

THE RESPONSE OF PUBLIC EXPENDITURE TO EXTERNAL RISKS THE CASE OF INDONESIA

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ABSTRACT

To what extent does the change in public spending respond to the external risks generated by globalization? The existing theories argue that trade liberalization might either tend to have larger public expenditure or lower trade taxes that can cause significant fiscal pressures. However, the existing empirical studies leave open the possibility that trade liberalization has varied effects on different types of external risks. Governments might be insensitive to respond to a particular risk in order to anticipate the other risk in term of greater public spending. To test the replacement hypothesis, we use quarterly data on Indonesia's government spending over the period 1990-2013. The ARDL estimation model presents that trade openness is found to increase the public spending but the terms of trade fluctuation does not significantly change the public spending. It seems is that in the short-run Indonesia's government has no capacity to substitute the external risks in order to offset the costs of globalization but in the long-run she does.

Key words: Government expenditure, government size, trade openness, terms of trade, ARDL

Introduction

In recent years, the importance of government expenditure within the globalization era has been received much attention. For academician, the central issue is whether government spending is really effective to stabilize open macroeconomic condition. Trade openness is recognized as one of the prime determinants of the magnitude of fiscal multipliers (see for example: Spilimbergo *et al.*, 2009). Indeed, greater openness to international trade is generally predicted to reduce the effectiveness of domestic fiscal policy.

For policy makers, the main question is whether government spending, in one hand, is really effective to mitigate external risks generated by trade openness as one of the globalization pillars. On the other hand, the freer trade may also lead to a loss of tax revenue, tariffs, and other trade taxes suggesting the decrease in provision of public goods. Despite taxes on international trade still constitute a major source of revenue for developing countries; trade barriers have been reduced significantly over the last decade.

Along with world economic recovery after the global financial crisis; the central issue has shifted toward the government expenditure productivity. Given the dominant role of the state in the economy, the increase in demand for public and social services, the fiscal costs associated with the resolution of financial crises, and disaster mitigation related spending, and revenue constraints have re-enforced the government to run excessive expenditure. Accordingly, the unproductive government spending inextricably linked to the issue of how they impacts on economic growth (see: Easterly and Rebello, 1993, among others).

Those considerations have emerged a major rethinking of the respective roles of governments and markets in the processes of trade and growth. For developing economies, in particular, it has become essential not only in attending to domestic social issues or acting as a regulatory mechanism for market imperfections, but as also to address vulnerability of the economy to external risks. Lack of preparedness and binding budget constraints may simply worsen the impacts of unforeseen economic crises whose effects might be unpredictably long lasting (Sobhee, 2010).

Theoretically, how governments' budgets respond to the external risks depends on the characteristics of expenditure, e.g. aggregate spending as proposed by Cameron (1978) and Rodrik (1998); and social welfare spending as argued by Burgoon (2003) and Rudra (2002). While governments facing tight budget constraints prioritize sector spending, the sector spending and social welfare spending are not perfect substitutes for trade losers (Rickard, 2012). Hence, openness affects how governments allocate resources across spending programs and different spending programs serve different purposes.

Prebisch-Singer (1950) hypothesis dealing with the terms of trade deterioration is another reason why governments concern with trade liberalization. Despite developing countries export primary commodities and import manufactured goods, the terms of trade tend to decrease due to a low elasticity of substitution between domestic and foreign goods. In fact, there is a strong correlation between terms of trade depreciation and trade openness (Lutz and Singer, 1994; Easterly and Kraay, 2000). Therefore, how the form of spending change in response to globalization might be an important question.

Indonesia provides a unique opportunity to assess the nature of fiscal policy in the context of international setting. After launching de-regulation and de-bureaucratization in all economic aspects in mid 1980s, private sector led economic growth. As a result, Indonesia became a new industrialized country (Hill, 2000). However, experience of dramatic depreciation in accordance with Asian financial crisis in 1997/98 has directed government expenditures to focus on the economic recovery. In that period, the government became dominate in the economy.

Furthermore, the global financial crisis in 2008, the government attempted to revive economic activity through various fiscal stimulus measures (amounting 73.3 trillion Rupiah or equivalently 1.4 percent of GDP). The fiscal stimulus programs have contributed substantially to Indonesia faster and stronger than expected recovery (Hur *et al.*, 2010). After that, gradually Indonesia in 2010s is one of the largest developing countries to implement various economic liberalization reforms that produce strong economic growth (Abdurohman, 2013).

At present, Indonesia is encountering several challenges as she is moving towards the globalization and trade liberalization era primarily in accordance with the implementation of ASEAN Economic Community in 2015. Hence, the consequences of fiscal expansion would best be studied in an open-economy framework. Such a framework allows us to explore the effects of fiscal policy changes on the terms of trade. Due to that, government intervention is essential in ensuring that the economy is resilience against the severe implications of economic openness.

