Public Debt Reduction Efforts in South-East Asia – Which Strategy Works?[1]

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Abstract: Both the financial crisis of 2008/09 and the pandemic crisis of 2020 fostered a massive accumulation of government debt worldwide raising the question of how to reduce public debt successfully in the future. As different regions in the world require different fiscal strategies, we study debt reduction periods in ASEAN economies in order to assess the successful strategies in this region. Using annual data for the period 2000 to 2018, we use different specifications and estimate a logistic probability model to identify factors determining substantial public debt reductions in ASEAN economies. The findings of this paper suggest that robust GDP growth was a main driver for reducing public debt. Furthermore, revenue based consolidations seem to increase the likelihood of a substantial debt reduction in ASEAN economies more that expenditure based consolidations.

1. INTRODUCTION

Several economies in South-East Asia have made considerable progress in their economic performance during the past two decades. Striking elements of fostering economic growth in this region are political stability and sound fiscal positions attracting foreign investment flows into the region. Especially in emerging and developing economies, sustainable public finances are crucial in restoring investors' confidence in the creditworthiness of governments. Governments in South-East Asia have used different strategies over the past to reduce public debt. This raises the question, which have been the key determinants of substantial debt reductions in South-East Asia. The answer to this question can be used to make appropriate policy recommendations for future fiscal consolidation efforts in this region.

While several studies analyze fiscal consolidation efforts and successful debt reduction periods in Europe and the US (Afonso et al. 2006; Alesina and Perotti 1995; Nickel et al. 2010), there is a lack of literature that analyzes the driving forces of persistent and successful fiscal consolidation in South-East Asia. As different regions may require different economic policy measures to consolidate fiscal positions, it is of utmost importance to analyze the driving forces of successful and substantial debt reduction episodes

on a regional basis. Therefore, this paper analyzes the key determinants of substantial and long lasting public debt reductions in (Association of South-East Asian Nations) ASEAN countries during the period 2000 to 2018. We use a logistic probability model and different specifications in order to evaluate the factors that determine the likelihood of substantial debt reductions in this region.

The remainder of this paper is structured as follows: Section 2 presents some evidence on the development of public debt-to-GDP ratios in ASEAN countries. Section 3 includes a brief review of the literature. Section 4 explains our empirical methodology and presents the estimation results. Section 5 presents the main findings and offers some conclusions.

2. STYLIZED FACTS

The development of government debt in ASEAN countries over the past years shows an ambiguous picture. While in some countries debt-to-GDP ratios have risen considerably over the past two decades, other countries experienced a substantial reduction in government debt. Table **1** illustrates the evolution of debt-to-GDP ratios in ASEAN countries during the period 2000 to 2018. In 2000, debt-to-GDP ratios ranged from virtually zero in Brunei to over 135 percent in Myanmar. In fact, Brunei exhibited almost no indebtedness over the past decades and only started to accumulate very moderate debt levels in recent years.

In 2005, the average debt-to-GDP ratio of ASEAN countries was about 54 percent and, thus, well below the debt levels of many developed economies. The average debt-to-GDP ratio

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even declined in recent years to about 46.2 percent in 2018. This development is a reflection of the successful debt reduction efforts that many ASEAN countries undertook during this period. For example, Myanmar reduced its debt-to-GDP ratio during the period 2000 to 2018 by almost 100 percentage points. Other countries also made remarkable progress in the reduction of their public debt. Indonesia reduced its debt-to-GDP ratio from 87.4 percent in 2000 to 30.1 percent in 2018. In the Philippines, the debt-to-GDP ratio declined during the same period by 22.2 percent to less than 40 percent. In other cases, government debt has substantially risen. For example, the debt-to-GDP ratio in Malaysia was 32.5 percent in 2000. By 2018, it had risen to almost 55.6 percent. In Singapore, the debt-to-GDP ratio increased from 82.3 percent in 2000 to 113.6 percent in 2018.

Table 1. Evolution of Public Debt to GDP Ratio.

