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October 10, 2017

Approved By
Asia and Pacific Department

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SPILLOVER EFFECTS FROM UNITED STATES POLICY SHIFTS AND LOWER GROWTH IN CHINA[1]

The Philippines trade and financial exposures to the United States and China are more moderate than the more open ASEAN neighbors, albeit with the role of China rising recently. Thus, the potential spillovers from policy shifts in the United States and lower growth in China is expected to be more modest in the Philippines, although historically U.S. financial spillovers had a large impact, perhaps reflecting the shallower financial depth. From a more forward looking perspective, we assess potential spillover effects to the Philippines under the following three illustrative scenarios: (a) monetary policy normalization in the United States, (b) a lower growth path in China owing to the materialization of downside risks, including tighter domestic funding conditions (IMF, 2017b), and (c) a deficit-financed fiscal expansion in the United States through reduced labor and corporate income taxes and increased infrastructure spending (IMF, 2017a).

A. Introduction

1. We consider two main channels through which U.S. policy shifts and a slowdown in China can affect the Philippines: trade and financial markets.[2] Trade is likely the most important channel as the United States and China are key trading partners not only in goods, but also in services such as business process outsourcing (BPOs), remittances and tourism (Figure 1). The destinations of merchandise exports have changed during the past decade as the weight of the United States has fallen while those of Asian countries, especially China, Hong Kong SAR and Japan have risen. However, the share of exports to the United States has remained significant, mainly related to electronic exports. BPO exports have shown rapid growth, with the Philippines becoming the call center (voice) capital of world with export receipts approaching $20 billion or nearly as large as remittances from overseas Filipino workers (OFWs). More important, BPOs have fueled service export growth and domestic value added employing about 1 million workers and creating demand for office space and nearby condominiums. Remittances remains relatively stable and the largest source of external finance, albeit moderating in importance. The share of remittances from the United States remains large, notwithstanding most of the OFWs being employed in Saudi Arabia and UAE. The financial channel is also important, especially through spikes in global financial volatility but the external liabilities of the Philippines are relatively low. Direct financial spillovers

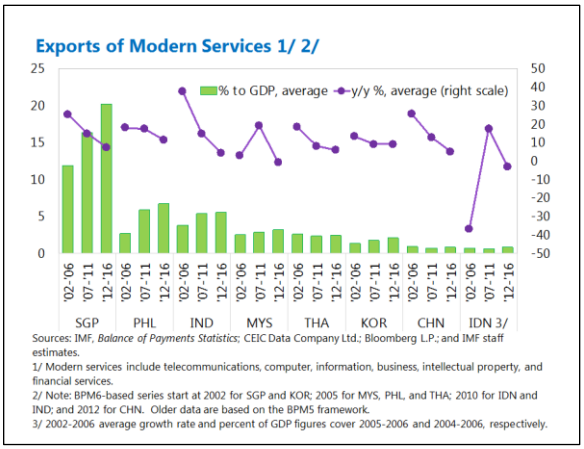
[1] Prepared by Shanaka Jayanath Peiris and Minsuk Kim (both APD). The authors would like to thank Mia Agcaoili and Khristine Racoma (IMF Resident Representative's Office) for their excellent research support and Dirk Muir (APD) for his valuable inputs and guidance on model simulation.

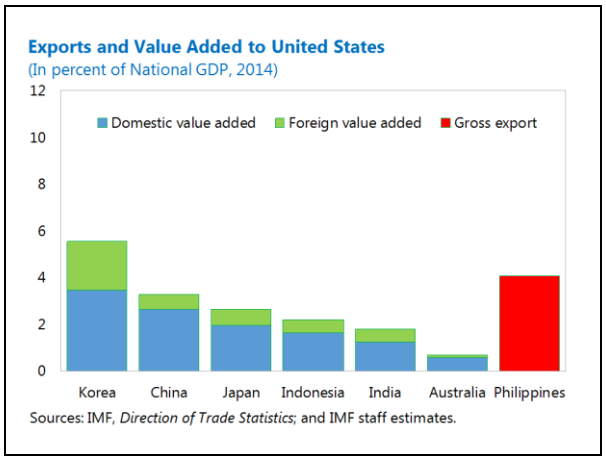
[2] Spillovers from global commodity prices are expected to be positive for net commodity importers like the Philippines but relatively small given the low energy intensity of the Philippine economy. The full pass-through of petroleum prices given the liberalized fuel pricing market is inflationary but energy is only 6 percent of the CPI basket. Thus, this paper controls for the impact of global commodity prices rather than assessing it as a separate channel. See Dizioli and others (2016) for the limited role of global commodity prices in the Philippines in conjunction with shocks to China.

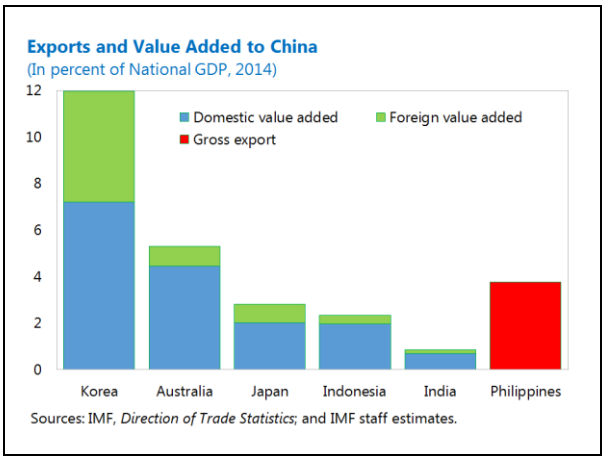
from the United States are significant, mainly through FDI and cross border bank lending, while direct financial links with China are currently limited (Dizioli and others, 2016).

Trade in Goods and Services

2. The Philippines has significant trade exposures to the United States and China. Given Asia's supply chains, trade openness as a share of nominal GDP may be misleading due to large re-exports and processing trade. Thus, value-added trade provides a complementary perspective. Although data on valued-added merchandise exports are not available for the Philippines, the exposures to the United States and China appear significant, with a share of exports less than the more open economies of Korea, Malaysia, Thailand and Vietnam but larger than the more closed Asian economies of India and Indonesia (Figure 1). Value added trade data on service exports is not available for the Philippines, but the share of modern service exports in GDP and growth captures the booming IT-BPO sector, which is an important source of productivity growth and output. Anecdotal evidence suggests that about 80 percent of BPO revenues are destined to the United States, highlighting vulnerability to potential changes in U.S. policies, particularly to the outsourcing sector.