In light of the fact that Indonesia is a low-tax, small-government in the international context, the scope for shifting the composition of government spending as well as affecting the world market remains limited. Moreover, as many developing Asian countries, Indonesia faces large sector spending (especially infrastructure) requirements in the medium term so it would be suboptimal to cut back spending on sector spending to make more room for social welfare outlays (Hur *et al.*, 2010). Therefore, implementing pro-rebalancing fiscal measures, such as strengthening social protection, is likely to require an increase in the size of the government. This brings us back to the issue of effectiveness of fiscal policy.

This paper enriches the literature on fiscal policy in the context of economic globalization in developing countries with focus on Indonesia. The rest of the paper is divided into four sections. The second section is on the theoretical framework as well as the related empirical studies. This is followed by the third section which explains the econometric procedure and data used proceed by the empirical results. The last section provides some concluding remarks of this paper.

Literature Review

The discussion of foreign market and government spending lays both in the political and economic tracks. Therefore, it is not unsurprisingly that the relationship between foreign market and government spending has been an intense research and heated debate among economists and politicians. However, political science and international economic literatures tend to diverge toward two strands regarding the characteristics of such relationship. Interestingly, each strand has its own variation since the empirical evidence on the globalization-welfare state nexus is mixed.

The first one is efficiency hypothesis. According to the efficiency hypothesis, economic globalization may cause a loss of international competitiveness (Alesina and Perotti, 1997). It may lower the demand for exports and employment, and favor the outflow of mobile factors (Gordon, 1983; Wilson, 1987; Persson and Tabellini, 1992). Those suggest that more economic integration will tend to reduce tax rates, possibly leading to smaller governments and a downsizing of the welfare state.

Theoretically, there is little evidence to support the claim that openness is associated with greater government size. Many analysts then suspect that increasing capital mobility has put downward pressure on the public economy (see for example: Rodrik, 1997; Quinn 1997; Swank 1998; Garrett 2001; Garrett and Mitchell 2001). Liberati (2007) formally examines the relationship among trade openness, financial openness, and government size. He found that financial openness is significantly and negatively associated with government size due to an increased mobility of factors that may undermine the ability of governments to tax and spend.

The second one is compensation hypothesis. It, in contrast, predicts that globalization induces a higher demand for social insurance which results in an extended welfare state. According to this view, countries that are more exposed to trade tend to have larger public economies, allowing governments to compensate those who are adversely affected by international competition. In the political science framework, Ruggie (1982), for example, points out that the compensation for whom adversely affected by external risks maintains the political support for openness.

The compensation hypothesis was first documented by Cameron (1978) in an influential and early contribution to the literature on the domestic political economy underlying international trade. Cameron found that trade openness is the most influential predictor in accounting for the increase in the size of government spending between 1960 and 1975 among a set of 18 industrial democracies and suggested that the growth in government spending represents a political response to the vulnerability of the open economy.

Rodrik (1998) revisited the association between trade exposure and the size of government. He reports that it holds for a substantially extended sample of countries, to be robust to the inclusion of a large number of control variables, and to be present not only among the higher, but also among the lower income countries. Rodrik's explanation emphasizes the role of volatility in aggregate economic activity: more open economies would suffer from increased external risk; increased external risks would increase volatility in domestic income; government spending would help to reduce volatility in aggregate income.

In different angle, Alesina and Wacziarg (1998) argue that for whom public compensation against risk does not explain the relation between trade openness and public expenditure. They posit the absence of a link between openness and public sector size if country size is taken into consideration. Their argument is that to take advantage of specialization, small countries need to open themselves to international markets more so than larger countries, and as they are unable to exploit scale economies in the provision of public goods, need a relatively higher public expenditure.

More recently, Ram (2009) has challenged the outcome of Alesina and Wacziarg (1998) mainly on the econometric ground. Considering 154 countries for the period 1960-2000, Rodrik (1998) shows that while pooled OLS regressions replicate the results of Alesina and Wacziarg (1998), a fixed effect estimation that takes into account cross-country heterogeneity would not lead to a significant negative co-variation of country size and either trade openness or government size. Thus, the estimates by Rodrik (1998) would be consistent with a direct link between openness and government size, instead of being mediated by country size.

Liberati (2013) provides additional insights to understand the relationship between government size and economic openness. In one hand, he shows that country size is not relevant to determine the sign of the relationship between government size and economic openness. On the other hand, the relevance of the cross-country heterogeneity suggested by Ram (2009) to argue in favor of the compensation hypothesis only picks the characteristic of the African countries of being relatively more closed. As a consequence, the compensation hypothesis cannot be assigned general validity on this ground.

