Wagner's law in Italy: empirical evidence from 1960 to 2008

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"WAGNER'S LAW" IN ITALY: EMPIRICAL EVIDENCE FROM 1960 TO 2008

by COSIMO MAGAZZINO *

«[…] the fact of believing in a corpus of scientific knowledge acquired independently of any judgement of values is, as I consider it to be, a naïve empiricism. […] questions are an expression of our interest in matters of the world, they are in essence assessments»[1].
G. K. MYRDAL (1898-1987)

ABSTRACT: "Wagner's Law" is the first model of public expenditure in the history of public finance. The aim of this article is to assess its empirical evidence in Italy for the period 1960-2008. After a brief introduction, an essential survey of the economic literature on this issue is offered, before evaluating the specifications of "Wagner's Law" due either to Ram or Koop & Poirier. Wagner's original specification is also evaluated. A few notes on the expenditure policy in Italy conclude the paper.

KEYWORDS: public expenditure; Wagner's Law; structural reforms; Italian public finance; time-series.

JEL Classification: E60; H50; H60.

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[1] See: MYRDAL G. K., *The Political Element in the Development of Economic Theory*, Routledge & Kegan, London, 1953, p. VIII.

1. – Introduction

THE PURPOSE OF THIS ESSAY IS TO ASSESS *"WAGNER'S LAW"*, ONE OF THE first and best known models of the dynamics of public spending. In his opinion the incidence of the latter on national income is set to increase over time. As far as the Italian case is concerned[2], this occurred from the beginning of the Sixties (when "first centre-left" governments started) up to 2008[3]. The data used is taken from the AMECO data-set of the European Commission[4].

A synthesis of the literature that, over the years, has taken shape on the model initially proposed by A. H. WAGNER at the end of the 19th century is followed by an overview of different econometric specifications of "WAGNER's Law" and a discussion on the various methods used by scholars in their empirical analyses are discussed.

Subsequently, we have assessed these relationships with a different specification that could isolate the price effect, considering such independent variables as the real GDP calculated at market prices and market prices GDP deflator.

The results of the estimates regarding policy changes are commented with methodological caution, derived from the "error theory"[5], in order to select those appropriate for the requalification and the reduction of Italian public spending, in line with the conclusions of the *Libro Verde sulla spesa pubblica* and (with the findings) of a number of researchers[6]. However, we are unable to comment on the inevitable and irreducible presence of value judgments in the modelling of the theory.

2. – Wagner's society model

As the NITTI[7], MUSGRAVE and ROSTOW[8] models, also WAGNER's model too may be included among the "society models".

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[2] For an analysis of different models, applied to other *data-set*, see MAGAZZINO C., *Modelli interpretativi della dinamica della spesa pubblica e "curva di Armey": il caso italiano, 1862-2001*, in "Notizie di Politeia", a. XXIV, no. 92, 2008, pp. 45-60.

[3] The econometric *software* used is STATA 11. See *web* address: http://www.stata.com/.

[4] See: http://ec.europa.eu/economy_finance/db_indicators/db_indicators8646_en.htm.

[5] See: ROMAGNOLI G. C., *L'errore nelle scelte di macroeconomia*, in "Rivista della Scuola superiore dell'economia e delle finanze", No. 12, 2005, pp. 96-151, in part. pp. 96-99.

[6] See: MINISTERO DELL'ECONOMIA E DELLE FINANZE – COMMISSIONE TECNICA PER LA FINANZA PUBBLICA, *Libro verde sulla spesa pubblica*, typewritten, Rome, 2007.

[7] See: NITTI F. S., *La scienza delle finanze*, in FORTE F. (EDITED BY), *Edizione Nazionale delle Opere di Nitti*, Laterza, Bari, 1972.

[8] See: ROSTOW W. W., *Politics and the Stages of Growth*, Cambridge University Press, Cambridge, 1971; MUSGRAVE R. A., *Fiscal Systems*, Yale University Press, New Haven, 1969; MUSGRAVE R. A. – PEACOCK A. T., *Classics in the Theory of Public Finance*, Macmillan, London, 1967.

We owe to ADOLF H. WAGNER – a German economist of the second half of the 19th century (a "socialist of the chair") – the first theory on the increase of public expenditure[9]. This theory proposed by WAGNER is a "society theory" that therefore makes the growth of public expenditure dependent upon the structural evolution of society[10]. He examined the existence of a desirable limit to the size of the public sector, determining that a limit was in fact not possible. In his opinion, the development of spending is determined, essentially, by the increase of national income. An increase of this variable generates a more than proportional expansion of the public sector. It follows that what WAGNER defined as "the law of increasing expansion of the public sector"[11], arguing, in his final analysis, that the value of financial pressure would increase.

At the core of WAGNER's thesis is, predominantly, the interaction existing between the growth of the public sector and that of private activities. With the increase of economic development, exchanges intensify among operators and the network of relationships becomes more and more complicated and controversial. All this can be addressed through legislation and arrangement of new and heftier controls. Moreover, since the processes of industrialization and urbanization create external diseconomies – such as the congestion effect or the deterioration of the environment –, the public sector has been called to find a remedy to these challenges[12].

In contrast, satisfaction of higher needs would be the explanation for the growth of social services. Insofar as the elasticity of such common consumptions with regard to income results to be superior to the unit. A continuous expansion of social services is easily foreseeable and, since citizens are ready towards financing such services with increasing shares of their resources, it would be senseless to set limits to these consumptions[13]. Consequently, there is a limit to public sector growth. By that, a planned level of public expenditure (and a consequent determinate relationship between these and the national income) beyond which the community would not agree to give up increasing shares for private spending. Having reached this point, public spending should become fixed on a proportionally constant share of the general economic activity. It is possible, therefore, to highlight two distinct periods of development of expenditure. The first is distinguished by progressive growth, in which the percentage variation of public expenditure turns out to be

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[9] See: WAGNER A. H., *Finanzwissenschaft*, Leipzig, 1883, cited in MUSGRAVE R. A. – PEACOCK A. T., *Classics in the Theory of Public Finance*, Macmillan, London, 1967; WAGNER A. H., *Les fondements de l'économie politique*, in 5 vol., Girard&Brière, Paris, 1912, vol. III, pp. 376-401; CHRYSTAL A. – ALT J., *Endogenous Government Behaviour: Wagner's Law or Götterdämmerung?*, pp. 127-137 in COOK S. T. – JACKSON P. M. (EDITED BY), *Current Issues in Fiscal Policy*, Martin Robertson, Oxford, 1979.

[10] See: DE ROSA F., *Compendio di Economia e Finanza Pubblica*, Simone, Napoli, 2005, p. 42.