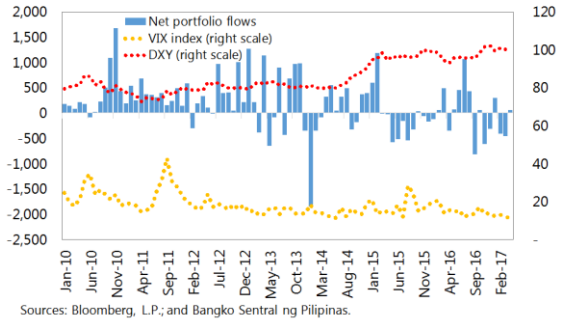




Financial Linkages and Spillovers

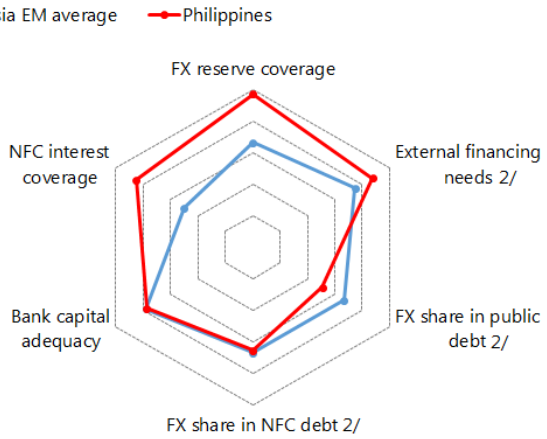
3. Portfolio flows to the Philippines is closely related to the VIX and, more recently to U.S. dollar strength, as in the rest of the ASEAN-5. Portfolio outflows in response to the taper tantrum in 2013, China equity market sell-off in 2015, and the U.S. Presidential election has been sizeable with asset prices reacting in tandem (Figure 2). In general, equity prices and the exchange rate in the Philippines has been more sensitive than regional peers, while sovereign and corporate debt spreads have been more resilient. This could be related to the relatively high foreign exposure in the equity market (about 50 percent of daily volumes) and low foreign participation in the local currency bond market (about 7 percent of stock). The exchange rate has been acting as a shock absorber with market implied sovereign risks remaining low, perhaps due to the Philippines' low vulnerabilities.

BSP-Registered Foreign Portfolio Investment Transactions and External Factors
(In million U.S. dollars)



Sources: Bloomberg, L.P.; and Bangko Sentral ng Pilipinas.

Philippines: Selected Vulnerability Indicators 1/



Sources: IMF, *Vulnerability Exercise* database; and IMF staff estimates.
1/ The diagram is designed to show decreasing vulnerability from the center to the periphery. The indicator values are based on staff estimates of 2015 for the nonfinancial corporate interest coverage and 2016 for all the other indicators. The indicators are defined as follows: Foreign exchange reserve coverage is the official foreign exchange reserves in percent of the IMF Assessing Reserve Adequacy metric; the external financing requirement is the short-term debt plus the long-term amortization paid plus the current account balance in percent of GDP; Foreign exchange share of nonfinancial corporate/public debt is the share of foreign exchange denominated debt in total nonfinancial corporations /general government debt; the bank capital adequacy ratio is the banking system capital in percent of total risk-weighted assets; and nonfinancial corporate interest coverage is the ratio of total nonfinancial corporation earnings before interest and taxes (EBIT) to interest payments due. The minimum and the maximum axis values for each indicator are 0 and the cross-country distribution average plus one standard deviation in 2016 (2015 for nonfinancial corporate interest coverage), respectively.
2/ Inverted axis with the maximum axis value at the center and the minimum at the periphery.

B. Asset Price Spillovers

Equity Prices

4. This section uses a spillover index developed by Diebold and Yilmaz (2014) to analyze the interdependence of asset returns and volatilities in the ASEAN-5, China and the United States The index quantifies the contribution of shocks from one country's asset returns and volatilities to another's at different points in time. The time-varying spillover index is obtained as the generalized impulse responses, which are derived using two lags in the vector auto regression estimation and a 150-day rolling window. Because the generalized impulse response functions and variance decompositions are invariant to the ordering of the variables, four key indicators are derived from the approach: (1) gross shocks transmitted by one country to all other countries (outward spillovers); (2) gross shocks a country receives from all others (inward spillovers); (3) the net contribution of the country to the gross shocks (net spillovers) and (4) the evolution of the shocks overtime (dynamic total connectedness).

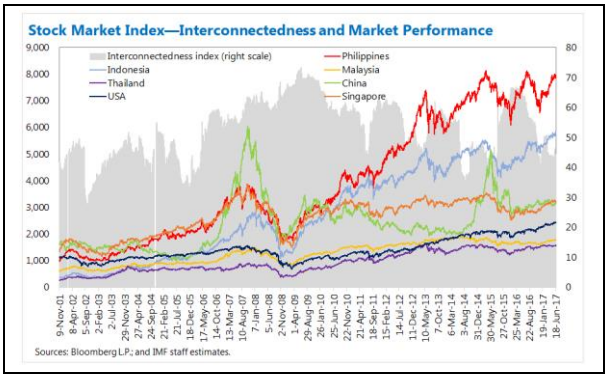
5. The results show sizeable spillovers among the ASEAN-5, China and the United States (Yilmaz, 2010; Guimaraes-Filho and Hong, 2016). Specifically, we find that:

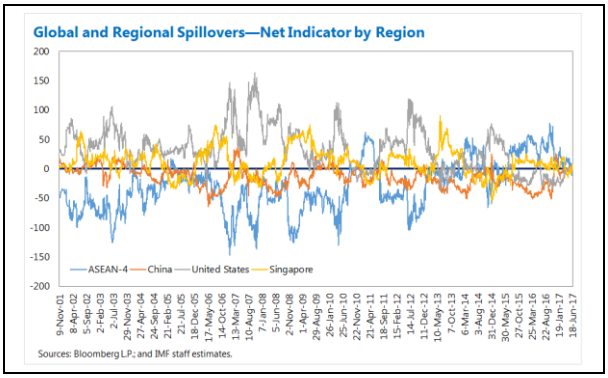
- Own country's contribution price dynamics is much higher than other countries' contribution to the equity market (Table 1).
- The United States and Singapore equity market have been the major spillover contributors having a net contribution of 33.9 percent and 10.5 percent, respectively (Table 1). Whereas, the Philippines' market has the largest spillover vulnerability among the ASEAN-5 countries with a -19.2 percent net contribution.
- Equity return and volatility spillovers have increased substantially since the global financial crisis (GFC), with a mild decrease in recent years. During the 2007–2008 GFC, the interconnectedness index spiked, showing strong interlinkages across the countries. The taper tantrum in 2013 and China equity market sell-off in 2015 were also associated with elevated spillovers.
- Finally, while interconnectedness and spillovers from China has risen as reported in IMF 2016a and IMF 2016b, the U.S. and ASEAN-5 markets remain the main source of spillover to the Philippines, perhaps due to greater regional financial integration. Singapore has been the more resilient market in the region.

