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**“COINTEGRATION, CAUSALITY AND WAGNER’S LAW WITH
AGGREGATED DATA: EVIDENCE FROM UZBEKISTAN”**

Annotation. The objective of this paper is to empirically investigate the direction of causality between the government spending and the national income using aggregate data for the period 1997-2020. It is found that economic growth variables do not have statistically significant effect on the government spending variables in the short-run. Speed of adjustment ranges from 50 to 125 percent, meaning deviations from the long-run path of government spending is corrected by 50-125 percent in the following year. Finally, Granger Causality tests are employed to verify the validity of the Wagner’s law. It is found that causality is unidirectional running from government expenditure variable to economic growth variable in three of out six versions. Other three versions indicate that the causality is neither Wagnerian nor Keynesian. In general, we do not find an empirical support for Wagner’s law in our study.

Key words: Wagner’s law, economic growth, econometric analysis, government spending.

Annotatsiya. Ushbu tadqiqotning maqsadi davlat xarajatlari va milliy daromad o'rtasidagi sababiy bog'liqlik yo'nalishini 1997-2020 yillardagi ma'lumotlardan foydalangan holda empirik tarzda o'rganishdir. Iqtisodiy o'sish o'zgaruvchilari qisqa muddatda davlat xarajatlarining o'zgaruvchilariga statistik jihatdan ahamiyatli ta'sir ko'rsatmasligi aniqlandi. Moslashish tezligi 50 dan 125 foizgacha o'zgarib turadi, ya'ni davlat xarajatlarining uzoq muddatli yo'lidan chetlanishi keyingi yilda 50-125 foizga tuzatiladi. Nihoyat, Vagner qonunining haqiqiylikini tekshirish uchun Granger Causality testlari qo'llaniladi. Oltita variantdan uchtaida sababiy bog'liqlik davlat xarajatlari o'zgaruvchisidan iqtisodiy o'sish o'zgaruvchisigacha bo'lgan bir yo'nalishli ekanligi aniqlandi. Boshqa uchta versiyada sabab-oqibat na Vagner, na Keynslik emasligini ko'rsatadi. Umuman olganda, biz tadqiqotimizda Vagner qonunini empirik qo'llab-quvvatlamadik.

Kalit so'zlar: Vagner qonuni, iqtisodiy o'sish, ekonometrik tahlil, davlat xarajatlari.

Аннотация. Целью данной статьи является эмпирическое исследование направления причинно-следственной связи между государственными расходами и национальным доходом с использованием агрегированных данных за период 1997-2020 гг. Установлено, что переменные экономического роста не оказывают статистически значимого влияния на переменные государственных расходов в краткосрочной перспективе. Скорость корректировки колеблется от 50 до 125

процентов, что означает, что отклонения от долгосрочной траектории государственных расходов корректируются на 50-125 процентов в следующем году. Наконец, тесты причинности Грейнджера используются для проверки справедливости закона Вагнера. Установлено, что причинно-следственная связь является односторонней, идущей от переменной государственных расходов к переменной экономического роста в трех из шести вариантов. Другие три версии указывают на то, что причинность не является ни вагнеровской, ни кейнсианской. В целом мы не находим эмпирического подтверждения закона Вагнера в нашем исследовании.

Ключевые слова: закон Вагнера, экономический рост, эконометрический анализ, государственные расходы.

Introduction

The relative size of the government in developing countries is now becoming larger than ever before. This produces reasonable worries that such an upward trend may end up having a negative effect on economic growth. For this reason, the analysis concerning the relationship between government spending and economic growth attracts significant attention of economists and policymakers.

This relationship has been the subject of two opposing views. On one hand, Keynesians treat government spending as an exogenous factor and a tool for increasing national income. They assume causality runs from public spending to gross domestic product (GDP). On the other hand, Wagnerians suggest national income is the driving force behind the growth of public spending. They view causality runs from GDP to government expenditure. Therefore, there is a need for an empirical testing before deciding which of these propositions best describes the relationship.

Understanding the relationship of government spending and national output is essential for several policy and economic issues. For instance, government officials in many countries are now trying to stimulate their economies through fiscal policy measures due to the recent Covid-19 pandemic. If Wagner's law is valid in those countries, it suggests that government intervention should be kept at a minimum since it does not promote an economic growth. Moreover, identification of the long run relationship between public spending and economic growth helps to create a framework in which governments achieve their budgetary aims and eliminate the risk of default.

Literature review

The propositions of Wagner (1883) and Keynes (1936) are two opposing views concerning the relationship between government expenditure and economic growth. As long as Wagner's law is involved in this paper, we will discuss the literature that is related to former proposition.

According to Wagner's law, it is expected that the share of government expenditure in gross national product will increase as the economy becomes more developed. There are three main reasons for increased public spending. Firstly, there is

a need for law and order as well as tighter regulation as society develops. Therefore, the protective and organizational role of government will increase. Secondly, the government will tend to increase its welfare expenditure such as education and healthcare as nation progresses.

Thirdly, the government increases its expenditures in order to eliminate monopolistic power from the market by taking over large private companies for the sake of stability in the economy. It is believed that some level of government intervention is needed for projects that require huge and risky capital injections can only be financed by the state. Government fills the gap when private sector becomes inefficient while providing certain economic services due to technological progress. In other words, Wagner’s law states that the expansion of state activities is inevitable due to increasing need for public goods and correction for externalities. Relying on the above arguments, Wagner’s law implies causality running from economic development to government spending.