While country size is considered as mediating variable by Alesina and Wacziarg (1998) and Liberati (2013), Epifani and Gancia (2008) point out to a further channel of influence. They argue that in an open economy, the costs of taxation can be exported if changes in public spending influence the terms of trade. They also argue that openness can increase the size of governments through two channels: (1) a terms of trade externality, whereby trade lowers the domestic cost of taxation, and (2) the demand for insurance, since trade raises risk and public transfers. More importantly, their findings raise warnings that globalization may have led to inefficiently large governments.

The relationship between international trade and government spending is probably related to the type of government spending. Dreher *et al.* (2008) conclude that globalization has no effect on the composition of public expenditures which is confronting to Benarroch and Pandey (2012). The later examine the causal relationship between trade openness and government size using both aggregate and disaggregated government expenditure data, including data on social security. Their results indicate that examining the relationship separately for functional categories of government expenditures provide important details on the relationship between the two variables.

Similar to Benarroch and Pandey (2012), Rickard (2012) categorizes the government into program spending and social welfare program. According to Rickard (2012), governments may cut spending on some programs, such as social welfare, in order to fund greater spending on other budget items. Using data on central government spending in 44 developing countries, she obtained that trade is found to decrease spending on social welfare programs but increase spending on subsidies. It seems that Rickard (2012) tries to assess the possibility of substitution among government expenditure categories.

In the case of Indonesia, the related study regarding this issue is limited. Based on the ARDL approach, Kueh *et al.* (2009) estimate the trade openness and government expenditure nexus in four South East Asian countries including Indonesia. They indicate that there is an existence of a significant positive long-run linkage between trade openness and government expenditure of all the ASEAN-4 countries. This means that government intervention in an open economy is crucial as to cushion the risks associated with trade liberalization.

Other previous studies have been conducted in the inward-oriented types. They focused on the impact of fiscal policy partially on inflation rate (Snyder, 1985), exchange rate (Abimanyu, 1998), and interest rates (Adiningsih, 2009). Recently, Simorangkir and Adamanti (2010) analyzed the economic impact of fiscal stimulus; Basri and Rahardja (2010) assessed the fiscal position; and Surjaningsih *et al.* (2012) observed output and prices volatility in accordance with the global financial crisis. In fact, there are no studies dealing with the external risks.

More recently, Kuncoro (2016) investigated the impact of fiscal policy credibility on the terms of trade movement. He comes to the conclusion that the credible fiscal rules policy is enables to improve the terms of trade. Conversely, the discretionary fiscal policy effectively reduces the terms of trade deterioration. The significance of discretionary fiscal policy provides some possibilities to analyze the substitution between the government spending allocations among the types of external risks. Therefore, the more comprehensive approach is needed to reassess the impact of the type of external risks on the government expenditure in the case of Indonesia.

Research Method

A wide range of literature is focused on panel studies with respect to this topic but rarely time series analysis has been done generally and for Indonesia particularly. Therefore, new avenues are opened for research in this area for the developing economies like Indonesia. This study is an attempt in this regard. The present study focuses on both long run and short run analyses regarding a linkage among trade openness and terms of trade along with the role associated with the government expenditure.

This paper is closely related to Kueh *et al.* (2009) and Rickard (2012) with some significant differences. First, unlike the earlier authors, we extend quarterly data in the longer time frame. Second, instead of breaking down into government spending categories as done by the Rickard (2012), we prefer to disaggregate the external risks and analyze their impact on aggregate spending. This is important to evaluate the possibility of spending replacement across risks.

We hypothesize that the change in government expenditure differs according to the external risks. We define economic globalization as the process of integration into global markets that is simply represented by export and import. Accordingly, economic globalization constitutes a threat of international economic competition and a dependence on foreign markets resulting in the change in terms of trade, the ratio of export prices to import prices. Hence, the government will internalize them in her spending decision as follows:

$$\text{Log (GOV)} = \alpha + \beta \text{Log (TOP)} + \gamma \text{TOT} + \varepsilon \quad (1)$$

Equation (1) presents the long term relationship which is suitably estimated by annual data. In the short term, we use the unrestricted ARDL (auto-regressive distributed lag) model. The use of the ARDL model is justified by the fact that it makes possible to easily assess the relative change in *GOV* both in the short-run and in the long-run.

Another advantage of this specification is the consistency and efficiency of estimates in the presence of endogenous regressors. Moreover, bearing in mind that standard unit root tests are susceptible to misleading results, Pesaran and Shin (1999) and further extended by Pesaran *et al.* (2001) show that ARDL models yield consistent estimates of the coefficients irrespective of whether the underlying regressors are *I(1)* or *I(0)*, as the Johansen framework, thus providing robustness to the results.

