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Relationship between Government Expenditure and National Income: The Case of Bangladesh

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Public expenditure is considered as an integral part of economic growth. Comprehending the link between public expenditure and economic growth has created some arguments among researchers at both empirical and theoretical levels. However, to the best of our knowledge there is no paper till now to address the issue whether government expenditure has increased national income or national income has increased government expenditure in Bangladesh. Hence, the main purpose of conducting this paper is to examine the causal relationship between government expenditure and national income in Bangladesh. In order to inscribe this particular matter, in this paper, annual data from the time period, 1980-2014 has been used up, along with Augmented Dickey-Fuller (ADF) Unit Root Test for the variables, Johansen Co-Integration and then, Granger Causality Test. Based on the results obtained from the above mentioned tests, no causal relationship has been found between the variables of government expenditure and national income which supports the Wagner's Law. This has important policy implications, as it suggests that national income does not seem to harm public expenditure in Bangladesh

Field of Research: Economics

1. Introduction

Comprehending the link between public expenditure and economic growth has created some arguments among researchers at both empirical and theoretical levels. Public expenditure is an integral part of economic growth. In other words, it is one of the main antecedents of economic growth. The main objective of this paper is to look into the government expenditure of the Bangladesh economy and get hold of the reasons behind it by pointing to the long run relationship with economic growth. Understanding the causal relationship of government expenditure and its long run impact on economic growth has been controversial, however, a topic of interest for decades.

Government expenditure is an integral part of national income, where the relationship, as to how it works, is conflicted by two schools of thoughts, namely, Wagnerian and Keynesian. They have debated whether national income raises government expenditure or government expenditure raises national income. In the case of developing countries, where there are increased unemployment rates, inflation, lack of security, and no scope for growth for private sectors, some

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economists stated total output could be raised evidently, if more government expenditure takes place. The parallel raising public expenditure and unsatisfactory economic growth in the developing countries has given birth to several questions regarding the impact of public spending on economic growth (Scully, 1989). However, contrarily, it too, can have negative effects such as crowding out effect and discouraging additional work. Even though, both the school of thoughts have given some interesting insights on the topic, in none of the cases, the assumption of a causal relationship has been through, thorough empirical findings.

Depending only on previous conclusions for selection between the two proposals is considered tough for at least three reasons. Firstly, is the chance of a review in macro relations which almost makes the causal relation and the direction very vague to focus on. Secondly, explained by Sahni, Kwan and Ahsan (1992), in the national income and government spending link, unsuccessfully keeping track of variables that have been missed may arise flawed arrangement among variables, and in a broad spectrum altogether may fail to give unbiased outcomes. Thirdly, if co-integration is applied among the processes' variables, the error correcting variables would give an extra stream of causal relationship. As a matter of fact, the prime characteristic of co-integrated variables is that their time paths are inspired by the limits of any change from long run equilibrium. Therefore, leaving out of any error correcting variables would bring about with it, error of misspecification and also may very well fail to show unbiased outcomes. In the framework of a multivariate system, such a result is very much attainable as bringing about a third variable in the process can change the causal deduction with respect to the clear and easy bivariate structure.

Singh and Sahni (1984) checked the relationship between public spending and economic growth, as a result, their research led to many other research, the outcome of which vary from no causal relationship between the two variables to multi directional causal relationship. Ram (1986, 1987) proposed that differences in the trend of data, the examining process and the time frame that may annotate the dissimilarity in outcomes. After some years, Kwan, Ahsan and Sahni (1992) included several other aspects that may annotate the instability among the outcomes by distinct writers, among which; one is an inspiration of a variable that has been left out. It is said that the inability to keep track of such variables may lead to rising false causal arrangement within the variables. Lately many other researchers have used the co-integrations examining outcomes, such as Lahirushan and Gunasekara (2015) and Amin et al (2011), but in the framework of a bivariate method, to either prove Wagner's Law right or wrong.

