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## THE BEHAVIOUR OF DISAGGREGATED PUBLIC EXPENDITURES AND INCOME IN MALAYSIA

Chor-Foon Tang\* and Evan Lau\*\*

**Abstract:** The present study attempts to re-investigate the behaviour of disaggregated public expenditures data and national income for Malaysia. This study covers the sample period of annual data from 1960 to 2007. The Bartlett-corrected trace tests proposed by Johansen (2002) were used to ascertain the presence of long run equilibrium relationship between public expenditures and national income. The results show one cointegrating vector for each specification of public expenditures. The relatively new MWALD test indicates a strong unidirectional causal effect runs from national income to public expenditures in Malaysia. While, bilateral causality evident exists merely between public expenditure on health and national income. In Malaysia, it is not a wise strategy to solely depend on fiscal policy for long-term economic development.

**JEL Classifications:** C22, E60, H50

**Keywords:** Bartlett-corrected trace test; Growth; MWALD; Public expenditure

### 1. INTRODUCTION

The roles of government in a country have been explored from different perspectives focusing on the theoretical debate and empirical assessment in terms of economic policymaking. Within this context, the long-run relationship between government expenditures and economic growth has been a lively topic of empirical assessment. Testing the dynamic linkages between these variables can provide us with theoretical relevance and policy implication for future growth determinants of a country. Two different schools of thought discuss the notion of government expenditure and economic growth accentuating on the causal direction between both of them. Wagner (1890) postulated that public expenditure is an endogenous variable that causes income growth for a country and it grows faster than the growth of income.<sup>1</sup> In contrast, Keynes (1936) postulates that public expenditure is an exogenous variable, which can be used as an effective fiscal policy instrument to foster economic growth suggesting that the causal direction runs from public expenditure to economic growth. Both theory holds at respective time in which the theories are postulated from real economic events. In the development of the world however, it

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is intensely debated in various countries using various methodology as in which directions are the causality run between public expenditure and income in a country. Yet, mixed results are found at best after over twenty decades of arguments.

A review of the literature on Malaysian case (Dogan and Tang, 2006; Furuoka, 2008; Ghani, et al., 2005; Tang, 2001; Sinha, 1998; Samudram et al., 2009) will introduce us to jumbled up results that either support Wagner's law (Tang, 2001; Furuoka, 2008 and recently, Abdullah and Maamor, 2010) or Keynesian hypothesis (Samudram et al., 2009; Ghani et al, 2005 and Dogan and Tang 2006 among others). Sinha (1998) found evidence that public expenditure and economic growth in Malaysia does not Granger-causes each other but found evidence of causality running from economic growth to public expenditure supporting the presence of Wagner's law in Malaysia. Using yearly data from 1960 to 2005, Ghani et al. (2005) argued that in the long run government expenditure and economic growth Granger-causes each other (bi-directional causality). However, in the short run the results only show unidirectional causality from government expenditure to economic growth. Their results support Keynes' rather than Wagner's law in Malaysia. Dogan and Tang (2006) on the other hand, found a uni-directional causal linkage from public expenditure to national income only for the case of the Philippines, but not for the rest of the ASEAN-5 countries (Indonesia, Malaysia, Singapore and Thailand). They argued that these inconsistency findings might be attributed to the deficiencies in dataset and methodological flaws. Samudram et al. (2009) re-investigated the issues empirically using the disaggregated data of public expenditures. From their empirical exercise, they found evidence supporting both Wagner's law and Keynesian hypothesis in Malaysia.

Motivated by this development, the goal of this study is to empirically re-examine the relationship between disaggregated public expenditures and economic growth in Malaysia using annual data from 1960 to 2007.<sup>2</sup> This study differs from the existing empirical studies in at least four ways. First, none of a research effort for Malaysia has considered the effect of disaggregated public expenditure data on economic growth, except for Samudram et al. (2009). The advantage of using disaggregated data is that it will offer a better exposition on the role of each component of the public expenditure on the growth process in Malaysia. In this sense, manipulation of appropriate policy conclusion on the different economy sector would be able to materialise.