Asean Country	2000	2005	2010	2015	2018
Brunei Darussalam	0.00	0.00	1.11	2.95	2.59
Cambodia	35.24	35.56	28.74	31.16	28.64
Indonesia	87.44	42.61	24.53	27.01	30.09
Laos	n/a	73.20	49.32	53.05	57.19
Malaysia	32.52	40.78	51.21	56.97	55.57
Myanmar	135.31	105.57	50.24	37.10	38.16
Philippines	61.14	67.40	49.68	41.49	38.92
Singapore	82.26	92.66	98.67	102.28	113.63
Thailand	57.83	45.46	39.83	42.56	42.08
Vietnam	31.43	36.54	48.08	57.10	55.56

Source: World Economic Outlook, IMF.

Given the sizeable and persistent debt reductions in some ASEAN countries during the considered period, we empirically study the driving forces of substantial government debt-to-GDP declines in this region.

3. LITERATURE OVERVIEW

Previous analyses on successful public debt reductions have mainly focused on advanced economies in Europe and the US. To some extent this can be attributed to better data availability but also to the vivid policy discussions in these countries in the course of rising debt levels during the global economic and financial crisis of 2008/2009. However, the apparent lack of attention for debt reduction strategies in South-East Asia is still somewhat surprising, given the considerable level of public debt in some ASEAN countries and the broad agreement on the negative effects of persistently high public debt-to-GDP ratios – especially in developing and emerging countries. The question whether the public debt level is sustainable and, ultimately, allows the country to orderly refinance its debt in the credit market is indeed

especially relevant in the context of developing countries (Bohn 1995, 2008; D'Erasmo et al. 2015). This might be the case, because creditors and the interest rates they charge on government debt might react especially sensitive to increasing debt levels in the institutional and economic context of developing countries (Small et al. 2020).

Furthermore, the literature on the growth effects of public debt might have especially significant implications for developing countries (Poirson et al. 2002; Moor and Thomas 2010). This is the case because for capital-scare developing countries borrowing from abroad can help to overcome domestic financial constraints but once the debt levels become unsustainable, it can also hamper investment and growth (Moor and Thomas 2010). Poirson et al. (2002) find a negative and non-linear relationship between the external indebtedness of developing countries and growth. The authors argue that the channel for this non-linear relationship is through investment. Based on a growth model, where capital accumulation is driving growth, the authors argue, that at low levels of indebtedness foreign capital drives growth in capital-scare developing countries. However, with rising debt levels the likelihood that the country's debt remains sustainable decreases and expectations that the debt service will be financed by explicit or implicit taxation, for instance in form of high inflation, increases and discourages productive investment.

Afonso et al. (2006) focus on fiscal consolidation, i.e., fiscal policies aimed at reducing public debt in Central and Eastern European countries before the accession to the EU. In particular, they analyze the factors that determine the probability of successful fiscal consolidation. Using logistic regression models and annual data from 1991 to 2003, the authors find that expenditure-based consolidations increase the likelihood of a successful consolidation, while revenue-based fiscal consolidation seems to be less successful. Nickel et al. (2010) confirm the finding that fiscal consolidation associated with a reduction in government expenditure that is a main driver of major debt reductions. Using data on gross public debt-to-GDP ratios for the EU-15, the authors identify 59 episodes of major debt reductions defined as a decline in the debt-to-GDP ratio by more than ten percentage points in five consecutive years. Using this definition, the authors find that efforts of fiscal consolidation that focus on a decrease in government expenditure increase the likelihood of a successful public debt reduction. In contrast, revenue-based consolidation does not seem to contribute to major debt reductions to the same extend. Furthermore, the authors find that robust GDP growth and a high interest rate burden on government debt are factors that raise the likelihood of a successful major debt reduction in EU countries.