Table 1. Variance Decomposition Matrix—Equity Market

	Philippines	Indonesia	Malaysia	Thailand	China	USA	Singapore	FROM
Philippines	40.29	13.11	9.16	9.72	2.88	12.41	12.43	59.71
Indonesia	9.55	39.38	10.19	11.7	2.84	12.36	13.99	60.62
Malaysia	7.07	12.21	42.02	8.72	3.41	11.54	15.03	57.98
Thailand	8.16	11.83	7.76	45.25	2.66	12.09	12.25	54.75
China	3.98	5.62	5.73	5.08	67.4	4.44	7.75	32.6
USA	4.43	6.04	5.95	7.23	2.74	62.3	11.3	37.7
Singapore	7.29	11.28	10.97	9.96	3.98	18.76	37.77	62.23
TO	40.49	60.1	49.76	52.41	18.5	71.6	72.75	52.23
NET	-19.22	-0.53	-8.22	-2.35	-14.09	33.9	10.51	

Sources: Bloomberg L.P.; and IMF staff estimates.





6. We examine the spillovers on ASEAN-5 domestic interest rates. While the role of global risk aversion on emerging markets' equity prices has been well studied (IMF, 2014a; Yilmaz, 2010; and IMF, 2015), spillovers on ASEAN-5's domestic interest rates are important given their direct implications on the monetary policy framework. How the "center economy" monetary policies are transmitted to domestic long-term sovereign bond yields is of particular interest as they act as a benchmark for pricing corporate bonds and household mortgages. The influence of global financial factors and risk aversion on domestic retail bank rates, directly or indirectly, through the monetary transmission mechanism is also important given the dominance of banks in the Philippines

- *Domestic long-term market interest rates*. The methodology followed Peiris (2013) and IMF (2016), estimating an EGARCH (1,1) model of sovereign bond yields in the ASEAN-5 economies during 2000–2015 using a comprehensive set of macrofinancial variables including global factors. The results show that a decline in the shadow federal funds rate[3] reduces long-term government bond yields in all ASEAN-5 economies. An increase in U.S. term premium, such as

[3] The Federal funds rate provides the conventional measure of U.S. monetary policy stance but at a near-zero rate since the end of 2008 cannot capture the role of unconventional monetary policy. This prompts the consideration of other measures including a shadow short rate (Krippner, 2014). The shadow short rate is computed using estimates from a two-state variable shadow yield curve and has historically tracked the actual federal funds rate very closely, prior to reaching the zero lower bound.

during the "taper tantrum," also results in higher long-term bond yields in all ASEAN-5 economies. The results indicate a greater impact in the Philippine domestic rates, owing to a rise in the shadow federal funds rate and U.S. term premium (Table 2). Greater global risk aversion proxied by the VIX has a mixed effect on long rates, with a rise in the VIX increasing yields in Indonesia and the Philippines while lowering yields in Thailand, likely reflecting the greater home bias of Thai financial institutions. Strong fundamentals such as stronger external balances and lower public debt tend to keep bond yields down. Expectations of currency depreciation can also drive bond yields higher. Interestingly, better growth expectations often result in lower bond yields than vice versa, suggesting that investors may see better growth prospects as a sign of improved credit worthiness rather than just a cyclical consideration. Overall, the susceptibility of long-term bond yields to global factors is consistent with the high degree of foreign participation in the ASEAN-5 economies, with foreign portfolio capital flows being a key channel of spillovers, albeit with expectations and domestic residents continuing to play a significant role.[4]

Table 2. Determinants of Sovereign Bond Yields 1/ 2/ 3/
(10-year government bond)

	Domestic Factors						External Factors		
	Debt to GDP ratio	Expected GDP (real % change, 1-yr forecast)	Inflation	Current account balance in percent of GDP (-1)	Expected exchange rates (1-year forecast)	Share of foreign holdings in total local currency government bonds	VIX	Effective Federal funds rate	U.S. term premium
Indonesia	0.062333 *	-2.08002 *	0.22776 *	0.11060			0.04632 **	0.37055 **	0.80325 *
	-0.046404 **	-0.519522	0.274776 *		0.000656 *	-0.174364 *	0.033914 **	0.110244	0.63379 *
Malaysia	0.018206	-0.194963 ***	0.081960 **	0.013592			-0.005650	0.095469	0.142382
	-0.004524	0.112354	0.048385 **		0.455059 *	-0.013591	0.000604	-0.034009	0.174713 *
Philippines	0.093204 *	-0.899722 *	0.024455	-0.178439 *			0.015214 *	0.413160 *	0.527717 *
	0.118536 *	-0.642977 **	0.208446 *		0.187917 *		-0.003698	0.10768	0.605144 *
Singapore	-0.008626 *	-0.148974 *	-0.085395 *	-0.019263			0.003095	0.181435 *	0.309268 *
	-0.007277 **	-0.029602	-0.041678 ***		1.686303 *		-0.004503	0.051912	0.218736 *
Thailand	-0.033360 **	0.140961	0.046901	-0.045019 *			-0.00817	0.269024 *	0.411737 *
	-0.107366	0.163451	0.10453 *		0.066449 *	0.05807 **	0.001842	0.288077 *	0.48909 *

1/ *significant at p<0.01 level; **significant at p<0.05 level; ***significant at p<0.10 level.
2/ The coefficients reflect the marginal increase in interest rates in percent of a 1 percentage rise in the explanatory variables.
3/ Results of alternative specification considering changes in economy-specific terms of trade remain robust.