Second, the existing empirical studies (e.g. Ansari, 1993; Sinha, 1998; Islam, 2001) used the standard Johansen (1988) and Johansen and Juselius (1990) procedures to examine the presence of long-run equilibrium relationship between public expenditure and economic growth. With the evidence of Monte Carlo experiments, Reimers (1992) and Cheung and Lai (1993) shows that in finite sample the standard Johansen's cointegration test is biased toward rejecting the null hypothesis of no cointegrating relation. Owing to this reason, Samudram et al. (2009) resort to the Pesaran et al. (2001) ARDL approach of cointegration to solve the problem of the small size of sample. This method has been adopted in numerous empirical applications of the economic literature by the same token. Although the ARDL method considered as 'super-consistent' for small sample sizes by several empirical studies (e.g. Narayan and Narayan, 2005; Narayan and Smyth, 2006), to the best of our knowledge, none of a Monte Carlo simulation supports this notion. Moreover, Pesaran et al. (2001 p. 315) noted that "...the analysis of this paper is based on a single-equation approach and it is inappropriate in situations where there may be more than one level relationship...". Rather than resorting to the ARDL approach of

cointegration, we adopt the Johansen (2002) proposal of the usage of the Bartlett's (1937) correction procedure. The benefit of using Bartlett-corrected trace test is that it can be applied even when the test distribution behaviour is non-standard (see Nielsen, 1997). On the basis of Monte Carlo experiment, Omtzigt and Fachin (2006) found that Bartlett correction procedure is an effective procedure to correct small sample bias (see also Dennis et al., 2005).

Third, we apply the modified Wald (MWALD) test for causality within the augmented vector autoregressive (VAR) framework developed by Toda and Yamamoto (1995) to examine the causal relationship between disaggregates public expenditure and income for Malaysia. In their paper, Samudram et al. (2009) do not adopt any form of causality exercise. Although cointegration indicates presence or absence of Granger causality, it does not indicate the direction of causality between variables. In this sense, the fragile assumption on causality relationship made by Samudram et al. (2009) is at question. For this reason, the paper fill the vacuum of the empirical literature especially left open by Samudram et al. (2009).

Further, we also employ the recursive-regression based causality test to examine the stability and robustness of the causal relationship between public expenditures and economic growth in Malaysia. The earlier studies implicitly assumed that the causal relationship is stable over time in which it is not always the case (Tang, 2008a).<sup>3</sup> In his paper, Tang (2008a) claimed that the causal relationship between government expenditure and economic growth for Malaysia is not stable over time; hence the causality evidence failed to converge into a consensus result. This might be due to the frequent changes of global economy, policy mismatch and political environments. Therefore, it is important to analyse the stability of the causal relationship between public expenditure and economic growth in Malaysia to yield more robust causality results.

The rest of this article is structured as follows. Section 2 explains the data and econometric techniques used in this study. Section 3 discusses the empirical results. Finally, Section 4 presents the conclusions.

## 2. DATA AND ECONOMETRIC TECHNIQUES

### 2.1. Data Description

Gross National Products ( $Y_t$ ) and disaggregated public expenditure data from 1960 to 2007 are utilized in this study. The aggregated public expenditure dataset consist of annual public expenditure on education ( $G_{t,edu}$ ), health ( $G_{t,hea}$ ) and defence ( $G_{t,def}$ ). The use of annual data in this study is due to unavailability of other scale of data and also to avoid the seasonal bias of using quarterly or monthly data. The Consumer Price Index (CPI, 2000) was used to derive the real term for the data series and all of the data series are then transformed into natural logarithm form ( $\ln$ ). All data are extracted from Asian Development Bank's Key Indicators (KI) and Bank Negara Malaysia's Economic Reports.