[11] See: WAGNER A. H., *Les fondements de…, cit.*

[12] See: WAGNER A. H., *Finanzwissenschaft,…, cit.*

[13] See: BROSIO G. (A CURA DI), *La spesa pubblica*, Giuffrè, Milano, 1987, pp. 93-94; MASTROMATTEO G., *La legge del Wagner e lo sviluppo della spesa pubblica*, in "Rivista di Diritto Finanziario e Scienza delle Finanze", 1984; MICHAS N., *Wagner's Law of Public Expenditure: What is the Appropriate Measurement for a Valid Test?*, in "Public Finance", 30(1), 1975, pp. 77-85; FRANCO D., *L'espansione della spesa pubblica in Italia*, il Mulino, Bologna, 1993 p. 51.

greater than the percentage variation of the aggregate income. While the second period is distinguished by proportional growth, when the percentage variation of public expenditure turns out to be equal to the percentage variation of the aggregate income[14].

From a methodological point of view, the empirical evidence concerning the relationship between public income and expenditure is based on the assessment of the elasticity of expenditure to income. Only if such elasticity is superior to the unit and the coefficient sign is positive, could we then come to the conclusion that the link between the two variables exists and it is consistent with WAGNER's hypothesis[15].

However, in the Wagnerian analysis an explicit reference to political mechanisms of decision was missing[16]. As a "socialist", WAGNER made reference to the "organicistic theory of the State". The State interprets the will of citizens, it is not a mere reflection of its single constituent units. It takes decisions pursuing an interest that by definition is general, as it results specifically from State will. Here, the implications of "holism" are evident, with the consequent rejection of "ethic individualism" as well as of the "methodological" one[17].

3. – A review of the results obtained

The model proposed by WAGNER has had a great influence in literature[18]. Although it has been long the fulcrum of the theoretical elaborations on determinants on public expenditure, with the passing of time it has also been subjected to an empirical assessment by different thinkers. The results obtained are contradictory, since with the changing of countries and the temporal intervals considered, the data-

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[14] See: SOBBRIO G., *Economia del settore pubblico*, Giuffrè, Milano, 1999, pp. 138-139; DOMINICK M., *A critical appraisal of the theories of government expenditure growth*, University of Stellenbosch, South Africa, 2002.

[15] See: FOSSATI A., *Economia pubblica. Elementi per un'analisi economica dell'intervento pubblico*, FrancoAngeli, Milano, 1999, pp. 296-299; DIBA B., *A Note on Public Sector Growth: a Real Perspective*, in "Public Finance", Vol. 37, 1982, pp. 114-119; FOSSATI A., *La spesa pubblica in Italia dal 1951 al 1980*, in "Rivista di Diritto Finanziario e Scienza delle Finanze", n. 3, XL, 1981, pp. 322-375; JACKSON P., *The Growth of the Relative Size of the Public Sector*, pp. 329-354 in CURRIE D. – PETERS W., *Contemporary Economics Analysis*, vol. II, Croom Helm, London, 1980; HADJIMATHEOU G., *On the Empirical Evidence on Government Expenditure Development*, in "Public Finance", Vol. 31, 1976, pp. 144-148.

[16] See: BROSIO G., *Economia e finanza pubblica*, Carocci, Roma, 2003, pp. 272-273.

[17] See: ACOCELLA N., *Fondamenti di politica economica*, Carocci, Roma, 1999, pp. 40-43.

[18] See: WAGNER A. H., *Les fondements de l'économie politique*, in 5 voll., Girard&Brière, Paris, 1912, vol. III, pp. 376-401; WAGNER A. H., *Finanzwissenschaft*, Leipzig, 1883, cited in MUSGRAVE R. A. – PEACOCK A. T., *Classics in the Theory of…, cit.*

set used and of the methods applied, they lead us to conclude sometimes in favour of the existence of "WAGNER's Law", and sometimes against it.

The elasticity of public spending concerning aggregate income has been calculated by GIARDA[19] to be equal to *0,63*, whereas BELLA and QUINTIERI[20] calculated it to be equal to *0,81*. According to these scholars, it can be claimed that during the period 1960-1985 the income growth determined around *40%* of expenditure increase in real terms (that is the *2,95%* per year on *7,4%*). In any case, both the estimates agree in considering that public spending does not involve superior goods.

KOOP and POIRIER examine WAGNER's hypothesis in terms of a long-term elasticity of the per capita government expenditure, *ln(G/POP)*, with regard to per capita income, *ln(GDP/POP)*, using a bivariate error-correction mechanism, corresponding to a co-integrated mechanism. Of 86 countries considered, only in one-third of them is WAGNER's hypothesis supported by data. The two scholars conclude that their calculations are in clear contrast with "WAGNER's Law"[21].

RAM tests the relationship, still in terms of elasticity, between the share of public general expenditure, *ln(G/Y)*, and the per capita GDP, *ln(PCY)*, by breaking the analysis down into two parts (time-series and cross-section)[22]. The analyses on the historical series (carried out in *115* countries, in relation to the period 1950-1980) show, on the one hand, the great difference of the estimates for the different countries. As the author points out,

> *«[…] we could say that we could obtain almost* whatever other *estimation for the government share elasticity with regard to the per-capita GDP, or for the elasticity of the public expenditure with regard to aggregate GDP al PIL by selecting an "appropriate" country or group of countries»*[23].

On the other hand, the differences between the various groups of countries seem to be modest or low; the average elasticity of the groups sometimes does differ according to countries analyzed, but it does so in a minor way (except for Asia). In particular, values systematically or clearly lower for the most developed countries do not seem to appear. Finally, the ratio between results in line and in contrast to WAGNER's hypothesis ends up to be, approximately, *3:2*. Of the *115* countries

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[19] See: GIARDA P. D., *Una interpretazione della crescita della spesa pubblica in Italia: 1952-1987*, in "Rivista Bancaria", anno XLIV, n. 11-12, 1988, November - December.

[20] See: BELLA M. – QUINTIERI B., *Crescita in disequilibrio ed espansione del settore pubblico*, in "Rivista Internazionale di Scienze Sociali", no 2, 1989, pp. 179-200.

[21] See: KOOP G. – POIRIER D. J., *An Empirical Investigation of Wagner's Hypothesis by Using a Model Occurrence Framework*, in "Journal of the Royal Statistical Society", Series A, vol. 158, no. 1, 1995, pp. 123-141.

[22] See: RAM R., *Wagner's Hypothesis in Time-Series and Cross-Section Perspectives: Evidence from "Real" Data for 115 Countries*, in "The Review of Economics and Statistics", vol. 69, no. 2, May, 1987, pp. 194-204; RAM R., *Comparing Evidence on Wagner's Hypothesis from Conventional and 'Real' Data*, in "Economic Letters", 20, 1986, pp. 259-262; RAM R., *Causality between Income and Government Expenditure: A Broad International Perspective*, in "Public Finance", 41, 1986, pp. 393-413.