In an analysis of 25 emerging market economies during the period 1980 to 2001, Clements et al. (2004) investigate the variables that led to successful fiscal consolidation, i.e., an improvement of the general government primary budget balance. The authors consider the timing of the adjustment and find that fiscal consolidation, for which countries achieved the decline of the deficit during the second half of the period of deficit reductions, had the highest likelihood of success. Their results also suggest that the probability of fiscal sustainability, defined as a public debt-to-GDP ratio that does

not increase, rises if fiscal consolidation stems from expenditure cuts.

A paper by Bernardini et al. (2019) using a global set of countries identifies episodes of major debt reductions and analyzes certain policies that were associated with these periods. Bernardini et al. (2019) analyze debt-to-GDP ratios in 23 developed countries since World War II and identify 30 major debt reductions, which they define as episodes, in which the public debt-to-GDP ratio fell by more than 25 percent. The authors provide an empirical taxonomy that allows classifying and categorizing these cases according to certain policy approaches to debt reduction. Using this procedure Bernardini et al. (2019) find three main policy approaches through which countries in the past had successfully reduced their public debt-to-GDP ratio by more than 25 percent. First, a common approach in the years after World War II, which successfully reduced debt, was inflation. Second, in the 1950s, the 1960s and the 1970s, governments used economic growth, moderate levels of inflation, and financial repression to reduce public debt.[2] Third, a more recent approach to debt reduction, which was successful in the 1980s, the 1990s and early 2000s, lies in the improvement of the primary balance by raising tax rates or cutting spending, i.e., fiscal consolidation. The authors identify for nine European countries, as well as for New Zealand and Canada, episodes of major debt reductions, which they attribute to improvements of the primary balance. The average yearly primary surplus during the episodes of major debt reductions ranged between 2.1 percent of GDP in the Netherlands to 6.3 percent of GDP in Norway. After an evaluation of the policy options, Bernadini et al. (2019) conclude that the only feasible option to reduce the debt-to-GDP ratio is to run a sufficiently high primary surplus. However, compared to Afonso et al. (2006) and Nickel et al. (2010), the paper does not distinguish between expenditure-based and revenue-based fiscal consolidation.

Yartey et al. (2012) examine the factors that are associated with debt reduction periods in a global set of countries but use their findings to draw policy recommendations for developing countries in the Caribbean. Before the global financial and economic crisis of 2008/2009, Caribbean countries accumulated high levels of public debt relative to GDP, which further increased during and after the crisis, given a sharp reduction in growth in these largely tourism-dependent countries. The authors analyze data for 155 developed and developing countries for the years 1970 to 2009 in order to identify episodes of debt reductions, during which governments achieved a decline in the debt-to-GDP ratio by at least 15 percentage points. Using this definition, there are 206 episodes of large debt reductions with an average reduction of 35 percentage points in the debt-to-GDP ratio. The authors apply an event study approach as well as logistic regressions and find that an increase of the cyclically adjusted

primary balance is associated with the probability of a successful major debt reduction. In addition, increases in GDP and a high interest rate burden are positively associated with the probability of a major debt reduction. The authors conclude that fiscal consolidation efforts that focus on a decline in government expenditure and efforts of countries to boost their economic growth are the main drivers of major debt reductions.

Small et al. (2020) exclusively focus on developing countries when analyzing the relationship between public debt and fiscal policy. The question the authors pose is different from the before mentioned papers. While the academic literature has so far examined the questions of what factors determine successful major public debt reductions, Small et al. (2020) address the question of how changes in the debt-to-GDP ratio influence the fiscal policies of countries. Using data of 53 developing countries for the years 1990 to 2017 and a dynamic difference GMM approach that includes a lagged dependent variable as a regressor the authors estimate the effects of changes in the ratio of debt to GDP on the primary fiscal balance. Their main finding indicates that developing countries react with an improvement of the primary balance to increases in the debt-to-GDP ratio. These improvements of the primary balance are driven by both increased revenues and decreased expenditure. However, the paper also indicates that with rising debt levels the adjustment occurs increasingly asymmetrically with larger adjustments on the revenue side.

