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The Tax-Spend Debate: Time Series Evidence from Sarawak Municipals, 1975-2003[†]

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This paper is concerned with the issue of the intertemporal relationship between revenues and expenditures and the way in which a State Government manages public deficits. In this study, different hypotheses are considered to examine such a problem. The so-called tax-spend hypothesis postulates that government raises tax revenues ahead of engaging in new expenditures (Buchanan and Wagner, 1978; and Friedman, 1978). The spend-tax hypothesis, on the other hand, predicts that government first spends and then increases tax revenues to finance their expenditures (Barro, 1974; and Peacock and Wiseman, 1979). There is also the fiscal synchronization hypothesis which suggests that government takes simultaneous decisions about revenues and expenditures (Musgrave, 1966; and Meltzer and Richard, 1981). Lastly, there is independence regarding the decisions to spend and raise revenues (Baghestani and McNown, 1994). Using the annual data on revenues and expenditures for the 22 municipals in Sarawak for the period 1975-2003, the cointegration and vector error correction model analyses suggest that the results are at best mixed.

Introduction

The discussion on the causal link between revenues and expenditures has been one of the most researched topics in macroeconomics. Establishing the direction of interdependence between the two macroeconomic variables—government expenditures and tax revenues would assist the policymakers in identifying the sources of any fiscal imbalances that might exist. Consequently, this would facilitate efforts to develop a suitable fiscal reform strategy.

The empirical testing of the relationship between government expenditures and tax revenues has resulted in several competing hypotheses. First, a unidirectional causality that runs from revenue to expenditure supports the so-called tax-and-spend hypothesis. The hypothesis indicates that, since government revenue causes changes in the government expenditure, the control of tax revenue should represent a good policy to control the government expenditure. Second, the spend-and-tax hypothesis implies that government expenditure leads to changes in tax revenue. In other words, the chain of causality runs from

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government expenditure to tax revenue. Third is the fiscal synchronization hypothesis which implies that taxation and spending decisions are simultaneously made by the fiscal authorities. In the Granger sense, this is known as a bi-directional relationship between tax revenue and government expenditure. Lastly, Baghestani and McNown (1994) relate the institutional separation of the expenditure and taxation decisions of government. This perspective suggests that revenues and expenditures are independent of one another.

The purpose of this study is to investigate the causal relationship between revenues and expenditures at the municipals level in the state of Sarawak for the period of 1975-2003. Using the concept of cointegration and vector error correction models, the respective hypothesis can be inferred. The paper provides a brief overview of the hypotheses along with the review of related literature on tax-spend debate, discusses the methodology and data used in the analysis, provides the empirical results, followed by a conclusion.

Review of Related Literature

The relationship between government revenue and expenditure can be categorized into four main competing hypotheses. Empirical evidences with respect to the above competing hypotheses are at best mixed. Musgrave (1966); Meltzer and Richard (1981); Miller and Russek (1990); Bohn (1991); and Bhat *et al.* (1993) supported the fiscal synchronization hypothesis. Studies by Friedman (1972 and 1978); Buchanan and Wagner (1977 and 1978); Blackley (1986); Marlow and Manage (1987); Joulfaian and Mookerjee (1990); and Darrat (1998). All indicated that government tax revenues lead to expenditures. On the other hand, the spend-and-tax hypothesis is supported by studies done by peacock and Wiseman (1961 and 1979); Anderson *et al.* (1986); von Furstenberg *et al.* (1986); Jones and Joulfaian (1991); and Provopoulos and Zambaras (1991). Conversely, apart from those studies, Baghestani and McNown (1994) found that government expenditure and revenue are not interdependent.