We use first the restricted ARDL model to accommodate some adjustments by implementing the lagged variables as follows:

$$\text{Log (GOV}_t) = \alpha + \beta_1 \text{Log (TOP}_t) + \beta_2 \text{Log (TOP}_{t-1}) + \gamma_1 \text{TOT}_t + \gamma_2 \text{TOT}_{t-1} + \varphi \text{Log (GOV}_{t-1}) + \varepsilon_t \quad (2)$$

Alternatively, the restricted model of the ARDL approach can be estimated as follows:

$$\Delta \text{Log (GOV}_t) = \alpha + \beta_1 \Delta \text{Log (TOP}_t) + \beta_2 \text{Log (TOP}_{t-1}) + \gamma_1 \Delta \text{TOT}_t + \gamma_2 \text{TOT}_{t-1} + \varphi \text{Log (GOV}_{t-1}) + \varepsilon_t \quad (3)$$

where Δ is difference operator.

To investigate the presence of long-run relationships among *GOV*, *TOP*, and *TOT*, bound testing under Pesaran *et al.* (2001) procedure is used. The bounds test method of co-integration has certain econometric advantages in comparison to other methods of co-integration which are the following: (1) all variables of the model are assumed to be endogenous; (2) bounds test method for co-integration is being applied irrespectively the order of integration of the variable; and (3) the short-run and long-run coefficients of the model are estimated simultaneously.

The bound testing procedure is based on the F-test. The F-test is actually a test of the hypothesis of no co-integration among the variables against the existence or presence of co-integration among the variables. The Wald test is computed to test the null hypothesis, denoted as:

$$H_0: \beta_2 = \gamma_2 = \varphi = 0 \quad (4a)$$

against the alternative hypothesis,

$$H_a: \beta_2 \neq \gamma_2 \neq \varphi \neq 0 \quad (4b)$$

If the Wald test value falls outside the upper bound, the null hypothesis of no co-integration is rejected. In other words, *GOV*, *TOP*, and *TOT* are said to be co-integrated. However, no conclusive inference can be made for the Wald test value falls inside the critical bounds, unless the order of integration of the variables is known. If the Wald test value falls below the lower bound, the null hypothesis of no co-integration cannot be rejected.

In the presence of co-integration, the long-run coefficients for *TOP* and *TOT* are derived from $(\beta_2)/(\varphi)$ and $(\gamma_2)/(\varphi)$ respectively. Generally, both in the short-run and the long-run, the coefficient of *TOP* and *TOT* could be positive or negative. The coefficient of lagged dependent variable is expected to be negative and measures the speed of adjustment towards the equilibrium in the long run.

Since we concern with degree of government responsiveness toward external risks, we need reliable and long span time series data on government expenditure, export, import, export prices, and import prices. All of the data are available in quarter basis derived from the national income and product account based on standard expenditure approach. This is intended that our study will be comparable to similar studies in other countries. The sample periods chosen for this study extend from 1990(1) to 2013(4). The total observation is 96 sample points.

As explored by Lutz and Singer (1994), the economic openness is measured by summation of export and import. The terms of trade is calculated from implicit export prices to implicit import prices ratio which are derived also from the national income account standard both in current and constant prices.

$$\text{TOP} = X + M \quad (5)$$

$$\text{TOT} = P_x / P_m \quad (6)$$

In some cases, we also employ *GOV* and *TOP* in relative terms by dividing them to GDP. All of the variables are presented in 2000 constant price. All of the data are taken from the central bank of Indonesia (www.bi.go.id, accessed on November 10, 2014). Most of the results are calculated in econometric program Eviews 8.

Results and Discussion

Table 1 presents the elementary statistics covering mean, median, and extreme (maximum and minimum) values. The average value of LOG(TOP) is slightly higher (12.60) than LOG(GOV) (10.31). The average of the two variables is larger than its median value suggesting that the series are right-skewed which are confirmed by positive value of skewness. However, Jarque-Bera test proves that LOG(TOP) variable is symmetrically distributed (bell-shaped) indicated by probability value higher than 5 percent.

Table 1: Descriptive statistics and coefficient of correlation

	LOG (GOV)	LOG (TOP)	TOT
Mean	10.3142	12.5966	0.8843
Median	10.1857	12.5143	0.9164
Maximum	11.1852	13.3410	1.1074
Minimum	9.6514	11.7352	0.6019
Std. Dev.	0.3449	0.4119	0.1080
Skewness	0.7823	0.0127	-0.5679
Kurtosis	2.7105	2.0538	2.7782
Jarque-Bera	10.1275	3.5839	5.3565
Probability	0.0063	0.1666	0.0687
Observations	96	96	96
LOG (GOV)	1.0000		
LOG (TOP)	0.8551	1.0000	
TOT	-0.3082	-0.0158	1.0000

