Original Research Article

The validity of Wagner's law in India: A post-liberalisation analysis

Abstract

Aims: The present study attempts to analyze the behavior of government expenditure in relation to economic growth using most appropriate advanced econometric techniques to test the Wagner's law of increasing State's activity in Indian scenario during the post-liberalization period of 1988 to 2017.

Data: The study uses the IMF database entitled "International Financial Statistics (IFS)" and World Bank database entitled "World Development Indicators (WDI)" for testing Wagner's law for the Indian economy.

Results: The results of Vector Error Correction Model (VECM) reveal that both the Gross Domestic Product (GDP) and the urban population have a positive and statistically significant effect on government expenditure in the long-run. Ceteris paribus, every 1.0 percent increase in GDP leads 0.36 percent increase in government expenditure. On the other hand, 1.0 percent increase in urban population leads to a 3.75 percent increase in government expenditure. The Granger causality results divulge that there is unidirectional causality running from urban population to government expenditure, whereas neither unidirectional nor bidirectional causality was found between GDP and public expenditure. In short-run, neither GDP nor urban population influences public expenditure.

JEL Classifications: *C32, E10, H50, O10*

Keywords: *Government expenditure, Wagner's law, gross domestic product, error correction model*

1. Introduction

The relation between government expenditure and national income[1] is very complex in nature and may vary depending upon the existing sphere of the State, that is between individualism and socialism. The most important question here before every scholar is to distinguish between the two statements that “Whether the States regulate their income by its expenditure” or “the expenditure or State’s activities are depending on its level of income? No matter the first statement is considered true in a contemporary world economy where *social welfare* and *development economics* has emerged as an important characteristic in political economy.

But there is an another point of view that firstly when State decides to expand its activity to any new horizon it must consider the amount of burden on individual and nation because for increased government expenditure either the tax revenue or the internal and external debt need to be increased, which again depends on the ability to pay or the level of income of individuals in case of tax revenue and credit of the economy to raise internal or external debt. Secondly, in the modern era, most of the economies are now open and have trade and investment relationship with other nations. In such a case the State let the expenditure to run beyond the national income and borrow the difference.[2] These above mentioned two reasons serve as the two basic facts why the second statement that is “The State’s activities are depending on its level of income” rationally holds true. The present study will also examine the association between government expenditure and national income for India within this context.

It is very important here to mention the name of a distinguished German economist Adolf Wagner who first developed and analyzed the relationship between government expenditure (GE) and gross domestic product (GDP). According to him, the change in GE identified with the change in the economic organization and economic development e.g. change in population, technological improvement, increased benefits from economic activities, increase in productivity, increase in tax and non-tax revenue resources, etc. Before analyzing the existing literature on Wagner’s ‘*law of increasing State’s activities*’ and framing our hypotheses, it is very necessary to expose or uncover the ‘*Wagner’s law*’ based on original sources (Wagner, 1883, 1893, 1904, 1911). Peacock & Scott (2000) suggests to pay attention or to be cautious while applying intensive econometric testing on hypotheses because without properly defining the word ‘*State’s activity*’ we may lead to misspecification of modeling.

2. Wagner’s law: The conceptual framework

Wagner was the first scholar who identified a positive correlation between the level of economic development and the size of public sector in industrial economies. This was first observed for his own country and later he examined the same relationship for other economies too. In his seminal work (Wagner 1883 & 1893) he opined that in progressive societies, the activities of Central, State and Local governments increase regularly and there is a functional relationship exists between economic development and State’s activities.

[1] Generally Gross Domestic Product (GDP) serves best to measure national income but for open economies (most of the nations are now have trade and investment partners) Gross National Income Per Capita (GNI PC) may also serves as a good indicator and that is why government expenditure may be affected by some exogenous factors e.g. Foreign Aid, Public Debt etc.

[2] Deficit financing is a phenomenon where funding is done through borrowing, a case when public expenditure is in excess of public revenue. It has been used by most of the developing nations to increase the demand of goods and services and fully utilise the underdeveloped resources.

