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CONTRIBUTIONS TO BOOKS

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

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- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

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WAGNER'S LAW IN INDIA: AN EMPIRICAL ANALYSIS

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ABSTRACT

This paper analyzes the applicability of Wagner's law in Indian economy using time series annual data over the period from 1970 to 2012 for India. This study keeps a special focus to check the validity and applicability of six versions of Wagner's hypothesis, which support the existence of short run as well as long run relationship between Economic growth and Public expenditure. For find out the applicability of Wagner's law various econometric techniques (Co-integration, VECM, Granger Causality) were used. Granger Causality analysis confirms that both economic growth and Public expenditure have in both sides i.e. unidirectional, bidirectional. Therefore the findings of this study pay a broader role to understand the relationship between economic growth and public expenditure in context of Indian economy.

KEYWORDS

Wagner's Law, Economic Growth, Public Expenditure, Co-integration, Vector Error Correction Model.

1. INTRODUCTION

Welfare of the society is the main drive for the government. It is urgently required in all the developed and developing countries to meet-out the balance between the development and the role of the government. After the World War 2nd, every country had tried to achieve rapid economic growth and a sharp increase in public expenditures as well as GDP. Every government also tries to avoid the condition of fiscal deficit and to control their Public Expenditure and Revenue. In this order fiscal policy is the centre point of development, which is the fundamental instrument to control the trade cycle in the economy. Fiscal policy has considered a centre stage in policy making. It is a tool in the hand of government, through which every economy attempt to promote its developmental growth. In India the government is playing a crucial role to maximize the welfare of society through its revenue. It has been observed that the role of government has increased with the passage of time despite having privatization but in the sense of regulations. There is continuous rise in fiscal deficit in India. There is a continuous increase in expenditure whereas there is not much increase in growth in GDP. Therefore a need arises to see that whether the increase in public expenditure is really supports increase in the growth. For this purpose, Adolph Wagner has introduced a law that is known as "Wagner's Law", which states that the role of government increases with the economic growth.

Adolph Wagner (1835-1917), German economists who has formulated the law of increasing public expenditures in 1883 which is popularly known as hypothesis of Wagner's law. He is best known for his principle of 'increasing state intervention in industrializing nation'. The law suggests that the share of public sectors in the economy rises as economic growth increases. Wagner observed the existence of relationship between economic growth and public spending and later formulated a law of increasing state activity. The primary idea behind this relationship is that the growth in public expenditure is a natural consequence of economic growth. In other words, the percentage share of public expenditure increases with an increase in Gross Domestic Product (GDP). Further, Wagner hypothesis emphasizes that in the process of economic development. The government's economic activity increases relative to private economic activity. According to Wagner, the reason behind the states activities is a practical approach and is not based upon any formula. So, Wagner offers three reasons[1] for this: **First**, with economic growth industrialization and modernization would take place which will diminish the role of public sector for private one. This continuous diminishing share of public sector in the economic activity leads to more government expenditure for regulating the private sector. **Second**, the rise in real income would lead to more demand for basic infrastructure particularly education and health facilities. Wagner asserts that it is the government who can provide these facilities more efficiently than private sector. And **third**, to remove the monopolistic tendencies in a country and to enhance economic efficiency in that sector where large amount of investment is required, government should come forward and invest in that particular area which will again increase public expenditure. He first observed it for his own country and then the other countries. Wagner's hypothesis is a contrast to Keynesian hypothesis.

The paper set out as follows. Section 1 discusses introduction and review of national and international literature pertaining to the study. Section 2 briefly outlines the methodological frame work to check the stationary, co-integration, rate of error correction and direction of relationship among the variables. Section 3 presents the results of ADF and PP, Co-integration, Vector Error Correction Models and Granger Causality tests. Section 4 contains concluding remarks.

