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Determinants of External Debt in Thailand and the Philippines

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ABSTRACT

External debt (ED) has been the major global concern not only heavily indebted poor countries but also developing nations in resultants of the 2008 global financial crisis. It has become a well-discussed subject and generally a concern of global finance and world of economy greatly. This paper analyses the role of some macroeconomic variables in determining the ED burden in Thailand and the Philippines from 1976 to 2013. The results indicate the existence of short-run linkages originated from inflation rate (Consumer Price Index [CPI]) and real interest rate [RIR] to ED in the case of Thailand. As for the Philippines, although there is no evidence of short-run linkages origin from gross domestic product (GDP), CPI, RIR and M2 to ED, but the burden of short-run adjustment appears to have fallen mostly on GDP and M2. Further, dynamic econometric analysis suggests that money and quasi money (M2) to total reserves ratio is the most exogenous variable beyond the 50-years horizon. The study concludes that a sound debt management could be implemented to control debt accumulation and to reduce dependence on debt relief in the form of foreign aid.

Keywords: External Debt Burden, Thailand, The Philippines
JEL Classifications: F34, C22

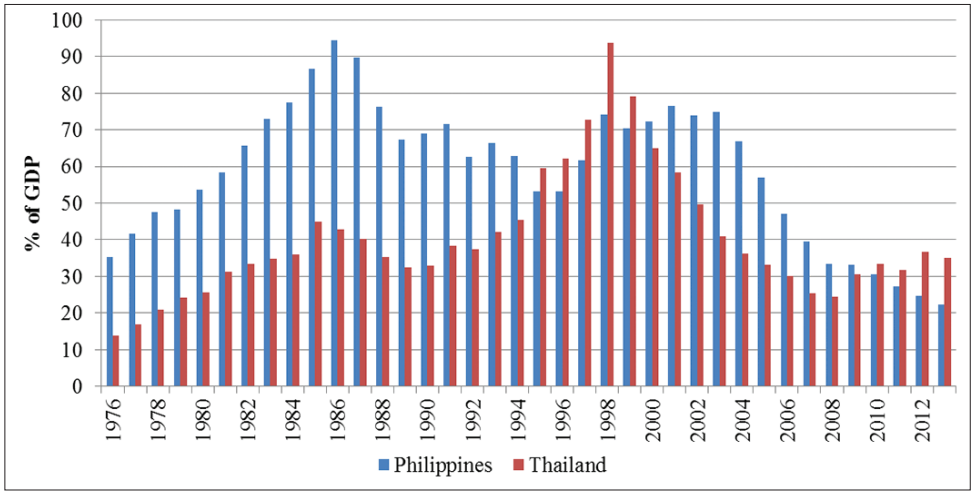
1. INTRODUCTION

Foreign indebtedness has continuously become a debatable issue for policy makers and researchers and in the broader international community since the outbreak of the sovereign debt crisis in the European countries in 2009. While external factors seem to be the most profound aspects that affect the external indebtedness of poor nations, there is still a continuing debate on the determinants of the foreign borrowing by developing countries. In this aspect, the problem of external debt (ED) in most of the developing countries is believed to be one of the major challenges nowadays. Although it is believed that ED can assist nations that are suffering from capital deficiency to achieve accelerated economic growth, however, once this financial gap becomes unmanageable, the past-accumulated ED is likely to provoke further external borrowings and this will create another vicious circle of ED (Tiruneh, 2004; Awan et al., 2015).

Throughout the years, debt has been an old issue for the Philippines but it is constant problem as indebtedness and debt service payments continue to grow. The ED has rose gradually over the 1976-1986 in the Philippines and reached about 94% of gross domestic product (GDP) in 1986 (Figure 1). It is mainly because of deep economic and political crisis that started in the late 1970s. This crisis has brought serious macroeconomic manifestations including high inflation, large current account deficits and huge arrears in ED (World Bank, 1996). Therefore, the Philippines indebtedness is the consequence of past policy mistakes, debt mismanagement, and historical conditions that involved heavy borrowing (Boyce, 1992; Vos and Yap, 1996).