First, a unidirectional causality that runs from revenue to expenditure supports the so-called tax-and-spend hypothesis. The hypothesis indicates that, since government revenue causes changes in government expenditure, the control of tax revenue should represent a good policy to reduce the size of the government expenditure. The tax-and-spend hypothesis advocated by Friedman (1978) argues that changes in the government revenues lead to changes in government expenditures. Friedman suggests that increase in tax will only lead to increase in expenditure resulting in the ability to reduce budget deficits. Second, the spend-and-tax hypothesis implies that government expenditure leads to changes in tax revenue. In other words, the chain of causality is running from government expenditure to tax revenue. Peacock and Wiseman (1979) argue that a temporary increase in the government expenditures as a result of crises can lead to a permanent increase in the government revenues. Third, the fiscal synchronization hypothesis implies that taxation and spending decisions are simultaneously made by the fiscal authorities. In the Granger sense, this is known as a bi-directional relationship between tax revenue and government spending. According to Musgrave (1966), the voters compare the marginal benefits and marginal costs of government services when formulating a decision in terms of the appropriate levels of government revenues and expenditures. Thus, revenue and expenditure decisions are jointly determined under fiscal synchronization

hypothesis. Lastly, when there is no causality between revenue and expenditure, then tax revenue and expenditure are independent of each other as forwarded by Baghestani and McNown (1994).

Other studies on the government revenue-expenditure nexus found a diversity of results, depending on the time period used, lag length and also between different levels of government. For instance, Manage and Marlow (1986) found that using different lag lengths gave different sets of results. When the lag length varies between two and five, the lower and most upper lag lengths suggest unidirectional relationship; a causal relation that runs from expenditures to revenues. On the other hand, the intermediate lag length provides support for bi-directional causal relationship between the two variables. Ram (1988) used both annual and quarterly data to examine the expenditures-revenues nexus for both Federal government and the State and Local governments. The study concluded with conflicting results. For example, using annual data, the results support the fiscal synchronization hypothesis at the Federal government level. However, when quarterly data was used, the results suggest that causality runs from revenues to expenditures, thus supporting the tax-and-spend hypothesis. But, at the state and local level, both annual and quarterly data indicate results that support the spend-and-tax hypothesis. In another study, Owoye (1995) studied the causal relationship between taxes and expenditures in the G7 countries. Despite the similarities in terms of the economic settings of the sample countries, Owoye found that the results of the causality relationships are not similar. The empirical results obtained from the error-correction models support the fiscal synchronization hypothesis for the US, Germany, UK, France and Canada. This implies that the fiscal authorities in these countries jointly decide the revenue and expenditure. On the other hand, causality runs from revenues to expenditures in Japan and Italy thus supporting the tax-and-spend hypothesis.

A study on selected EU economies by Kollias and Makrydakis (2000) found that the fiscal decision-making process in Greece, Ireland, Spain and Portugal is diverse. In the case of Greece and Ireland, the evidence overwhelmingly supports the principal of synchronization in spending and tax decisions by the fiscal authority. In the case of Spain, causality is found to run from revenues to expenditures implying that the Spanish fiscal authorities decide first on the amount of tax collections and then on how much to spend. In the case of Portugal, decisions on government spending and tax levying turn out to be independent actions. A study by Chang *et al.* (2002) on three newly industrialized countries of Asia (South Korea, Taiwan and Thailand) and seven industrialized countries (Australia, Canada, Japan, New Zealand, South Africa, the UK and the USA) found that data for Japan, South Korea, Taiwan, UK and the USA support the tax-and-spend hypothesis, while the spend-and-tax hypothesis holds good only for Australia and South Africa. In the case of Canada, it supports the fiscal synchronization hypothesis. Further, Chang *et al.* (2002) found out that revenues and expenditures in New Zealand and Thailand are not interrelated.

The studies on tax-spend nexus for the developing economies are quite numerous and among others include Ewing and Payne (1998) for Latin America; Chang and Ho (2002) for China; Chang and Ho (2002) and Fuess *et al.* (2003) for Taiwan; AbuAl-Foul and Baghestani (2004) on Egypt and Jordan; and Carneiro *et al.* (2004) for Guinea-Bissau.