A very integral weakness of the research on this topic in the past is that, it does not succeed in adapting for the co-integration outcome of the time series in context of the multivariate structure that makes traditional statistical conclusions invalid. Surely, bringing about a third variable in the structure can change not only the causal conclusion on the easy bivariate structure, but also the value of the approximate result. Selection of variables may become difficult as all the research in this area is empirical in adaptation. Firstly, during the time frame tested, these variables were of the most curiosity for economic policies. Surely, compared to the nearly calm and composed and acknowledged set of ten years of the 1950s-1960s, of most European countries, the 1970s and afterwards, were associated with high unemployment at a level not accomplished in the past, and also with high rates of inflation. Thus, we hope unemployment and inflation to have an integral part in the structuring between the causal system between G and Y. Secondly; several

empirical evidences found that both inflation and unemployment are closely related with the growth of government expenditure and economic growth. For example, Abrams (1999) showed that the increase in American government expenses is the reason behind high unemployment rates, which have led to the creeping growth of the American economy. Some other researchers, however, such as Fischer (1993), Burdekin, Goodwin, Salamun and Willet (1994) and Clark (1997), approximate time series regression of inflation and growth through borders, and figure out inflation is conversely related to growth.

Although government expenditure can significantly affect the national income of a developing country like Bangladesh, to the best of our knowledge, there is no literature examining the relationship between government expenditure and national income for Bangladesh economy. So, the following two questions are addressed in this paper.

1. Is there any long term relationship between the variables concerned?

2. Is there any causal relationship between the variables?

From empirical evidence, we have seen that the relationship between the two variables work differently for different countries at different times. So, it is important to know the causal relationship between government expenditure and national income, for policy perspectives. If unidirectional causality is found, running from government expenditure to national income then government should be very careful before implementing introduction of any contractionary fiscal policy. Since results of this paper reveal that there is no causal relationship between government expenditure and national income in Bangladesh, like that of India, implying there exists no Keynesian or Wagnerian law. Thus, we can conclude that this paper is different in the sense that several other research has been carried out on this topic in other countries, however, it is the first of its kind in Bangladesh.

The rest of the paper is organized as follows: The next chapter introduces the Literature Review, which consists of two parts- Theoretical Background and Empirical Evidence. Chapter 3 discusses Overview of Government Expenditure in Bangladesh. Methodologies are illustrated in chapter 4 and the Results and Conclusions are in chapters 5 and 6, respectively. Bibliography is in chapter 7.

2. Literature Review

2.1 Theoretical Background

Economists use Wagner's Law (2013) and empirical evidences to find a causal relationship between government expenditure and national income. Two theories mainly classified and defined the relationship- Wagner's Law (2013) and the Keynesian Approach (1936). Wagner's Law (2013) explains that the performance of the economy has a significant favorable effect on the growth of public sector, which is an endogenous factor in national income. And, Keynesian Approach (1936) states that government spending may formulate an exogenous element of economic policy to alleviate growth through its several effects on aggregate demand. Theory states, this issue is still ambivalent, with researchers having contradictory views on public

spending and national income. Wagner (2013), through his law of rising government actions, explained that as the national income per capita increases, the average size of government public spending grows along. This illustrates that as an economy flourishes, the number of hubs engaged in criminal activities also rises. This is when the government needs to interfere, to bring down these negative externalities as low as possible and also to provide other social services. This kind of interference has a cost, increasing government spending as a result. Wagner's Law (2013), states that national income has a causal effect on public expenditure. Contradicting to Wagner's Law (2013), Keynes (1936) thought that the answer to the fluctuation of the economy is to trigger it by a mix of fiscal and monetary policy. That will be a fall in the rate of interest and level of public investment on infrastructure. Keynes (1936) stated that when interest rates fall, the private sector would use up this convenience to gather more loans and make investments in the economy. Moreover, when public spending on infrastructure will take place, it will generate more job opportunities, which in turn, will raise national income through the multiplier. So, according to Keynes (1936), public expenditure leads to economic growth. However, the Neo-Classical School of Thought doesn't agree with this assumption of Keynes (1936). They believed that a bigger public expenditure size may impede the overall economic performance, because in an attempt to manage money for increasing costs, the state may have to obtain more money or increase taxes. If the state chooses to finance more with the help of more tax revenues, such a rise may be of no motivation to the extra task that in turn maybe a reason behind falling income and total demand. Likewise, increased corporate taxes are likely to raise costs of production and lower all businesses' profitability and their capability to carry out further investment. Additionally, funding public spending through loans, may lead to crowding out effect of the private sector. Also, empirical evidences show that these two hypotheses have contradicted in the case of different countries.