On the other hand, Thailand foreign indebtedness was not exceedingly high in 1970s to 1980s relative to the Philippines. Nevertheless, it increased significantly in the early 1990s as a reflection of persistently high current account imbalances. The ED has rose from less than 40% during 1990-1992 to more than 60% during the period of 1996-1997 and peaked at 94% of GDP in 1998. Thailand relied on foreign capital to finance the gap between domestic savings and investment, but high current account deficits and the subsequent high external indebtedness were excessive compared to the growth path of the Thai's economy and this eventually led to the Asian Financial Crisis in

Figure 1: External debt (% of gross domestic product) in Thailand and the Philippines (1976-2013)



Source: World Development Indicators, 2015

1997 (Buranathanung and Poonpatpibul, 2003). As a result of rising current account deficits during the crisis, capital inflows into Thailand increased subsequently in the form of debt creating inflows and contributing to a huge ED accumulation. Higher budget deficits will cause higher interest rate leading to the appreciation of domestic currency, which in turn lead to a widening in current account deficits in Thailand (Baharumshah et al., 2006; Baharumshah and Lau, 2007; Lau et al., 2010). In other words, large budget deficits contribute to the deficits in current account and it is known as twin deficit.

Owning to the background above, Thailand and the Philippines have respectively gone through historical episodes of debt accumulation. Although the debt positions remain at a manageable level, with the outbreak of the sovereign debt crisis in the European countries; foreign indebtedness has again become one of the most debateable issues in many of the developing countries. Therefore, what are the macroeconomic factors that will influence the ED in an open economy like Thailand and the Philippines? The objective of this paper is to examine the macroeconomic factors contributing to the ED in Thailand and the Philippines for the time period of 1976-2013.

With this conjecture, in the subsequent section, presents the related literature on the factors contributing to ED with a focus on developing countries. In Section 3, we briefly discuss the methodological issues, data descriptions and empirical model specified. Section 4 reports the empirical results while Section 5 concludes the research by giving some policy recommendations.

2. LITERATURE REVIEW

Looking at the literature, there are numerous studies investigated the foreign indebtedness over the decades. Cline (1984) and McFadden et al. (1985) were among the first stated that external vulnerability and insolvency of a country took place after the foreign debt crisis in the 1980's. Most of these studies attempt to analyze the determinants of debt servicing difficulties in the first wave of debt crisis. Ajayi (1991) stressed that the causes of the debt accumulation could be categorized into the domestic factors and the external factors where the external factors do affect crucially on what happens domestically. Loser (2004) indicate among the ED indicators were the net international reserves, real effective exchange rate, inflation, output growth, export and import behavior, terms of trade, monetary indicators, interest rates and fiscal deficit and credit to the public sector. Qiu (2010) on other hand defines ED as the capital borrowed from an external source, where the government gain the loans by issuing government bonds, securities and bills, in which he found that the accumulation of EDs in developing countries are mainly caused by the irrational debt structure, improper use of debt and deteriorating situation in foreign trade that causes the sharp cut off of export income.

Additionally, Tiruneh (2004) found that poverty, income instability, debt service payments and capital flight are the main causes of the external indebtedness in the developing countries in 1980s and 1990s[1]. Bader and Magableh (2009) examined the role of government budget deficit, saving gap, size of foreign aids and real exchange rate on debt accumulation in Jordan during the period 1980-2005. The results suggested that all the endogenous variables contributed to the debt burden with the real exchange rate indicate the most significant effect on ED. Greenidge et al. (2010) utilized panel dynamic ordinary least square procedure to study the main determinants of external public debt in 12 Caribbean community countries and discovered that the contributing factors are the output gap, real cost of foreign borrowing, real effective exchange rate and exports. Choong et al. (2010) examined the effect of different types of debts on the economic growth in Malaysia during the period from 1970 to 2006. The findings suggest that all components of debts have a negative effect on long run economic growth. The Granger causality test reveals the existence of a short-run causality linkage between all debt measures and economic growth in the short-run.

1 The list of developing countries (heavily indebted poor countries [HIPC] and non-HIPC) is in Tiruneh (2004. p. 271, Table 2). The episodic debt accumulations which were also listed in Tiruneh (2004) provides clear motivation for the present research.

Awan et al. (2011) analyzed the relationship between ED, exchange rate, fiscal deficit and terms of trade where they found significant long run relationship between these variables. Autoregressive Distributed Lag with the acronym (ARDL) for the period 1991-2009, Daud et al. (2013) found that the accumulation of ED is associated with an increase in Malaysia's economic growth up to an optimal level and an additional increase of external indebtedness beyond the level has inversely contributed to the Malaysian economy. Pyeman et al. (2014) studied the determinants that contributing to the ED in Malaysia. The empirical findings show that GDP, export and foreign direct investment are important indicators affecting the ED in Malaysia from 1972 to 2012. In a recent study, Awan et al. (2015) opined that fiscal deficit, nominal exchange rate and trade openness are the significant determinants that influence the ED in the case of Pakistan. Lau et al. (2015) examined the macroeconomic factors contributing to the ED in Malaysia from 1970 to 2013; the results suggested that inflation is the only factor affecting the ED in the short-run. The results of variance decompositions (VDCs) suggest that the consequences of quasi money (M2) become noticeable only over the long-run.