[23] See: RAM R., *Wagner's Hypothesis in…, cit.*, p. 197.

included in the study, *41* have an elasticity inferior to the unit; in the other *75* cases, the relationship is significant at the level of *5%* in *54* of these.

In the cross-section estimates, the period of reference is divided into *3* sub-periods: 1950-1960, 1961-1970 and 1971-1980. Moreover, the sample is broken down into two sub-samples: *D.C.* (*Developed Countries*) and *L.D.C.* (*Less Developed Countries*). The results seem to reject the starting hypothesis: the elasticity of the expenditure share concerning the per capita GDP is negative in most cases, and the negative sign is significant in the full sample as well as in the sub-sample *L.D.C.* Also, the elasticity of the government expenditure concerning the GDP is inferior to the unit in many cases.

MUSGRAVE reaffirmed how the most plausible formulation of WAGNER's model is in terms of a positive correlation between the share of public expenditure on domestic product and per capita income; in addition, he found that the cross-section evidence for high-income countries does not confirm WAGNER's hypothesis. However, the analysis of historical series shows favourable evidence in at least *60%* of cases[24].

MUSGRAVE[25], HINRICHS[26] and GANDHI[27], working separately, reached the conclusion that cross-section analyses that include both developed and under-developed countries as well as more backward countries support WAGNER's hypothesis, while samples formed only by from less developed countries do not support this.

SINGH and SAHNI, studying the causality link between public expenditure and national income for India during the period 1950-1981, found that the effect of the growth of public expenditure on that of national income is relatively low if compared to its effect on the growth of expenditure income. The conclusions they reach are that public expenditure and national income are linked by a causal mechanism of feedback; but that the empirical evidence suggests that such a causality relationship is neither of a Wagnerian nor a Keynesian type[28].

KELLEY suggested how "WAGNER's Law" must be modified in order to incorporate the relevant effects of demographic changes. This would result from from the complex interaction of economic and demographic changes that do not necessarily require an increase of the public sphere and of state activity[29].

FERRIS and WEST discovered that empirical evidence is unfavourable to "WAGNER's Law", using data referring to the post second world-war period[30].

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[24] See: MUSGRAVE R. A., *Fiscal Systems*, Yale University Press, New Haven, 1969.
[25] See: MUSGRAVE R. A., *Fiscal Systems..., cit.,* pp. 111; 116-118; 123.
[26] See: HINRICHS H. H., *Determinants of Government Revenue Shares among Less-Developed Countries*, in "Economic Journal", 75, September, 1965, pp. 546-556.
[27] See: GANDHI V. P., *Wagner's Law of Public Expenditure: Do Recent Cross-Section Studies Confirm It?*, in "Public Finance", 26, 1971, pp. 44-56.
[28] See: SINGH B. – SAHNI B. S., *Causality Between Public Expenditure and National Income*, in "The Review of Economics and Statistics", vol. 66, n. 4, November, 1984, pp. 630-644.
[29] See: KELLEY A. C., *Demographic Change and the Size of the Government Sector*, in "Southern Economic Journal", vol. 3, no. 2, October, 1976, pp. 1056-1066.
[30] See: FERRIS J. S. – WEST E. G., *Testing Theories of Real Government Size: U. S. Experience*, in "Southern Economic Journal", vol. 62, no. 3, January, 1996, pp. 537-553.

HENREKSON noted how the crux of "WAGNER's Law" originates from regressions to levels, invoking the "causality test" of GRANGER and NEWBOLD in support of theses of erroneous inferences when variables are not steady[31]. Indeed, he shown how income and the share of public expenditure on national product, – even if correlated – are not cointegrated, demonstrating this through the Swedish case in an empirical verification on data in historical series from 1861 to 1990. In this way, they reached the conclusion that correlations reported by other researchers are of "spurious" nature[32].

On the contrary OXLEY, analyzing data on Great Britain from 1870 to 1913, found evidence in favour of "WAGNER's Law", which resists and satisfies the causality test of GRANGER[33].

EASTERLY and REBELO find strong evidence in favour of "WAGNER's Law" in the cross-section analysis relating to 115 countries (in the period 1970-1988) as well as in the historical one concerning 26 countries (from 1870 to 1988). The correlation between per capita income and dimensions of public spending is often found, in both kinds of econometric analyses[34].

STEIN, TALVI and GRISANTI, by comparing the countries of Latin America to those of OECD, showed that the role of the public operator is more extensive in the richest countries. In other words, those countries with a greater aggregate income tend to have wider public apparatus[35].

SHELTON, using a cross-country panel regressed various measures of public expenditure on a vector of explanatory variables through the "random effects method". He underlined how the richest countries tend to have populations with a higher average age which would push them to spend more in the area of social security and of other forms of protection and public assistance. Besides calculating the fraction of the population above 65 years old, it should be emphasized that countries with a greater national income would tend to have less plethoric and larger state machines – which constitutes the complete opposite to what "WAGNER's Law" suggests. In short, it would be the health and social expenditure that would "lead" the relationship between public expenditure and per capita income, that otherwise would not increase jointly. Another determinant of "WAGNER's Law" would be the "taxation technology", that is, the expansion of the public operator would be made easier by the state skilfulness in increasing the

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[31] See: GRANGER C. W. J. – NEWBOLD P., *Spurious Regressions in Econometrics*, in "Journal of Econometrics", vol. 2, No. 1, 1974, pp. 111-120; GRANGER C. W. J., *Investigating causal relations by econometric model and cross-spectral methods*, in "Econometrica", vol. 37, 1969, pp. 424-438.

[32] See: HENREKSON M., *Wagner's Law - A Spurious Relationship?*, in "Public Finance", vol. 48, No. 2, 1993, pp. 406-415.

[33] See: OXLEY L., *Cointegration, Causality, and Wagner's Law: A Test for Britain 1870-1913*, in "Scottish Journal of Political Economy", vol. 41, No. 3, 1994, pp. 286-298.

[34] See: EASTERLY W. – REBELO S., *Fiscal Policy and Economic Growth: an Empirical Investigation*, in "Journal of Monetary Economics", vol. 32, 1993, pp. 417-458.

[35] See: STEIN E. – TALVI E. – GRISANTI A., *Institutional arrangements and fiscal performance: the Latin American experience*, Inter-American Development Bank, Office of the Chief Economist, Working Paper No. 367, February, 1998.

tax revenue, which in turn depends on the tax system and its simplicity and efficiency[36].