1.2 PREVIOUS EMPIRICAL STUDIES

Wagner's hypothesis has examined by many economists and a number of empirical investigations of its validity in both developed and developing economies have yielded mixed results. **Ray and Ray** (2012),**Verma** and **Arora** (2010), **Sahoo** (2001)found that economic growth and Public expenditure were mutually causing each other and there is long run relationship is found among these variables. But Chandra (2004) found that the government did not act as an engine of growth either in the short or in long run in India during 1950-96. On the other hand **Singh** and **Sahni** (1984) investigated that the growth in Public expenditure causes and effects the growth in national income. On the basis of empirical evidence they found that in Indian economy context both the hypotheses (Wagnerian and Keynesian) were mutually work and they cause each other. **Kesavarajah** (2012) showed that in Bangladesh total expenditure was slightly increased while in Sri Lanka, India and Pakistan it had slightly declined. In Sri Lankan economy percentage of public expenditure in AGRI sector has declined while as in defense EDU, HEL and TRC it has increased over the years. Co integration and ECM test results showed that the existence of short run as well as long run relationship between GDP and Public expenditure. According to Granger casualty test results confirmed that Wagner's law does not exist in case of Sri Lanka. **Magazzio** (2012) examined six versions of Wagner's law in EU-27 for the post-war period 1970-2009. According to Granger Causality test results that Wagner's law applicable in case of Belgium and Ireland while it followed the opposite direction in Denmark, Finland, France and Ireland. **Ghorbani and Zarea** (2009) found that Wagner's law is accepted in Iran's economy during 1960-2000. **Bagdigen** and **Cetintas** (2008) explored that there was no co-integration between GDP and Public expenditure which means that there was no long run relationship between Public expenditure and GDP for the Turkish case. In case of Pakistan there are different views of researchers that **Rehmanet. al.** (2007) found that the long run relationship between government expenditure and determinants of growth like per capita income in Pakistan. **Afzal** and **Abbas** (2010) explored that Wagner's Hypotheses in Pakistan economy. But on the other hand **Rauf**, **Qayum** and **Zaman** (2012) examined that neither Wagner's hypotheses nor Keynesian hypotheses did not hold in case of Pakistan during the period 1979 to 2009. **Husain** (2011) According to findings of this study Sri Lanka spent more on education and health sectors as compared to Pakistan and India but both countries (India, Pakistan) spent a huge amount on defense sector (non-economic sector).

Public expenditure incurred by public authorities like central, state and local governments to satisfy the collective social wants of the people is known as public expenditure. In any country the public expenditure is required to promote rapid economic development, trade and commerce, agricultural and industrial sectors, rural development, balanced regional growth, full-employment and maintain price stability, mineral resources like coal and oil, socio-economic

[1]Kesavarajah, M., (2012), Wagner's Law in Sri Lanka: An Econometric Analysis, ISRN Economics, Article ID 573826

overheads eg. Roadways, railways, power etc. and to ensure an equitable distribution of the resources. A striking feature of public expenditure in India is its continuous increase since independence. After independence, India took the responsibility of establishing a welfare state based on a planned economic development. The main objective is to promote the economic and social well-being of the people which enforced the government to come forward and spend for enhancing economic and social welfare. Thus, a continuous upward trend has been observed in public expenditure of the Indian government. After introduction of Liberalization, Privatization and Globalization (LPG) in India GDP has increased continuously. Private hands try to collect only their welfare but not the welfare of the society. Therefore, the government has taken responsibility of society's welfare and for this purpose Central and State governments are spending into mainly two forms like Revenue Expenditure and Capital Expenditure.

2. DATABASE AND METHODOLOGY

The present study is based on secondary data that covers the period from 1970-71 to 2011-12. Time series annually data for 42 observations has been utilized in this study. The study covers selected independent variables GDP, the indicator of income denoted by LY, Per capita income (LYP) and dependent variables Government expenditure (LGE), Real expenditure (LRE), real per capita expenditure (LREP), nominal per capita expenditure (LNEY), Government final consumption expenditure (LGFCE). The data has been collected from Hand book of Statistic on Indian Economy 2011-12 and annual report of (2000-01) published by Reserve Bank of India (RBI).Similarly, to neutralize the impact of increase or decrease in prices, all the variables have been deflated at 2004-05 prices by using appropriate deflators.

TABLE 1: REGRESSION FORM OF SIX VERSIONS OF WAGNER'S LAW

S. No.	Versions	Regression Equation
1	**Peacock-Wiseman (1961)**	LNGE = a + bLNGDP + u
2	**Gupta (1967)**	LN (GE/P) = a + bLN (GDP/P) + u
3	**Goff man (1968)**	LNGE = a + bLN (GDP/P) + u
4	**Pryor (1969)**	LNGCE = a + bLNGDP + u
5	**Musgrave (1969)**	LN (NGE/NGDP) = a + bLN (GDP/P) + u
6	**Mann (1980)**	LN (NGE/NGDP) = a + bLNGDP + u

Source: Verma, S. and R. Arora (2010), Does the Indian economy Support Wagner's Law? An Econometric Analysis, Eurasian Journal of Business and Economics, 3 (5), pp. 77-91