### 2.2. Johansen's Cointegration Approach

We employ the Johansen cointegration test to examine the presence of long run relationship between public expenditure and national income in Malaysia. Since the testing procedure had been well documented in the literature, only a brief discussion will be presented here. The Johansen multivariate cointegration test is based on the following vector error-correction model (VECM):

$$\Delta X_t = \mu + \Pi X_{t-1} + \sum_{k=1}^{p-1} \Gamma_k \Delta X_{t-k} + \varepsilon_t \quad (1)$$

where  $\Delta$  is the first difference operator and  $X_t$  is an  $(n \times 1)$  column vector of two non-stationary  $I(1)$  variables, namely  $\ln G_t$  and  $\ln Y_t$ .  $\mu$  is an  $(n \times 1)$  vector of constant terms.  $\Pi$  is an  $(n \times n)$  coefficient matrix and can be rewritten as  $\Pi = \alpha\beta'$ , where  $\alpha$  is the speed of adjustment vector which shows the convergence speed of the system towards the cointegrating relations after a stochastic shock, and  $\beta$  is the cointegrating vector.  $k$  is the lag length and the residuals  $\varepsilon_t$  is assumed to be spherically distributed and white noise.

We are aware of the fact that the standard Johansen's likelihood ratio trace test for making inference on cointegrating rank is biased when the sample size is small.<sup>4</sup> In this paper, Bartlett's (1937) correction factor suggested by Johansen (2002) will be employed to improve the small sample properties of likelihood ratio trace test  $-T \sum \ln(1 - \hat{\lambda}_i)$ , where  $T$  is the total numbers of observations and  $\hat{\lambda}_i$  is the eigenvalues. Readers may refer to Johansen (2002) and Johansen et al. (2002) for detail discussions on the Bartlett-corrected trace test.

Further, we incorporate the modified version of Pantula principle developed by Hjelm and Johansson (2005) to select the appropriate model for cointegration test. The notion of the modified procedure is that the cointegration result is accepted if the standard Pantula principle' chooses Models 2, 4 or 5 because the standard Pantula principle are bias toward selecting Model 3. On the contrary, if Model 3 is chosen, the VECM is estimated with the inclusion of a restricted deterministic trend model (i.e. Model 4). Then, the LR test is computed to determine the significance of the parameter on the restricted deterministic trend. If the null hypothesis of no deterministic trend is rejected after the said computation, Model 4 will be selected otherwise Model 3 is preferred.

### 2.3. MWALD Causality Approach

Next, the augmented VAR model proposed by Toda and Yamamoto (1995) will be estimated with the Seemingly Unrelated Regression (SUR) to examine the causal interaction between public expenditure and income in Malaysia (see also Rambaldi and Doran, 1996).<sup>5</sup> To use the MWALD test, we have to decide the maximal order of integration ( $d_{\max}$ ) for the variables in the system and the optimal lags structure ( $k$ ) for the VAR model. We use  $d_{\max} = 1$  because it performs better than other orders of  $d_{\max}$  (see Dolado and Lütkepohl, 1996). The augmented VAR ( $k + d_{\max}$ ) model is expressed as follows:

$$\begin{aligned} \begin{bmatrix} \ln G_t \\ \ln Y_t \end{bmatrix} &= \begin{bmatrix} \alpha_1 \\ \alpha_2 \end{bmatrix} + \begin{bmatrix} A_{1,1} & A_{12,1} \\ A_{21,1} & A_{22,1} \end{bmatrix} \times \begin{bmatrix} \ln G_{t-1} \\ \ln Y_{t-1} \end{bmatrix} + \dots + \begin{bmatrix} A_{1,1,k} & A_{12,k} \\ A_{21,k} & A_{22,k} \end{bmatrix} \times \begin{bmatrix} \ln G_{t-k} \\ \ln Y_{t-k} \end{bmatrix} \\ &+ \begin{bmatrix} A_{1,1,p} & A_{12,p} \\ A_{21,p} & A_{22,p} \end{bmatrix} \times \begin{bmatrix} \ln G_{t-p} \\ \ln Y_{t-p} \end{bmatrix} + \begin{bmatrix} \xi_{1t} \\ \xi_{2t} \end{bmatrix} \end{aligned} \quad (2)$$