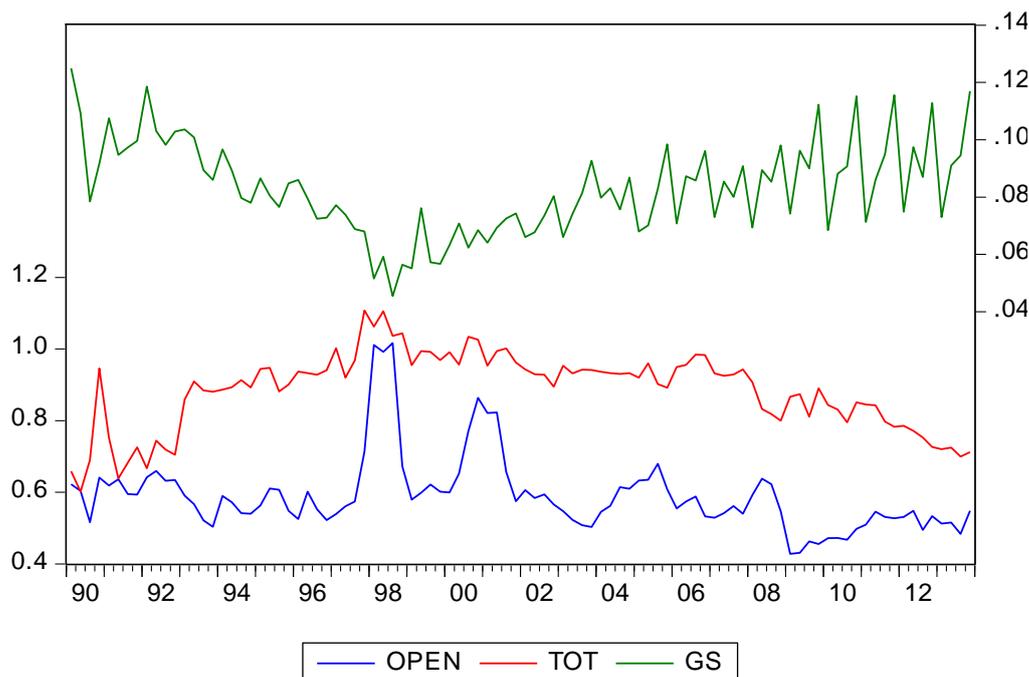
In contrast, the average value of TOT is less than its median and hence the skewness value is negative; the lower tail of the distribution is thicker than the upper tail. Even though the corresponding series is normally distributed and kurtosis value less than 3 implying that the tails of the distribution are normal (i.e. platykurtic), the variability of TOT is highest. This conclusion is drawn by looking at the max-min ratio and coefficient of variation (standard deviation to mean ratio). The coefficient of variation for the three series is 3.34, 3.27, and 12.21 percent respectively.

In the lower part of Table 1 delivers also pair-wise correlation among the three variables. The correlation between LOG(GOV) and LOG(TOP) is highly positive, 0.86, implying that the increase in trade openness is directly associated with the increase in government expenditure. A negative correlation is found in the case of LOG(GOV) and TOT relationship, -0.31. It seems that the government spending will increase as a response of the decrease in TOT. Meanwhile, there is a weak negative correlation between TOT and LOG(TOP).

Figure 1 presents visually the movement of the three variables of interest for the whole period. The contour of government size (GS, government expenditure to GDP ratio) was drastically dropped in 1997/98 as a consequence of Asian financial crisis. On the contrary, TOT had been increasing until 1997/98 and then after that decreasing. As a result, there is a synchronous fluctuation patterns clearly in the opposite direction between GS and TOT as found by correlation analysis.

The same pattern is found with regard to trade openness to GDP ratio (OPEN) and GS. The trade openness tended to increase since the starting period. The peak performance of OPEN was reached in 1998. After that, OPEN was relatively stable. When we split our observation into pre- and post-global financial crisis in 2008, there is a significant difference. In this point, we preliminary can infer that government spending is more sensitive to the fluctuation of TOT rather than international trade. We will re-check it later more convincingly using econometric models.

Figure 1: Degree of Openness, Terms of Trade, and Government Size



In the proceeding section, we focus on the time series properties of each series. Many studies point out that using non-stationary macroeconomic variable in time series analysis causes superiority problems. It is well known in literature that applying regression on a set of non-stationary series is likely to produce a spurious estimation. Thus, a unit roots test should precede any empirical study employing such variables. We decided to make the decision on the existence of a unit roots through conventional Augmented Dickey–Fuller (ADF) test.