3. ECONOMETRIC METHODOLOGY AND DATA

3.1. Unit Root Tests

Before conducting the cointegration analysis, we need to establish the stationarity properties of the individual series. Unit root are vital in examining the stationarity of a time series because a nonstationary regressor invalidates many standard empirical results (Dritsakis, 2004). In this study, Dickey and Fuller (1979, ADF) and Kwaitkowski et al. (1992, KPSS) tests are employed. The ADF tests the null of nonstationary while KPSS tests the null of stationary.

3.2. Cointegration Test

Having established the stationarity of the variables, we adopted the popular Johansen and Juselius (1990, JJ) method as an investigation of long-run cointegrating relation among variables. This test utilizes two likelihood ratios test statistics for the number of cointegrating vectors which are the trace test and the maximum Eigen value test. As it becomes a norm in empirical time series econometrics estimation, details of the JJ test were not presented here but interested reader could refer to the original article for detail implementation.

3.3. Granger Causality Test

If cointegration is detected, the Granger causality must be applied in vector error correction model (VECM) to avoid problems of misspecification (Granger, 1988). VECM is a special case of VAR that impose cointegration in its variables. The relevant error correction term (ECTs) must be included in the VAR to avoid misspecification and omission of the important constraints. Thus, for cointegrated model, the Granger causality must be conducted in VECM to test the significance of the ECTs. The existence of a cointegrated relationship in the long-run indicates that the residuals from the cointegration equation can be used as ECT as follows:

$$\begin{bmatrix}\Delta ED_t\\ \Delta GDP_t\\ \Delta CPI_t\\ \Delta RIR_t\\ \Delta M2_t\end{bmatrix}=\begin{bmatrix}d_{11} & d_{12} & d_{13} & d_{14} & d_{15}\\ d_{21} & d_{22} & d_{23} & d_{24} & d_{25}\\ d_{31} & d_{32} & d_{33} & d_{34} & d_{35}\\ d_{41} & d_{42} & d_{43} & d_{44} & d_{45}\\ d_{51} & d_{52} & d_{53} & d_{54} & d_{55}\end{bmatrix}\begin{bmatrix}\Delta ED_t\\ \Delta GDP_t\\ \Delta CPI_t\\ \Delta RIR_t\\ \Delta M2_t\end{bmatrix}+\begin{bmatrix}\delta_1 ECT_{t-1}\\ \delta_2 ECT_{t-1}\\ \delta_3 ECT_{t-1}\\ \delta_4 ECT_{t-1}\\ \delta_5 ECT_{t-1}\end{bmatrix}+\begin{bmatrix}\alpha_1\\ \alpha_2\\ \alpha_3\\ \alpha_4\\ \alpha_5\end{bmatrix}+\begin{bmatrix}\varepsilon_1\\ \varepsilon_2\\ \varepsilon_3\\ \varepsilon_4\\ \varepsilon_5\end{bmatrix}$$

Where, Δ is the lag operator, ECT refers to the error-correction term derived from long-run cointegrating relationship via the Johansen method, α_1, α_2, α_3, α_4, and α_5 are constants, and ε_1, ε_2, ε_3, ε_4 and ε_5 are serially-uncorrelated random error terms with means zero.

3.4. Further Analysis: VDCs and IRFs

The VECM only indicating the presence of Granger-causality of the dependent variable with the sample period but cannot provide the relative contributions of the explanatory variables in explaining the variation in the dependent variable beyond the sample period (Masih et al., 1997). Hence, we employed VDCs and IRFs developed by Sims (1980) to gauge the strength of the causal of the Granger-causal chain or degree of exogeneity amongst the variables beyond the sample period (Masih and Masih, 2001). The forecast error VDC allows inference over the proportion of movement in a time series due to its own shocks versus shocks to other variables in the system (Enders, 2015). A variable that is optimally forecast from its own lagged values will have all its forecast error variance accounted for by its own disturbances (Sims, 1982). It is carried out typically based on the moving average (MA) representation of vector autoregression (VAR(p)) process with p being the order of the VAR[2]:

$$y_t=\sum_{i=0}^{\infty}\Psi_s\varepsilon_{t-i}$$

On the other hand, IRF analysis is designed to determine how each endogenous variable responds to an earlier shock in that variable and to shocks in every other endogenous variable over time (Shan, 2002; 2009). In other words, this approach traces out the time path of various shocks on the variables contained in the VAR system. Similar to VDC, IRF is based on vector MA (∞) representation. The matrix ψ_s collects the marginal effects of the innovations in the system on to Y_{t+s}[3]:

2 The h-step forecast error for the y_t can be written as $y_{t-s}-y_t(s)=\sum_{i=0}^{\infty}\psi_s\varepsilon_{t+s-i}$, with y_t being the optimal h-step forecast at period t for y_t+s. It is straightforward to compute the total forecast error variance of a variable in y_t for the h-step forecast horizon and the corresponding shares of individual innovations to this variance (Lütkepohl, 2005).