2.2 Empirical Evidence

Inspired by the significant raise in government expenditure, a large group of economists have targeted at finding the relationship between government expenditure and national income. In this process, several countries have employed a number of processes, such as Granger Causality Techniques and Johansen Co-integration, Vector Autoregressive (VAR) Models, Panel Data and Cross Section Regression and Multivariate Co-integration to name a few. However, two groups mainly categorize this paper- Wagner's Law or Keynesian Approach.

Ansari (1997) tried to figure out the direction of causality between government expenditure and national income of three African countries, South Africa, Kenya and Ghana, with the help of Holmes-Hutton (1990) Causality Test and the Standard Granger Test. The process involves using yearly data on per capita public expenditure and national income from 1957-1999. From this, it's found that in South Africa, Kenya and Ghana, there exists no long run relationship between public expenditure and national income through the course of the time frame involved. In the case of these countries, Wagner's Law doesn't exist.

Abizadeh and Yousefi (1998) tested Wagner's Law in South Korea from 1961 to 1992. They carried out Granger type causality tests, and then estimated an equation of growth and an equation of public expenditure growth with the help of annual data for the years 1961-1992. Economic growth evidently led to government expenditure, was the result of their paper. Thus,

we can conclude, Wagner's Law exists in South Korea. Moreover, to top it all, the growth equations' approximations, did not have any positive effect in South Korea. Similarly, Islam (2001) tested for the relationship between government expenditure and national income in USA, by the help of yearly data from 1929-1996. He discovered there is an existence of a long run relationship between them. Also, Wagner's assumption is given a lot of support by the Engel-Granger's outcome of (1987) error correction approach.

Al Faris (2001) used a Granger Causality Test and Multivariate Co-integration to check for the relationship between public expenditure and growth for Gulf Cooperation Council (GCC) countries. He discovered a long run relationship between national income and current, capital and total spending. In the case of majority of the countries, Wagner's Law exists but not the Keynesian Approach. He stated that even though the public expenditures are very high in Gulf countries, however, as an outcome of oil wealth, the government expenditure doesn't lead to economic growth and hence, cannot be focused upon as a fiscal policy tool. Dogan and Tang (2006) attempted to figure the direction by which the variables function for Indonesia, Malaysia, Philippines, Singapore and Thailand. Time series data for the past 40 years helped. The Keynesian Approach was only found to exist in the Philippines. This hypothesis or its opposite does not exist in the other countries.

Singh and Sahni (1984) tried finding the direction of these two variables in India. Expenditure data from 1950-1981 has been taken up for reference. The data used was yearly and did not show the true value, it was underestimated. The outcome was that they did not find any causal relationship between government expenditure and national income, implying there existed no Wagnerian Law or Keynesian Approach, in this case. Abu Bader and Abu Qran (2003) looked into the link between public expenditure and national income for Syria, Egypt and Israel. They discovered there exists a long run bidirectional causal relationship between two variables in Syria and Israel. Abu Qran and Abu Bader gave a conclusion that those countries have had to take up the pressure created from expenditures from the military.

Abrams (1999) showed proof that an increase in the US government spending is the reason behind the rise in unemployment rate, which led to the slacking of the US economy. On the contrary, other researchers, such as Fischer (1993), Burdekin, Goodwin, Salamun and Willet (1994), and Clark (1997) provide approximate figures of time series regression of inflation and growth throughout countries and discovered that inflation was not directly related to growth. Ogbonna (2013) assessed the credibility of Wagner's Law in Nigeria for the time period 1950-2008 and the empirical results indicate that Wagner's Law holds true, and is supported for Nigeria's economy for the particular time period discussed.

Ibok and Bassey (2014) examined if public expenditure in Nigeria's primary sector supported Wagner's Law. The researchers used annual data from the Nigerian primary sector for the period of 1961-2012. With the help of Johansen and Juselius Co-integration Test, the existence of Wagner's Law in the Nigerian primary sector was proven. In general, Wagner's Law was supported by many researchers, such as, Wiseman and Peacock 1961, Musgrave 1969, 1988, Michas 1975, Mann 1980, Ram 1986, 1987, Courakis 1993. Having said that, most of the papers ensured that the time series data are motionless and that unfitting methods of evaluation, have thus been used.

Nowadays, the paper of Economics allows using co-integration methods to examine the tendency of government expenditure and national income (Murthy 1993, Henrekson 1993, Hondroyiannis and Papapetrou 1995, Legrengi 2000). Other empirical evidences in support of Wagner's Law include Akitoby et al. (2006) for developing countries, Alimi (2013) for Nigeria and Ogboka (2015) for Namibia, Kumar et al. (2012) for New Zealand, Lamartina and Zaghini (2008) for 23 OECD countries and Mohammadi et al. (2008) for Turkey.