[4] The degree of foreign participation has a direct impact on sovereign bond yields in the ASEAN-5 as in other EMs (Peiris, 2013) while the role of global financial factors also remains significant. The impact of Quantitative Easing in the Euro Area and Japan was not distinguishable with U.S. financial variables which are the dominant global factor for the ASEAN-5. The increasing spillovers from China to EME financial markets reported in IMF (2016b) were also not discernible in the quarterly data from 2000–15 given the frequency of the sample.

- *Retail bank rates*. Spillovers of global factors to retail bank rates in the ASEAN-5 countries were investigated following the approach of Ricci and Shi (2016) and IMF (2016) by estimating the domestic and global determinants of both deposit and loan rates (Table 3 and 4).[5] In addition, the specification allows for liquidity effects and rigidities in interest rate transmission. The results indicate that global financial factors significantly affect bank behavior in the Philippines and other ASEAN-5 economies except possibly in the case of Thailand.[6] Lending rates are also affected by lagged equity prices, which are a proxy for net worth of corporates and reflect balance sheet or financial accelerator effects affecting the cost of bank credit. However, the domestic policy rates and liquidity conditions (measured by the deviation of reserve money from a Hodrick-Prescott trend) also post a significant effect in the Philippine deposit and lending activities. Subsequently, affirming the important role of domestic monetary policy and liquidity management operations in influencing the credit cycles.

Table 3. Determinants of Deposit Rates 1/ 2/ 3/

	Domestic Factors			External Factors		
	Policy rate	Reserve money gap	Deposit interest rate (-1)	VIX	Federal Funds rate	U.S. term premium
Indonesia	0.027175 **	-0.0000005	0.933521 *	-0.000949	0.008974	0.027535
	0.148977 *	-0.000002		-0.009033	0.395125 *	0.607063 *
Malaysia	0.043452 *	-0.000001 **	0.941046 *	-0.001112 *	0.002053	0.013723 *
	0.051323	0.000013 *		-0.003590 **	0.094911 *	0.085377 *
Philippines	0.064288 ***	0.000000	0.888499 *	0.001056	-0.004274	0.022956
	0.693344 *	-0.000003 *		-0.003013	-0.050155	0.241218 *
Singapore	-0.000592	0.000001	0.025152 *	0.001321 *	0.017002 *	-0.002479
	-0.001191	0.000000		0.001087 *	0.029868 *	0.015474 *
Thailand	0.051272 **	0.000112	0.876080 *	-0.002416	0.000888	0.009568
	0.309664 *	-0.000103		-0.008819 **	0.075830 *	0.022943

1/ For Singapore, NEER month-on-month growth was used for the variable "policy rate."
2/* significant at p<0.01 level; **significant at p<0.05 level; ***significant at p<0.10 level.
3/ The coefficients reflect the marginal increase in interest rates in percent of a 1 percentage point rise in the explanatory variables.

[5] The empirical methodology followed Ricci and Shi (2016) in assessing the robustness of the findings to alternative specifications and sub-sample estimations, but the results were largely unchanged from the Ordinary Least Squares estimates below for the full sample period, allaying concerns of omitted variable bias and/or structural breaks. The robustness of the results to alternative publicly available retail bank rate data were also tested, although supervisory data on banks deposit and loan rates were unavailable and may provide a more accurate measure of financing costs.

[6]The increase of provisioning rates by the Bank of Thailand and tightening of banks' lending standards, likely related to rising household leverage (see next section), may explain the different results for Thailand.

Table 4. Determinants of Lending Rates 1/ 2/ 3/

	Domestic Factors				External Factors		
	Policy rate	Reserve money gap	Lending interest rate (-1)	Equity prices (-1)	VIX	Federal Funds rate	U.S. term premium
Indonesia	0.062514 *	-0.0000005	0.955839 *		0.002044	-0.014678	-0.011645
	0.072285	-0.0000066			0.014710 ***	0.674774 *	0.829765 *
	-0.011667	-0.000002		-0.000707 *	0.005535	0.277657 *	0.16202 **
Malaysia	0.025667	0.0000012	0.912929 *		-0.001410 ***	0.032964 *	0.027321 **
	0.029859	0.000013 *			0.009545 *	0.383984 *	0.243941 *
	0.540194 *	0.000004		-0.001056 *	0.000506	0.206565 *	0.189615 *
Philippines	0.198824 **	-0.0000002	0.736750 *		0.008107	0.059109	0.152256 **
	0.832216 *	-0.000002 *			0.027624 *	0.189371 **	0.627367 *
	0.337952 *	-0.000001		-0.000486 *	0.014131 **	0.161869 **	0.05785
Singapore	0.000107	-0.0000008 *	0.982296 *		0.000065	0.000525	0.001203
	0.004795	-0.0000006			0.001331 *	-0.008960 *	0.000812
	0.003364	-0.0000005		0.000030 *	0.001496 *	-0.006920 *	0.006025 *
Thailand	0.051432 *	0.000246	0.976985 *		-0.000205	-0.031450 *	-0.008097
	0.167468 *	-0.000223			-0.010757 ***	-0.49984 *	-0.636922 *
	0.016985	0.000284		0.002209 *	0.019712 *	-0.130755 *	-0.173794 *

1/ For Singapore, NEER month-on-month growth was used for the variable "policy rate."
2/* significant at p<0.01 level; **significant at p<0.05 level; ***significant at p<0.10 level.
3/ The coefficients reflect the marginal increase in interest rates in percent of a 1 percentage point rise in the explanatory variables.

C. Role of External Factors in Driving Business Cycle Fluctuations

7. We also examine the quantitative impacts of external shocks on the Philippines' business cycle. The role of external factors in driving emerging market economic growth is well established.[7] We follow the approach of IMF (2014b) to analyze the relationship between emerging market business cycles and external conditions by assuming that global economic conditions are exogenous to small open emerging market economies, at least on impact.[8] The section uses Bayesian structural vector auto regression (BVAR) model to quantify the growth effects of external shocks. The external variables (the "external block") include U.S. real GDP growth, the U.S. Term Premium, the VIX index, China GDP growth and economy-specific terms of trade growth.[9] In alternative specifications (Kim and Peiris, forthcoming), the external block will be modified by additional proxies for global financing conditions, such as net capital flows, and FX currency sovereign (EMBIG) spreads.