where  $\Delta$  is the first difference operator,  $k$  is the optimal lag order and  $p$  represents the  $(k + d_{\max})$  lag orders. From equation (2),  $A_{12,k} \neq 0 \forall_k$  implies that the national income Granger causes public expenditure (i.e. Wagner's law); whereas if  $A_{21,k} \neq 0 \forall_k$  holds, the public expenditure Granger causes national income (i.e. Keynesian hypothesis). The residuals  $\xi_t$  are assumed to be normally distributed and white noise. Finally, it is worthwhile to point out here that the parameters for the extra lag, i.e.  $d_{\max} = 1$ , in equation (2) are unrestricted as the inclusion of extra lag into the augmented VAR model is to ensure that the asymptotic  $\chi^2$  distribution critical value can be applied when the test for causality between the integrated variables are conducted (see Toda and Yamamoto, 1995).

### 3. EMPIRICAL RESULTS

#### 3.1. Unit Root Results

A common practice in time series analysis is to ascertain the order of integration for each variable. Regression results will be spurious if any of the estimated variables are non-stationary (Granger and Newbold, 1974; Phillips, 1986). In this respect, the Augmented Dickey-Fuller (ADF, 1979; 1981) and Phillips-Perron (PP, 1988) unit root tests are used. Since ADF and PP unit root tests are well noted in the existing literature, we do not discuss the details of these tests here (see Maddala and Kim, 1998, for a review of ADF and PP unit root tests). The results for ADF and PP unit root tests are reported in Table 1. The estimation results suggest that all the variables are non-stationary at level, but the variables are stationary after taking their first difference form. Therefore, these variables belong to  $I(1)$  process. With the findings of same order of integration,  $I(1)$  for each series, we can proceed with the Johansen cointegration tests to investigate the presence of potential long run relationship between public expenditures and national income in Malaysia.

Table 1  
The Results of Unit Root Tests

Variables	ADF	PP
$\ln G_{t,edu}$	-3.179 (0)	-3.095 (5)
$\Delta \ln G_{t,edu}$	-6.525 (0)*	-7.176 (13)*
$\ln G_{t,hea}$	-2.919 (0)	-2.963 (2)
$\Delta \ln G_{t,hea}$	-7.081 (0)*	-8.312 (16)*
$\ln G_{t,def}$	-2.793 (3)	-2.441 (4)
$\Delta \ln G_{t,def}$	-5.024 (2)*	-4.290 (9)*
$\ln Y_t$	-2.783 (0)	-2.941 (2)
$\Delta \ln Y_t$	-6.088 (0)*	-6.088 (0)*

Note: The asterisks \*, \*\* and \*\*\* denotes the significance level at the 1, 5 and 10 per cents, respectively. The optimal lag length for ADF test is selected using the SBC while the bandwidths for PP test is selected using the Newey-West Bartlett kernel. Both tests were conducted including intercept and linear deterministic trend. The most significant testing statistics is used for unit root tests.

### 3.2. Johansen's Cointegration Result

In order to implement the Johansen test, we have to decide the optimal lag structure and also the deterministic components (i.e. constant term and/or trends) in the VAR system. The Schwarz Bayesian Criterion (SBC) is used to determine the optimal lag structures. The SBC suggests that an optimal lag structure of  $k = 1$  was sufficient for the dataset employed in our study. Next, the Pantula's principle is used to select an appropriate model among the three relevant models (i.e. Model 2, 3 and 4) considered in this study (see Eviews, 2004 for details of these models). In a sequential search based on trace statistics, we find that Model 2 (intercept in the cointegrating relations) is the best choice for public expenditures on education, health and defence.<sup>6</sup> In Table 2, the unadjusted trace test statistics tend to reject both null hypotheses ( $r = 0$  and  $r \leq 1$ ) at the 5 per cent significance level. These results are clearly biased toward rejecting the null hypothesis as noted by Cheung and Lai (1993) and Gonzalo and Lee (1998).