No such concrete functional relationship was developed by Wagner (Dutt & Ghosh, 1997) e.g. to measure increasing State's activity whether to take (i) Total government expenditure, (ii) proportion of total government expenditure to GDP or (iii) proportion of growth of public sector to total economy. In this regard, researchers have adopted different versions for empirical testing. Musgrave (1969) too claimed that the functional form is unclear but argued that Wagner was proposing (iii) proportion of growth of public sector to total economy and found it most appropriate from the readings of Wagner.

The expansion and intensification of State's activities are firstly because of the traditional sphere of functions which include defense, administrative activities and to maintain law & order. Secondly, public expenditure increases with increased industrialisation and urbanisation that lead to greater '*social complexities*' or '*frictions*' requiring increased '*sensitisation*' and '*social controls.*' It results in increased production of State-sponsored public or merit goods and services which generally include expenditure on health and education facilities, providing employment opportunities, increase social and economic welfare using development programmes. This type of expenditure is termed as 'Wagner's law version 1: Restructuring society' by Lybeck (1986).

Thirdly researchers have assessed that one important reason for increased State's activity is characterised by income elastic demand over the long run which depicts that when per capita income increases with economic growth, the demand for public or merit goods and services increases and people demand or prefer more of public goods and services. Lybeck (1986) termed this as 'Wagner's law version 2: Income elastic demand.' But if we closely look at Wagner's version, there is one more reason for increasing State's activities and that is to take over the management of natural monopolies[3] which is very important not only to enhance efficiency in production but also (to) maintain equity in distribution.

Many empirical and descriptive studies have been done to test the validity of Wagner's law of increasing State's activity. Most of them (Hook 1962; Mann 1980; Gould 1983; Neck & Schneider 1988; Paldan & Zeuthen 1988; Yousefi & Abizadeh 1992; Hackl *et al.* 1993) found support for Wagner's law using cross-section, time series, and panel data for different regions of the world. Particularly Paldan & Zeuthen (1988) used time-series data from 1948-85 for Denmark applying Ordinary Least Square (OLS) to total government consumption and transfers and found strong support for Wagner's law. If we enquire more about Denmark's public sector, we come to know that it grew more than any other Organisation for Economic Cooperation and Development (OECD) country in that phase which was an outcome of liberalisation and international integration policies adopted by the then government of Denmark in 1950s. Another study (Hackl *et al.* 1993) found same results for Australia using a larger time series from 1860-1986. This study used a series of significant independent variables like real GDP, current account deficit (CAD), federal deficit, population, etc.

Studies like Gupta (1967) and Bird (1971) also found strong support for Wagner's law and proved income elastic demand approach works when it comes to increased GE on public goods and services. Other than these Goffman & Mahar (1971), Henning & Tussing (1974), Ganti & Kolluri (1979), Beck (1985), Vatter & Walker (1986), Khan (1988), Ram (1987) also found strong support for income elastic demand run GE in long run. Henrekson (1993) suggested that to test the Wagner's law one should focus more on time series behaviour of public expenditure in a country for preferably a long period of time rather than on a cross-

[3] Natural monopoly is a type of monopoly that exists due to high fixed costs of operations in a specific industry which creates high barriers to further entry and provide advantage to existing player.

section of economies because this phenomenon (increasing State's activity) relates to transition of a country alone.