8. The impact of external shocks on economic activity could be transmitted through different channels and amplified by structural features and policies. Therefore, we consider a

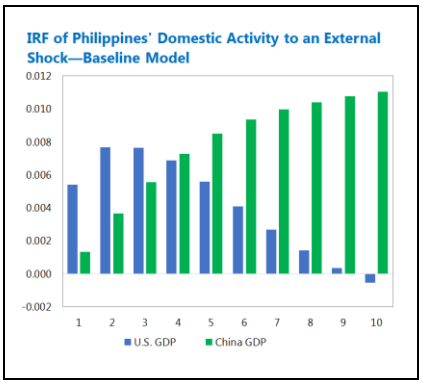
[7] Studies analyzing the role of external conditions in emerging markets' growth include Österholm and Zettelmeyer (2007) for Latin America; Utlaut and van Roye (2010) for Asia; and Adler and Tovar (2012) for a more diverse group of emerging markets.

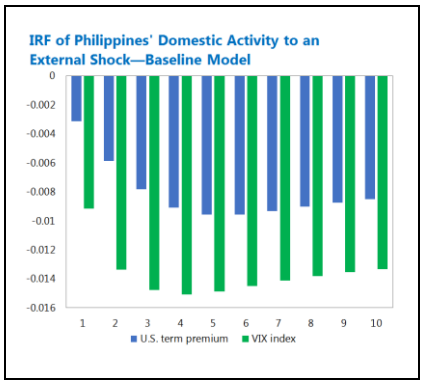
[8] On the other hand, IMF (2017a) for the impact of external factors on trend or medium term growth in emerging markets.

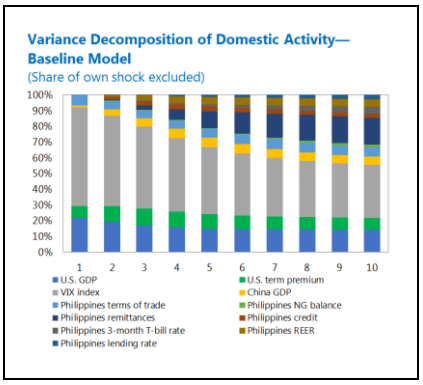
[9] With the federal funds rate constant at near zero since 2008 and the Federal Reserve's focus on lowering U.S. interest rates at the long end, the 10-year Treasury bond rate is likely a better proxy for U.S. monetary policy for the analysis. That said, none of the main results of the analysis would be affected if the federal funds rate were added or used instead.

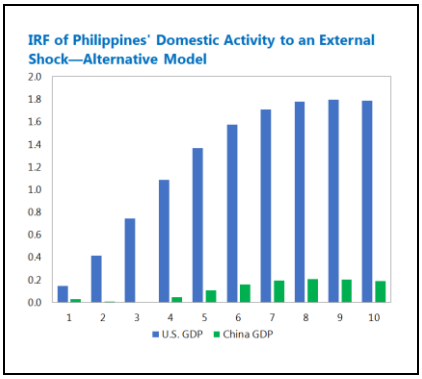
few alternative specifications based on the literature. The baseline specification for domestic variables (the "internal block") include real GDP growth, domestic credit growth to the private sector, interest rates, the rate of appreciation of the economy's real exchange rate against the U.S. dollar, the budget balance, and remittances. The external block is assumed to be contemporaneously exogenous to the internal block—that is, external variables are not affected by internal variables within a quarter. This specification captures the traditional transmission channels of external demand and financing conditions through the trade channels and domestic monetary policy response including credit and exchange rate channels. An alternative model specification evaluates global and domestic policy transmission through local currency long term bond yields and EMBIG spreads given the large capital inflows and pick up in FX borrowing since the GFC.

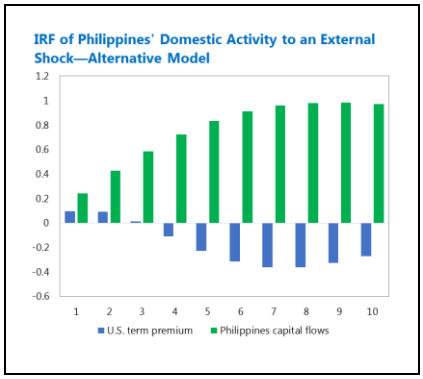
9. The model is estimated for the Philippines using quarterly data from the first quarter of 2000 through the latest available quarter in 2017. The impulse response functions (IRFs) show that domestic economic activity (real GDP) is significantly affected by U.S. GDP growth, U.S. long-term bond yields and the VIX. As a consequence, external factors explain most of the variation in real GDP growth excluding own shocks with remittances the only other significant domestic driver of business cycles. In terms of transmission and amplification of shocks including capital flows, domestic bank credit and local currency bond yields play an important role, which are affected by both domestic policy and external factors.

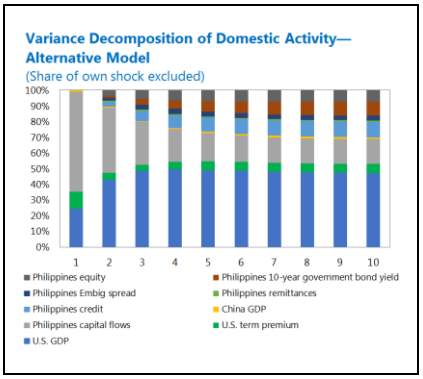












D. Illustrative Policy Scenarios

10. Global policy uncertainties are at an elevated level and some types of external shocks can have large spillovers on the ASEAN-5 and emerging markets, based on historical experience. Despite a decline in election and new administrations related risks, policy uncertainty could well rise further, reflecting—for example—difficult-to-predict U.S. fiscal policies (Obstfeld, 2017). In China, failure to address financial stability risks and curb excessive credit growth could result in an unwanted, abrupt growth slowdown, with adverse spillovers to other countries through trade, commodity price, and confidence channels. A faster-than-expected monetary policy normalization in the United States could tighten global financial conditions and trigger reversals in capital flows to emerging economies, along with U.S. dollar appreciation (Obstfeld, 2017). Recent experience with the taper tantrum in 2013, China equity market sell-off in 2015, and initial reaction to the 2016 U.S. election, suggests potentially significant spillovers to the ASEAN-5 should any of the three key risks identified above materializes (Figure 2). The spillovers of United States and China shocks to the ASEAN-5 estimated and traced in the previous sections also indicate likely channels of impact and magnitudes, that can be used gauge the spillovers of the hypothetical risks above.

11. We use a four-region version of the IMF's *Global Integrated Monetary and Fiscal Model*—consisting of the United States, China, the Philippines, and the rest of the world—to quantify potential spillover effects to the Philippines. The model also features a financial accelerator effect, with financing costs of firms varying in response to changes in their debt-equity ratios. We examine the following illustrative scenarios.