Hence, we computed the Bartlett-corrected trace test proposed by Johansen (2002) to affirm the test result. The cointegration results for Bartlett-corrected trace test are reported in Table 2 (column 5). Interestingly, the result for Bartlett-corrected trace tests consistently rejects the null of no cointegration ( $r = 0$ ) at the 1 per cent significance level for all the three categories of public expenditures, but failed to reject the null of at most one cointegrating rank ( $r \leq 1$ ). This implies that public expenditures (i.e. education, health and defence) and national income in Malaysia move in the same direction in the long run; the existence of one and unique long run equilibrium. Furthermore, the presence of cointegration indicates that the bivariate models of public expenditure and national income are correctly specified (see Perman, 1991). This result corroborates to the finding of existing empirical studies in Malaysia (e.g. Ghani et al., 2005; Tang, 2008b; Samudram et al., 2009).

Table 2  
The Results of Johansen Cointegration Tests

Variables	Null hypotheses	Optimal Lag	Test Statistics (Model 2)	
			Trace	Bartlett-Corrected Trace
$\ln G_{t,edu}$ , $\ln Y_t$	$r = 0$	1	68.896*	64.705*
	$r \leq 1$		12.205**	4.115
$\ln G_{t,hea}$ , $\ln Y_t$	$r = 0$	1	66.482*	62.437*
	$r \leq 1$		11.551**	0.329
$\ln G_{t,def}$ , $\ln Y_t$	$r = 0$	1	51.258*	48.139*
	$r \leq 1$		7.825***	3.001

Note: The asterisks \*, \*\* and \*\*\* denotes significance level at the 1, 5 and 10 per cents, respectively. The econometric software SVAR version 0.45 is used to compute the Bartlett-corrected trace test.

### 3.3. Cointegrating Relationship

Since we established a long run relationship between the variables, computation of cointegrating vector for each specification of public expenditure is required. Following Chletsos and Kollias (1997) study, we employed the Ordinary Least Squares (OLS) to estimate the long-run coefficients

owing to its superior performance. Abeyasinghe and Tan (1999) conducted a Monte Carlo experiment to analyse the performance of six cointegrating coefficient estimators (e.g. Engle and Granger, 1987; Bardsen, 1989; Johansen and Juselius, 1990; Phillips and Hansen, 1990; Engle and Yoo, 1991; Stock and Watson, 1993). Their simulation results suggest that among six estimation techniques the OLS is still the best choice in finite sample. Therefore, the OLS estimator is suitable for our limited sample study. The estimation results are reported in Table 3.

Table 3  
The OLS Estimation Results of Cointegrating Relationship

	Coefficients	t-ratio	R <sup>2</sup>
Dependent variable: In G <sub>t,edu</sub>			
Constant	-4.401	-15.750*	0.979
In Y <sub>t</sub>	1.129	46.856*	
Dependent variable: In G <sub>t,hea</sub>			
Constant	-4.388	-18.574*	0.982
In Y <sub>t</sub>	1.024	50.281*	
Dependent variable: In G <sub>t,def</sub>			
Constant	-1.776	-3.787*	0.913
In Y <sub>t</sub>	0.891	22.023*	

Note: The asterisks \*, \*\* and \*\*\* denotes the significance at the 1, 5 and 10 per cent levels, respectively.

From the estimation results in Table 3, we found that the coefficient for national income ( $\ln Y_t$ ) is greater than one, except for the case when the defence expenditure ( $\ln G_{t,def}$ ) become the dependent variable. In addition, the coefficients for national income are statistically significant at the 1 per cent level for all the specification. In relation to the Wagner's law (i.e. national income elasticity is greater than unity), a plausible conclusion that we could draw from this finding is that the Wagner's law is vindicated in Malaysia when the education and health expenditures are the dependent variables. But then, this law is invalid when defence expenditure becomes the dependent variable. As the coefficient measures the extent to which one variable are related or associated with another, the interpretation however does not necessarily implies strong judgement of the validity of Wagner law or even Keynesian view in Malaysia. As such, we adopt a more formal and precise methodology that examines the causality pattern (MWALD) to affirm the validity of the hypotheses.