To ensure whether all of the series data are stationary, each series will be examined 2 times using ADF unit roots test procedure with respect to level and first-difference. The ADF unit roots test is based on the null hypothesis that the respective time series are difference stationary. We assume that the underlying data are not stationary. The results concerning the stationary of the data are reported in Table 2. The null hypotheses of non-stationary can be rejected, which does not demonstrate the existence of a common trend in those series.

All of the data level in all cases was not found to be stationary in 5 percent significance level implying the series data do not have a unit roots. After first-differencing, the series data is stationary. In other words, in the first difference forms, all the variables become stationary. It implies that the behavior of the variables does not vary around to the mean value and invariant overtime (Enders, 2004). The occurrence of unit roots in the series gives a preliminary indication of shocks having permanent or long lasting effect, thus making it very difficult for traditional stabilization policies to survive.

Table 2: Unit Roots Tests

	Level		First Difference	
	t-stat	Prob.	t-stat	Prob.
Log (GOV)	0.1525	0.9680	-5.6730	0.0000
Log (TOP)	-1.3132	0.6209	-9.4627	0.0000
TOT	-2.8275	0.0582	-11.6366	0.0001

Stationary properties of the time series data is required to perform co-integration. Co-integration is an important concept to analyze the long-run behavior of the data. To prove our hypothesis, we estimate first the restricted ARDL model as equation (2). The results show that all of the coefficients of lagged independent variables entirely present statistically insignificant. Unfortunately, the coefficient of lagged dependent variable is neither insignificant. These preliminary perform the absence of co-integration.

To ensure the presence of co-integration, then estimate equation (3). We test the possibility of co-integration by implementing the bound test. The result is presented in Table 3. The Wald test (F and χ^2 statistic) is computed to test the null hypothesis, $H_0: \beta_2 = \gamma_2 = \varphi = 0$ against the alternative hypothesis, $H_a: \beta_2 \neq \gamma_2 \neq \varphi \neq 0$. The result of the Wald test values falls outside the upper bound in the lower probability value. It means that the null hypothesis of no co-integration is rejected suggesting the presence of co-integrating relation. In other words, the government spending, trade openness, and terms of trade are said to be co-integrated.

Table 3: Co-Integration Bound Tests

Wald Test: $\beta_2 = \gamma_2 = \varphi = 0$	Value	df	Prob.	Conclusion
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Unrestricted ARDL				
F-statistic	0.7917	(3, 87)	0.5017	Not cointegrated
Chi-square	2.3752	3	0.4983	Not cointegrated
Restricted ARDL				
F-statistic	28.9349	(3, 87)	0.0000	Cointegrated
Chi-square	86.8048	3	0.0000	Cointegrated

Critical Value Bounds for the F-statistics: 3.23 – 4.35

Alternatively, using Johansen’s maximum likelihood approach, we test the bi-variate between the two variables with 1-2 lags in all the cases. The trace statistics together with maximum eigenvalue (λ_{max}) for testing the rank of co-integration are shown in Table 4. The results of both tests deny the null hypotheses of absence of co-integrating relation of the two volatile series.

Furthermore, both tests suggest the presence of two co-integrating equations at 5 percent level or even 1 percent significance level between the non stationary (or stationary at the different levels) series which means that the linear combinations of them are stationary and, consequently, those series tend to move towards the equilibrium relationship in the long-run consistent with the results of Bound test.

Table 4: Johansen Co-Integration Test

Series: $\Delta \text{LOG}(\text{GOV}) \Delta \text{LOG}(\text{TOP}) \Delta \text{TOT}$				
Lags interval (in first differences): 1 to 2				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.9090	315.0314	29.7971	0.0001
At most 1 *	0.4920	94.5603	15.4947	0.0000
At most 2 *	0.2957	32.2528	3.8415	0.0000

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Regarding to the stationary of first-difference data, therefore, the restricted ARDL model is suitable to estimate rather than the unrestricted one. The regression results for four specification models are presented in Table 5. Model (1) is the original one, model (2) and (3) elaborate dummy variable to accommodate Asian monetary crisis in 1997 (D97) and global financial crisis in 2008 (D08) respectively. Model (4) is the complete specification. Hence our discussion relies mainly on model (1) and (4) as comparison.

In the short-run, trade openness – as expected – induces the government spending. On the average the government spending increases for about 0.64-0.66 in the response of the increase 1 percent of trade openness. The similar result is obtained for the lagged trade openness both in terms of sign and magnitude. The corresponding coefficient is statistically significant and robust for all of the four specification models. These results are basically in line with the compensation hypothesis proposed by Cameron (1978) and Rodrik (1998).

Regarding the terms of trade, the coefficient of government spending is found to be negative and insignificant in the contemporaneous variable. In addition, the corresponding coefficient is statistically inconsistent across model. To accept the null hypothesis, we need higher confidence level (7.5 percent); far enough from the standard 1 percent level. It suggests that in the short-term the government spending remains unchanged in relation to the terms of trade movement.