4. – Estimates for Italy

The estimation methods used in this work are the following: OLS Robust (*Ordinary Least Squares*), FGLS (*Feasible Generalized Least Squares*)[37], ARIMAX Robust (*AutoRegressive Integrated Moving Average with Exogenous Variables*), GARCH (*General AutoRegressive Conditional Heteroskedaticity*)[38], and GLLAMM (*Generalized Linear Latent And Mixed Model*)[39]. Moreover, also mixed models have been used.

The data used in this work has been drawn from the AMECO data-set of the European Commission (E.C.), that can be freely consulted on the web[40]. AMECO is a macroeconomic database revised monthly by the Directorate General for Economic and Financial Affairs. It is an essential instrument for all analyses and reports of the ECOFIN. Its advertising is free aimed at strengthening the transparency and precision of studies for which it is intended. Data can be found here for the E.U.-27, the Eurozone, the countries proposed as candidates for entry into the Euroarea and other countries forming part of the O.E.C.D.[41].

The empirical evidence concerning "WAGNER's Law" has produced, therefore, contrasting results: some researchers have not found any systematic relationship between the share of public spending and per capita domestic product[42]. While, others have found a strong positive relationship between the two variables[43].

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[36] See: SHELTON C. A., *The Size and Composition of Government Expenditure*, Wesleyan Economic Working Papers, No. 2, January, 2007.

[37] See: PRAIS S. J. – WINSTEN C. B., *Trend estimators and serial correlation*, Cowles Commission Discussion Paper, No. 383, Chicago, 1954; COCHRANE D. – ORCUTT G. H., *Application of least-squares regression to relationship containing auto correlated error terms*, in "Journal of the American Statistical Association", 44, 1949, pp. 32-61.

[38] For an in-depth analysis of the model employed see, among others: LÜTKEPOHL H., *New Introduction to Multiple Time Series Analysis*, Springer-Verlag, Milano, 2005; DI FONZO T. – LISI F., *Serie storiche economiche*, Carocci, Roma, 2005; BEE DAGUM E., *Analisi delle serie storiche: modellistica, previsione e scomposizione*, Springer-Verlag, Milano, 2002; GALLO G. M. – PACINI B., *Metodi quantitativi per i mercati finanziari*, Carocci, Roma, 2002; ENGLE R. F. (EDITED BY), *ARCH. Selected Readings*, Oxford University Press, Oxford, 1995.

[39] See: RABE-HESKETH S. – SKRONDAL A., *Multilevel and Longitudinal Modeling using Stata*, College Station, Stata Press, TX, 2005; RABE-HESKETH S. – PICKLES A. – SKRONDAL S., *Generalized multilevel structural equation modeling*, in "Psychometrika", 69, 2004, pp. 167-190. See also website address: http://www.gllamm.org/models.html.

[40] See: http://ec.europa.eu/economy_finance/db_indicators/db_indicators8646_en.htm.

[41] This concerns studies of the United States of America, Japan, Canada, Switzerland, Norway, Island, Mexico, South Korea, Australia and New Zealand.

[42] See: LALL S., *A Note on Government Expenditures in Developing Countries*, in "Economic Journal", June, 1969, pp. 413-417; MUSGRAVE R. A., *Fiscal Systems..., cit.*; Lotz J. R. – Morss E. R., *A Theory of*

Using the specification suggested by RAM[44], we have subjected to empirical analysis – relatively to the Italian case in the period 1960-2008 – the specification containing as dependent variable the logarithm of the share of the total public spending on GDP (*logSTG*) and as explanatory variables the logarithm of the real GDP (*log*RGDP) and the deflator of GDP at market costs (*DefGDPmktpr*).

We can thus sum up in the following formula:

$$G/Y = f(Y) \qquad [1]$$

where G/Y represents the expenditure share on GDP, explained according to Y, the real GDP (we have also included in the specification the deflator of the GDP to take into account the price effects).

Tax Level Determinants for Developing Countries, in "Economic Development and Cultural Change", April, 1970, pp. 328-341.

[43] See: GUPTA S. P., *Public Expenditure and Economic Growth: A Time-Series Analysis*, in "Public Finance", 1967, pp. 423-461; MARTIN A. M. – LEWIS W. A., *Patterns of Public Revenue and Expenditure*, in "The Manchester School of Economics and Social Studies", September, 1956, pp. 203-244; THORN R. S., *The Evolution of Public Finances During Economic Development*, in "The Manchester School of Economics and Social Studies", 1967, pp. 19-53; WILLIAMSON J. G., *Public Expenditure and Revenue: An International Comparison*, in "The Manchester School of Economics and Social Studies", January, 1961, pp. 43-56.

[44] See: RAM R., *Wagner's Hypothesis in Time-Series and Cross-Section Perspectives:…, cit.*; RAM R., *Comparing Evidence on Wagner's Hypothesis…, cit.*

TABLE 1 – Synthesis of the estimates of "WAGNER's model" according to the specification proposed by RAM (1960-2008 and 1969-1992).

Dep. Var. (logSTG) 1960-2008	***(with constant)***	***(without constant)***	***Dep. Var. (logSTG) 1969-1992***	***(with constant)***	***(without constant)***
Constant	-1.12238*** (.1197347)	-	***Constant***	-1.917033*** (.1080139)	-
logRGDP	-.1508248 (.1030481)	1.242802*** (.015911)	***logRGDP***	.5166583*** (.0621597)	-.7157331*** (.0913389)
DefGDPmktpr	.0051066*** (.00133)	.0051404*** (.0016245)	***DefGDPmktpr***	.0021785*** (.0004931)	.012581*** (.0022827)
ARIMA Correction	(3,0,2)	(2,0,2)	***ARIMA Correction***	(1,0,3)	(1,0,3)
ARCH Correction	ARCH(1)	ARCH(1)	***ARCH Correction***	-	-
N	49	50	***N***	24	24
Wald χ^2	24807.77 (0.0000)	3.51e+06 (0.0000)	***Wald χ^2***	1.63e+11 (0.0000)	1.82e+08 (0.0000)
Log pseudo-verisimilutude	97.15728	101.5576	***Log pseudo-verisimilitude***	50.59486	44.24409
L.B. (lags(10))	12.849 (0.2322)	8.5521 (0.5751)	***L.B. (lags(10))***	7.2786 (0.6989)	7.6738 (0.6607)
AIC	-174.3146	-187.1151	***AIC***	-85.18973	-74.48818
BIC	-155.1943	-171.8189	***BIC***	-75.7653	-66.24181

N.B.: all estimates are calculated using the correction for the heteroscedasticity of WHITE[45].
Levels of Significance: * 10%, ** 5%, *** 1%.
In parenthesis, for variables, the Robust Standard Errors are reported.