3 The ψ_s is matrix consists of the row i, column j which identifies the consequences of one unit increase in the j^{th} variable's innovation at date t (ε_{jt}) for the value of the i^{th} variable at the time $t+s$ (y_{it+s}), holding all other innovations at all dates constant.

$\psi_s = \frac{\partial Y_{t+s}}{\partial \varepsilon_t'}$ where, $\psi_{i,j,s} = \frac{\partial y_{i,t+s}}{\partial \varepsilon_{jt}}$

The function that evaluates $\frac{\partial y_{i,t+s}}{\partial \varepsilon_{jt}}$ for all $s > 0$ is called the IRF, which describes the response of y_{it+s} to a one-time impulse in y_{jt} with all other variables dated t or earlier held constant.

3.5. Data Description and Empirical Model

Time series data spanning from 1976 to 2013 are utilized in this study. The sources of data from this study are obtained from World Bank. This paper concentrates on the macroeconomics determinants of the ED in Thailand and the Philippines. The following explanatory variables are used for this purpose: GDP (current GDP, USD), real interest rate (RIR), inflation (measured by the percentage change in the Consumer Price Index [CPI]), and money and quasi money (M2) to total reserves ratio (M2). Prior to the analysis, all variables are transformed into logarithm form. Thailand and the Philippines have faced several unstable economic scenarios during the last two decades especially during the Asian financial crisis. Hence, the issue of foreign indebtedness particularly the macroeconomic factors attributing to the ED become important. As for this case, the following model is specified for estimation purpose[4]:

$$ED_t = \beta_0 + \beta_1 GDP_t + \beta_2 RIR_t + \beta_3 CPI_t + \beta_4 M2_t + \varepsilon_t$$

4. EMPIRICAL RESULTS

4.1. Unit Root and Cointegration Test Results

The results of ADF and KPSS tests indicate that all variables are nonstationary at level form but are stationary in their first difference for both countries[5]. Therefore, the results suggest that all the variables have the same order of integration, that is $I(1)$. Since it has been determined that all the variables are integrated of order 1, then the cointegration test is implemented. Table 1 presents the results from the cointegration test. It is observed that for Thailand and Philippines, both the trace and maximum eigenvalue tests suggest the same conclusion – the presence of two cointegrating vectors. Therefore, rejecting the null hypothesis of no cointegration implies that the five variables do not drift apart and share at least a common stochastic trend in the long run.

4.2. Causality Results

Next, we proceed to VECM. The results are reported in Table 2. The findings suggest that the short-run adjustment appears to have fallen mostly on ED and CPI for the case of Thailand while ED and GDP for the Philippines. Exactly, in Thailand, the ED and CPI are the two equations in the system where the ECT is statistically significant; however in Philippines, the ED and GDP are the equations in the system where the ECT is statistically significant. This indicates that ED, CPI and GDP solely bear the brunt of short-run adjustment to bring about the long-run equilibrium in Thailand and the Philippines, respectively. This result is in line with the cointegrating relationship found earlier. Additionally, the ED, CPI and GDP equations act as the initial receptor of any exogenous shocks that disturb the equilibrium system. The t-statistic on the lagged residual is also statistically significant and negative supporting the JJ findings reported earlier. The coefficient of the ECT determines the speed of the temporal adjustment to the long-run equilibrium in the system which is represented by the cointegration relationship. In the case of Thailand, the adjustment is about 6.8% annually in ED equation and 1.2% annually in CPI equation, respectively. As for the Philippines, the speed of adjustment is shorter in relative to Thailand. The adjustment is about 43.2% and 67.7% annually in ED and GDP equations, which will respectively take around 2.5 and 1.5 years to adjust to the long-run equilibrium due to short-run shocks.