However, other researchers supporting the Keynesian hypothesis are- Gupta and Gangal (2015) for India, Chimobi (2009), Ighodaro and Oriakhi (2010) Sevitenyi (2012) for Nigeria, Ghosha and Gregariou (2008) for 15 developing countries, Dependra (2007) for Thailand, Blankenau et al. (2007) for developing countries and Halicioglu et al. (2003) for Turkey.

Lastly, empirical papers that state that both public expenditure and national income are a cause of each other and lead to causing the other are- Huang (2006) for China and Tang (2009) for Malaysia. Odhiambo et al. (2015) showed that economic growth does not lead to a reduction in poverty in Swaziland – neither in the short run nor in the long run. However, the findings are that there is a causal link from reduction of poverty to economic growth in the short run. Research has shown that when income inequality is too high, economic growth by itself may not be able to reduce poverty. Wu et. al (2010) and Odhiambo et al. (2015), as a matter of fact, showed support for both side causality based on their research on 182 countries.

The paper has given us a thorough insight, as to which is Bangladesh's outcome, amongst the four possible outcomes, such as: government expenditure causes national income, national income causes government expenditure, government expenditure and national income causes each other, government expenditure and national income does not cause each other. And in Bangladesh's case, it so happens that neither of the variables cause each other, and that is how it is different from the other papers that have been referred to in this section.

3. Overview of Government Expenditure in Bangladesh

According to the World Bank definition, general government final consumption expenditure (formerly general government consumption) includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditure on national defense and security, but excludes government military expenditures that are part of government capital formation. All the citizens of the country want to know if Bangladesh is becoming better off, if the government is having a budget deficit or a surplus and if her money is being spent in a rational manner. Although, an annual budget is released every year, because it is partially politics and partially accounting, it is often not disclosed in detail to the public. The value, direction and number of numbers are often misleading and false. The budget of Bangladesh has changed substantially over the last ten years and it is easier to understand the budget now than it was in previous years. The rise doesn’t match up to the level of effect upon all the people of the country as the rate of the population growth is higher. As a result, the GNI per head grew magnificently from Tk.25000 to more than Tk.73000. Simultaneously, the public spending per head rose from almost Tk.5000 to Tk.21000. This may illustrate the idea that economic development is separating itself from public expenditure, but it

is dubious if that is truly the case. Starting at 100% in the year 2004, and distorting in accordance to check on how it changed over the last decade.

Public expenditure in Bangladesh has risen to Tk.823.97 billion in 2015 from Tk.702.09 billion in 2014. Public expenditure in Bangladesh had a mean of Tk.390.65 billion from 2003 till 2015, reaching the record peak of Tk.823.97 billion in 2015 and an all-time low of Tk.115.31 in 2003. Public expenditure of Bangladesh is noted by the Bangladesh Bureau of Statistics. Setting against the 2013 per capita values with that of 2004, discloses a significant disparity between the link of the growth of budget expenditure and the Gross National Income, (GNI is defined as the sum of value added by all producers who are residents in a nation, plus any product taxes (minus subsidies) not included in output, plus income received from abroad such as employee compensation and property income) of Bangladesh. The 2013 GNI was 289% of 2004's GNI, which is a confirmation of the booming economic growth of Bangladesh. The 2013 budget is 438% of 2004's. This is altered per head and is therefore, slowed down due to the population growth. The growth in absolute terms of both the budget and GNI has been even more in this period.

Public expenditure efficiency also increases this way, also a deficit and debt values are measures like foreign interest payments and net spending. Foreign interest payments are an important indicator since the markets can lead financially burdened countries to become almost insolvent, as the Southern European countries had stated. Even then, government has little impact on the development of the market. According to absolute figures, the cost of deficit in the country has increased. The rise has been slowed by increased public spending. Checking debt as a public spending cost thus fell from 2.16% to 0.78% of public spending costs. This is a huge improvement keeping in mind the financial downfall the world faced in the same set of ten years. This betterment has to be handled sensitively because it does not take count of the national financial burden and relies on consecutive favorable economic developments. How the public expenditures developed in the last decade should be asked. If the country is making expenditures in a wise way, and putting money on the unforeseen should also be asked. Considering a bigger picture, we should be making a general investigation.