### 3.4. MWALD Causality Results

Table 4 reports the MWALD test results within the augmented VAR(1+1) specification for each type of public expenditure. An interesting finding emerged from this study is that, the null hypotheses of national income does not Granger causes public expenditures (i.e. education, health and defence) are rejected at the 5 per cent significant level (see Panel A of Table 4). Nevertheless, the calculated  $\chi^2$ - statistics in Panel B of Table 4 failed to reject the null hypotheses of public expenditures does not Granger cause national income at the 5 per cent significant level. Only at 10 per cent significance level public expenditure on health Granger causes national income in Malaysia. These imply that the empirical evidence strongly supports the presence of



Table 4  
The Results of MWALD Causality Tests

Panel A: Wagner's Law			
Null Hypothesis	$\ln Y_t \rightarrow \ln G_{t,edu}$	$\ln Y_t \rightarrow \ln G_{t,hea}$	$\ln Y_t \rightarrow \ln G_{t,def}$
MWALD test	3.870	6.149	6.999
p-value	(0.049)**	(0.013)**	(0.008)*
Panel B: Keynesian Hypothesis			
Null Hypothesis	$\ln G_{t,edu} \rightarrow \ln Y_t$	$\ln G_{t,hea} \rightarrow \ln Y_t$	$\ln G_{t,def} \rightarrow \ln Y_t$
MWALD test	1.308	3.425	1.111
p-value	(0.253)	(0.064)***	(0.292)

Note: The asterisks \*, \*\* and \*\*\* denotes the significance level at the 1, 5 and 10 per cents, respectively. The Seemingly Unrelated Regression (SUR) is used to estimate the augmented VAR models. The optimal lag structure was determined by SBC.

Wagner's law, but the support for the Keynesian hypothesis is rather weak in Malaysia. Specifically, among the three major public sectors, only the public expenditure on health plays a role in Malaysian economic growth performance. A plausible explanation of this finding is that the economic growth in Malaysia after 1980 mostly fostered by export-orientated industries and foreign capital inflows rather than public expenditure. Tongzon (1998) also noted that the role of government intervention has gradually decline and many new incentives to attract more foreign capital inflow have been proposed. As such, it is not surprise that the dataset weakly support the presence of Keynesian hypothesis in Malaysia. In addition, our empirical results are contrary to the finding of Samudram et al. (2009) of the existence of bilateral causality for all public sectors in Malaysia. This is because cointegration tests are not an appropriate analysis instrument for causality direction. This corroborates to the Granger Representation Theorem that if the variables are cointegrated, there must be at least one causal relation, but it does not indicate the direction of the causal linkages.

### 3.5. Robustness Analysis

Next, we incorporate the recursive regression procedure into the MWALD causality test to ascertain the sub-sample causal relationship between public expenditures and economic growth. To implement the recursive-regression based causality test, we have to pre-specify the initial sample and add one observation at each time. To the best of our knowledge, the setting of initial sample size is arbitrary. Given that the sample size of this study is relatively small, we set the initial sample as 10 years (i.e. 1970) and the MWALD causality results (p-values) are depicted in Figure 1 and 2. The null hypothesis of non-Granger causality can be rejected if the plots of p-values fluctuate below the 0.10 cut-off line.