Using the annual time series data for China for the period 1977-99, and employing the multivariate error correction models in their study, Chang and Ho (2002) found that bi-directional Granger causality exist between government revenues and government expenditures, thus supporting the fiscal synchronization hypothesis for China. As for Taiwan, both the studies by Chang and Ho (2002) and Fuess *et al.* (2003) support the tax-and-spend hypothesis—one-way causality from government receipts to expenditures. For the Latin American countries, Ewing and Payne (1998) found that Chile and Paraguay support the fiscal synchronization hypothesis. For Colombia, Ecuador and Guatemala, there is evidence of causality from revenues to expenditures thus supporting the tax-and-spend hypothesis. The study by AbuAl-Foul and Baghestani (2004) on Egypt and Jordan found that data for Egypt indicate a unidirectional causation from revenue to spending, with higher revenue leading to higher spending. Results for Jordan indicate bi-directional causation between revenue and spending, thus supporting the fiscal synchronization hypothesis. For Guinea-Bissau, Carneiro *et al.* (2004) found that there exists a stable long-run relationship between government expenditures and revenues. The spend-and-tax hypothesis means that the government seems to spend first and then raise tax revenues and/or request/receive grants to finance its expenditures, rather than adopting the approach of raising funds to finance spending later.

Methodology

Testing for Long-Run Relationship between Economic Variables

To determine the long-run relationship between revenue and expenditure, one can employ the Johansen (1988) and Johansen and Juselius (1990) multivariate maximum likelihood estimation procedure. A detailed exposition on the Johansen-Juselius technique has been provided in Dickey *et al.* (1991), Charemza and Deadman (1992) and Cuthbertson *et al.* (1992). However, a brief discussion on the Johansen-Juselius technique is provided below. We begin by defining a k -lag Vector Autoregressive (VAR) representation

$$X_t = \alpha + \Pi_1 X_{t-1} + \Pi_2 X_{t-2} + \dots + \Pi_k X_{t-k} + v_t \quad (t=1, 2, \dots, T) \quad \dots(1)$$

where X_t is a $px1$ vector of non-stationary $I(1)$ variables, α is a $px1$ vector of constant terms, $\Pi_1, \Pi_2, \dots, \Pi_k$ are pxq coefficient matrices and v_t is a $px1$ vector of white Gaussian noises with mean zero and finite variance. Equation 1 can be reparameterized as

$$\Delta X_t = \alpha + \Gamma_1 \Delta X_{t-1} + \Gamma_2 \Delta X_{t-2} + \dots + \Gamma_{k-1} \Delta X_{t-k+1} + \Pi_k X_{t-k} + v_t \quad \dots(2)$$

where $\Gamma_i = -I + \Pi_1 + \Pi_2 + \dots + \Pi_i$ ($i=1, 2, \dots, k-1$) and Π is defined as

$$\Pi = -I + \Pi_1 + \Pi_2 + \dots + \Pi_k \quad \dots(3)$$

Johansen (1988) shows that the coefficient matrix Π_k contains the essential information about the cointegrating or equilibrium relationships between the variables in the data set. Specifically, the rank of the matrix Π_k indicates the number of cointegrating relationships existing between the variables in X_t . In this study, for a two case variables, X_t = (revenue and expenditure) and so $p = 2$. Therefore, then the hypothesis of cointegration between revenue

and expenditure is equivalent to the hypothesis that the rank of $\Pi_k = 1$. In other words, the rank r must be at most equal to $p-1$, so that $r \leq p-1$, and there are $p-r$ common stochastic trends. If the $r = 0$, then there are no cointegrating vectors and there are p stochastic trends.