Public spending can be divided into two parts- development and non-development expenditures. The first, improves and makes the economy better in terms of education and health, when the second one does not need any such, and it consists of police, administration, defense, debt service and jury, to name a few. The non-development expenditure needs to manage a country well, although, it is sensible to maintain a low profile and put emphasis on devoting the resources into making more infrastructure and/or education.

4. Methodology and Data

The existence of unit root has been tested to check the stationarity of the variables. Macro variables are well known for their non-stationarity. Augmented Dickey Fuller (ADF) Test were performed to examine the existence of unit root and found some of the variables are non-stationary and thus cannot be regressed without making them stationary. Then, Cointegration Test was run to find out possible linear combination of the variables that can be considered

stationary. If cointegration was found, Granger Causality Test was also run to check the possible direction of causality.

Here, it is mentioned that Johansen Cointegration Test is widely used in empirical literature to address the issue of cointegration and Granger Causality Test deals with causality.

In time series analysis, non-stationary data may lead to spurious regression unless there exists at least one cointegrating relationship. The Johansen procedure is applied to test for cointegration. This method provides a unified framework for estimation and testing of cointegration relations in the context of Vector Autoregressive (VAR) Error Correction Models. For this approach, one has to estimate an Unrestricted Vector of Autocorrelation of the form:

$$\Delta x_t = \alpha + \theta_1 \Delta x_{t-1} + \theta_2 \Delta x_{t-2} + \theta_3 \Delta x_{t-3} + \Lambda\ \Lambda + \theta_{k-1} \Delta x_{t-k+1} + \theta_k \Delta x_{t-k} + u_t$$

Where Δ is the difference operator, x_t is a (n×1) vector of non-stationary variables (in levels information on long run relationship between variables. If the rank of r_k=0, the variables are not cointegrated. On the other hand if rank (usually denoted by r) is equal to one, there exists one cointegrating vector and finally if 1<r<n, there are multiple counteracting vectors. Johansen and Juselius (1990) have derived two tests for cointegration, namely the Trace Test and the Maximum Eigen Value Test. The Trace Statistic evaluates the null hypothesis that there are at most r cointegrating vectors whereas the Maximal Eigen Value Test, evaluates the null hypothesis that there are exactly r cointegrating vectors in x_t) and u_t is also the (n×1) vector of random errors.

According to cointegration analysis, when two variables are cointegrated then there is at least one direction of causality. Granger-Causality, introduced by Granger (1969, 1980, 1988), is one of the important issue that has been much studied in empirical macroeconomics and empirical finance. Engle and Granger (1987) have indicated that the existence of non-stationarity, can give misleading conclusions in the Granger Causality Test. It is only possible to infer a causal long run relationship between non stationary time series when the variables are cointegrated.

If y and x are the variables of interest, then the Granger Causality Test determines whether past values of y add to the explanation of current values of x as provided by information in past values of x itself. If past changes in y does not help explain current changes in x, then x does not Granger cause x .Similarly, we can investigate whether x Granger causes y by interchanging them and repeating the process. There are four likely outcomes in the Granger causality test: (1) neither variable Granger cause each other, (2) y causes x but not otherwise, (3) x causes y but not otherwise, (4) both x and y Granger cause each other.

In this paper the causality test between public expenditure and national income will be conducted. For this the following two sets of equation will be estimated:

$$x_t = \alpha_0 + \alpha_1 x_{t-1} + \Lambda\ \Lambda + \alpha_l x_{t-l} + \beta_1 y_{t-1} + \Lambda\ \Lambda + \beta_l y_{t-l} + u_t$$

$$y_t = \alpha_0 + \alpha_1 y_{t-1} + \Lambda\ \Lambda + \alpha_l y_{t-l} + \beta_1 x_{t-1} + \Lambda\ \Lambda + \beta_l x_{t-l} + v_t$$

For all possible pairs of (x,y) series in the group, the reported F-statistics are the Wald statistics for the joint hypothesis

$$\beta_1 = \beta_2 = \beta_3 = \Lambda\ \Lambda\ = \beta_l = 0$$

As explained earlier this paper examines the long run relationship and the direction of causality between public expenditure and national income of Bangladesh. This relationship is at a high level of aggregation between public expenditure and national income and takes a simple functional form (linear) such that one principle variable, capable of explaining much of the variation in the other, as they both change with the passage of time. The measure of public expenditure can be considered as the indicator of national income which has been drawn from the different issues of Economic Trends published by Bangladesh Bank. For public expenditure use, we have used the data of public expenditure and it has been taken from different issues of statistical yearbook published by Bangladesh Bureau of Statistics (BBS). It should be mentioned here that since Bangladesh got her independence in 1971, the article concentrates over the period 1974-2006, for which 33 observations are available at most. Small sample size might be problematic in finding the long run relationship.