4. EMPIRICAL ANALYSIS AND RESULTS

4.1. Identifying Periods of Substantial Public Debt Reduction

As the aim of this paper is to analyze the determinants of substantial reductions of government debt in the ASEAN economies, we focus on the development of gross government debt-to-GDP ratio for the period 2000 to 2018. We split our sample into three categories: The first category considers episodes, during which the annual change of gross government debt as a ratio of GDP ratio was not negative. The second category covers episodes, during which the annual change of gross government debt as a ratio of GDP ratio was negative and the third category covers episodes, during which this ratio declined by at least 10 percentage points in five consecutive years. As in Nickel et al. (2010), we define the episodes of the third category as substantial debt reduction periods. This definition of a substantial debt reduction allows us to capture only those periods of debt reductions that can be regarded as sizeable and persistent. Given the persistently low debt-to-GDP ratio in Brunei and, thus, the limited room for debt reductions we exclude Brunei from the data set that we use in the empirical analysis.

Table **2** lists the periods, for which we identify substantial debt reductions for individual ASEAN countries during 2000 to 2018. Six out of nine countries experienced a period of a substantial debt reduction. The longest period of a substantial debt reduction occurred in Myanmar over the years 2002 to 2015, during which the debt-to-GDP ratio declined by incredible 174.2 percent. Indonesia and Laos also experienced sizeable debt reductions of 64.5 percent in Indonesia

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[2] Financial repression refers to a broad range of administrative measures and policies that intend to keep borrowing costs for governments lower than in absence of these measures. Such measures include, for instance, caps on interest rates, restrictions on the international movement of capital or requirements for banks to invest in domestic government bonds (Zimmermann und Baier 2012).

and 52.3 percent in Laos during the considered time span. We identify only one substantial debt reduction that spans over five years, namely, Cambodia. During the period 2004 to 2008, Cambodia managed to reduce public debt by 16.1 percent. In contrast and according to our definition, we cannot identify any substantial debt reduction periods in the countries, Malaysia, Singapore, and Vietnam.

Table 2. Substantial Debt Reduction: At Least Ten Percentage Points in Five Consecutive Years.

Asean Country	Period of Substantial Debt Reduction	Government Debt-to-GDP ratio		Change in Public Debt-to-GDP Ratio
		Peak	Trough	
Cambodia	2004 - 2008	43.10	27.00	16.10
Indonesia	2001 - 2012	87.44	22.96	64.48
Laos	2003 - 2011	95.31	43.01	52.30
Malaysia	-	-	-	-
Myanmar	2002 - 2015	211.26	37.10	174.15
Philippines	2004 - 2011	74.06	47.48	26.58
Singapore	-	-	-	-
Thailand	2001 - 2008	57.83	34.95	22.88
Vietnam	-	-	-	-

Source: World Economic Outlook, IMF, and own calculations.

4.2. Debt Dynamics and Contributing Factors

We can decompose the change in government debt-to-GDP ratio into its components in the following way (e.g. Perotti et al. 1998).

$$B_t = -PB_t + \left(\frac{r_t - g_t}{1 + g_t}\right)B_{t-1} + dda \qquad (1)$$

B denotes the ratio of general government gross debt to GDP; PB is the primary balance (fiscal balance excluding interest payments) in percent of GDP, r is the interest rate, g is the GDP growth rate, dda is the debt-deficit adjustment, and t indicates the period. Given this decomposition, governments have a limited amount of options to reduce public debt.

One option is to cut expenditure and/or increase revenues and, thereby, generate primary surpluses to lower the debt levels. Another option is to adjust economic policies to promote economic growth and adopt structural measures other than revenue and expenditure, through which confidence in public finances rises. The latter would lead to a decline in public debt via lower long-term interest rates and, thereby, lower interest payments for the government. Inflation and debt-deficit adjustments, resulting for example from privatization or exchange rate changes represent yet another option to lower public debt. However, the positive effects of these policies on public debt seem to be limited, here. Inflation, for instance, can only have a one-off effect, as it would lead to a decline in public debt because of an unexpected increase of the price level in the considered economy. Once economic agents adjust expectations about the price development, market participants will adjust their yield expectations. Subsequently interest payments for the government will increase. Besides, inflation might lead to unanchored inflation expectations and to a loss in central bank independence and credibility. Hence, debt reduction via inflation might lead to economic instability.