This result is quite different from Kueh *et al.* (2009) (in terms of magnitude and sign) due to different model specification. Kueh *et al.* (2009) posit TOT as dependent variable and government expenditure as explanatory variable. Moreover, Kueh *et al.* (2009) used annual data instead of quarterly data as in this paper. In our view, TOT is exogenous variable and government expenditure is endogenous variable. Hence, we estimate government expenditure is a function of terms of trade.

It seems that the Indonesia’s government prioritizes her budget to enhance the external risks dealing with quantity rather than the prices shocks. This interpretation is plausible when we consider that Indonesia is small-government in international market so the capability to affect the world market price remains limited. The position of price-taker makes easy to handle risks presented by the change in quantity consistent with Rickard (2012) regarding welfare and subsidy spending.

The estimation of the lagged dependent variable gives the significant coefficients. The associated coefficient displays persistence. The government spending persistence can be considered as a measure of the degree of dependence of current government spending behavior on its own past developments. The coefficient of lagged dependent variables are quite the same, 0.93-0.98, suggesting that a change in the government spending between month $t-1$ and t drives up the government spending process in t almost 100 percent partial adjustments to respond to the tolerated change. Consequently, the government spending tends to be more persistent than to respond to *TOP* in the short-run.

Table 5: Estimation Results of Government Spending

Dep. Var. Δ Log (GOV)	(1)		(2)		(3)		(4)	
	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.
C	1.8604	0.0012	2.9088	0.0003	2.7576	0.0008	3.6208	0.0002
Δ LOG (TOP)	0.6593	0.0005	0.6392	0.0006	0.6601	0.0005	0.6414	0.0006
Δ (TOT)	-0.5233	0.0745	-0.5816	0.0459	-0.4223	0.1553	-0.4880	0.0997
LOG (TOP-1)	0.6767	0.0000	0.6243	0.0000	0.6156	0.0000	0.5744	0.0000
TOT-1	-0.9084	0.0000	-1.0857	0.0000	-0.7288	0.0009	-0.9138	0.0002
LOG (GOV-1)	-0.9289	0.0000	-0.9578	0.0000	-0.9594	0.0000	-0.9825	0.0000
D97	-	-	0.0958	0.0566	-	-	0.0885	0.0777
D08	-	-	-	-	0.1104	0.1183	0.0974	0.1647
R ²		0.5020		0.5222		0.5157		0.5328
Adj-R ²		0.4740		0.4897		0.4826		0.4952
SEE		0.1488		0.1465		0.1475		0.1457
F		17.9407		16.0317		15.6152		14.1723
DW		2.0000		2.0100		1.9829		1.9935

So far, we have discussed the relationship between government expenditure and external risks in the short-run perspective. Table 6 summarizes the results about the long-run elasticity of expenditure with respect to trade openness and terms of trade which are derived from Table 5. It could be calculated by dividing the short-run elasticity by the corresponding coefficient of adjustment in the absolute form. We refer model (4) to further analysis in the long-run perspectives.

The long-run elasticity coefficient with respect to economic openness is positive (0.5846) and slightly lower than that in the short-run. A positive value of the elasticity is consistent with a wider interpretation of compensation hypothesis, as it implies that government expenditure rises with the increase in trade openness. Meanwhile, the semi-elasticity of government spending associated with terms of trade is -0.9301 almost twice than that in the short-run.

The statistical evaluation of the two coefficients confirms to the strong compensation hypothesis. Implementing t-stat, F-stat, and χ^2 tests convincingly (*p*-value is quite low) proved that the null hypotheses cannot be accepted. Hence, those coefficients statistically exceed one, as it suggests that in response to a given shock to export and import and terms of trade, the government expenditure rises by even more in percentage points.

Table 6: Long-Run Coefficient Tests

Coefficient	Short-Run	Long-Run	t-stat	F-stat	χ^2	Prob.
α	3.6208	3.6854	4.3323	18.7686	18.7686	0.0000
β	0.6414	0.5846	8.1718	66.7782	66.7782	0.0000
γ	-0.4880	-0.9301	-4.2099	17.7229	17.7229	0.0001
ϕ	-0.9825	-	-	-	-	-