Table 1: Results of JJ cointegration test

Country	Null	Alternative	k=3, r=2			
			Max-Eigen value		Trace	
			Statistic	95% CV	Statistic	95% CV
Thailand	r=0	r=1	77.470**	30.440	138.275**	60.061
	r≤1	r=2	38.372**	24.159	60.805**	40.175
	r≤2	r=3	14.711	17.797	22.434	24.276
	r≤3	r=4	7.715	11.225	7.723	12.321
	r≤4	r=5	0.007	4.130	0.007	4.130
Country	**Null**	**Alternative**	**k=3, r=2**			
			Max-Eigen value		**Trace**	
			Statistic	**95% CV**	**Statistic**	**95% CV**
Philippines	r=0	r=1	40.273**	30.440	87.747**	60.061
	r≤1	r=2	26.012**	24.159	47.474**	40.175
	r≤2	r=3	14.062	17.797	21.462	24.276
	r≤3	r=4	7.191	11.225	7.400	12.321
	r≤4	r=5	0.209	4.130	0.209	4.130

**denotes statistically significant at 5% significance level. The k indicates the lag length and r indicates the number of cointegrating vector(s). JJ: Johansen and Juselius

On the causality front, it is evident from Panel A, Table 2 that there exist several direct causal linkages for Thailand: (1) RIR and CPI have a significant impact on ED (RIR → ED and CPI → ED); (2) ED causes M2 (ED → M2); and (3) GDP causes CPI (GDP → CPI). Additionally, we also observed that there is bilateral causal relationship between CPI and RIR (CPI ↔ RIR). Meanwhile, we examined the role of causing variables in the system. We sought for the causal chain that runs from GDP to CPI, to ED and finally to M2 (GDP → CPI → ED → M2). In other words, GDP causes M2 indirectly. These results are also suggestive of the significant interdependence between the five variables in the case of Thailand where GDP causes M2 and operates through the other three variables (GDP → CPI → RIR → ED → M2). Also, ED, CPI and RIR are interconnected to each other and form a circle of causality in the system.

Following by the results for the Philippines from Panel B Table 2, we found that the existence of direct causal linkages in the case of the Philippines where RIR and CPI are the cause for GDP (RIR → GDP and CPI → GDP); and ED and RIR are the cause for M2 (ED → M2 and RIR → M2). It is worth noting that GDP and M2 are associated bilaterally (GDP ↔ M2).