The Johansen-Juselius procedure begins with the following least square estimating regressions

$$\Delta X_t = \alpha_1 + \sum_{i=1}^{p-1} \Gamma_i \Delta X_{t-i} + \omega_{1t} \quad \dots(4)$$

$$X_{t-p} = \alpha_2 + \sum_{i=1}^{p-1} \Gamma_i \Delta X_{t-i} + \omega_{2t} \quad \dots(5)$$

Define the product moment matrices of the residuals as $S_{ij} = T^{-1} \sum_{t=1}^T \omega_{it} \omega_{jt}$ (for $i, j=1, 2$), Johansen (1988) shows that the likelihood ratio test statistic for the hypothesis of at most r equilibrium relationship is given by

$$-2 \ln Q_r = -T \sum_{i=r+1}^p \ln(1 - \lambda_i) \quad \dots(6)$$

where $\lambda_1 > \lambda_2 > \dots > \lambda_p$ are the eigenvalues that solve the following equation

$$|\lambda S_{22} - S_{21} S_{11}^{-1} S_{12}| = 0 \quad \dots(7)$$

The eigenvalue are also called the squared canonical correlations of w_{2t} with respect to w_{1t} . The limiting distribution of the $-2 \ln Q_r$ statistic is given in terms of a $p-r$ dimensional Brownian motion process, and the quantiles of the distribution are tabulated in Johansen and Juselius (1990) for $p-r = 1, \dots, 5$ and in Osterwald-Lenum (1992) for $p-r = 1, \dots, 10$.

Equation 6 is usually referred to as the trace test statistic which is rewritten as follows

$$L_{trace} = -T \sum_{i=r+1}^p \ln(1 - \lambda_i) \quad \dots(8)$$

where $\lambda_{r+1}, \dots, \lambda_p$ are the $p-r$ smallest squared canonical correlation or eigenvalue. The null hypothesis is at most r cointegrating vectors. The other test for cointegration is the L -maximal eigenvalue test based on the following statistic

$$L_{max} = -T \ln(1 - \lambda_{r+l}) \quad \dots(9)$$

where λ_{r+l} is the $(r+l)^{th}$ largest squared canonical correlation or eigenvalue. The null hypothesis is r cointegrating vectors, against the alternative of $r+1$ cointegrating vectors. Comparing the two tests, according to Cheung and Lai (1993), the trace test shows more robustness to both skewness and excess kurtosis in the residuals than does the L -max test. Therefore, emphasis is only on the use of trace statistics to make inferences for non-cointegration between revenue and expenditure in this study.

Nevertheless, knowing that the Johansen-Juselius cointegration procedures are distorted

in a small sample, the analysis is continued by employing the vector error correction model to infer cointegration among the series. According to the ‘Granger Representation Theorem’ not only does cointegration imply the existence of an error correction model, but also the converse applies that is, the existence of an error correction model implies the cointegration of the variables. Recent developments in cointegration and error correction model as pointed by Pesavento (2004) suggest that the Johansen’s test for cointegration has low power in both large and small samples compared to the error correction model. In fact, Kremers *et al.* (1992) have argued that the standard *t*-ratio for the coefficient on the error-correction term in the dynamic equation is a more powerful test for cointegration. Banerjee *et al.* (1986) and Kremers *et al.* (1992) show that standard asymptotic theory can be used when conducting the test in the context of an error correction model; specifically, the *t*-statistics on the error correction term coefficients have the usual distribution.

Since our task is to determine the long-run relationship and the causal direction between the two variables in question, we estimate the following vector error correction model and for a two variable case, we specify the following bi-variate Vector Error Correction Models (VECM) as

$$\Delta y_t = a_0 + \sum_{i=1}^k \alpha_i \Delta y_{t-i} + \sum_{j=1}^k \alpha_j \Delta x_{t-j} + \gamma_1 ecm_{t-1} + \varepsilon_{1t} \quad \dots(10)$$

$$\Delta x_t = b_0 + \sum_{i=1}^k \beta_i \Delta y_{t-i} + \sum_{j=1}^k \beta_j \Delta x_{t-j} + \gamma_2 ecm_{t-1} + \varepsilon_{2t} \quad \dots(11)$$