Figure 1 shows the p-values of the recursive-regression based causality test statistics for the null hypothesis that public expenditures does not Granger-cause national income (i.e. Keynesian hypothesis). Slightly contrary to the full sample MWALD causality results, the plots of p-values testing the Keynesian hypothesis indicate that public expenditure on health Granger-causes national income at the 10 per cent significance level over the sample period, with the exception of two periods. The exception periods consist of a five-year period from 1970 to 1975 and a six-

Figure 1: The Plots of p-values for the Public Expenditures to National Income (Keynesian Hypothesis)

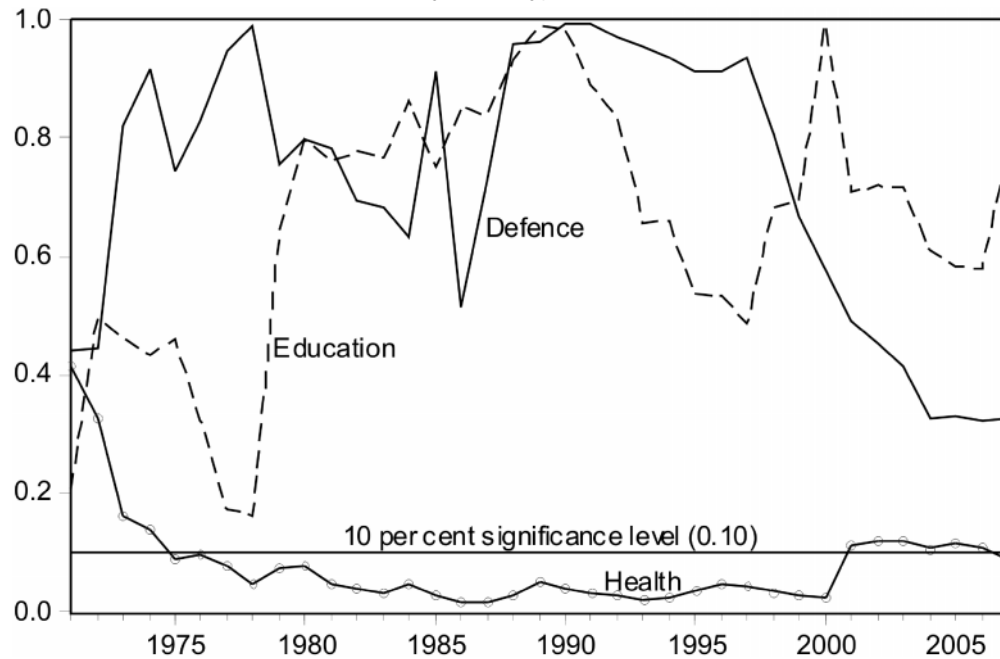
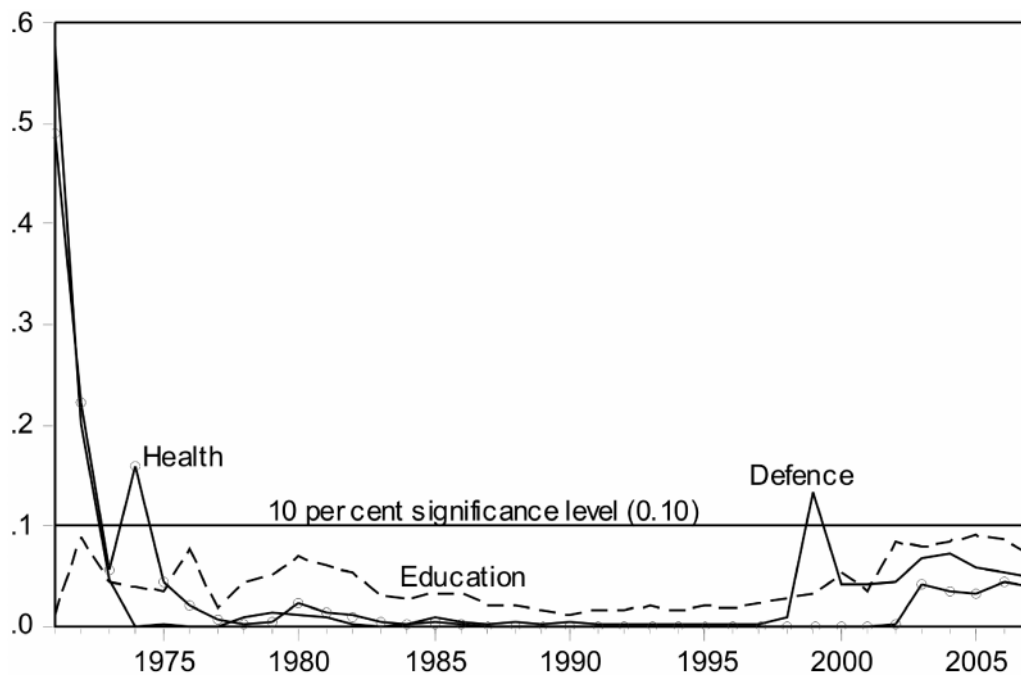