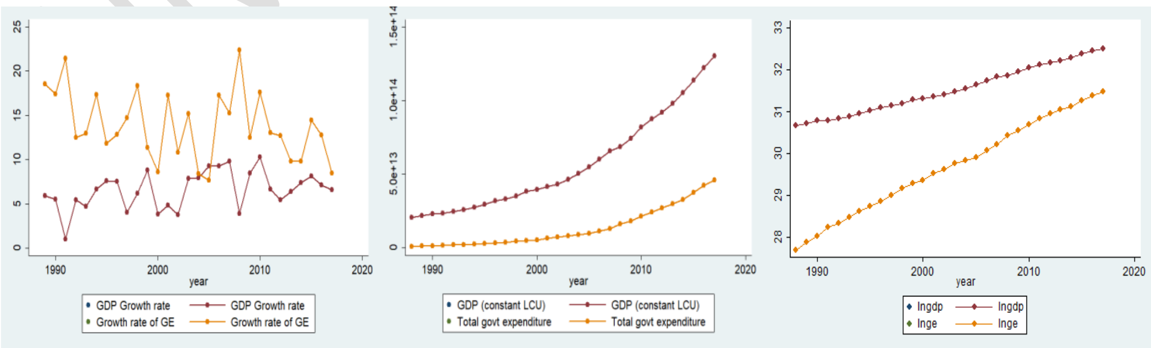
On the other hand, some studies (Wagner & Weber 1977; Chrystal & Alt 1979; Pluta 1981; Lybeck 1986; Ram 1986; Delortne *et al.* 1988; Saunders 1988; Gemmell 1993; Craigwell 1991; Hondroyiannis & Papapetrou 1995) found no or some support for Wagner's law. Among these Pluta (1981) measure the growth of public expenditure for 20 developing nations using a panel data from 1960 to mid-1970. The study found a very low share of GDP was actually spent by governments and if we compare this share of developing nations with OECD countries, it was more than double for the later (Lindauer, 1988). When we consider growth in GE the median elasticity for GE was slightly higher for developing nations than OECD countries. Similarly, Hondroyiannis & Papapetrou (1995) used maximum likelihood (ML) method for Greece and found no such support for Wagner's law. Blot & Debeauvais (1966) also tried to test the same for developing nations and found strong support for Wagner's law but the results are very limiting in sense because the study took government expenditure on education as dependent variable which is only a small part of total GE.

In past, a number of studies have examined the validity of Wagner's law but having conflicting results that differ country to country and not consistent either with cross-section, time series or panel data. In case of India too, we have literature that has conflicting findings among them Singh & Sahani (1984), Upendra & Ramakrishan (1994), Lalvani (1995), Singh (1997), Sahoo (2001) supported the Wagner's law but studies like Bhat et al. (1991) and Mohsin et al. (1995) refused the existence of any long-run relation between GE and GDP. Particularly, Verma & Arora (2010) used a bigger time series for India and confirms the validity of Wagner's law for long run only which was the result of liberalisation policies adopted in 1991 similar to Denmark.

3. Research Methodology

3.1. Data

The study attempts to analyze the behavior of government expenditure in relation to economic growth using most appropriate advanced econometric techniques to test the Wagner's law of increasing State's activity in Indian scenario during the post-liberalization period of 1988 to 2017. The study uses the IMF database entitled "International Financial Statistics (IFS)" and World Bank database entitled "World Development Indicators (WDI)" for testing Wagner's law for the Indian economy. The appropriate price deflators have been used to avoid or neutralize the effect of any price change during the period.



Figures (1): Growth rates of GDP and GE, (2): Trend of GDP and GE (at level) & (3): Trend of GDP and GE (log-transformed).

In case of India, both GDP and GE have increased rapidly in post-liberalization period but the growth rate of GDP has always been ahead of GE for corresponding years. However, the gaps in growth rates have decreased over the years (figure 1). We see a sharp increase in GDP and GE after 2005 and both showed a similar trend over the study period (figure 2). However, the rate of increase is much more for GE (figure 3).