where ecm_{t-1} is the lagged residual from the cointegration between y_t (say, expenditure) and x_t (revenue) in level. Granger (1969) points out that based on Equation 10, the null hypothesis that x_t does not Granger cause y_t is rejected not only if the coefficients on the x_{t-j} are jointly and significantly different from zero, but also if the coefficient on ecm_{t-1} is significant. The VECM also provides for the finding that x_{t-j} Granger cause y_t , if ecm_{t-1} is significant even though the coefficients on x_{t-j} are not jointly significantly different from zero. Furthermore, the importance of α ’s and β ’s and represent the short-run causal impact, while γ ’s gives the long-run impact. In determining whether y_t Granger cause x_t , the same principle applies with respect to Equation 11. Above all, the significance of the error correction term indicates cointegration, and the negative value for γ ’s suggest that the model is stable and any deviation from equilibrium will be corrected in the long-run.

Sources of Data

The data on Sarawak’s gross domestic product, total revenues and total expenditures for the 22 municipals in the state of Sarawak for the period 1975-2003 are collected from the various issues of the *Statistical Yearbook Sarawak* published by the Department of Statistics Malaysia, Sarawak. The 22 municipals include Baram, Bau, Betong, Kalata, Kanowit, Kapit, Kuching Rural, Lawas, Limbang, Lubok Antu, Lundu, Maradong, Matu, Miri Municipal, Mukah, Sarikei, Serian, Sibü Municipal, Sibü Rural, Simujan, Sri Aman and Subis. Other municipals such as Kuching North City Hall, Council of the City of Kuching South, Kuching Municipal, Samarahan, and Bintulu are not included in this study due to unavailability of consistent data. All time series variables were transformed into natural logarithms.

Table 1: Results of Unit Root Tests				
Municipals	Revenues		Expenditures	
	Levels	First-Differences	Levels	First Differences
Baram	−3.02 (0)	−10.18* (0)	−2.12 (0)	−11.49* (0)
Bau	−2.12 (0)	−10.13* (0)	−1.65 (0)	−4.92* (1)
Betong	−0.18 (0)	−12.78* (0)	−2.12 (0)	−10.02* (0)
Kalata	−2.11 (0)	−11.52* (0)	−1.52 (0)	−12.95* (0)
Kanowit	−3.00 (0)	−9.45* (0)	−2.87 (0)	−8.40* (0)
Kapit	− 2.46 (2)	−4.65* (1)	−2.49 (0)	−12.86* (0)
Kuching Rural	−2.29 (0)	−9.33* (0)	−3.10 (4)	−8.29* (0)
Lawas	−2.69 (0)	−9.26* (0)	−2.11 (0)	−9.84* (0)
Limbang	−2.60 (0)	−9.22* (0)	−1.87 (0)	−10.11 (0)
Lubok Antu	−2.72 (0)	−9.68* (0)	−3.16 (0)	−9.56* (0)
Lundu	−1.34 (1)	−15.13* (0)	−2.29 (0)	−10.83* (0)
Maradong	−2.14 (0)	−10.31* (0)	−3.09 (0)	−10.25* (0)
Matu	−1.59 (0)	−11.93* (0)	−1.23 (0)	−12.07* (0)
Miri Municipal	−1.41 (0)	−8.10* (0)	−1.02 (0)	−10.19* (0)
Mukah	−1.00 (0)	−10.92* (0)	−2.33 (0)	−12.20* (0)
Sarikei	−1.76 (0)	−10.79* (0)	−1.66 (0)	−9.37* (0)
Serian	−1.90 (0)	−11.15* (0)	−2.32 (0)	−13.78* (0)
Sibu Municipal	−3.47 (0)	−8.82* (0)	−3.05 (0)	−8.49* (0)
Sibu Rural	−1.85 (0)	−11.48* (0)	−2.60 (3)	−6.41* (2)
Simunjan	−2.23 (0)	−9.75* (0)	− 2.44 (0)	−11.41* (0)
Sri Aman	−1.71 (0)	−9.90* (0)	−2.09 (0)	−11.34* (0)
Subis	−3.01 (0)	−10.73* (0)	−2.78 (0)	−8.39* (0)
Notes: Asterisk (*) denotes statistically significance at the 5% level. Critical values are taken from MacKinnon (1996). Series in levels were estimated with constant and trend, while series in first-differences were estimated with constant only. Figures in parentheses denote lag length chosen by SBC criterion.				