Figure 2: The Plots of p-values for the National Income to Public Expenditures (Wagner's Law)



year period from 2001 to 2006. During these periods, public expenditure on health does not Granger-causes national income in Malaysia.

On the other hand, Figure 2 demonstrates the p-values of the recursive-regression based causality test statistics for the null hypothesis that national income does not Granger-cause public expenditures (i.e. Wagner's law). Similar to the full sample MWALD causality results, the plots of p-values confirm that national income Granger-cause all the three major public expenditure over the sample period, except for the period from 1970 to 1975 and 1999.

#### 4. CONCLUSIONS

This study re-examine the interrelationship between the disaggregated public expenditure data and national income from 1960 to 2007. We analyze the dataset using cointegration and causality tests. In addition to that, this study addressed the size distortion problem in the standard Johansen cointegration tests by accommodating the Bartlett's correction procedure for the trace test suggested in Johansen (2002). Without correcting the size distortion problem, the result of standard trace test (see Table 2) tends to reject the null hypotheses of no cointegrating vector ( $H_0 : r = 0$ ) and also the null of at most one cointegrating vector ( $H_0 : r \leq 1$ ). In contrast, the evidence of Bartlett-corrected traces tests revealed the presence of one long-run equilibrium relationship between national income and public expenditure (i.e. education, health and defence) in Malaysia. Next, in the long run this study found that public expenditure on education and health grows faster than national income (i.e. elastic). While the long run elasticity between public expenditure on defence and national income is less than unity (i.e. inelastic). In addition, the results of MWALD test suggest a unidirectional causality running from national income to disaggregate public expenditures on education and defence in Malaysia, while there is a bilateral causation between public expenditure on health and national income.

Interestingly, disaggregated public expenditure plays different role in Malaysian economic growth. On the contrary, economic growth is the key force that leads all the disaggregated public expenditure in the case of Malaysia. This suggests that any fiscal policy action taken to combat crisis or foster economic growth in Malaysia should be complement with other policies such as monetary policy or supply-side economy. This is because it is evident that the Keynesian hypothesis is rather weak in Malaysia (see Figure 1). However, policymakers have to boost public expenditure on health and education more effectively even though the Granger causality results show that education expenditure does not lead growth, as these two sectors are the backbone for Malaysian economy development. Moreover, the national health and education authorities such as Ministry of Health and Ministry of Education have to monitor the healthcare and education provision to meet public's health and education needs.

The next decade would be crucially important for the country, as route of becoming a developed nation by 2020 had been laid out. This would constitute pillars, which are economically, politically, socially, spiritually, psychologically and culturally developed as a whole, a-la-Malaysia. These are in line with the Ninth Malaysian Plan, 2006-2010 and the recent launched Tenth Malaysian Plan, 2010-2015. Following the recent Budget presentation, the Government will continue with fiscal reforms to bring greater value for money to government spending and widen its revenue base in which by 2015, the fiscal deficits would be targeted to 2.8 per cent

from 7.4 per cent in 2009. Therefore, proper fiscal management together with other macroeconomic policies are required to avoid misallocation of public resources into non-productive sector.

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