For eliminating the base difference, the natural logarithms of the entire variable have been utilized. Before using the data firstly need to consider the impact of Structural shift in Indian economy on growth elasticity of public expenditure following dummy variables[2] have been introduced:

INTERCEPT DUMMIES

$$D_1 = \begin{cases} 1: \text{if } 1970 \leq t \leq 1990 \\ 0: \text{otherwise} \end{cases} \quad \text{And} \quad D_2 = \begin{cases} 1: \text{if } t > 1991 \\ o: \text{otherwise} \end{cases}$$

Slope dummies: $Z_1 = D_1 \times X_t$ and $Z_2 = D_2 \times X_t$

Where the dummy D_1 represents the first phase of economic liberalization from (1970-71 to 1990-91), and D2 represents the second phase of economic liberalization phase from (1990-91 onwards), both are shown the structural shift in Indian economy.

To test the validity of Wagner's hypothesis in Indian economy, Johansion co- integration, Vector error correction model, Granger Causality test have been utilized to test the relationship between economic growth and public expenditure. The estimation procedure involves three steps. The first step is to test for stationarity of the time series data with the help of unit root (ADF) and PP tests. The presence of unit root makes the regression test results more spurious[3] and these results disturb the accuracy of the estimated parameters. Both Augmented Dickey Fuller (ADF) and Phillips Perron (PP) tests are applied to the Level form and First Difference in logarithms term of the series form two models: Intercept and Trend and Intercept.

3. EMPIRICAL RESULTS

UNIT ROOT TEST

The first step of Johansion Co-integration approach is to test the presence of unit root in time series variables. For this purpose Augmented Dickey Fuller (ADF) and Phillips Perron (PP) tests have been utilized. The results of unit root test (ADF and PP) tests are exhibited in table 4.1. The ADF and PP tests are performed for the two models; intercept as well as trend and intercept. Both models are performed on the level as well as first difference of the series.

[2]Verma, S. and R. Arora (2010), Does the Indian economy Support Wagner's Law? An Econometric Analysis, Eurasian Journal of Business and Economics,3 (5),pp. 77-91.

[3]A problem of spurious regression can occur when two time series variables in a regression are highly correlated whereas there is no actual relationship between them. High correlation is due to the existence of time trends in both time series variables (Granger and Newbold, 1974).

TABLE 2

Unit Root Test on Variables

Variables	Model	ADF Test Statistic		PP Test Statistic	
		Level	First Difference	Level	First Difference
LY	Intercept	3.6288*	-5.9202*	4.7799	-5.9670*
		(-3.6009)	(-3.6056)	(-3.6009)	(-3.6056)
	Trend & Intercept	-1.3404	-8.0356*	-1.2679	-9.5266*
		(-4.1985)	(-4.2050)	(-4.1985)	(-4.2050)
LE	Intercept	-1.1061	-6.6453*	-1.4959	-6.6877*
		(-3.6009)	(-3.6056)	(-3.6009)	(-3.6056)
	Trend & Intercept	-1.9285	-6.6390*	-1.8825	-6.7094*
		(-4.1985)	(-4.2050)	(-4.1985)	(-4.2050)
LRE	Intercept	0.2215	-6.4856*	0.595	-6.5217*
		(-3.6009)	(-3.6056)	(-3.6009)	(-3.6056)
	Trend & Intercept	-2.4582	-6.5259*	-2.5727	-6.5810*
		(-4.1985)	(-4.2050)	(-4.1985)	(-4.2050)
LREP	Intercept	0.3342	-6.6409*	0.8441	-6.6577*
		(-3.6009)	(-3.6056)	(-3.6009)	(-3.6056)
	Trend & Intercept	-2.1776	-6.7717*	-2.2454	-6.8465*
		(-4.1985)	(-4.2050)	(-4.1985)	(-4.2050)
LGFCE	Intercept	-3.3698	-7.0467*	-3.3271	-14.6487*
		(-3.6009)	(-3.6056)	(-3.6009)	(-3.6056)
	Trend &Intercept	-3.330243	-6.957378*	-3.236324	-14.34461*
		(-4.1985)	(-4.2050)	(-4.1985)	(-4.2050)
LRGFCE	Intercept	-1.330596	-7.277697*	-1.046543	-13.07536*
		(-3.6009)	(-3.6056)	(-3.6009)	(-3.6056)
	Trend & Intercept	-3.254529	-7.205677*	-3.246688	-14.23947*
		(-4.1985)	(-4.2050)	(-4.1985)	(-4.2050)
LYP	Intercept	4.274679*	-5.287147*	5.323949	-5.367194*
		(-3.6009)	(-3.6056)	(-3.6009)	(-3.6056)
	Trend & Intercept	-0.957948	-7.854949*	-0.957948	-9.2049*
		(-4.1985)	(-4.2050)	(-4.1985)	(-4.2050)
LNEY	Intercept	-2.929392	-6.061557*	-2.94964	-6.27485*
		(-3.6009)	(-3.6056)	(-3.6009)	(-3.6056)
	Trend & Intercept	-2.560413	-4.715949*	-2.476065	-6.566164*
		(-4.1985)	(-4.2050)	(-4.1985)	(-4.2050)
LEP	Intercept	-0.643789	-6.683824*	-0.860661	-6.776689*
		(-3.6009)	(-3.6056)	(-3.6009)	(-3.6056)
	Trend & Intercept	-2.178472	-6.607156*	-2.152848	-6.714455*
		(-4.1985)	(-4.2050)	(-4.1985)	(-4.2050)

