of variation – a relative measure of a variable's variation – was as low as 0.26 percent! Therefore Goffman's and Michas' versions are the same as the traditional version conditionally to stable population. The proof for Goffman's version is as follows:⁵

$$\begin{aligned}
 E &= \beta_1 \cdot \left(\frac{GDP}{P}\right)^{\beta_2} \Rightarrow \\
 \log E &= \log \beta_1 + \beta_2 \cdot \log\left(\frac{GDP}{P}\right) \Rightarrow \\
 \log E &= \log \beta_1 + \beta_2 \cdot (\log GDP - \log P) \Rightarrow \\
 \log E &= (\log \beta_1 - \beta_2 \cdot \log P) + \beta_2 \cdot \log GDP \Rightarrow \\
 \text{if } P &= konst. \Rightarrow \log E = (\log \beta_1 - \log P^{\beta_2}) + \beta_2 \cdot \log GDP \Rightarrow \\
 \log E &= \log \frac{\beta_1}{P^{\beta_2}} + \beta_2 \cdot \log GDP \Rightarrow \\
 \log E &= \log \beta_1' + \beta_2 \cdot \log GDP.
 \end{aligned}$$

[6]

Because eleven of twelve tested models undoubtedly confirm the theoretical background, we can confirm the already stressed assumption: for Slovenia Wagner's law (still) holds. The economic role of the public sector has been growing in Slovenia since independence. This can be seen as faster growth of public (or solely government) spending as compared to growth of gross domestic product. Practically all empirical versions of Wagner's law were confirmed, which proves the following: it is irrelevant whether we take aggregate data, per capita data, or data with respect to gross domestic product as a measure of the dependent variable (public or solely government spending); or if we take aggregate or per capita gross domestic product as a measure of the causal factor. Irrespective of this, the data show that the economic role of the public sector (with this we mean the economic role of the state) has been growing in Slovenia.

However, we cannot determine whether this finding corresponds to a longer-term relationship between the nation's development and the role of government, or if it is simply the result of coincidence in the development in Slovenia in the past decade and a half since independence. For this to be tested, a longer period of data will have to be available.

If we turn back to our main hypothesis about change in economic policy since 2004, the results are clear as well. The new more conservative government could not significantly change the trends in public finances (relative to gross domestic product) in order to lessen the influence of the government on the economy. We have not analyzed the structure of public spending, but the overall or general picture can be seen from the analysis. The influence of GDP (nominal or per capita) on public or purely government spending (or purchases) has not changed significantly in one, two or three years since the elections.

What do these results show? They show either the unwillingness of the previous government to really take on serious reforms in public finances, or the fact that the majority of public spending⁶ is fixed in Slovenia. The final result is the same regardless of the reason behind it: the economic role of the government in Slovenia is rising (from the perspective of Wagner's law) and not declining with economic development. The problem is not the rising economic role *per se*, but the worrying facts are seen with respect to the sustainability of public finances in Slovenia. Not many studies have been done on Slovenia, but some still argue in favour of questionable sustainability of public finances in the country. Some analyses (for example, Dolenc 2006b) observe from the international (i.e., the EU) perspective that Slovenia is bordering on unsustainable public finance and that in the intermediate period the situation could worsen. There are some fears based on the doubtful sustainability of the pension system as well (see, for example, Verbič 2007a and 2007b, Verbič, Majcen and van Nieuwkoop 2006, and other studies). Therefore, real caution in the public sector is crucial.

In 2007, nevertheless, the (general government) deficit was the lowest since 1995 and amounted to only 0.1 percent of GDP. Even so, 2007 was also a really successful year from the perspective of economic growth, which – as noted before – was more than 6 percent on an annual basis. Long-term trends (not short-term movements) matter in economic sustainability; therefore, this short-term shift should not be misleading.

Future research might focus also on the structure of public spending and not only on the general data as such. Researchers might be interested in the relationship and trends between the fixed and variable parts of public spending and where the variable part of public spending is targeted.

5. Conclusion

In this paper we focus on empirical models for testing Wagner's law and test the validity of Wagner's law for

Slovenia. Moreover, the focus is also on the question of whether the conservative government, elected at the end of 2004, really lowered public spending (relative to other macroeconomic performance). More precisely, we consider whether the previous government broke the significant relationship between public spending and economic development in Slovenia.

We identify six empirical versions of Wagner's law, which differ mainly in the definition of the dependent variable (i.e., government or public spending) and causal factor(s) (i.e., a nation's development). All empirical versions of Wagner's law use an economic variable (such as gross national product) as an indicator of a nation's development.

For the empirical analysis of the validity of Wagner's law for Slovenia, we use quarterly data (because of the short period) for public and government spending and gross domestic product in Slovenia from 1992 until 2007. Results undoubtedly confirm five of six versions of Wagner's law. One version is confirmed partly, only for public spending and not for government spending.