With respect to debt-deficit adjustment the effects on debt developments seem to be limited for two reasons. First, there are obvious limits to the accumulation of financial assets via privatization. Second, lowering public debt via exchange rate changes leads to adverse economic effects in the economy. Assuming public debt is mainly issued in the foreign currency, which is often the case in developing and emerging economies, a reduction in public debt would require an appreciation of the domestic currency. The appreciation of the domestic currency would be associated with adverse economic effects harming growth (Bordo et al. 2010).

Table 3. Contributing Factors to Substantial Public Debt Reduction Periods.

Country	Period of Substantial Debt Reduction	Average Change in Debt ratio	Average Change in Expenditure Ratio	Average Change in Revenue Ratio	Average Real GDP Growth	Average Implied Interest Rate	Average Inflation Rate
Cambodia	2004 - 2008	-3.8	-1.7	1.2	11.8	n/a	5.1
Indonesia	2001 - 2012	-7.9	0.5	0.6	5.1	10.0	9.5
Laos	2003 - 2011	-7.9	-0.3	0.0	7.4	n/a	8.9
Myanmar	2002 - 2015	-15.2	0.4	0.5	9.8	10.7	18.2
Philippines	2004 - 2011	-4.8	-0.6	0.1	6.2	6.4	5.4
Thailand	2001 - 2008	-10.2	0.0	0.7	5.8	4.6	2.1

Source: World Economic Outlook, IMF, and own calculations.

Table **3** presents some contributing factors to substantial debt reductions in the individual ASEAN countries. The average change in the debt-to-GDP ratio during the substantial debt reduction period ranged from -3.8 percent in the case of Cambodia in 2004 to 2008 to -15.2 percent in the case of Myanmar in 2002 to 2015.

While substantial debt reductions were accompanied in all cases by no changes or positive changes in the average revenue ratio, the picture for the average expenditure ratio is rather inconclusive. Some countries, like Cambodia, Laos and the Philippines reduced government spending mainly during the debt reduction period. Other countries, like Indonesia and Myanmar, increased spending during the fiscal consolidation period.

Further, substantial debt reductions occurred in all cases in times of strong GDP growth. For instance, GDP grew by 11.8 percent on average in Cambodia during the debt reduction period of 2004 to 2008 and by somewhat 10 percent in Myanmar during the debt reduction period of 2002 to 2015. Indonesia still grew on average by 5.1 percent during the substantial debt reduction period. It represents the country with the lowest average real GDP growth in our sample.

The debt reduction periods were accompanied by, on average, high inflation rates. In Myanmar, the average inflation rate was around incredible 18 percent during the substantial debt reduction period from 2002 to 2015. Except for Thailand, which had an average inflation rate of close to 2 percent during the substantial debt reduction period, all the remaining countries experienced an average inflation rate beyond 5 percent.

4.3. Estimation Strategy

We now examine whether and to what extent the factors discussed above contributed to a substantial debt reduction in the South-East Asia. In line with the analysis of Nickel et al. (2010), our estimation is based on a binary choice technique using a logistic probability model. Using data for the period 2000 to 2018 we estimate the probability of a decline in the debt-to-GDP ratio by a minimum of 10 percentage points during a period of 5 consecutive years, given information about the fiscal position and the economic growth environment.[3]

We use panel data of debt reduction years during the period 2000 to 2018 and estimate a logistic probability model with

$$P_i = E\big[S=1|Z_i\big] - \frac{e^{Z_i}}{1+e^{Z_i}} \qquad (2)$$

Here, $E\big[S=1|Z_i\big]$ represents the conditional expectation of a successful debt reduction, given Z_i, with

$$S = \begin{cases} 1, if\ debt\ reduction\ is\ substantial \\ 0, if\ debt\ reduction\ is\ modest \end{cases} \qquad (3)$$