Note: * indicates significant at 1 percent level. Brackets ( ) contain critical values.

The result of the unit root and PP indicates that all the variables are non- stationary in level form for the intercept model except LY (log of GDP) and LYP (log of per capita income) at one percent level of significance but all the variables are non- stationary in level form for the trend and intercept model. Whereas, all the variables are in the stationary in first difference for both Intercept and Trend & Intercept models. So now, co- integration model can be applied on the given data series.

CO-INTEGRATION TEST

The stationary behavior of the series fulfils the criteria of estimating the co-integration model. In the co-integration, study utilized the Johansen co-integration methodology. This technique is more robust in the case of more than two variables. To test the existence of co-integrating Vectors for the six versions of Wagner's law (Peacock & Wiseman, Gupta, Goffman, Pryor, Musgrave and Mann), Johansen Test and max Statistics have been used. In general, there can be up to two Co-integrating vectors for all versions. The test results have been presented in below given table.

TABLE 3: JOHANSEN CO-INTEGRATION TEST

Sr. no.	Variables	Null Hypothesis	Alternative Hypothesis	Eigenvalue	Max-Eigen	Trace Statistic	Critical Value (0.5%)	Prob.
1	LRE,LY & DV	r=0	r>0	0.5144	28.8970	50.0831	42.9153	0.0082
	(Peacock & Wiseman)	r≤1	r>1	0.3440	16.8609	21.1861	25.8721	0.1717
		r≤2	r>2	0.1025	4.3252	4.3252	12.5180	0.6947
2	LREP,LYP & DV	r=0	r>0	0.5257	29.8364	51.7136	42.9153	0.0053
	(Gupta)	r≤1	r>1	0.3504	17.2548	21.8773	25.8721	0.1451
		r≤2	r>2	0.1091	4.6225	4.6225	12.5180	0.6511
3	LRE, LYP & DV	r=0	r>0	0.5350	30.6278	53.2603	42.9153	0.0034
	(Goff man)	r≤1	r>1	0.3605	17.8811	22.6325	25.8721	0.1201
		r≤2	r>2	0.1120	4.7514	4.7514	12.5180	0.6324
4	LRGFCE, LY & DV (Pryor)	r=0	r>0	0.4071	20.9124	36.8022	42.9153	0.1785
		r≤1	r>1	0.2606	12.0792	15.8898	25.8721	0.5014
		r≤2	r>2	0.0909	3.8107	3.8107	12.5180	0.7693
5	LNEY, LYP & DV (Musgrave)	r=0	r>0	0.5342	30.5634	51.0749	42.9153	0.0063
		r≤1	r>1	0.3293	15.9757	20.5115	25.8721	0.2011
		r≤2	r>2	0.1072	4.5358	4.5358	12.5180	0.6638
6	LNEY, LY & DV	r=0	r>0	0.5158	29.0072	47.9577	42.9153	0.0145
	(Mann)	r≤1	r>1	0.3064	14.6318	18.9505	25.8721	0.2837
		r≤2	r>2	0.1023	4.3187	4.3187	12.5180	0.6957

* indicates Co integration equation at 5% level of significance.

The Johansen Co-integration Test results show that Peacock & Wiseman, Gupta, Goffman, Musgrave and Mann versions trace statistic have been rejected at null hypothesis but accept at degree one. So all these five versions have been one co-integrating relationship among economic growth and public expenditure except **Pryor** version in India. In Pryor version null hypothesis is accepted at zero co-integrating relationship. So VECM model can not apply on Pryor version.