TABLE 1 points out, on the left, that in the "full" model only the deflator is statistically significant, with a coefficient equal to *0,0051* (Model 1); if we consider only the real income as an independent variable, it is not significant, and it assumes the negative sign in contrast with the theoretical hypotheses (Model 2); finally, in Model 3 the GDP deflator is the only explanatory variable and is not statistically significant. On the right side of the table we have taken into account the sub-period 1969-1992, that is the period of absence of exactness in the management of politics of balance: in this case we find and empirical evidence favourable to the law, since the real GDP is statistically significant and has the sign (positive) expected. Therefore, using the specification proposed by RAM, there is empirical contradictory evidence concerning "WAGNER's Law" in the Italian case.

Using the specification suggested by KOOP and POIRIER[46], we have sestimated the model containing as dependent variable the logarithm of the per capita public expenditure (*logTPE/Pop*) and as explanatory variables the logarithm of the real per capita GDP (*logRGDP/Pop*) and market prices GDP deflator (*DefGDPmktpr*).

In formula we have:

$$G/Pop = f(Y/Pop) \qquad [2]$$

[45] See: WHITE H., *A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroschedasticity*, in "Econometrica", 48, 1980, pp. 817-838.
[46] See: KOOP G. – POIRIER D. J., *An Empirical Investigation of Wagner's Hypothesis…, cit.*

where *G/Pop* represents the per capita public expenditure, explained as a function of the per capita GDP, *Y/Pop* (also in this case we have included in the specification GDP deflator in order to take into account the costs effects).

TABLE 2 – Synthesis of the estimates of "WAGNER's model" according to the specification proposed by KOOP and POIRIER (1960-2008).

Dep. Var. (logTPE/Pop)	***(with constant)***	***(without constant)***	***Dep. Var. (logRTPE/Pop)***	***(with constant)***	***(without constant)***
Contant	-4.478638 (4.880812)	-	***Constant***	-.6558127 (2.980067)	-
logRGDP/Pop	.4098301 (.5179479)	.8802608*** (.0168508)	***logRGDP/Pop***	1.012319*** (.3135481)	1.080824*** (.0122582)
DefGDPmktpr	.039764*** (.0050327)	.0354639*** (.0025589)	***DefGDPmktpr***	.0065354** (.0031218)	.0050328*** (.0016597)
ARIMA Correction	(3,0,2)	(3,0,2)	***ARIMA Correction***	(3,0,2)	(3,0,2)
N	47	47	***N***	47	47
Wald χ^2	1.33e+10 (0.0000)	121264.30 (0.0000)	***Wald χ^2***	1.74e+11 (0.0000)	2.87e+14 (0.0000)
Log pseudo-verisimilitude	61.39533	60.92018	***Log pseudo-verisimilitude***	76.08616	67.45124
L.B. (lags(10))	1.4183 (0.9992)	1.7156 (0.9981)	***L.B. (lags(10))***	9.6564 (0.4711)	7.3338 (0.6936)
AIC	-104.7907	-107.8404	***AIC***	-136.1723	-118.9025
BIC	-88.13933	-94.88932	***BIC***	-121.3711	-104.1013

N.B.: all estimates are calculated using the correction for the heteroscedasticity of WHITE.
Levels of significance: * 10%, ** 5%, *** 1%.
In parenthesis, for the variables , the Robust Standard Errors are reported.

TABLE 2 on its left side highlights that in the "full" model the real per capita income does not result to be statistically significant, with a coefficient equal to *0,4098* (Model 1); if we consider only the real per capita income as independent variable, it is significant, but with a negative sign in contrast with the theoretical hypotheses (Model 2); finally, in Model 3 the GDP deflator is the only explanatory variable, and it is strongly significant. On the right we can see how, instead, the real expenditure is explained by the real per capita GDP as well as from the GDP deflator. In particular, the coefficient of the real aggregate production has the positive sign expected and is *>1* (*1,0123*). In conclusion, even using a specification proposed by KOOP and POIRIER, there is empirical contradictory evidence on "WAGNER's Law" in the Italian case.

Now we present a further specification of "WAGNER's Law", centred on its original formulation. It takes as explanatory variable the level of the nominal aggregate income (*GDP*), while the dependent variable is constituted by the total public expenditure at levels (*TPE*).

TABLE 3 – Summary of the estimates of "WAGNER's model" according to a different specification (1960-2008).

	ARIMA-ARCH Model		***FGLS Model***	
Dep. Var. (TPE)	***(with constant)***	***(without constant)***	***(with constant)***	***(without constant)***
Constant	-6.017985*** (.6922638)	-	16.71563 (12.33408)	-
GDP	.8920326*** (.0602222)	.9482193 (.0173656)	.7303163*** (.0425652)	.7472976*** (.0354318)
ARIMA Correction	(2,0,2)	(2,0,2)	-	-
ARCH Correction	ARCH(1)	ARCH(1)	-	-
N	47	47	46	46
Wald χ^2	1633.00 (0.0000)	282713.96 (0.0000)	-	-
Log pseudo-verisimilitude	-179.5073	-183.9054	-	-
F	-	-	310.03 (0.0000)	444.84 (0.0000)
R^2	-	-	0.8973	0.9546
RMSE	-	-	25.544	25.364
ρ	-	-	.7886803	.7918021
L.B. (lags(10))	27.34 (0.0023)	23.733 (0.0083)	117.83 (0.0000)	100.93 (0.0000)
AIC	375.0146	381.8108	430.6137	428.9988
BIC	389.8158	394.7619	434.271	430.8274

N.B.: all estimates are calculated using the correction for the heteroscedasticity of WHITE.
Levels of significance: * 10%, ** 5%, *** 1%.
In parenthesis, for the variables , the Robust *Standard Errors* are reported.

As we can see from the left section of TABLE 3, the explanatory variable is statistically significant and its coefficient is *<1*. Excluding the constant from the model, the results do not change appreciably. It is important to underline that in both specifications, the correlogram shows how the residuals do not follow the "White Noise" process. Applying the FGLS method, the coefficient of the aggregate production measured in monetary terms remains lower than the unitary value but statistically significant (whether the intercept is included or excluded). The precision of adaptation is very high while the value of ρ is close to the unit (*0,79* in both cases). Finally, also in these two last cases, we note that the residuals do not follow a WN process.

Now we present a further specification of "WAGNER's model". The explanatory variables are represented by the logarithm of the real aggregate income (*log*RGDP) and by market prices GDP deflator (*DefGDPmktpr*), while the dependent variable is the total public expenditure (*logTPE*).

TABLE 4 – Synthesis of the estimates of "WAGNER's model" according to a different specification (1960-2008).