4 The model adopted from Lau et al. (2015) which examine the macroeconomic indicators for external debt in Malaysia.

5 Results for unit root tests are not provided in this paper for brevity but made available upon request.

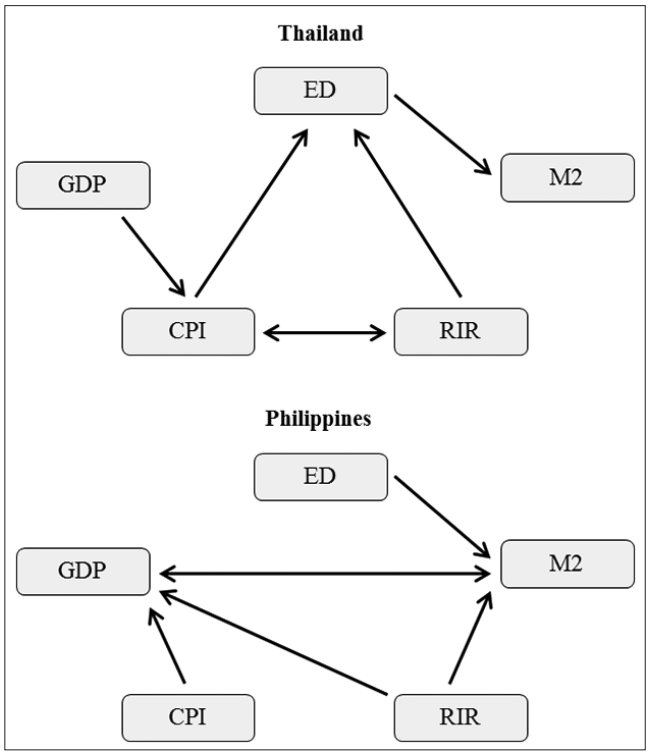
Table 2: Granger causality results

Dependent variables	χ^2 statistics					ECT	
	ΔED	ΔGDP	$\Delta M2$	ΔRIR	ΔCPI	Coefficient	t-ratio
Panel A: Thailand							
ΔED	-	6.542 (0.088)	6.006 (0.111)	16.742 (0.001)**	16.686 (0.001)**	−0.068**	−4.188**
ΔGDP	4.039 (0.257)	-	3.127 (0.372)	1.084 (0.781)	2.828 (0.419)	−0.020	−1.174
$\Delta M2$	11.764 (0.008)**	2.142 (0.543)	-	5.252 (0.154)	2.050 (0.562)	0.024	1.031
ΔRIR	2.459 (0.483)	1.218 (0.749)	2.006 (0.571)	-	8.888 (0.031)**	0.106	1.200
ΔCPI	5.849 (0.119)	13.432 (0.004)**	7.231 (0.065)	13.287 (0.004)**	-	−0.012**	−3.693**
Panel B: Philippines							
ΔED	-	5.385 (0.146)	2.660 (0.447)	2.773 (0.428)	3.501 (0.321)	−0.432**	−2.850**
ΔGDP	1.099 (0.777)	-	21.055 (0.000)**	16.736 (0.001)**	21.632 (0.000)**	−0.677**	−4.096**
$\Delta M2$	26.545 (0.000)**	11.516 (0.009)**	-	8.192 (0.042)**	6.512 (0.089)	2.069	3.293
ΔRIR	0.789 (0.852)	0.553 (0.907)	4.463 (0.216)	-	2.215 (0.529)	−3.400	−0.222
ΔCPI	1.410 (0.703)	0.876 (0.831)	7.588 (0.055)	1.099 (0.777)	-	−0.047	−0.277

The χ^2-statistic tests the joint significance of the lagged values of the independent variables, and the significance of the ECT (s); Δ is the first different operator; **Statistically significant at 5% level. ECT: Error correction term, ED: External debt, GDP: Gross domestic product, RIR: Real interest rate, CPI: Consumer price index

Apart from that, there are numerous indirect linkages among the variables observed in the case of the Philippines: (1) ED and RIR respectively cause GDP through causing variable M2 (ED → M2 → GDP and RIR → M2 → GDP); and (2) both RIR and CPI cause M2 and operate through GDP (RIR → GDP → M2 and CPI → GDP → M2). For All these causality interactions are portrayed in Figure 2.

Figure 2: Summary of short run causal linkages



4.3. Further Analysis: VDCs and IRFs

Table 3 provides the decomposition of the forecast error variances of each variable up to 50-year horizon. From the results, M2 appears to be the most exogenous variable in the system for both Thailand and the Philippines. It is observed that at the end of 50 years, only 28% and 58% of the forecast variance being explained by the remaining variables respectively in Thailand and the Philippines. Contrastingly, ED and CPI seem to be the most interactive and endogenous variables within the system for Thailand and the Philippines. The cumulative shocks at the end of 50 years are generally explained by external shock of about 98% (36% from GDP), (24% from RIR), (19% from CPI) and (19% from M2) in Thailand. Simultaneously in the Philippines, it is observed that about 87% of the forecast error variance of CPI can be explained by ED (2.6%), GDP (38%), RIR (34%) and M2 (13%). This provides for strong direct causality originating from GDP to ED in Thailand and from GDP to CPI in the Philippines.

As for the IRFs, given a system of five-dimensional variables, 20 possible scenarios of IRFs for each the variable taken separately, ignoring their own shocks is constructed. The visual IRFs are shown in Figures 3 and 4[6]. As this study seeks to examine the determinants of ED, it is crucial to analyze the response of the selected endogenous variables (GDP, M2, RIR and CPI) towards the ED beyond the sample period. It is observed that in Thailand, GDP and CPI responded negatively to the shock in ED, implying the existence of a negative relationship between GDP and CPI with ED. M2 and RIR responded positively to the shock in ED suggesting positive relationship between the former two variables with ED. While in the Philippines, only CPI responded positively to the shock in ED while RIR and GDP responded negatively to the shock in ED. It is noted that response of M2 to the shock in ED has greater fluctuation during the first 15 years and it responded positively to the shock in ED after that.

5. SUMMARY AND CONCLUSION

This study aims to investigate the determinants of ED in Thailand and the Philippines for the period 1976 to 2013 using several econometric procedures. The purpose is to circumvent some of the problem associated with an individual technique and to assess the robustness of the empirical results. Using the JJ

6 Figures 3 and 4 only reports the impulse response of GDP, RIR, inflation (CPI) and quasi money to total reserves ratio (M2) to shocks in ED for brevity but the full results are available upon request.