The law is subject to several criticisms. According to Peacock and Wiseman (1961) there is no justification for Wagner’s argument that public expenditure must rise at a faster rate than national income although he provided clear explanations for government spending to increase in any developing state. Furthermore, as Bird (1971) states “essentially, this ‘law’ is not really a theory at all but rather a kind of philosophizing about history”. It is difficult to test this law empirically since Wagner did not specify the exact formulation of the hypothesis. Most importantly, Wagner did not specify what variables should be used to measure economic development and state activity. Although many researchers use government spending as the measure of state activity, government spending itself is hard to determine since there are many factors (social, economic and political) affecting the level of public spending which are mostly qualitative. GDP per capita, however, is widely accepted and used by many economists as a measure of economic development.

Methodology and results

Wagner did not specify the exact formulation of the hypothesis. Different economists use different formulation to test the validity of Wagner’s law. Most widely used specifications are listed below. However, there is not any decisive factor which helps us to determine the best version. Therefore, we use all six versions of Wagner’s law in our study.

1. Peacock-Wiseman version

One of the earliest forms of Wagner’s law was suggested by Peacock and Wiseman (1961). Wagner’s law holds true if the value of slope coefficient β (elasticity of government expenditure with respect GDP) is higher than one.

$$\ln(GE)_t = \alpha + \beta \times \ln(GDP)_t + u_t, \quad \beta > 1$$

Here, $\ln$ denotes natural logarithm; GE stands for government expenditure, GDP for gross domestic product.

2. Pryor version

This form of the law is very similar to the one presented above except Pryor (1968) suggests using government consumption expenditure as a measure of state activities. The law is supported when elasticity of government consumption expenditure with respect to national income exceeds one.

$$\ln(GCE)_t = \alpha + \beta \times \ln(GDP)_t + u_t, \quad \beta > 1$$

Note that, GCE stands for government consumption expenditure.

3. Goffman version

Goffman (1968) relates government spending with income per capita. Elasticity of public spending with respect to income should exceed unity for Wagner’s law to be valid.

$$\ln(GE)_t = \alpha + \beta \times \ln(GDP_PC)_t + u_t, \quad \beta > 1$$

Note that, GDP_PC represents the gross domestic product per capita.

4. Musgrave version

Musgrave (1969) recommends using share of public spending to GDP as a proxy for state activity and income per capita as a measure of economic development. Since this form is a share version of the law, support is found when the slope coefficient is positive.

$$\ln(GE_GDP)_t = \alpha + \beta \times \ln(GDP_PC)_t + u_t \quad \beta > 0$$

Note that, GE_GDP stands for government expenditure per capita

5. Gupta version

In this version, public spending per capita is used as a proxy for state activities and it is expressed as a function of income per capita. Verification of the law requires slope coefficient to exceed unity.

$$\ln(GE_PC)_t = \alpha + \beta \times \ln(GDP_PC)_t + u_t \quad \beta > 1$$

6. Mann version

Relatively new formulation of the law developed by Mann (1980) recommends that share of public spending in national income must be seen as a function of GDP. Coefficient of elasticity must be greater than zero if law is to be found valid.

$$\ln(GE_GDP)_t = \alpha + \beta \times \ln(GDP)_t + u_t \quad \beta > 0$$

Note that, GE_GDP represents the share of government expenditure in national income.

We found a long-run relationship between government expenditure and economic growth variables. It implies that all short-run deviations from their long-run path will ultimately be erased. Therefore, it is highly recommended that government should treat short-run spending cuts with special care. In order for savings generated by spending cuts not to get erased in the long-run, it is essential that spending cuts are combined together with long- term reforms.

Conclusion and recommendations

Understanding of the exact causality direction has crucial policy implications. For instance, if the causality was Keynesian (government expenditure causing national income), it would imply that government should increase its expenditures. Government

spending would be seen as an important policy variable which is used to correct the short-run deviations of the economic growth from its long-run path. Likewise, in our case, the causality is not Wagnerian. This result increases the importance of government spending as an important policy variable. In other words, economic growth is affected by government spending, thus government can rely on its ability to increase expenditures to correct short-term fluctuations in national income.

Author was unable to find disaggregated data for longer span of time, so he limited himself with aggregated data. After all, Wagner’s hypothesis is a long run phenomenon. However, given the very long period under consideration, it is unlikely that total government expenditure remains stable. For this reason, the examination of various categories of total expenditure (such as healthcare and defense) and the economic growth would be a more appropriate method for checking the validity of Wagner’s law. One of the topics for future research would be the examination of Wagner’s law using disaggregated data.

REFERENCE LIST

1. Wagner, A., (1883) Three Extracts on Public Finance, translated and reprinted in R.A. Musgrave and A.T. Peacock (eds), Classics in the Theory of Public Finance, London: Macmillan, 1958.
2. Keynes, J.M. (1936) The General Theory of Employment Interest and Money, New York: Harcourt, Brace & World Inc.
3. Peacock, A. T., and J. Wiseman, (1961) The Growth of Public Expenditure in the United Kingdom. Princeton, N.J.: Princeton University Press.
4. Bird, R.M., (1971) Wagner’s ‘Law’ of Expanding State Activity, Public Finance/Finances Publique, 26, 2, 1-26.
5. Pryor, F.L., (1968) Public Expenditures in Communist and Capitalist Nations. London: George Allen and Unwin.
6. Goffman, I. J. (1968) On the Empirical Testing of Wagner's Law: A Technical Note, Public Finance, 23(3): 359-364.
7. Musgrave, R.A., (1969) Fiscal Systems. New Haven and London: Yale University Press.
8. Gupta, S.P., (1967) Public Expenditure and Economic Growth: A Time Analysis, Public Finance/Finances Publique, 22, 4, 423-61.
9. Mann, A.J., (1980) Wagner’s Law: An Econometric Test for Mexico 1925-1976, National Tax Journal, 33, 189-201.