3.2. Model Specification

In order to test the model, we have used the tri-variate model with government expenditure as the dependent variable:

$$\ln(GE) = f(\ln(GDP), \ln(UP)) \quad (1)$$

Where ln (GE), ln (GDP) and ln (UP) stand for the natural log of government expenditure, gross domestic product, and urban population, respectively. Since both the dependent and independent variables are converted into the logarithmic form, the coefficients can be interpreted as the elasticity of the dependent variable with respect to the respective independent variable. The expected signs of the independent variables are indeterminate, and we test the hypothesis based on the signs and statistical significance of the coefficients. There may be the following three possibilities:

1. If it is not possible to reject the null hypothesis that the estimator of $\beta_{it} = 0$, we conclude that the respective variables have neutral effect on government expenditure.
2. If the null hypothesis is rejected and $\beta_{it} > 0$, the respective variable has positive effect on the government expenditure.
3. If the null hypothesis is rejected and $\beta_{it} < 0$, the respective variable is said to have a negative effect on the government expenditure.

In the first stage of the testing procedure, we have used augmented Dickey-Fuller test and Phillips-Perron test for testing the presence of unit roots in the variables of interest. If all the variables are integrated of the same order, we proceed further to check for cointegration among the variables. For this purpose, we have use Johansen cointegration. Johansen cointegration test involves the construction of the VAR model at the levels of the variables. The VAR model is specified as:

$$\boldsymbol{X_t} = \mu + \sum_{i-1}^{p} \boldsymbol{\beta_i X_{t-i}} + \boldsymbol{\varepsilon_t} \quad (2)$$

Where X_t is a vector of Variables (ln (GE), ln (GDP), ln (UP)), μ is a vector of constant terms, β_i is a matrix of VAR parameters for lag i. ε is the vector of error terms. Two likelihood tests viz. the Maximum Eigenvalue test and the Trace test are considered by Johansen cointegration test to determine the number of cointegrating equations. Both the tests test the null hypothesis of r cointegrating equations against the alternative hypothesis of n cointegrating equations, where n is the number of variables in the system.

Once the cointegration is confirmed, a vector error correction model (VECM) estimated to estimate the long-run as well as short-run relationship among the variables of interest. The regression equation form for VECM is as follows:

$$\Delta \boldsymbol{X_t} = \boldsymbol{\mu} + \boldsymbol{\alpha X_{t-1}} + \boldsymbol{\Omega} \sum_{i=1}^{p} \boldsymbol{\gamma_i} \Delta \boldsymbol{X_{t-j}} + \varepsilon_t \quad (3)$$

Where Δ represent the difference, Ω is the error correction term, X_t is the vector of variables, α is a matrix of long-run coefficients, γ is a matrix of short-run coefficients and ε is the error term.

3.3. Granger Causality

In the final step of the empirical analysis, we have used Granger causality test to examine the causal relationship among the variables. Variable X is said to "Granger-cause" variable Y if and only if the forecast of Y can be improved by using the past values of X together with past values of Y, then by not doing so (Granger 1969). Granger causality is either unidirectional or bidirectional (feedback). The traditional causality test proposed by Granger (1969) suffers from the specification bias and the problem of spurious regression. Firstly, for the specification bias, as pointed out by Gujarati (1995), this test is sensitive to model specification and number of lags.

Toda & Yamamoto (1995) and Dolado & Lutkepohl (1996) have suggested an alternative procedure based on augmented VAR, which gives the asymptotic distribution of the Wald statistic (an asymptotic $\chi 2$ –distribution), also known as modified Wald test statistic (MWald). This test is deemed superior to the ordinary Granger-causality procedure because it can be used irrespective of the order of integration of the variables.

The Toda & Yamamoto (1995) technique first take in the maximum order of integration (d_{max}) of the series that are to be included in the model. It is found by using any of the unit roots tests. Secondly, an optimal lag length of k^{th} order for vector autoregressive model needs to be specified. Thirdly, this procedure intentionally over-fits the underlying model with additional d_{max} order of integration. The d_{max} is the maximal order of integration of the series in the model. The VAR equation for testing Granger-causality in our model is specified as below:

