



Government Expenditure And Economic Growth: Testing Of Wagner's Hypothesis

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Abstract:

The paper examines the relationship between public expenditure and economic growth in the Indian states by empirically testing the Wagner's Law. The study uses alternative interpretations of the Wagner's Hypothesis to test the hypothesis of increasing state activity for twenty nine Indian states using cross-sectional data and regression analysis. The empirical evidence reported in the paper does not support Wagner's hypothesis of increasing state activities. The Wagner's hypothesis is rejected meaning thereby that government expenditure is increasing at a slower rate than the economic growth. Hence, there is decreasing role of government in Indian states.

KEYWORDS:

Public Expenditure, Government Expenditure, Economic Growth, Wagner's Law, Wagner's Hypothesis, Increasing State Activity, Peacock-Wiseman Share, Pryor, Goffman, Musgrave, Gupta/Mitches.

1. INTRODUCTION AND THEORETICAL CONSIDERATIONS

The relationship between government expenditure and economic growth has received considerable attention over the last three decades. For a long time, there was no model of the determination of public expenditures. Of course, some classical economists, e.g. Adam Smith, paid attention to tendencies in the long-term trend in public expenditures, but there was no attempt to translate such observations into a general theory [Tarschys, 1975].

However, over one hundred years ago, a simple model of the determination of public expenditures was offered by Adolph Wagner [1835-1917], a leading German economist of the time. On the basis of empirical findings, Wagner formulated a 'law' of expanding state expenditures; which pointed to the growing importance of government activity and expenditure as an inevitable feature of 'progressive state' [Bird, 1971]. He was the first scholar to recognize the existence of a positive correlation between the level of economic development and the size of the public sector. Hantolai [2003] has very well summarized the literature and critically examined the theoretical foundations and model specifications involved in the testing of Wagner's Law of increasing state activity for Eritrea, and the present study has followed the same. Wagner [1883] offered a model of the determination of public expenditure in which public expenditure growth was a natural consequence of economic growth. Later, his views were formulated as a law and are

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often referred to as "Wagner's Law". His main contribution in this field was that he tried to establish generalizations about public expenditures, not from postulates about the logic of choice, but rather by direct inference from historical evidence.

According to Wagner, there are inherent tendencies for the activities of different levels of a government to increase both intensively and extensively. He argued that the development of modern industrial society would give rise to increasing political pressure for social progress and call for increased allowance for social consideration in the conduct of industry. In consequence, continual expansion of the public sector and its share in the economy should be expected [Musgrave and Musgrave, 1989]. As such, the argument states a functional relationship between the growth of an economy and the growth of the government activities so that the government sector grows faster than the economy.

Wagner outlines several reasons for the increased size of the public sector relative to a country's level of economic development. First, the greater division of labour and urbanization accompanying industrialization would require higher expenditure on contractual enforcement and regulatory activity. Second, the growth of real income would facilitate the relative expansion of income-elastic cultural behavior and welfare expenditures. Third, economic development and changes in the technology and the funding for long-run investments would have a dynamic impact on the level of fiscal activities of the state. The lack of access to capital funds on a very large scale would produce state interventions in the long-run as private sector firms would not be able to raise the required capital. Moreover, the need for public infrastructure as a complement to private sector investment activities would be needed [Safa, 1999]. It follows from the above that public expenditure in Wagner's Law can be treated as an outcome, or an endogenous factor, not a cause of growth in national income.

Modern economists hold the view that public expenditure has a positive role to play in achieving definite ends. Its goal is to promote maximum social welfare, and its significance lies in the supply of those essential goods and services by the government for the satisfaction of collective wants, which might not otherwise be provided economically and efficiently by the private sector.

The development of developing economies requires huge expenditure to be incurred in various sectors of the economy. The private sector does not undertake such investments, either being unable to finance these huge investments or being unwilling to risk on uncertain or long delved investment returns. Moreover, in the modern world, state is regarded as a Welfare State, which is expected to promote the welfare of its citizens by fulfilling certain social and economic obligations. Therefore, state has to provide not only social security but also to participate directly in the economy to maintain growth and stability and to secure essential goods; which all call for ever increasing investment expenditure.