Wagner's law holds also for Slovenia: with an increased level of the nation's development (expressed by gross domestic product as aggregate or per capita), the role of government (expressed by public or government spending) significantly increases. In Slovenia the elasticity of public or government spending with respect to gross domestic product is surprisingly high compared to other countries.

Our main hypothesis is confirmed as well. The previous government, despite its claims, could or would not significantly change the trends in public finances (relative to gross domestic product) in order to lower the influence of government on the economy. We have not analyzed the structure of public spending, but the overall or general picture can be seen from the analysis. The influence of GDP (nominal or per capita) on public or purely government spending (or purchases) has not changed significantly in one, two or three years since the elections.

Results are dramatic and not sustainable in the long-run. Therefore, strict budgetary discipline has to be enforced in the coming period.

6. Notes

- The new government was a remarkable shift in the political sense because after 12 years of nearly continuous liberal governments, conservative parties won the elections in the end of 2004 and formed a government.
- In two empirical versions of Wagner's law (Musgrave and combined) the test value of 1 is changed to 0.
- In the period from 1992 until 2007 the price level rose by 250 percent.
- Note that Pryor's version is the only version with public/government purchases as a dependent variable instead of public/government (total) spending.
- We get similar results when transforming Michas' version. Similarly, we could also compare Musgrave's and the combined version.
- Some estimations mention between 85 and 90 percent.

References

- Atkinson, Anthony B., and Joseph E. Stiglitz (1980). *Lectures on Public Economics*. London: McGraw-Hill.
- Bertoncelj, Andrej, Kovač, Darko, Kavčič, Klemen (2009). Intended vs. achieved objectives in mergers and acquisitions. *Ekonomski istraživanja* 1(2): 198-212.
- Dolenc, Primož (2005). *Does the Economic Role of Government Increase in Slovenia? Proof on the Testing of the Validity of Wagner's Law*. Koper: Faculty of Management.
- Dolenc, Primož (2006a). State-owned Financial Assets and Privatization: Theory and Reality in Slovenia. *Naše gospodarstvo* 52 (3/4): 65-82.
- Dolenc, Primož (2006b). Doubtful Sustainability of Public Finances in Slovenia. *Prague Economic Papers* 15(3): 268-281.
- Gemmell, Norman (1990). *Wagner's Law, Relative Prices and the Size of the Public Sector*. Manchester: The Manchester School of Economic and Social Studies.
- Goffman, Irving J. (1968). On the Empirical Testing of Wagner's Law: A Technical Note. *Public Finance* 4 (23): 359-364.
- Henrekson, Magnus (1990). *An Economic Analysis of Swedish Government Expenditure*. Göteborg: Vasastadens Bokbinderi AB.
- Mann, Arthur J. (1980). Wagner's Law: An Econometric Test for Mexico, 1925-1976. *National Tax Journal* 3 (33): 189-201.
- Michas, Nicholas A. (1975). Wagner's Law of Public Expenditure: What is the Appropriate Measurement for a Valid Test? *Public Finance* 30 (1): 77-84.
- Ministry of Finance of the Republic of Slovenia: Bulletin of Public Finance, several issues.
- Ministry of Finance of the Republic of Slovenia: Internal data.
- Musgrave, Richard A. (1969). *Fiscal Systems*. London: Yale University Press.
- Peacock, Alan T., and Jack Wiseman (1961). *The Growth of Public Expenditure in the United Kingdom*. Princeton: Princeton University Press.
- Pryor, Frederic L. (1968). *Public Expenditures in Communist and Capitalist Nations*. Homewood, IL: Richard D. Irwin, Inc., Nobleton, OT: Irwin-Dorsey Limited.

16. Statistical Office of the Republic of Slovenia: Online database, [url: <http://www.stat.si>]
17. Stubelj, Igor (2009). Strošek lastniškega kapitala podjetja : primer ocene za izbrane slovenske delniške družbe. *Management* 4(1): 21-38.
18. Verbič, Miroslav (2007a). *Varying the Parameters of the Slovenian Pension System: An Analysis with an Overlapping-Generations General Equilibrium Model*. Ljubljana: Institute for Economic Research.
19. Verbič, Miroslav (2007b). *Supplementary Pension Insurance in Slovenia: An Analysis with an Overlapping-Generations General Equilibrium Model*. Ljubljana: Institute for Economic Research.
20. Verbič, Miroslav, Boris Majcen and Renger van Nieuwkoop (2006). *Sustainability of the Slovenian Pension System: An Analysis with an Overlapping-Generations General Equilibrium Model*. Ljubljana: Institute for Economic Research.
21. Wagner, Adolph (1883). *Finanzwissenschaft*. Leipzig: C. F. Winter'sche Verlags-handlung.
22. Wagner, Adolph (1893). *Grundlegung der politischen Ökonomie*. Leipzig: C. F. Winter'sche Verlagshandlung.