5. Results

Unit root tests were conducted to determine the order of integration of the data series for each of the variables. Augmented Dickey Fuller Test were carried out to check the stationarity of the data, to find out if the variables are stationary or not at first level difference. To help do that, an assumption of a hypothesis that the data series is non stationary and integrated was made. This approach is the standard in empirical literature. If rejection is clearly proven, only then is the hypothesis rejected. Table 2 shows the ADF statistics and corresponding critical values of all the variables in their level and first differenced forms.

Table 1: Augmented Dickey Fuller Unit Root Test for the Variables

Panel 1: Levels			
	ADF Statistics (Only Constant)	ADF Statistics (Constant & Trend)	Decision
Public Expenditure	8.023375	-3.884326	stationary at 5% level
Panel 2: First Differences			
	ADF Statistics (Only Constant)	ADF Statistics (Constant & Trend)	Decision
National Income	8.607322	4.331779	Stationary

Note: All regression is estimated with and without trend. Selection of the lag is based on Schwartz Information Criterion (SIC).

Table 2: Mackinnon critical values for rejection of hypothesis of a Unit Root				
Critical Value	Levels		First Differences	
	No Trend	With Trend	No Trend	With Trend
1%	-3.646342	-4.262735	-3.653730	-4.273277
5%	-2.954021	-3.552973	-2.957110	-3.557759
10%	-2.615817	-3.209642	-2.617434	-3.212361

Table 3: Johansen Cointegration Test					
		Eigen Value	Trace Statistic	0.05 Critical Value	Probability
Trace	None	0.33401	15.11709	12.3209	0.0166
	At most 1	0.050304	1.70323	4.129906	0.2254
Maximum Eigen Value	None	0.33401	13.41386	11.2248	0.0203
	At most 1	0.050304	1.70323	4.129906	0.2254

Here it is mentionable that unit root tests have non-standard and non-normal asymptotic distribution which are highly affected by the inclusion of deterministic terms, e.g., constant, time trend etc. A time trend is considered as an extraneous regressor whose inclusion reduces the power of the test. However if the true data generating process were trend stationary, failing to include a time trend also results in a reduction in power of the test. In addition, this loss of power from excluding a time trend when it should be present is more severe than the reduction in power associated with including a time trend when it is extraneous (Lopez et al, 2005).

One of the most important issues in conducting the unit root test is to select the appropriate lag length. One approach is to include a relatively long lag length and select the model by the usual t-test. If the t-statistics on lag p is insignificant at some specified critical value, the regression should be repeatedly estimated using a lag length p-1 until the lag is significantly different from zero. The stationary property of the variables have been checked by taking different lags and they yield homogenous results, that means public expenditure is stationary at level whereas the variable national income is stationary in the first differenced form.

It is clear that the variable national income is non stationary in its level and stationary in the first differences whereas public expenditure is stationary in level. The above results also imply that the variables would yield spurious results unless the variables are cointegrated. These results, however, allow to proceed the next stage of testing for cointegration. The Johansen Cointegration Test indicates that two series have one cointegrating relationship for both 1 and 2 orders of VAR. Both the Maximal Eigen Value Test and the Trace Test indicated one cointegrating relationship at 90% and 95% significance level. The Johansen Test result of this paper is insensitive to the inclusion of intercept and/or trend.

Additionally, the long run cointegrating relationship is reported in the following table which has been normalized on public expenditure.

However, the long run coefficients results are not robust because of the exclusion of other relevant variables which might affect public expenditure. As the main purpose of the paper is to examine the causal relationship between the concerned variables, to avoid complicacy, a simple equation has been regressed by omitting the other exogenous variables which has been reflected by a high coefficient and intercepts value. At the same time, the inclusion of other variables tend to give us more than one cointegrating relationships.