Table 3: VDCs

Percentage of variations in	Horizon (years)	Due to innovation in					
		ΔED	*ΔGDP*	*ΔRIR*	*ΔCPI*	*ΔM2*	*ΔCU*
Panel A: Thailand							
Years relative variance in: Δ*ED*	1	100.000	0.000	0.000	0.000	0.000	0.000
	12	17.099	44.048	12.305	17.209	9.340	82.901
	24	5.066	39.693	20.724	18.714	15.802	94.934
	50	1.804	35.894	24.492	18.812	18.997	98.196
Years relative variance in: Δ*GDP*	1	19.301	80.699	0.000	0.000	0.000	19.301
	12	8.650	36.225	28.345	10.646	16.134	63.775
	24	10.361	28.933	30.153	11.297	19.257	71.067
	50	11.404	25.587	30.784	11.609	20.616	74.413
Years relative variance in: Δ*RIR*	1	41.394	0.000	58.605	0.000	0.000	41.395
	12	37.791	3.257	44.931	5.839	8.182	55.069
	24	39.751	5.708	43.301	4.794	6.446	56.699
	50	41.361	9.522	40.957	3.595	4.565	59.043
Years relative variance in: Δ*CPI*	1	56.761	1.219	14.137	27.884	0.000	72.116
	12	18.830	16.910	39.349	9.538	15.373	90.462
	24	18.984	15.213	36.968	10.230	18.605	89.770
	50	18.675	14.767	35.833	10.686	20.039	89.314
Years relative variance in: Δ*M2*	1	0.233	2.727	0.063	14.137	82.840	17.160
	12	14.511	1.954	1.899	12.156	69.480	30.520
	24	13.690	3.027	1.124	11.195	70.965	29.035
	50	13.064	4.256	0.592	10.291	71.797	28.203
Panel B: Philippines							
Years relative variance in: Δ*ED*	1	100.000	0.000	0.000	0.000	0.000	0.000
	12	43.104	5.934	44.560	3.900	2.502	56.896
	24	39.578	6.498	47.027	4.272	2.625	60.422
	50	37.971	6.741	48.171	4.444	2.673	62.029
Years relative variance in: Δ*GDP*	1	0.208	99.792	0.000	0.000	0.000	0.208
	12	44.099	37.370	12.388	5.338	0.805	62.630
	24	54.219	32.675	7.597	4.331	1.178	67.325
	50	60.428	29.749	4.679	3.725	1.419	70.251
Years relative variance in: Δ*RIR*	1	4.647	13.894	81.458	0.000	0.000	18.542
	12	8.947	8.219	54.611	26.049	2.174	45.389
	24	8.035	6.220	42.511	40.457	2.777	57.489
	50	6.979	4.227	29.733	55.587	3.474	70.267
Years relative variance in: Δ*CPI*	1	1.350	12.379	54.719	31.552	0.000	68.448
	12	1.848	37.075	29.375	18.589	13.113	81.411
	24	2.384	37.520	32.760	14.284	13.052	85.716
	50	2.581	37.673	34.030	12.647	13.070	87.353
Years relative variance in: Δ*M2*	1	1.871	0.040	22.650	2.642	72.797	27.203
	12	2.572	30.595	31.584	2.010	33.239	66.761
	24	1.456	40.594	18.102	1.427	38.422	61.578
	50	0.763	47.351	9.322	1.046	41.519	58.481

Figures in the first column refer to horizons (i.e., number of years). VDC: Variance decompositions, ED: External debt, GDP: Gross domestic product, RIR: Real interest rate, CPI: Consumer price index

cointegration test, the results show the existence of a long-run relationship between the ED and the endogenous variables in both Thailand and the Philippines. Focusing on the short-run causality linkages, the results depict that inflation CPI and RIR are significant factors that determine the ED in Thailand in the short-run[7]. As for the Philippines, although there is no evidence of short-run linkages origin from GDP, CPI, RIR and M2 to ED, but the burden of short-run adjustment appears to have fallen mostly on GDP and M2 rather than on the other three variables. It is noteworthy that the results of dynamic analysis imply that M2 appears to be the most exogenous variables where it is highly influential towards the others for both countries. Contrastingly, ED and CPI are the most interactive and endogenous variables respectively in Thailand and the Philippines where these two variables are mostly explained by other variables in the long term period beyond the sample.

On the basis of results, the study has some policy suggestions. As a clear conclusion emerged from the empirical work, RIR will affect the ED directly and if the policy makers are to maintaining a suitable RIR as a rise in interest rates may also increase debt in the case of loans. Appropriate debt management strategy should be adopted by policy makers specifically enables early indication of possible risks resulting from the external borrowings to avoid from debt default risk. Finally, whether or not developing nations has past debt default episodes, they should have a comprehensive

7 It is evident that higher real interest rates lead to high debt service payments. As a result, little resources were left over for domestic investment which will hamper the economic growth subsequently and again lead to higher demand for external loans (Tiruneh, 2004).