Monetary Policy Normalization in United States

12. *Assumptions*. The monetary policy normalization in the United States, including through a gradual reduction of the Federal Reserve's securities holdings, causes a greater-than-expected tightening of global financial conditions. As discussed in IMF (2014a), this unexpected tightening could be triggered by market misperception over the speed of future monetary policy normalization in the United States. The U.S. term premium rises by 20 basis points in 2018 and 2019, respectively, and 15 basis points each in the subsequent two years.[10] These in turn raise the term premia in other countries, consistent with the historical correlation for this type of shock (IMF, 2014a). Furthermore, emerging market sovereign risk premia increase temporarily by 50-70 basis points in 2018,[11] as investors become more reluctant to hold bonds issued by these economies.

[10] See Bonis and others (2017) for the effect of the U.S. Federal Reserve's balance sheet adjustment on the term premium.

[11] This is about half of the size of the shock observed in 2008, as measured by the average annual increase in the J.P. Morgan Global Emerging Market Bond Index for emerging Asian countries.

13. ***Results*** *(Figure 3)*. As financial conditions unexpectedly tighten, U.S. real GDP falls by 0.5 percent in 2018 and 0.7 percent in 2019. The Federal Reserve responds quickly to market fears by easing its monetary stance relative to the baseline, which helps contain the rise in U.S. short-term interest rates.

14. ***The*** **adverse spillovers to the Philippines could be significant, with the real GDP falling by close to one percent in 2018 and 2019**. The increase in the sovereign risk premium and the term premium raise the real interest rate and the external financing premium of leveraged firms, leading to weaker investment. The increase in the user cost of capital also reduces firm profitability and dividend payments to households, and lowers production and labor demand, leading to weaker consumption. In response to the weaker domestic private demand and the resulting moderate decline in inflation, the authorities lower the nominal policy interest rates and increase government spending. Improvement in the trade balance, which mainly reflects lower imports and weaker currency, provides some partial offset to the output loss.

Lower Growth Path in China

15. ***Assumptions***. China follows a lower growth path over the medium term owing to a temporary but persistent funding shock. The shock could be triggered by a system-wide turbulence in the Chinese wholesale funding market or a run on short-term asset management products issued by nonbank financial institutions, as described in IMF (2017b). Under this scenario, real GDP growth falls by about 2.5 percentage point below the baseline in 2018 and 2019, and remain below the baseline over the medium term. Furthermore, sovereign risk premia rise in 2018, by 100 basis points in China and by 25 basis points in other economies excluding the United States.

16. ***Results*** *(Figure 4)*. Notwithstanding the significant output decline in China, the estimated spillovers to the Philippines are relatively moderate. Real GDP declines by about 0.6 percent in 2018 and 2019. The external financing premium for Filipino firms rise about 15 basis points in 2018. The currency remains broadly stable in real effective terms, but depreciates by almost one percent against the U.S. dollar in real terms.

Unproductive U.S. Fiscal Expansion[12]

17. ***Assumptions***. The United States embarks on a four-year debt-financed fiscal expansion (2018–21) through a combination of reduced labor and corporate income taxes and increased infrastructure spending (IMF, 2017a). After four years, the U.S. government adjusts its policy to stabilize the long-run government debt-to-GDP ratio. During the first two years, households and firms take the fiscal stimulus as temporary in nature and behave accordingly. While U.S. monetary policy responds endogenously to the change in demand, the rest of the world—except China and the Philippines—keeps their policy rates at the effective lower bounds. The infrastructure spending

[12] This scenario is based on the "unproductive" infrastructure spending scenario in Scenario Box 1 of IMF (2017a). The latter, however, used the IMF's G-20 model for simulation. The simulation results here and in the WEO are qualitatively similar, although the magnitude of impacts is generally smaller in this simulation.

is assumed to be unproductive, leading to higher U.S. inflation rates and a faster normalization of the U.S. term premium (25 basis points in 2018 and an additional 25 basis points in 2019) than with productive infrastructure spending. Labor tax cuts go mostly to wealthy households.

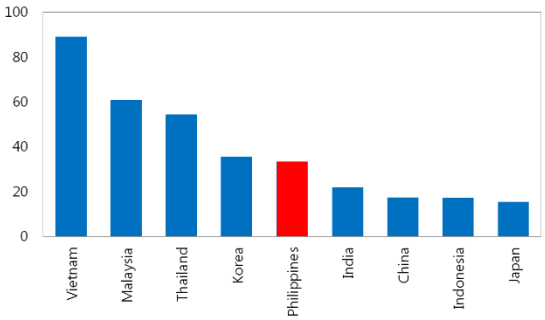
18. ***Results*** *(Figure 5)*. During the fiscal expansion period, U.S. real GDP rises by about 0.5 percent, and U.S. monetary policy tightens in response to higher domestic demand and inflation pressures. Real U.S. interest rates also rise, and the U.S. dollar appreciates in real effective terms.

19. The U.S. fiscal expansion affects the Philippines economy through the interest rate and the trade channel. The net spillover impact on the Philippines' GDP is negative (about 0.2 percent) in the short term as global financial conditions tighten more than to offset the expected positive gains in trade. Compared to the productive case where the net output impact is positive, the U.S. nominal policy rate rises by less but the faster normalization of the U.S. term premium leads to higher real interest rates. On the other hand, the gain from trade is smaller owing to the weaker domestic demand expansion in the United States.

Figure 1. Trade and Financial Exposures

Philippines exports account for nearly a third of GDP…

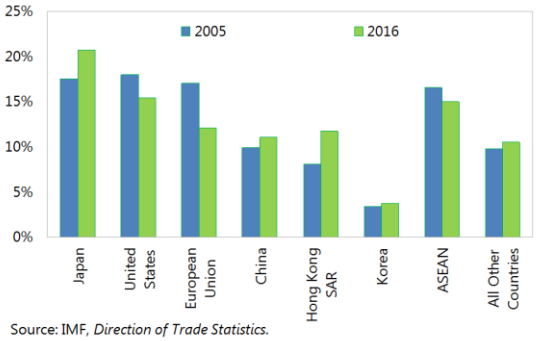
Selected Asia: Gross Imports
(In percent of 2016 GDP)



Sources: IMF, *World Economic Outlook* database; and IMF staff estimates.