Dep. Var. (logTPE)	***(with constant)***	***(without constant)***	***Dep. Var. (logRTPE)***	***(with constant)***	***(without constant)***
Constant	-.3050016 (.7709652)	-	***Constant***	-1.520341*** (.4352399)	-
logRGDP	1.862301*** (.5153199)	1.780143 (.0939006)	***logRGDP***	1.491165*** (.3504472)	1.273651*** (.2873583)
DefGDPmktpr	.0232839*** (.0052672)	.0277211 (.0028003)	***DefGDPmktpr***	.000667*** (.0031482)	.0012266 (.0026365)
ARIMA Correction	(2,0,2)	(2,0,1)	***ARIMA Correction***	(2,0,2)	(2,0,2)
N	47	47	***N***	47	47
Wald χ^2	5846.41 (0.0000)	9.68e+13 (0.0000)	***Wald χ^2***	2188.01 (0.0000)	2.80e+10 (0.0000)
Log pseudo-verisimilitude	46.73279	57.01742	***Log pseudo-verisimilitude***	65.76458	62.95677
L.B. (lags(10))	16.164 (0.0950)	3.7857 (0.9565)	***L.B. (lags(10))***	13.738 (0.1853)	.74345 (1.0000)
AIC	-77.46558	-102.0348	***AIC***	-115.5292	-111.9135
BIC	-62.6644	-90.93396	***BIC***	-100.728	-98.9625

N.B.: all estimates are calculated using the correction for the heteroscedasticity of WHITE.
Levels of significance: * 10%, ** 5%, *** 1%.
In parenthesis, for the variables , the Robust *Standard Errors* are reported.

As we can note from TABLE 4, with reference to the specification with expenditure in nominal terms (on the left), in the "full" model both explanatory variables are statistically significant, with a coefficient for *logRGDP* equal to *1,8623* (Model 1); however, if we use exclusively this variable as regressor, it is not significant, and it assumes a negative sign in contrast to the theoretical hypotheses (Model 2); finally, in Model 3, GDP deflator is the only explanatory variable and it is statistically significant. This calls into question the validity of "WAGNER's Law" in the Italian case, relatively to the period 1960-2008. Considering the expenditure in real terms (on the right), we can note that there are no significant differences with regard to the previous case: both explanatory variables turn out to be statistically significant and assume the sign expected (positive); the increase (in absolute value) of the constant (that passes from *-0,3050* to *-1,5203*) however must be noted.

Breaking down this time-frame into sub-periods but maintaining this specification, we can note how in the sub-period 1970-2008, the law finds favourable empirical evidence both when the dependent variable is expressed in nominal terms and when it is expressed in real terms. Instead, in the sub-period 1970-1992, "WAGNER's Law" seems to be confirmed by data only when the dependent variable is expressed in real terms but not when it is instead expressed in nominal terms. In the sub-period 1992-2008, "WAGNER's Law" finds favourable empirical evidence when the dependent variable is expressed in nominal terms but not in real terms.

Finally, we present the estimate of "WAGNER's Law" according to the *Finite Mixture Model-F.M.M.* model. The "mix models" are used to describe the distribution of statistic variables within populations composed of a number of

heterogenic groups. In the application contexts, one of the simplest hypothesis is to assume that data refer to statistical units independent of each other. However, this assumption is implausible in territorial analyses where a discriminating effect is precisely the latent effect of the environment. In order to include this latent effect, the classical statistical models are modified by inserting an element of interaction among statistical units located in nearby territorial areas. We will use such categories of models to highlight any structural breaks in the series of the variables, also in order to study the possible constancy of parameters along the whole period of observation[47].

```
Iteration 8088:log pseudolikelihood =  5.1473022

3 component Normal regression                   Number of obs    =         47
                                                Wald chi2(6)     =    7848.35
Log pseudolikelihood =  5.1473022               Prob > chi2      =     0.0000
```

logTPE	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
component1						
logRGDPpe	1.664445	.1004468	16.57	0.000	1.467573	1.861317
PrDefGDPmk~r	.046567	.0007942	58.63	0.000	.0450104	.0481236
_cons	2.570436	.0630189	40.79	0.000	2.446921	2.693951
component2						
logRGDPpe	-4.783274	.3395889	-14.09	0.000	-5.448856	-4.117692
PrDefGDPmk~r	.0123779	.0011909	10.39	0.000	.0100438	.014712
_cons	2.139265	.1164498	18.37	0.000	1.911027	2.367502
component3						
logRGDPpe	-.9667893	.2245356	-4.31	0.000	-1.406871	-.5267075
PrDefGDPmk~r	.0143271	.0003781	37.89	0.000	.0135861	.0150682
_cons	4.763742	.1386575	34.36	0.000	4.491979	5.035506
/imlogitpi1	.883987	.5446048	1.62	0.105	-.1834187	1.951393
/imlogitpi2	1.79293	.4908438	3.65	0.000	.8308933	2.754966
/lnsigma1	-2.822255	.18021	-15.66	0.000	-3.17546	-2.46905
/lnsigma2	-1.793407	.171132	-10.48	0.000	-2.12882	-1.457995
/lnsigma3	-4.562623	.2497859	-18.27	0.000	-5.052195	-4.073052
sigma1	.0594717	.0107174			.0417749	.0846653
sigma2	.1663923	.028475			.1189776	.2327025
sigma3	.0104346	.0026064			.0063953	.0170253
pi1	.2567507	.0675798			.1471639	.4088234
pi2	.6371773	.0738299			.4843062	.7665735
pi3	.106072	.045478			.0169368	.1952073

As is clearly shown by data, the model identifies three components or year groupings (1960-1970, 1971-1992 and 1993-2006). For all three components the real GDP is statistically significant, but only for the first one is the expected sign (positive) assumed. Moreover, it is to be noted the extreme variability of the coefficient for the real GDP in the different groups (*1,6644*, *-4,7833* and *-0,9668* respectively). On the contrary, GDP deflator has a coefficient very similar in the three cases, between *0,01* and *0,05*. Therefore, the "structural breaks" identified according to "WAGNER's Law" would have in correspondence of the years 1971 (break of the balances of public finance; collapse of Bretton Woods system; strengthening of the Welfare State and reflections of the "'hot autumn") and 1993 (crash of the S.M.E.; "Tangentopoli"; "Maastricht Treaty").

[47] See: CONWAY K. – DEB P., *Is Prenatal Care Really Ineffective? Or, is the 'Devil' in the Distribution?*, in "Journal of Health Economics", 24, 2005, pp. 489-513; MCLACHLAN G.J. – PEEL D., *Finite Mixture Models*, John Wiley, New York, 2000; DEB P. – TRIVEDI P. K., *Demand for Medical Care by the Elderly: A Finite Mixture Approach*, in "Journal of Applied Econometrics", 12, 1997, pp. 313-326; TITTERINGTON D. M. – SMITH A. F. M. – MAKOW U. E., *Statistical Analysis of Finite Mixture Distributions*, John Wiley, New York, 1985.