The growth in the size of public sector has received considerable attention for several decades. After the publication of English translations of Wagner's works in 1958, Wagner's Law has become very popular in academic circles and it has been analyzed and tested by many researchers. In particular, the relationship between public expenditure and national income has been tested empirically for various countries using both time-series and cross-sectional data sets within the context of 'Wagner's Law'. Among the several interpretations, the most popular interpretation of the Law states that the increases in economic activities cause an increase in government activities, which in turn raises public expenditure.

Some of the important and often referred studies on Wagner's Law are, Musgrave [1969], Bird [1971], Krzyzaniak [1972, 1974], Mann [1980], Sahni and Singh [1984], Abizadeh and Gray [1985], Ram [1986, 1987], Henrekson [1992], Courakis et al. [1993], Murthy [1993], Oxley [1994] Ansari et al. [1997], and Chletsos and Kollias [1997].

Some of these researchers have applied traditional regression analysis, while some others have used causality testing. More recently, for the time-series data, cointegration analysis has also appeared in the literature. Empirical tests of Wagner's Law have yielded results that differ considerably from country to country and period to period.

The objective of this research paper is to assess the relationship between government expenditure and economic growth in the Indian states by testing the Wagner's Law. The present section introduces the Wagner's Hypothesis and lays down the theoretical foundation for determination of public expenditures. Section two presents the various model specifications for testing of the Wagner's Law. It is envisaged that the role of the governments will have to expand increasingly in social sectors. Is the role of the state governments increasing, particularly in social sector, along with the economic growth? Based upon the Wagner's Hypothesis of increasing state activities; section three empirically examines this issue, for a cross-sectional data of Indian states. At the end, section four concludes the study.

2. MODEL SPECIFICATION TO TEST WAGNER'S LAW

The precise formulation of Wagner's Hypothesis is subject to some disagreement among

researchers. In economic literature, there are different interpretations of the hypothesis, which broadly results into six formulations [Mann, 1980]. In this section, we first discuss these alternative versions of Wagner's Law and then after explain the criteria used by the present study for the final model selection. The alternative versions of Wagner's Law are:

1. Peacock-Wiseman Traditional Version [1968]

$$E = f[\text{GDP}]$$

2. Pryor Version [1969]

$$C = f[\text{GDP}]$$

3. Goffman Version [1968]

$$E = f[\text{GDP}/P]$$

4. Musgrave Version [1969]

$$E/\text{GDP} = f[\text{GDP}/P]$$

5. Gupta/Mitchels Version [1967]

$$E/P = f[\text{GDP}/P]$$

6. "Modified" Peacock-Wiseman Share Version suggested by Mann [1980]

$$E/\text{GDP} = f[\text{GDP}]$$

Where,

E	=	Government total expenditure
P	=	Population
C	=	Government consumption expenditure
GDP	=	Gross Domestic Product

The difference in the above versions basically lies in the definition of dependent variable which is the role of government as defined in terms of government expenditure. The government expenditure variables used are total expenditure, consumption expenditure, per capita total expenditure and ratio of expenditure to GDP. The growth variables used in the above models are total GDP and per capita GDP.

If the elasticity of government expenditure with respect to growth is greater than one, then it would mean that the government expenditure increases faster than the economic growth, implying thereby that there is increasing role of the government in the economy. And, in that case, Wagner's hypothesis holds true. Considering alternative interpretations of the Wagner's Hypothesis, the present study carries out the exercise of testing the hypothesis for the twenty nine Indian states using cross-sectional data for the year 2001-02. The data used in the study has been drawn from 'States Finances: A Study of Budgets', Reserve Bank of India. For obvious reasons, the GDP has been replaced by Net State Domestic Product [SDP] and the expenditure variables used are Total Expenditure [TE] and Social Expenditure [SE]. The Pryor Version, which uses consumption expenditure as dependent variable, has not been included in the analysis and instead we have introduced social expenditure as a dependent variable in each of the versions along with total government expenditure. All the equations have been estimated in double-log functional form, using OLS method of regression analysis, where the slope co-efficient gives the elasticity of government expenditure with respect to growth.