$$\begin{bmatrix} ln(GE)_t \\ ln(GDP)_t \\ ln(UP)_t \end{bmatrix} = \begin{bmatrix} \alpha_1 \\ \alpha_2 \\ \alpha_3 \end{bmatrix} + \sum_{i=1}^{k} \begin{bmatrix} \beta_{11,i} & \beta_{12,i} & \beta_{13,i} \\ \beta_{21,i} & \beta_{22,i} & \beta_{23,i} \\ \beta_{31,i} & \beta_{32,i} & \beta_{33,i} \end{bmatrix} \begin{bmatrix} ln(GE)_{t-i} \\ ln(GDP)_{t-i} \\ ln(UP)_{t-i} \end{bmatrix} +$$

$$\sum_{j=1}^{d_{max}} \begin{bmatrix} \beta_{11,k+j} & \beta_{12,k+j} & \beta_{13,k+j} \\ \beta_{21,k+j} & \beta_{22,k+j} & \beta_{23,k+j} \\ \beta_{31,k+j} & \beta_{32,k+j} & \beta_{33,k+j} \end{bmatrix} \begin{bmatrix} ln(GE)_{t-k-j} \\ ln(GDP)_{t-k-j} \\ ln(UP)_{t-k-j} \end{bmatrix} + \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \varepsilon_3 \end{bmatrix} \quad (4)$$

Where all the variables are the same as previously stated, k is the number of lags for VAR, α is the vector of constants, β_s are all parameter matrices; d_{max} is the highest order of integration for the variables. We have used the VAR Granger/Block exogeneity Wald test to examine the causal relationship among our variables of interest. We use the modified Wald test statistic (χ^2) to test the null hypothesis of Granger non-causality.

4. Empirical Analysis

4.1. Unit Root Tests

Table: 1
Unit Root Tests

Variables	Augmented Dickey-Fuller Test		Phillips-Perron Test		Outcome
	Levels	I-Difference	Levels	I-Difference	
ln (GE)	-2.01	-4.69***	-2.02	-4.67***	I (1)
ln (GDP)	2.08	-4.02***	2.21	-4.03***	I (1)
ln (UP)	1.47	-2.48**	-0.40	-2.48**	I (1)

Note: ** and *** denote 0.05 and 0.01 level of significance, respectively. ln(GE), ln(GDP) and ln(UP) symbolise the natural log of final Government Expenditure, Gross Domestic Product (GDP) and urban population, respectively.

Before proceeding to the empirical analysis, it is essential to conduct unit root tests on all the variables. We have applied the augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests to detect the presence of unit roots in the variables. The results of the same has been demonstrated in table 1.

The results reveal that log of government expenditure has a unit root at the levels as the computed test statistic is greater than the tabular value at any conventional level of significance. But the first difference of the variable is stationary as tabular value at any given level of significance exceeds the computed value. The results are proved by the Phillips-Perron test. Both the ADF and Phillips-Perron tests confirm that the log of the GDP is nonstationary at the levels, but its first difference is stationary hereby implying that GDP is integrated of order 1. Similar results are found for the log of urban population. Both the tests prove that it has unit roots at the levels but the first difference of it is stationary implying that it is also integrated of order one.

4.2. Co-integration Test

Since all of the three variables are integrated of the same order, the next step is to test for cointegration among the variables. We have used Johansen cointegration test here. The results of the same have been depicted on table 2. The Johansen Cointegration test uses trace and max-eigen value statistic to test the null hypothesis of no cointegration. Results in the table 2 reveal that according to both the statistics null hypothesis of no cointegrating equation is rejected in favour of at most one cointegrating equation by both the test statistics as the tabular value (shown in parenthesis) are less than the computed ones. But none of the test statistics could reject the null of at most one or two cointegrating equations. Therefore, it may be concluded that all the variables in the system are cointegrated when we take log of government expenditure as the dependent variable and there is only one cointegrating equation in system.