TABLE 4: LONG-RUN OF VECTOR ERROR CORRECTION MODEL

Long run						
S. N.	**Versions**	**dependent Variable**	**Independent Variables**	**Coefficients**	**S. Error**	**Z- Values**
1	**Peacock- Wiseman**	**LRE**	**LRY**	0.3689*	-0.1630	2.2626
			DV	-0.1889	-0.0207	-9.1419
			Trend	0.0540	-0.0038	14.1511
			Constant	5.8576		
2	**Gupta**	**LREP**	**LYP**	0.2770*	-0.0944	2.9349
			DV	-0.2617	-0.0348	-7.5159
			Trend	0.0422	-0.0036	11.6111
			Constant	5.1707		
3	**Goffman**	**LRE**	**LYP**	-0.1229	-0.0946	-1.2990
			DV	0.2459	-0.0350	-7.0184
			Trend	0.0669	0.0037	18.2982
			Constant	5.9533		
4	**R.A.Musgrave and P. B. Musgrave**	**LNEY**	**LYP**	-0.6359*	-0.1025	-6.2031
			DV	-0.2611	-0.0374	-6.9739
			Trend	0.0403	-0.0039	10.2909
			Constant	4.2723		
5	**Mann**	**LNEY**	**LY**	-0.8052*	-0.1090	-7.3889
			DV	-0.2413	-0.0340	-7.0969
			Trend	0.0600	-0.0061	9.8828
			Constant	5.3490		
Note: * Stands for significant for 5% level						

After find out the relationship among the variables, now there is need to which type of relationship (short run as well as long run) will exit among both variables. Results of long- run VECM model explores that Peacock & Wiseman, Gupta, Musgrave and Mann versions are statistical significant at five percent critical value except Goffman version. Standard Error shows the speed of adjustment on equilibrium restore in a year among the variables.

SHORT RUN OF VECTOR ERROR CORRECTION MODEL

The behavior of the short run relationship between expenditure and economic growth for all the five versions of Wagner's hypothesis has been shown in Table. The co-integration equation1 has been checked out at five percent level of significance.

TABLE 5

Short run						
S. No.	**Versions**	**Variables**		**Coefficients**	**S. Error**	**Z- Values**
1	**Peacock and Wiseman**	**Co-integrating Equ.**	**D(LRE)**	-1.1478*	0.4966	-2.3115
			D(LRY)	0.1979	0.1386	1.4276
		D(LRE(-1))		-0.2604*	0.1056	-2.4650
		D(LRY(-1))		0.7645	0.9295	0.8225
		DV(LRE)		0.1121	0.1124	0.9974
		DV(LRY)		-0.0514	0.0314	-1.6374
		C(LRE)		-0.1021	0.1163	-0.8775
		C(LRY)		0.0651*	0.0325	2.0033
2	**Gupta**	**Co-integrating Equ.**	**D(LREP)**	-0.8811*	0.1824	-4.8319
			D(LYP)	-0.3008*	0.1030	-2.9204
		D(LREP(-1))		-0.0156	0.0921	-0.1698
		D(LYP(-1))		-0.8511*	0.3366	-2.5286
		DV(LREP)		0.0623	0.0552	1.1284
		DV(LYP)		0.0308	0.0312	0.9887
		C(LREP)		0.0691*	0.0152	4.5338
		C(LYP)		0.0394*	0.0086	4.5781
3	**Goffman**	**Co-integrating Equ.**	**D(LRE)**	-0.7945*	-0.1801	-4.4110
			D(LYP)	-0.3280*	-0.0975	-3.3656
		D(LRE(-1))		-0.0244	-0.0893	-0.2737
		D(LYP(-1))		-0.9057*	-0.3331	-2.7193
		DV(LRE)		0.1058	-0.0619	1.7100
		DV(LYP)		0.0326	-0.0335	0.9737
		C(LRE)		0.0843*	-0.0163	5.1689
		C(LYP)		0.0386*	-0.0088	4.3746
4	**R.A. and P. B. Musgrave**	**Co-integrating Equ.**	**D(LNEY)**	-0.4324*	0.1946	-2.2221
			D(LYP)	-0.3276*	0.0944	-3.4713
		D(LNEY(-1))		0.0027	0.0891	0.0305
		D(LYP(-1))		-0.5151	0.3274	-1.5732
		DV(LNEY)		0.0612	0.0684	0.8951
		DV(LYP)		0.0327	0.0332	0.9868
		C(LNEY)		0.0300	0.0182	1.6438
		C(LYP)		0.0457*	0.0088	5.1655
5	**Mann**	**Co-integrating Equ.**	**D(LNEY)**	-0.5396*	0.2044	-2.6406
			D(LY)	-0.3267*	0.0979	-3.3361
		D(LNEY(-1))		-0.0067	0.0888	-0.0751
		D(LY(-1))		-0.4158	0.3136	-1.3257
		DV(LNEY)		0.0824	0.0679	1.2127
		DV(LY)		0.0211	0.0325	0.6478
		C(LNEY)		0.0379	0.0259	1.4646
		C(LY)		0.0668*	0.0124	5.3888
Note:	* Stands for significant for 5% level					