Equation (3) represents the conditional probability of a substantial debt reduction, given Z_i defined as

$$Z_i = \beta_0 + \beta_1 fis_i + \beta_2 rev_i + \beta_3 trendg_i \qquad (4)$$

where fis_i is defined as the sum of the fiscal balance of the two years preceding the debt reduction period. We use this to control for the fiscal stance, because a positive fiscal impulse might lead to a more substantial and long-lasting debt reduction period. The regressor rev_i represents a dummy variable controlling the composition of the fiscal adjustment. It is constructed as follows:

$$Rev_t = \begin{cases} 1, if\left(\dfrac{\Delta \mathrm{Re} v_t}{\Delta bb_t}\right) > \lambda \\ 0, otherweise \end{cases} \qquad (5)$$

We define a fiscal adjustment process as revenue-based in case that at least λ percent of the change in the budget balance in percent of GDP (bb) is attributable to revenue enhancements. The variable $trendg_i$ represents the trend growth computed by applying, for each country under consideration, a Hodrick-Prescott-Filter to the GDP growth data. The variable is supposed to capture the business cycle effects on public debt developments.

Further, to underline the robustness of the results, we also run regressions replacing the revenue dummy by an expenditure dummy.

$$Z_i = \beta_0 + \beta_1 fis_i + \beta_2 exp_i + \beta_3 trendg_i \qquad (6)$$

We define the expenditure dummy in an analogous way to the revenue dummy.[4]

4.4. Estimation Results

Table **4** shows the results of estimating equations (4) and (6). The results are based on non-zero between cluster error terms, which correct for the potential heterogeneity between the independent debt reduction periods. Therefore, the observations can be considered as independent across clusters of episodes that followed each other over a longer period, but they are not necessarily independent within clusters episodes.

Our findings suggest that especially the trend GDP growth is a striking factor that contributes to the success of substantial public debt reduction. The result is robust to different specifications of the model and significant at a five percent significance level. According to our results, a one-percentage point increase in trend GDP growth raises the probability of a substantial debt reduction by between seven and eight percentage points. In line with Nickel et al. 2010 and Bernardini et

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[3] Alternative definitions of a substantial debt reduction period (i.e., defining a substantial debt reduction as a decline in government debt-to-GDP ratio by at least 5 percentage points in 5 consecutive years or a decline in government debt-to-GDP ratio by a minimum of 10 percentage points in four consecutive years) do not lead to significant changes of the estimation results.

[4] We define the expenditure dummy as $Exp_t = 1, if\left(\dfrac{\Delta Exp_t}{\Delta bb_t}\right) > \alpha$ and 0 otherwise.

al. 2019, we find that promoting real growth helps econo-mies to consolidate public finances.

Table 4. Estimation Results.

	Threshold for the Dummy Variable			
	λ = 70		λ = 60	
	1	2	1'	2'
Fiscal impulse	-0.02	-0.02	-0.03	-0.03
	(0.04)	(0.03)	(0.03)	(0.03)
	[-0.02]	[-0.01]	[0.00]	[0.00]
Revenue		**0.53*****		0.66
		(0.20)		(0.42)
		[0.18]		[0.19]
Expenditure	-0.26		-0.35	
	(0.19)		(0.42)	
	[-0.10]		[-0.09]	
Trend growth	**0.29****	**0.27****	**0.30****	**0.30****
	(0.12)	(0.12)	(0.12)	(0.12)
	[0.08]	[0.07]	[0.08]	[0.08]
Constant term	**-1.14*****	**-0.94****	**-0.67****	**-0.81****
	(0.31)	(0.38)	(0.34)	(0.35)
No. of observations	93	93	93	93
No. of substantial reduction episodes	56	56	56	56

Note: The table shows the results of estimating equations (4) and (6). Data used are from World Economic Outlook, IMF; *** and ** indicate statistical significance at the 1 percent and 5 percent level, respectively. Values in parentheses show standard errors. Values in brackets show the marginal change in the probability of success for the average values of the independent variables (dP/dZ). In case of dummy variables, the marginal changes refer to the discrete change from 0 to 1.