Table: 2
Johansen Cointegration Test

Specifications	**Hypothesised No. of Cointegrating Eq.**	**Trace Statistic**	**Max-Eigen Statistic**	**Outcome**
ln (GE) = f (ln (GDP), ln (UP))	None	31.46** (24.28)	22.98** (17.79)	(1) Cointegrating Equation)
	At Most 1	8.47 (12.32)	8.35 (11.22)	
	At Most 2	0.13 (4.13)	013 (4.13)	

Note: Values in the parenthesis represents the critical value of the respective statistic at 0.05 level of significance. ** and *** denote 5% and 1 % level of significance respectively.

4.3. VECM Estimates for the Long-Run

As a corollary to the cointegration test, we have estimated the Vector Error Correction Model (VECM) to estimate the long-run and the short-run coefficients of the independent variables in the system. The results of the long-run estimates have been presented in table 3.

Table: 3
Long-Run Estimates

Independent Variable	Specification (Dependent Variable: ln (GE))
ln (GDP)	0.36** (0.16)
ln (UP)	3.75*** (0.41)
Constant	55.08
Cointeq	ln (GE)= 55.08(Constant) + 0.36(ln (GDP)) + 3.75(ln (UP))

Note: *** and **denotes 1% and 5 % level of significance, respectively. Values in parenthesis are the standard errors of the respective coefficients.

The results reveal that there is positive and statistically significant relationship between GDP and the public expenditure in long-run in context of India. In the long-run, each 1.0 percent increase in the GDP leads to about 0.36 percent increase in the public expenditure in India. This finding is in sync with the famous Wagner's law. According to the law, public expenditure is an increasing function of GDP in the modern welfare states. This finding shows that Wagner's law holds for India, at least in the long-run. Another variable, the urban population also has a positive and statistically significant effect on the public expenditure in India. Holding other things constant, every 1.0 percent increase in the urban population leads to about 3.75 percent increase in the public expenditure. Since urbanisation demands a unique set of public goods such as law and order, better sanitation and health facilities, street lightning, transport, and other infrastructure facilities, it makes it essential to increase the government expenditure on these heads. So, increasing urbanisation is associated with increasing public expenditure in India in the long-run and our results validate it.

4.4. VECM Estimates for the Short-Run

The short-run results have been depicted in table 4. On the basis of the Akaike Information Criterion (AIC), a lag-length of 3 has been selected for the model. The results reveal that besides the government expenditure none of the variable has statistically significant effect on government expenditure in India.

In short-run, the government expenditure of the previous years has strong positive effect on government expenditure in current year. A 1.0 percent increase in government expenditure in the first, second and third lag is likely to increase government expenditure in the current year by 0.38 percent, 0.44 percent, and 0.44 percent, respectively. On the other hand, none of the dependent variables has statistically significant effect on government expenditure in the short-run, though they are main drivers of government expenditure in the long-run. The error-correction (ECM) term has the desired negative sign and it is statistically significant. The magnitude of the coefficient suggests a fairly high speed of adjustment in the aftermath of a shock. About 82.0 percent of disequilibria from a shock converge back to the long-run equilibrium within a year.

Table: 4
Short-run estimates

Independent Variable	Specification (Dependent Variable: ln (GE))
$\Delta \ln (GE)_{t-1}$	0.38* (0.21)
$\Delta \ln (GE)_{t-2}$	0.44** (0.20)
$\Delta \ln (GE)_{t-3}$	0.44** (0.21)
$\Delta \ln (GDP)_{t-1}$	-0.10 (0.30)
$\Delta \ln (GDP)_{t-2}$	0.05 (0.29)
$\Delta \ln (GDP)_{t-3}$	0.25 (0.30)
$\Delta \ln (UP)_{t-1}$	8.93 (12.08)
$\Delta \ln (UP)_{t-2}$	-24.58 (16.23)
$\Delta \ln (UP)_{t-3}$	-12.81 (12.22)
Constant	0.71** (0.26)
ECM	-0.82 (0.28)

Note: *, **, and *** denote 10%, 5% and 1% level of significance, respectively. Values in parenthesis are the standard errors of the respective coefficients.