The estimates of the table show that in the case of Peacock-Wiseman version, Z value is -2.3 this is more than tabulated value at five percent level (1.96), it rejects the null hypothesis. So it is statically significant at five percent critical value the coefficient of past error term is negative value is -1.15 and error correction term is 0.49, this result as per the validity of Co-integration model means it is supporting that past error term should bear negative coefficient value. Similar type results are found for all the reaming four versions where the coefficient value is statically significant with negative sign. These results indicate that any type of disequilibrium in the past is corrected very fast for long run equilibrium. The results of this table show the sign of applicability of five versions of Wagner's law in the short run

GRANGER CAUSALITY TEST

There is need to know about that whether there is unidirectional and bi-directional relationship among economic growth and public expenditure in India. For this purpose Granger- Causality test has been applied.

TABLE 6: PAIR WISE GRANGER CAUSALITY TESTS

Null Hypothesis:	Obs.	F-Statistic	Probability
LY does not Granger Cause LRE	41	5.3863	0.02576
LRE does not Granger Cause LY		0.01287	0.91029
LY does not Granger Cause LREP	41	8.11678	0.00704
LREP does not Granger Cause LY		0.45418	0.50444
LYP does not Granger Cause LREP	41	5.56738	0.02354
LREP does not Granger Cause LYP		0.27586	0.60248
LY does not Granger Cause LGRFCE	41	6.93919	0.01213
LGRFCE does not Granger Cause LY		0.02795	0.86811
LYP does not Granger Cause LGRFCE	41	4.9724	0.03174
LGRFCE does not Granger Cause LYP		0.24126	0.62613

After having a look on statistics the results of the table it is clear that the null hypothesis which is 'LY does not Granger Cause LRE' is significantly rejected i. e. LY significantly Granger causes LRE at 2.6 percent level while second row of the table reports that the null hypothesis 'LRE does not Granger Cause LY' is insignificantly accepted. Taking together both rows of the table the results reveal that in the case of Wiseman-Peacock version, there is uni-directional relationship between LRE and LY. All the results of the table show that some variables are Granger cause to other variables like, LY Granger Cause LREP, LYP Granger Cause LREP and, LY Granger Cause LRGFCE, LYP Granger Cause LRGFCE. So there is uni-directional relationship among the variables. As the growth variables are causing the expenditure's variable which is the theory of Wagner's law. Therefore, results of causing indicating the applicability of Wagner's Law in India.

4. CONCLUSION

The main focus of this study is to check out the relationship between Economic growth and Public expenditure in India that was the law given by Wagner. This study checks out the applicability of six versions of Wagner's law in India during 1970-71 to 2011-12 by different econometric techniques. For this purpose some variables of growth and public expenditure are selected on the bases of six versions of Wagner's Law. For analysis, the data unit root test is used like Augmented Dickey Fuller (ADF) and Phillips Perron (PP) test to check the stationary of the data. In ADF and PP test all the variables become non-stationary at level of intercept except LY and LYP which becomes stationary at intercept. Then in trend and intercept all the variables become non-stationary at level form. Finally, all the data for variables become stationary at first difference on intercept and trend and intercept in both the models. As per the results of co-integration model five versions like Peacock-Wiseman, Gupta, Goff man, Musgrave, and Mann show that the null hypothesis is rejected and is significant at five percent level, but it shows only one level of co-integration between the variables. But the result of Pryor is the opposite of the five versions of Wagner's Law. Granger Cause results show that there is uni-directional relationship among the variables. As the growth variables are causing the expenditure's variable which is the theory of Wagner's law. Therefore, results of causing indicating the applicability of Wagner's Law in India. However the findings of this study gave a deeper understanding about the relationship between Economic growth and Public expenditure. In future, the researchers can check sector wise performance of Economic growth and Public expenditure in India and other countries.

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