Table 2: Results of Long-Run Causality from the VECM Models (VAR=2)		
Municipals	Dependent variables	t-Statistics of ecm Term from VECM Models:
		ecm_{t-1}
Baram	Δ Expenditure	-0.63
	Δ Revenue	1.06
	Δ GDP	3.76*
Bau	Δ Expenditure	-2.11*
	Δ Revenue	0.65
	Δ GDP	0.65
Betong	Δ Expenditure	-1.72
	Δ Revenue	0.37
	Δ GDP	3.94*
Kalata	Δ Expenditure	-2.23*
	Δ Revenue	1.50
	Δ GDP	1.28
Kanowit	Δ Expenditure	1.06
	Δ Revenue	2.32*
	Δ GDP	2.64*
Kapit	Δ Expenditure	-1.67
	Δ Revenue	0.97
	Δ GDP	1.20
Kuching Rural	Δ Expenditure	0.36
	Δ Revenue	2.39*
	Δ GDP	2.16*
Lawas	Δ Expenditure	-2.90*
	Δ Revenue	0.79
	Δ GDP	1.65
Limbang	Δ Expenditure	-0.43
	Δ Revenue	1.64
	Δ GDP	2.86*
Lubok Antu	Δ Expenditure	-2.18*
	Δ Revenue	-2.41*
	Δ GDP	-1.14
Lundu	Δ Expenditure	-1.00
	Δ Revenue	1.73
	Δ GDP	1.39
Maradong	Δ Expenditure	-0.43
	Δ Revenue	1.09
	Δ GDP	1.34
Matu	Δ Expenditure	1.16
	Δ Revenue	1.99
	Δ GDP	2.39*
Miri Municipal	Δ Expenditure	-1.12

(Contd...)

Table 2: Results of Long-Run Causality from the VECM Models (VAR = 2) (...contd)		
Municipals	Dependent variables	<i>t</i>-Statistics of ecm Term from VECM Models: ecm_{t-1}
	Δ Revenue	1.87
	Δ GDP	1.63
Mukah	Δ Expenditure	0.19
	Δ Revenue	1.29
	Δ GDP	4.99*
Sarikei	Δ Expenditure	-1.58
	Δ Revenue	1.50
	Δ GDP	-0.25
Serian	Δ Expenditure	-0.97
	Δ Revenue	1.32
	Δ GDP	0.58
Sibu Municipal	Δ Expenditure	-3.24*
	Δ Revenue	-1.47
	Δ GDP	1.30
Sibu Rural	Δ Expenditure	-0.03
	Δ Revenue	2.07*
	Δ GDP	3.25*
Simunjan	Δ Expenditure	-1.25
	Δ Revenue	0.31
	Δ GDP	1.82
Sri Aman	Δ Expenditure	-0.38
	Δ Revenue	3.09*
	Δ GDP	1.61
Subis	Δ Expenditure	-2.89*
	Δ Revenue	-0.58
	Δ GDP	2.69*
Notes: Asterisk (*) denotes statistically significance at the 5% level.		

The Empirical Results

Before testing for cointegration by using the Vector Error Correction Model (VECM) approach, the order of integration of all variables for all municipals is tested. Table 1 shows the results of the unit root test for the test of the order of integration of revenue and expenditure for the the 22 municipals in Sarawak under investigation. Clearly, in all cases, the augmented Dickey-Fuller test (Dickey and Fuller, 1981) statistics indicate that the two series in Sarawak are difference stationary, in other words, they are $I(1)$ in levels.