Nevertheless, we must underline how the diagnostic analysis carried out demonstrates contradictory evidence with regard to "WAGNER's model". Such model turns out to be, for all temporal intervals considered, mis-specified, affected by heteroscedasticity, a positive serial correlation in the residuals and by conditional autoregressive heteroscedasticity, although being the aggregate production often statistically significant and with the sign (positive) expected.

5. – Conclusions

In a conclusion, we can say that the analyses carried out do not fully confirm the validity of "WAGNER's Law", with regard to the Italian case for the period 1960-2008; in fact, regressing the total public expenditure on the real GDP and on market prices GDP deflator, we find empirical evidence favourable to the Wagnerian hypothesis; using the specification suggested by RAM (with the same explanatory variables but with the expenditure share on GDP as variable answer) we have contradictory empirical evidence on "WAGNER's Law"; and we arrive at the same conclusions if we use a different specification of the model, proposed by KOOP and POIRIER, having as dependent variable the per capita public spending and as explanatory variables the per capita GDP and the GDP deflator. The key point, that is often concealed in literature, is the incompleteness of WAGNER's original specification, who claimed to explain the trend of public spending through a single covariate (the aggregate production). That is why the inadequacy of the model emerges clearly, provided that the diagnostic tests are carefully analyzed, from different points of view: it turns out to be affected by an absence of relevant explanatory variables, a strong positive serial correlation in the residuals, heteroschedasticity, and disturbances of ARCH(p) type.

Besides "WAGNER's Law", there are other sources of pressure on spending: the difficult overcoming of the criterion of the "incremental budget" based on the concept of "historical spending" (on the basis of "WILDAVSKY's model"), that prevents an effective "spending review" from being carried out and the start up of a more efficient criterion of a "zero based budget", devoid of a "historical memory"[48]; the expansion of the demand for public services which is increasingly onerous, the aim of which is to meet the ever more complex needs with the increase of development (on the basis of "WAGNER's model"); moreover, on the basis of "ARMEY's curve", it has been shown how the expenditure share that maximizes the

[48] See: MAGAZZINO C., *Stima della spesa pubblica italiana secondo i modelli di Musgrave e Rostow e di O'Connor*, ne "Il Risparmio Review", n. 3, 2009; MAGAZZINO C., *Le determinanti della spesa pubblica in Italia (1980-2002), parte seconda*, in "Notizie di Politeia", a. XXII, n. 83, 2006, pp. 63-78; MAGAZZINO C., *Le determinanti della spesa pubblica in Italia (1980-2002)*, in "Notizie di Politeia", a. XXI, n. 79, 2005, pp. 35-44.

Italian economic growth is equal to *23%*, greatly lower than the value that it takes on today (*49%*)[49].

This should push the Italian legislator to a wide program of requalification and reform of public expenditure, having as its aim the revisiting of the Italian welfare model, the revision of the mechanisms of public revenue, a wide plan of liberalization and privatization[50], the reform of justice (by improving the efficiency of the judicial apparatus and decreasing the average length of trials), of pensions (increasing the retirement age for all workers, and bringing the female one in line with the male one; reducing the replacement rate; re-modulating the system of benefits and eligibility, by limiting or cutting them, and that of contributions, by widening them; eliminating whatever part is divided within the system and replacing it with those at full capitalization; introducing a multi-pillar system, of which one is public, another private yet compulsory, and a third one private and voluntary; in addition, the development of pension funds would help the growth of financial markets, which in turn would encourage the formation of savings and the accumulation of capital, by promoting, in the final analysis, the growth of the economy), of the labour market (increasing labour flexibility and mobility; introducing a mechanism of compulsory insurance with minimum cover), of fiscal and tax system (by simplifying and streamlining them and, if necessary, introducing a flat tax), of health system (introducing a mandatory insurance for basic services and against serious or rare illnesses; extending the systems of prevention and vaccination; strengthening quality and cost controls, by increasing their incentives; introducing performance contracts for physicians), of the Public Administration (strengthening the transparency and the efficiency of the bureaucracy), of the University and of the Research (introducing international standards in the assessment of academic careers; avoiding the "brain drain" phenomenon; increasing the net contributions of University researchers; avoiding the proliferation of Universities; expanding the system of scholarships for equity reasons; realizing an

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[49] See: MAGAZZINO C., *Modelli interpretativi della dinamica della spesa pubblica e "curva di Armey":…, cit.* In the same direction the conclusions of TANZI and SCHUKNECHT run according to whom «in the long run the total public expenditure should be brought up to under 30% of the GDP without having to sacrifice the main or essential activities of the public sector and without negatively impacting on relevant social and economic indicators», compare TANZI V. – SCHUKNECHT L., *La spesa pubblica nel XX secolo. Una prospettiva globale*, Firenze University Press, Firenze, 2007, p. 128.

[50] See: LA SPINA A. – MAJONE G., *Lo Stato regolatore*, il Mulino, Bologna, 2000; ENGEL E. – FISHER R. – GALETOVIC A., *Infrastructure Franchising and Government Guarantees*, X Regional Seminar on Fiscal Policy, CEPAL, Chile, January, 1998; IRWIN T. – KLEIN M. – PERRY G. – THOBANI M., *Managing Contingent Capabilities in Infrastructure Privatization*, X Regional Seminar on Fiscal Policy, CEPAL, Chile, January, 1998; P.U.M.A. – O.E.C.D., *Contracting Out Government Services: Best Practice Guidelines and Case Studies*, O.E.C.D. Occasional Paper, No. 20, 1997; HEALD D., *Privately Financed Capital in Public Services*, in "The Manchester School of Economic and Social Studies", Vol. 65, No. 5, December, 1997, pp. 568-598; WORLD BANK, *Bureaucrats in Business: The Economics and Politics of Government Ownership*, Oxford University Press – W.B., New York, 1995; KAPUR A., *Airport Infrastructure. The Emerging Role of the Private Sector*, World Bank Technical Paper, No. 313, W.B., 1995; WORLD BANK, *Averting the Old Age Crisis: Policies to Protect the Old and Promote Growth*, Oxford University Press – W.B., New York, 1994; WORLD BANK, *World Development Report*, Oxford University Press – W.B., New York, 1994.

easy terms credit system for the third-level education; eliminating the sub-financing and the overcrowding of university institutes), of the school (enacting a vouchers system), of work contracts, the fiscal federalism, electoral laws for the various levels of government that remove the hyper-fragmentation of the Italian political system – will be certainly able to contribute to re-qualifying spending, emptying many chapters of unproductive expenditure to fill those of expenditure susceptible to exercising greater effects on the economic activity of the country[51]. For this purpose, serious qualitative balance policies as well as reasoned qualitative deficit manoeuvre would be desirable (on the basis of the alternative methods of financing of the public deficit and of the economic cycle), that would go hand in hand with the quantitative ones[52]. The mid-term objective to be achieved should be the return to the primary surplus – the principal measure for the reduction of the national debt/gross product ratio[53] – in addition to a sustained and sustainable development.