To sum up, it is public expenditure that explains variation in public expenditure in the short-run but GDP and urban population are major drivers of public expenditure in the long-run only.

4.5. VECM Model Diagnostic Tests

The VECM model satisfies all the diagnostic tests and the results of these tests have been shown in the table 5. The probability value of the serial correlation LM test reveals that the model does not suffer from the problem of serial correlation as the test failed to reject the null hypothesis of no serial correlation.

Table:5
VECM Model Diagnostic Tests

Tests	Results
Serial Correlation χ^2 (3)	2.63 (0.97)
Heteroscedasticity χ^2 (3)	135.63 (0.16)
Normality (Jarque-Bera) (3)	4.32 (0.63)

Note: Values in parenthesis are the p-values of the respective test statistic.

We have applied Breusch-Pagan-Godfrey test to detect heteroscedasticity in the residuals of the model. The computed test statistic value and corresponding p-value (shown in parenthesis) show that the residuals of the model are homoscedastic. Similarly, the Jarque-Bera test statistic fails to reject the null hypothesis of normality of the residuals of the model.

4.6. Causality test results

At the end of the empirical exercise, Granger causality/Block exogeneity Wald test has been applied in order to test for the causal relationship between the variables of interest.

Table: 6
VAR Granger Causality/ Block Exogeneity Wald Test Results (Specification 1)

Dependent Variable	Independent Variable	χ^2
Δln (GE)	Δln (GDP)	0.99
	Δln (UP)	11.27***
	All	16.37***
Δln (GDP)	Δln (GE)	1.00
	Δln (UP)	1.12
	All	1.53
Δln (UP)	Δln (GE)	4.04
	Δln (GDP)	3.54
	All	6.83

Note: *, **, and *** denote 10%, 5% and 1% level of significance, respectively.

The results have been shown in table 6. The results suggest unidirectional causality between urban population and public expenditure running from urban population to public expenditure. It implies that urban population granger causes government expenditure in India. We did not find any sort of causality between GDP and public expenditure and GDP and urban population.

5. Conclusions and policy suggestions

The results of Vector Error Correction Model (VECM) model reveal that both the GDP and the urban population have a positive and statistically significant effect on government expenditure in the long-run. Ceteris paribus, every 1.0 percent increase in GDP leads 0.36 percent increase in government expenditure. On the other hand, 1.0 percent increase in urban population leads to a 3.75 percent increase in government expenditure. The Granger causality results divulge that there is unidirectional causality running from urban population to government expenditure, whereas neither unidirectional nor bidirectional causality was found between GDP and public expenditure. In the short-run, neither GDP nor urban population influences public expenditure.

To sum up, the present investigation provides support for Wagner's law in case of India in the long run only. It has been found that urbanisation has a greater impact on public expenditure than the national income (GDP) and which is also supported by Granger causality test showing significant unidirectional causality running from level of urbanisation to government expenditure. This causality does not exist between GDP and government expenditure. Our results got support from previous studies like Hackl *et al.* (1993), Goffman & Mahar (1971), Henning & Tussing (1974), Ganti & Kolluri (1979), Beck (1985), Vatter & Walker (1986), Khan (1988), Ram (1987), Henrekson (1993) Verma & Arora (2010) who found strong support for Wager's law in long run.

The overall empirical analysis for Indian scenario proves the long-run relationship between economic growth and government expenditure and provides strong support for

Wagner's law in post-liberalisation reform period for India. The empirical results do not support for any short-run impact of economic growth on government expenditure which confirms that increase in GDP does not have immediate impact on government expenditure or its activities. Being a developing nation India underwent a drastic sectoral transformation in post-liberalisation period which is connected to increased urbanisation. Still, the economy is mostly government-driven and this increase in government expenditure continues due to the provisions of social and economic welfare services.

Competing interests

Authors have declared that no competing interests exist.

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