Source: Table 3

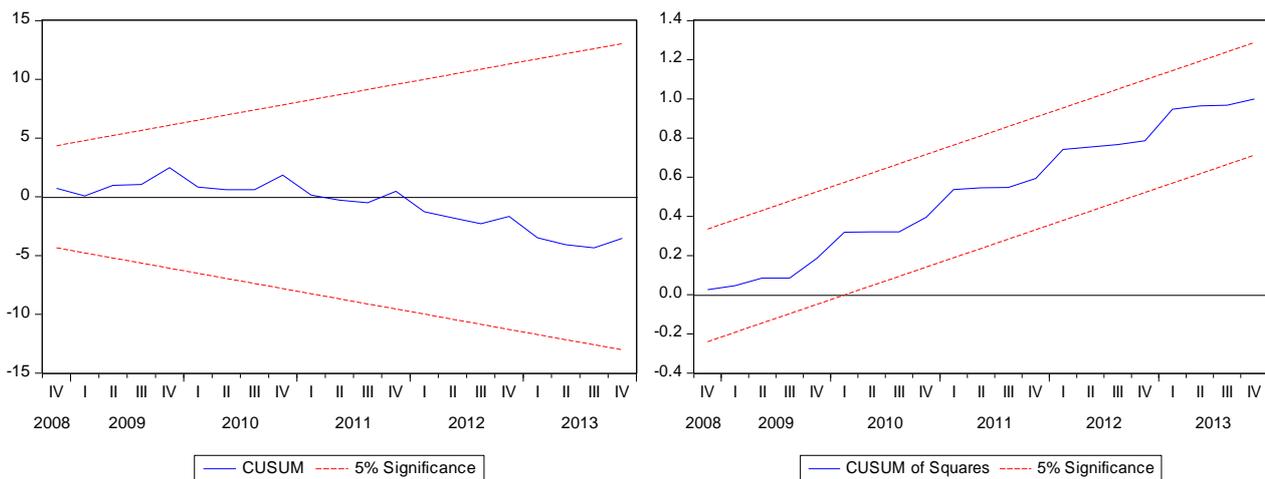
The higher increase in government expenditure compared to the increase in external risks is due to the economic system adopted by Indonesia is mixed. In fact, the economic success of Indonesia relies on their steadily increasing in openness. Lack of the government intervention without concentrated to the economic insecurities generated by liberalization and globalization may harm the prospects of sustainable economic growth of the country. Accordingly, as noted by Kueh *et al.* (2009), the extreme competitive pressures faced by Indonesia as she is moving towards liberalization and globalization. As a result, domestic firms might not have the ability to overcome the challenges of the liberalization impacts. Therefore, the government plays prominent role in ensuring stability in the economic and acts as risk bearer in mitigating eternal risk due to the high degree of trade openness and the terms of trade fluctuation.

Furthermore, the significance of the lagged dependent variable indicates that our estimated government expenditure model is well specified. Thereafter, it is necessary to check for the stability of the government expenditure function. This is because of the importance of the stability of the government expenditure function for an effective fiscal policy. This, therefore, makes it necessary to test whether the estimated government expenditure equation has shifted over time as an important part of this empirical study.

We use CUSUM and CUSUMSQ to detect the possibility the coefficients of regression changes overtime. CUSUM(SQ) stands for cumulative summation of (squared) recursive residual generated by the regression equation. If the CUSUM(SQ) values locate within the tolerated lower and upper bands, the regression function is said to have a constancy of parameter regression. Figure 2 delivers the results of stability tests regarding constancy of parameters regression.

The CUSUM test confirms the existence of the parameter regression constancy indicating that the parameters are stable during the sample period. The entire residuals plot lies within the 5 percent tolerable bands. The CUSUMSQ test reports the same result. The plots of squared residual are within the tolerated bands. Overall, the estimated government expenditure has a more stable function implying further that it can be use for prediction and policy simulation purposes.

Figure 2: CUSUM Stability Tests



Conclusion

This study is an attempt to explore the impact of trade openness on government spending in the case of emerging economy like Indonesia. This paper is motivated by the fact that the existing theories argue that trade liberalization might either tend to have larger public expenditure or lower trade taxes that can cause significant fiscal pressures. However, the existing studies leave open the possibility that trade liberalization has varied effects on different types of external risks. In doing so, we utilized restricted ARDL model for co-integration and for short-run dynamics. Based on quarterly data over the period 1990-2013, our empirical results reveal mixed. In one hand, trade openness is positively associated with larger government expenditure suggesting the compensation hypothesis holds. This shows that more openness of economy will increase the government expenditures and proves the existence of Cameron (1978) and Rodrik (1998) hypothesis. On the other hand, terms of trade and government spending are allied inversely while supporting conventional wisdom hypothesis or domestic fiscal imbalance hypothesis. Interestingly, terms of trade fluctuation does not significantly affect the government spending decision. Given those results, we can infer that trade liberalization has varied effects on different types of external risks. The Indonesia's governments might be insensitive to respond to a particular risk (terms of trade) in order to anticipate the other risk (economic openness) in term of greater public spending. The implication of this finding is that in the short-run Indonesia's government has no capacity to substitute the external risks in order to offset the costs of globalization but in the long-run she does.

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