Furthermore, it is also necessary to dwell on many asymmetries concerning public spending that hurt private citizens, pointed out by the "Public Choice School" and by the "Scuola Italiana di Scienza delle Finanze": the opposition between concentrated benefits and costs which are instead spread; between visible advantages and invisible costs (made so by mechanisms of "fiscal illusion" – that hides the cost of deficit financing through the issue of bonds of public debt – and that of the "financial illusion" – that hides the inflationary cost (via seignorage, and therefore with creation of monetary means) of the financing of the public deficit[54].

Moreover, the search for consent and the maximization of votes, lead "of course" to the expansion of deficit and public debt: in order to increase the probability of (re)election, policy-makers find it much more desirable to increase expenditure (in order to win the votes of specific electoral constituencies) instead of cutting them; as such, it is undoubtedly easier to operate fiscal cuttings as opposed

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[51] See: DE IOANNA P. – GORETTI C., *La decisione di bilancio in Italia*, il Mulino, Bologna, 2008; REVIGLIO F., *La spesa pubblica*, Marsilio, Venezia, 2007, pp. 57-74; 165-231; CIOCCA P., *Ricchi per sempre? Una storia economica d'Italia (1796-2005)*, Bollati Boringhieri, Torino, 2007; AA. VV., *Riforme. We will*, Marsilio, Venezia, 2007; REVIGLIO F., *Per restare in Europa*, U.T.E.T., Torino, 2006, pp.184-208; FAINI R. – GIANNINI S. – GROS D. – PISAURO G. – KOSTORIS PADOA SCHIOPPA F., *I conti a rischio. La vulnerabilità della finanza pubblica italiana*, il Mulino, Bologna, 2006; ALESINA A. – GIAVAZZI F., *Goodbye Europa. Cronache di un declino economico e politico*, Rizzoli, Milano, 2006; ALVI G., *Una repubblica fondata sulle rendite. Come sono cambiati il lavoro e la ricchezza degli italiani*, Mondadori, Milano, 2006; PETRINI R., *L'imbroglio fiscale*, Laterza, Roma-Bari, 2005; MINISTERO DELL'ECONOMIA E DELLE FINANZE – COMMISSIONE TECNICA PER LA FINANZA PUBBLICA, *Libro verde sulla spesa pubblica…, cit.*, pp. 107-116.

[52] See: MARZANO A., *Politica macroeconomica*, U.T.E.T., Torino, 2006, pp. 204-259.

[53] See: ROMAGNOLI G. C., *La Legge finanziaria 2008 tra esigenze di risanamento ed esigenze del governo*, pp. 45-68 in TRUPIANO G. (EDITED BY), *La Legge finanziaria 2008*, Aracne, Roma, 2008.

[54] See: PERSSON T. – TABELLINI G., *Political Economics. Explaining Economic Policy*, M.I.T. Press, Cambridge-London, 2000; PERSSON T. – TABELLINI G., *The Size and Scope of Government: Comparative Politics with Rational Politicians*, in "European Economic Review", vol. 43, 1999, pp. 699-735; KYDLAND F. E. – PRESCOTT E. C., *The Econometrics of the General Equilibrium Approach to Business Cycles*, in "Scandinavian Journal of Economics", no. 93, 1991, pp. 161-178; PERSSON T. – TABELLINI G., *Politica macroeconomica. Le nuove teorie*, La Nuova Italia Scientifica, Roma, 1996 (original edition: *Macroeconomic Policy, Credibility and Politics*, Harwood Academic Publishers, London, 1990).

to a worsening in tax. This could lead to the adoption of "constitutional rules" – in collusion with the "New Constitutional Economics" – that could limit the discretion of the political class, directing the measures adopted by the latter more and more towards general interests of the community[55]. For this reason, important requirements for the efficiency of expenditure plans and the control of public deficit have been identified in balance procedures that could, one the one hand, strengthen incentives to cautious fiscal policies and, on the other, set rules and limits to expansive policies [56].

On account of this we could reconsider the idea suggested by FORTE in the Eighties that is to link the actual public spending to the dynamic of prices (linking them to inflation rate), while those in public investments and fiscal incomes would be linked to the growth rate of aggregate production: the result would be a progressive reduction of the balance deficit[57].

Finally, it must be taken into due account how a reduction of expenditure would favour the contextual decrease of the fiscal pressure without worsening the condition of public accounts; in other words, it would allow the balancing of the budget, if fiscal cuts were more contained than those applied to expenditure.

Concluding the Meeting of the "Società Italiana di Economia Pubblica" (Conference of the Italian Society of Public Economics) in 1978, SERGIO STEVE recalled:

> *«public expenditure can appropriately grow on condition that the community is willing to pay its cost.*
>
> *[…] everyone agrees that public expenditure on the whole is too great, consent on this is easy, but no one agrees on the first public expenditure that needs to be cut»*[58].

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[55] See: BRENNAN G. – BUCHANAN J. M., *La ragione delle regole. Economia e politica costituzionale*, FrancoAngeli, Milano, 1991 (edizione originale: *The Reason of Rules. Constitutional Political Economy*, Cambridge University Press, Cambridge, 1985); BRENNAN G. – BUCHANAN J. M., *The Power to Tax. Analytical Foundations of a Fiscal Constitution*, Cambridge University Press, Cambridge, 1980; TULLOCK G., *The Vote Motive*, Institute of Economic Affairs, London, 1976; BUCHANAN J. M. – TULLOCK G., *Il calcolo del consenso. Fondamenti logici della democrazia costituzionale*, Il Mulino, Bologna, 1998 (original editition: *The Calculus of Consent. Logical Foundations of Constitutional Democracy*, Ann Arbor, The University of Michigan Press, 1962).

[56] See: MILESI-FERRETTI G., *Fiscal Rules and the Budget Process*, I.M.F. Working Paper, 96/60, International Monetary Fund, 1996; ALESINA A. – PEROTTI R., *Political Economy of Budget Deficits*, I.M.F. Staff Papers, Vol. 42, No. 1, March, pp. 1-31, 1995.

[57] See: FORTE F. – PEACOCK A. T. (EDITED BY), *Public Expenditure and Government Growth*, Basil Blackwell, Oxford, 1985.

[58] See: STEVE S., *Conclusioni*, pp. 223-231 in GERELLI E. – REVIGLIO F. (EDITED BY), *Per una politica della spesa pubblica in Italia*, FrancoAngeli, Milano, 1978.