Our findings also indicate that the type of the fiscal adjustment is crucial for the success of a debt reduction. More specifically, a revenue-driven consolidation in countries, which we study in this paper, seems to lead to a successful debt reduction. Throughout the analysis, the revenue dummy shows the expected sign and, in model 2, it turns out to be statistically significant. This shows that the change of the revenue dummy form 0 to 1 raises the probability of a substantial debt reduction by almost 20 percent. However, the expenditure dummy does not turn out to be statistically significant in our analysis. This suggests that revenue increases are more likely to contribute to fiscal consolidation in ASEAN economies, while expenditure cuts do not lead to the preferred outcome. This outcome is particularly interesting, as it might be an indication for the lower degree of adverse effects of the tax multiplier on output if compared to

the magnitude of the government spending multiplier. Therefore, the negative effects on GDP in case of a revenue driven consolidation might be smaller than in case of an expenditure driven consolidation leading to a more substantial decline in the debt-to-GDP ratio. The control variable fiscal impulse turns out to be statistically insignificant. Since we construct this variable as the sum of the fiscal balance during the two years preceding the debt reduction period, one possible interpretation of the outcome might be that other factors rather than the expectation channel of political efforts are more likely to contribute to successful fiscal consolidation.

It should be noted that our approach is a panel analysis and thereby ignores country-specific structures and country-specific developments during the period examined here. For example, budget concerns can be very different across ASEAN countries. Myanmar and Laos may need more public expenditure in infrastructure and education, while Singapore does not. Similarly, the period 2000 to 2018 included some significant developments in some of the countries for example the 2004 Indian Ocean earthquake and tsunami, that may have put an enormous fiscal burden on heavily affected countries like Indonesia and Thailand, while several other ASEAN countries were much less affected. These differences are difficult to capture. Therefore, our analysis does not include these differences, but this means that there could be some effects relevant for our analysis that we do not consider.

5. CONCLUSIONS

Following the global financial crisis of 2008/09, a number of countries have accumulated high government debt-to-GDP ratios raising the question of how to reduce public debt successfully in the future. As different regions, require different economic policy measures to consolidate fiscal positions, it is of utmost importance to analyze the driving forces of successful and substantial debt reduction episodes on a regional basis. This paper analyses the determinants of substantial debt reduction periods over the time span 2000 to 2018 for ASEAN economies. We apply a logistic probability model with different specifications and find that especially real growth seems to be a striking factor for a successful and substantial debt reduction in this region. Besides, our results indicate that revenue-based consolidations increase the likelihood of a substantial debt reduction. The findings do not change with alternative thresholds applied for the fiscal consolidation dummies.

A positive real trend growth seems to contribute significantly to a substantial and long lasting debt reduction period in the ASEAN countries. According to our results, an increase of trend GDP growth by one percentage point increases the probability of a substantial debt reduction by between 7 and 8 percent. This emphasizes that economic and structural policies that focus on supporting GDP growth are essential to curb debt levels down in this region. Further, our results point towards the importance of the structure of the fiscal adjustment. Revenue driven consolidations seem to be more successful in lowering public debt substantially than expenditure driven consolidations. This outcome is particularly interesting, as it might be an indication for the lower degree of adverse effects of the tax multiplier on real output if com-

pared to the magnitude of the government spending multiplier. Therefore, the negative effects on GDP in case of a revenue driven consolidation might be smaller than in case of an expenditure driven consolidation leading to a more substantial decline in the debt-to-GDP ratio. In this respect, our results represent a starting point for further research. In the next step, it would be interesting to analyze which revenue components have a stronger effect on a substantial debt reduction.

CONFLICT OF INTEREST STATEMENT

The authors declare that they have no conflict of interest.

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