The Granger Causality Test has been done for 4 different lag intervals (lag 1, lag 2, lag 3 and lag 4) and the result shows that there is no causal relationship running from public expenditure to national income. Here the Granger Causality Test results show the failure to reject the null hypothesis that government expenditure increases national income or national income increases government expenditure. The results of The Granger Causality Test for lag 2 are reported in the following table:

Table 4: Granger Causality Tests

Hypothesis	F-Statistics	P-Value	Granger Causality
Public Expenditure does Granger Cause National Income	0.01243	0.9877	No causality found
National Income does not Granger Cause Public Expenditure	1.03122	0.3697	

6. Conclusions

Going to the depths of the link between government expenditure and economic growth has been a controversial issue, mainly because of the differences of the two schools of thoughts- Wagnerian and Keynesian. Their conflict was mainly, to identify which direction are the variables actually working; basically finding out if national income raises government expenditure or government expenditure raises national income. Although, both the school of thoughts has provided some fundamental information regarding this topic, in both of the cases, the hypothesis of the link between the variables has not undergone rigorous empirical evidence. So, relying on conclusions achieved in the past, between the two proposals is difficult. Recently, however, many research works have used cointegration, in the framework of bivariate method, to support the Wagnerian hypothesis or just to prove it wrong.

In this paper, it has been found that, there exists a long term cointegrating relationship between the variables concerned; however, there seems to be no causal relation. A very notable drawback of this research topic from the past is that, it fails to adapt the cointegration outcome of the time series in terms of the multivariate structure that leads to orthodox statistical conclusions running out their validity. Introduction of the third variable, not only changes the causal conclusion on the bivariate structure, but also the results. Which variable to use is a difficult question to answer as these research works are empirical in nature. From empirical evidence, we have seen that the relationship between the two variables work differently for different countries at different times. To the best of our knowledge, there is no literature examining the relationship between government expenditure and national income for

Bangladesh economy, and hence, absence of general agreement is the driving force to pursue this paper.

This paper has also provided new knowledge in the sense that, previously, it was not known whether government expenditure actually affected national income, thus we now know that if government expenditure is raised to raise the national income, this would not in turn increase the level of inflation in the country, hence we can conclude that the two variables that have been worked with in this paper, are independent of each other. Therefore, government can adopt any contractionary fiscal policy in order to get rid of any macroeconomic problems like inflation.

The paper has investigated the direction of the causal relationship between national income as a component of public expenditure in Bangladesh during the period of 1980-2014. It shows that the public expenditure does not derive the national income, but vice versa. Economic growth causes expansion of public expenditure. To cope with the expected increase in national income, public expenditure must increase. It was found that the amount of public expenditure in previous two years is a good predictor for the amount of national income in the current year. This does not mean that national income does not matter for Bangladesh economy; the analysis shows that the role of public expenditure is relatively small. This has important policy implications, as it suggests that national income does not seem to harm public expenditure in Bangladesh. Given that national income in Bangladesh is insufficient to meet the growing demand. Thus, in Bangladesh's context, national income can ensure better public expenditure. The importance of this paper lies in the sense that it is the first of its kind in Bangladesh and if it were not conducted, it would have not been known that there exists no causality between the variables, and this case is similar to that of India's, where also no causality had been found upon conducting a research.

Main limitations in conclusion for this research would be that only two variables are being used instead of a multivariate model, which results in a small sample size. If the sample size were larger, the results would be closer to accuracy, and the robustness of the accuracy could also be kept under check, and hence, this research could also be extended to other areas. Not enough empirical papers on this topic of research is also another limitation. Were there more empirical papers, reinstating the direction of the functioning of the variables would have been easier. Another very integral weakness of the research on this topic in the past is that, it does not succeed in adapting for the co-integration outcome of the time series in context of the multivariate structure that makes traditional statistical conclusions invalid.

The results of this paper show us that there has been no research previously to find the causal relationship between government expenditure and national income. From the literature review, in comparison with the other studies carried out in different countries, our paper is different. In the sense that, our outcome states, there exists no causal relationship between the variables concerned, however, in the cases of the other countries, there was found to be either a Keynesian or a Wagnerian relationship. This is quite a surprise that there exists no relationship because every year government of Bangladesh is investing in the economy to enhance income at a national level, however, since the data shows a different result altogether, government should now try to focus on other policies to affect national income more rigorously.

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