…with Japan, China, and Hong Kong SAR shares rising while U.S. export shares falling over time.

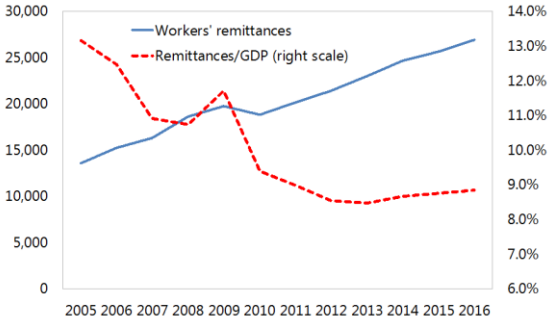
Philippines: Export Shares by Destination
(In percent)



Source: IMF, *Direction of Trade Statistics.*

OFW remittances remain a significant share, albeit moderating…

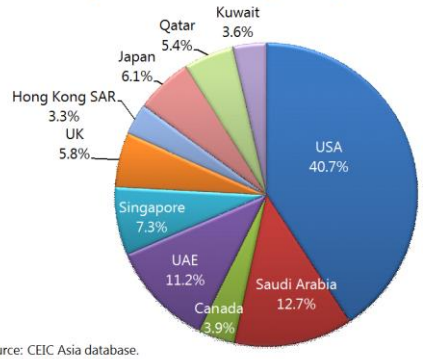
Overseas Filipinos' Remittances
(In millions of U.S. dollar and share of GDP)



Sources: CEIC Data Co. Ltd.; and IMF staff estimates.

…with U.S. having the largest share of remittances.

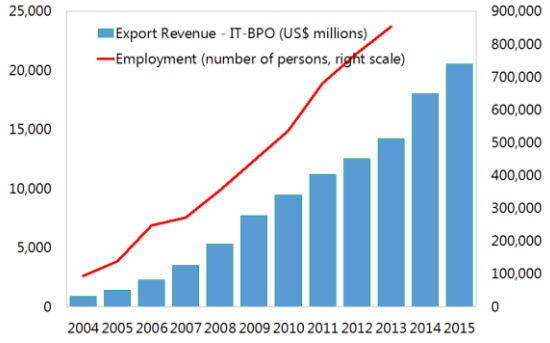
Overseas Filipinos' Remittances by Country, March 2017



Source: CEIC Asia database.

Moreover, the BPO industry continues to expand significantly…

Info Tech Business Process Outsourcing Services



Source: Bangko Sentral ng Pilipinas.

…foreign liabilities are relatively low compared to the rest of ASEAN-5.

Foreign Assets, Excluding Reserves and Liabilities
(In percent of GDP)

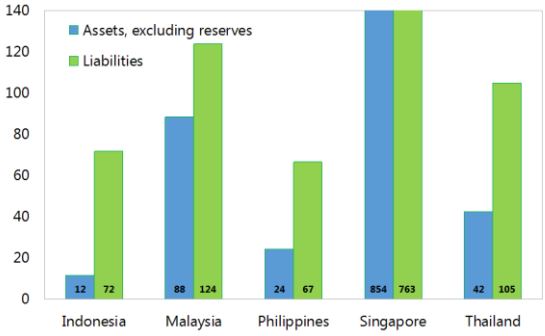
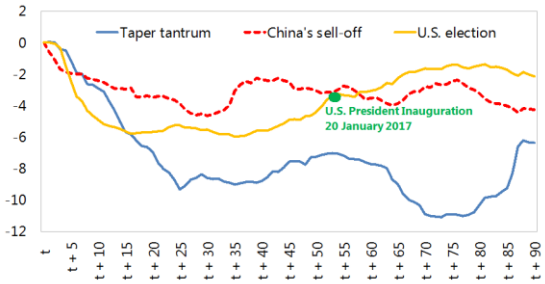


Figure 2. Financial Spillovers and Regional Comparisons

Portfolio outflows have been sizable in response to U.S. and China shocks…

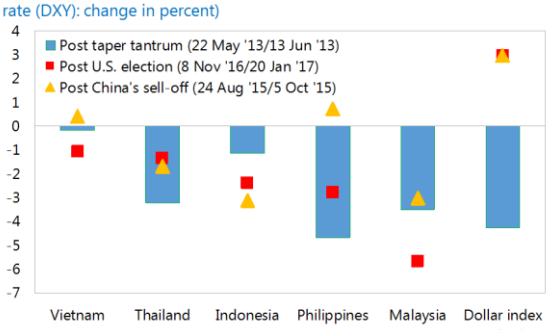
ASEAN-5: Cumulative Portfolio Flows 1/
(In billions of U.S. dollars)



Sources: Bloomberg L.P.; Haver Analytics; and IMF staff estimates.
1/ Equities coverage: Indonesia, Philippines, Thailand, and Vietnam; bonds coverage: Indonesia and Thailand.

…with exchange rate acting as a shock absorber.

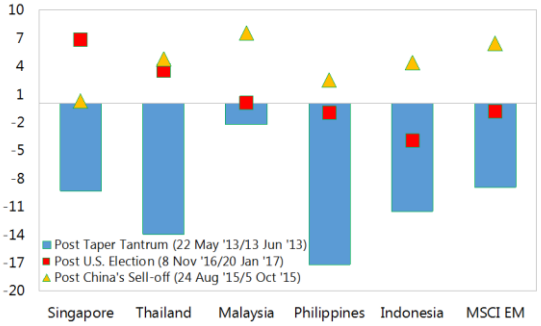
Exchange Rate
(Local currency per US$: Appreciation/depreciation, dollar index spot rate (DXY): change in percent)



Sources: Bloomberg L.P.; and IMF staff estimates.

Equity prices were most affected by the taper tantrum…

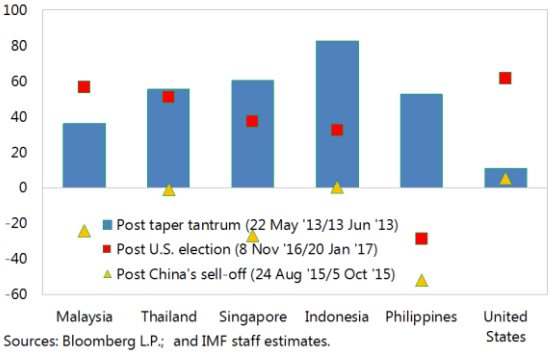
ASEAN-5 Equities
(Change in percent)



Sources: Bloomberg L.P.; and IMF staff estimates.