3. EMPIRICAL RESULTS

As there is no objective criterion or convincing test to decide which of the Wagner's versions is the most appropriate, the present study uses the various statistical tests of significance [t-test, R², D-W test and F-value] to pick up the most suitable version of Wagner's Hypothesis for the Indian states. The estimated regression results are given in Table 1. The table shows the elasticity of government expenditure [total as well as social] with respect to growth variable for all the five versions of Wagner's Hypothesis along with relevant statistical tests.

TABLE: 1
ESTIMATED RESULTS

Version	Expenditure Variable [log]	Growth Variable [log]	Elasticity	t-value	R ²	Adj. R ²	D-W	F
Peacock-Wiseman [traditional]	TE	SDP	0.680	21.09	0.94	0.94	1.925	445.12
	SE	SDP	0.712	24.26	0.95	0.95	2.165	588.95
Goffman	TE	PCSDP	-0.211	0.45	0.007	0.02	1.783	0.202
	SE	PCSDP	-0.305	0.62	0.01	0.02	2.009	0.394
Musgrave	TE/SDP	PCSDP	-0.195	0.81	0.02	0.01	2.067	0.659
	SE/SDP	PCSDP	-0.289	1.36	0.06	0.03	1.674	1.857
Gupta/Mitches	PCTE	PCSDP	0.805	3.36	0.29	0.26	2.067	11.287
	PCSE	PCSDP	0.711	3.36	0.29	0.26	1.674	11.293
Peacock-Wiseman [share version]	TE/SDP	SDP	-0.320	9.91	0.78	0.77	1.925	98.361
	SE/SDP	SDP	-0.288	9.80	0.78	0.77	2.165	96.086
<i>t statistics for dof=28</i>			Pr [t > 2.4] = 0.01		Pr [t > 3.4] = 0.001			
<i>D-W statistics for n = 29 and k = 1</i>			D _l = 1.341		D _u = 1.483			

The Peacock-Wiseman 'traditional' version, which describes total expenditure and social expenditure as a function of GDP, has given comparatively the best fit with slope co-efficient [elasticity] less than one. The Gupta/Mitches version, which explains expenditure and GDP in per capita, has given elasticity results that are similar to the Peacock-Wiseman 'tradition' version; however with poor statistical tests results.

Goffman and Musgrave versions have given statistically very poor results. The results of 'share' version of Peacock-Wiseman explain that with the increase in GDP, total expenditure and social expenditure as a percentage to GDP rather declines.

Nonetheless, no version has given the elasticity of government expenditure with respect to growth variable greater than one. The above analysis suggests that in the case of cross-sectional study of Indian states, the Wagner's hypothesis is rejected meaning thereby that government expenditure is increasing at a slower rate than the economic growth. Hence, there is decreasing role of government activities in Indian states.

4. CONCLUSIONS

The relationship between government expenditure and economic growth has received considerable attention in the literature on Wagner's Law. The main concern of the paper is to determine whether Wagner's hypothesis of increasing state activity holds true in case of Indian states. Is the role of the state governments towards social sector keeping pace with the economic growth? The regression analysis has been adopted for this purpose for all the different versions of Wagner's law. The results suggest that the Peacock-Wiseman 'traditional' version provides the best fit equation with slope co-efficient [elasticity] less than one. The empirical evidence establishes that in the case of cross-sectional study of Indian states, the Wagner's hypothesis is rejected meaning thereby that government expenditure is increasing at a slower rate than the economic growth. Hence, there is decreasing role of government in the growth and development of Indian states.

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