The results of estimating Equations 10 and 11 with the inclusion of a third variable, Sarawak's GDP, are presented in Table 2. The study, attempts to determine whether revenues and expenditures among the municipals in the state of Sarawak are related and whether these variables are related or exhibit a long-run relationship, we would expect the estimated parameters of the error correction terms in Equations 10 and 11 are significant. From the VECM results in Table 2, The t -statistics of the error correction

Table 3: Results Summary for Tax-Spend Nexus for the State of Sarawak Municipalities		
Municipals	Tri-Variate Model	
	Cointegration	Tax-Spend Hypotheses
Baram	Yes	Independent
Bau	Yes	Tax-spend
Betong	Yes	Independent
Kalata	Yes	Tax-spend
Kanowit	Yes	Spend-tax
Kapit	No	–
Kuching Rural	Yes	Spend-tax
Lawas	Yes	Tax-spend
Limbang	Yes	Independent
Lubok Antu	Yes	Fiscal synchronization
Lundu	No	–
Maradong	No	–
Matu	Yes	Independent
Miri Municipal	No	–
Mukah	Yes	Independent
Sarikei	No	–
Serian	No	–
Sibu Municipal	Yes	Tax-spend
Sibu Rural	Yes	Spend-tax
Simunjan	No	–
Sri Aman	Yes	Spend-tax
Subis	Yes	Tax-spend
Notes: Extracted from Table 2.		

term, ecm_{t-1} are presented, where the long-run causality between the variables is inferred. The significance (at least one) of the error correction term implies cointegration or exhibit long-run relationship between revenue and expenditure. Generally, results in Table 2 indicate that expenditure and revenue are cointegrated in the 15 out of the 22 municipals. These municipals are Baram, Bau, Betong, Kalata, Kanowit, Kuching Rural, Lawas, Limbang, Lubok Antu, Matu, Mukah, Sibü Municipal, Sibü Rural, Sri Aman, and Subis. In all the 15 cases, at least one error correction term is statistically significant at the 5% level in the three variable VAR systems. In other words, both expenditures and revenues are bound together by the long-run relationships.

As suggested by the results in Table 2, there are four competing tax-spend hypotheses derived from the models. The tax-and-spend hypothesis is supported by the municipals in Bau, Kalata, Lawas, Sibü Municipal and Subis. The spend-and-tax hypothesis is supported by the municipals in Kanowit, Kuching Rural, Sibü Rural and Sri Aman. On the other hand, fiscal synchronization is supported only by municipal in Lubok Antu. Lastly, the hypothesis that revenue and expenditure is independent of each other is supported by Baram, Betong, Limbang, Matu and Mukah. These results are summarized in Table 3.

Conclusion

The objective of the present study is to extend the literature on the tax-spend debate to a sample of municipals in Sarawak, one of the 14 states in Malaysia. To test several hypotheses concerning the temporal relationship between revenues and expenditures, the vector error correction model approach is utilized.

The model which includes GDP as a third variable suggests that the results are mixed. Municipals in Bau, Kalata, Lawas, Sibü Municipal and Subis support the tax-and-spend hypothesis. This implies that these municipals decide first on the amount of tax collections and then decide on how much to spend. Under this scenario, these municipals should focus attention on adjusting revenues in order to control spending and the size of the budget deficits.

The municipals in Kanowit, Kuching Rural, Sibü Rural and Sri Aman support the spend-and-tax hypothesis. This would imply that the fiscal authorities of these municipals decide to spend first and then increase tax collection to cover the expenses. Under this scenario, the fiscal authorities of these municipals should try to control spending in order to restore fiscal discipline and control the size of its fiscal deficits. Only Lubok Antu supports the fiscal synchronization hypothesis and implies that under this scenario, the fiscal authority of Lubok Antu should try to raise revenues and cut spending simultaneously in order to control budget deficits. On the other hand, municipals in Baram, Betong, Limbang, Matu and Mukah suggest that revenues and expenditures are not interrelated in the long-run. This implies that the independent determination of revenue and spending suggest the absence of coordination between expenditure and revenue decisions in the respective municipals. □

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