Figure 3: Impulse response to shocks in external debt of Thailand

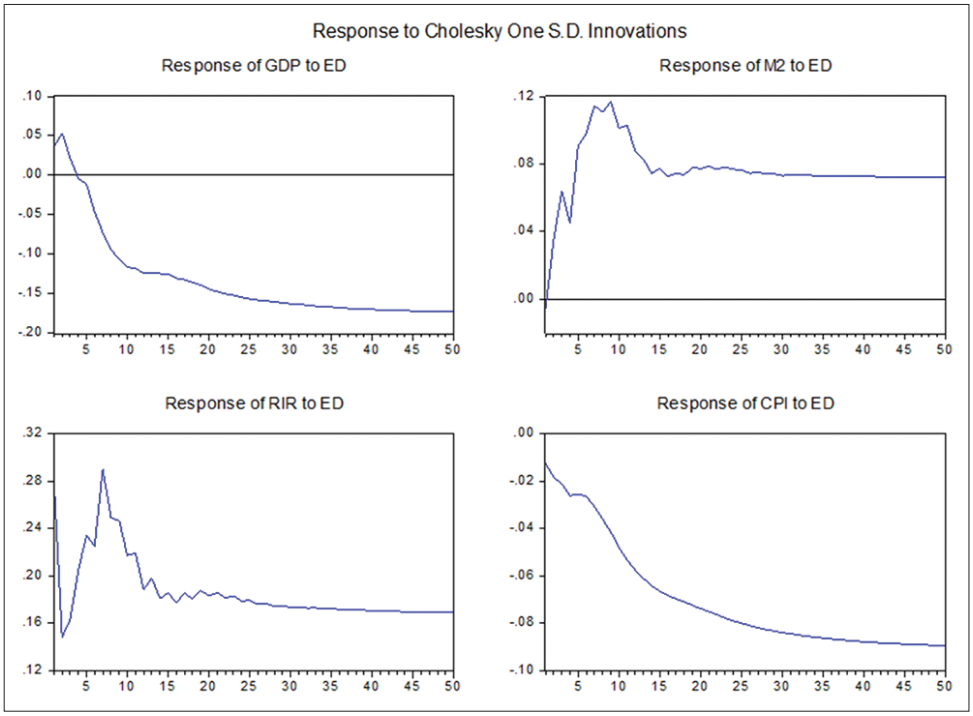
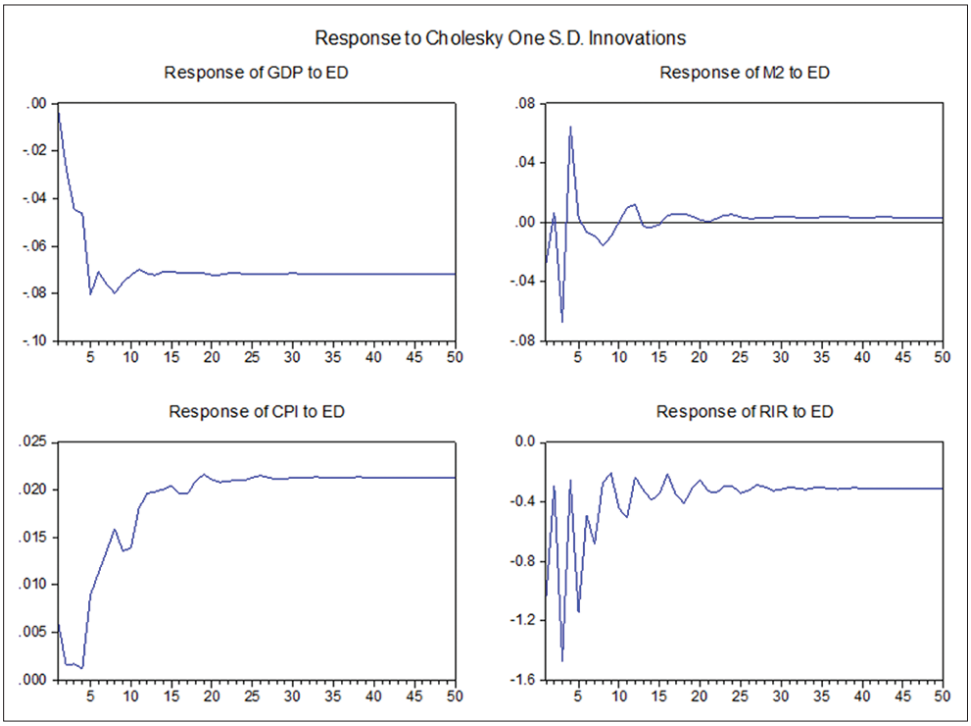


Figure 4: Impulse response to shocks in external debt of the Philippines. → and ↔ Denotes unidirectional and bidirectional causal relationships respectively



debt management strategy in safeguarding the fiscal solvency and debt positions in achieving debt sustainability.

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