…while government bond yields rose except during the China equity market sell off.

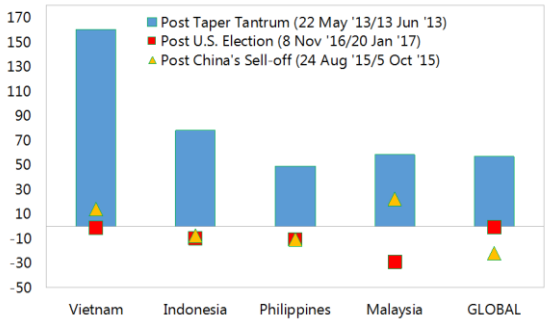
ASEAN-5 Bond Yields
(10-year yields, change in basis points)



Sources: Bloomberg L.P.; and IMF staff estimates.

Sovereign FX spreads rose significantly only during the taper tantrum…

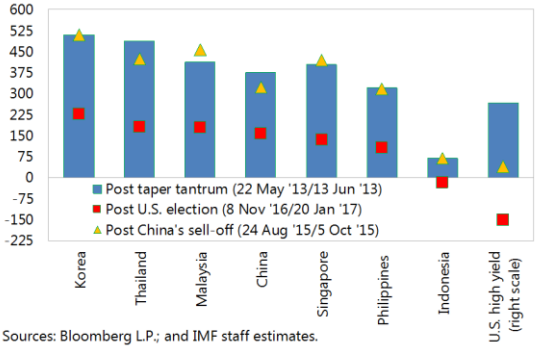
EMBIG Spread
(Change in basis points)



Sources: Bloomberg L.P.; and IMF staff estimates.

…with corporate FX spreads rose as much during the China equity market sell-off.

Corporate Emerging Market Bond Index Spreads
(Change in basis points)



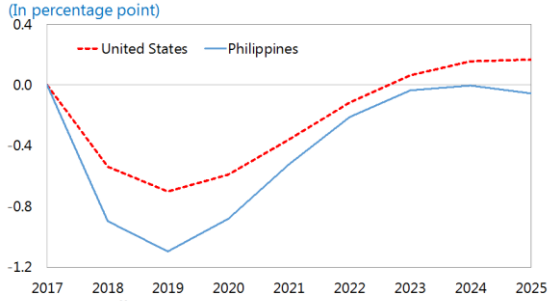
Sources: Bloomberg L.P.; and IMF staff estimates.

Figure 3. Monetary Policy Normalization in United States

(Percent deviation from case with no shocks)

Real GDP

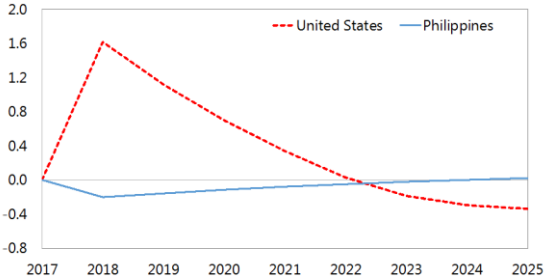
(In percentage point)



Source: IMF staff estimates.

Real Effective Exchange Rate

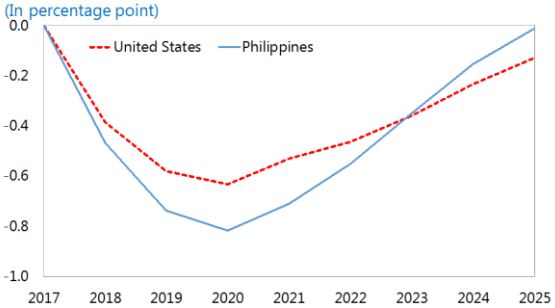
(Appreciation if greater than 0)



Source: IMF staff estimates.

Nominal Policy Rate

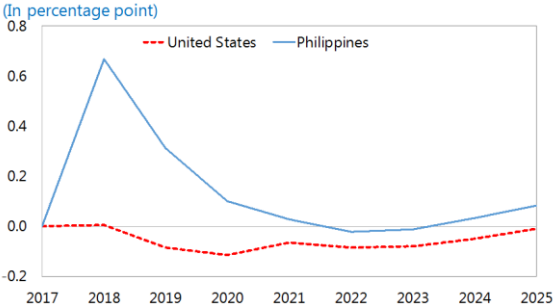
(In percentage point)



Source: IMF staff estimates.

Real Interest Rate

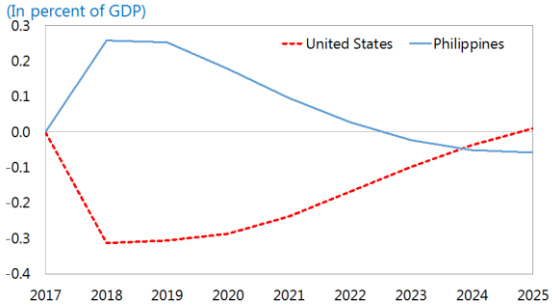
(In percentage point)



Source: IMF staff estimates.

Trade Balance

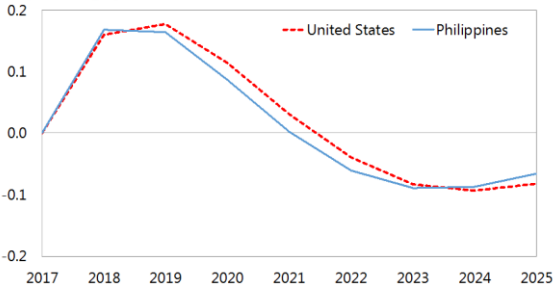
(In percent of GDP)



Source: IMF staff estimates.

Government Deficit-to-GDP Ratio

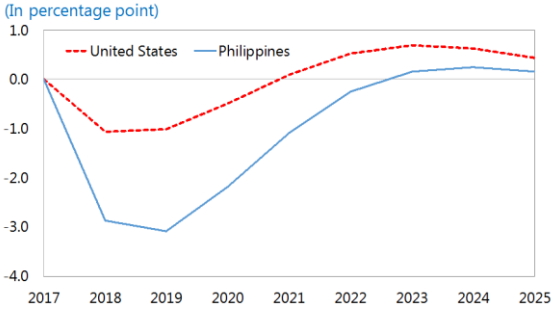
(In percentage point)



Source: IMF staff estimates.

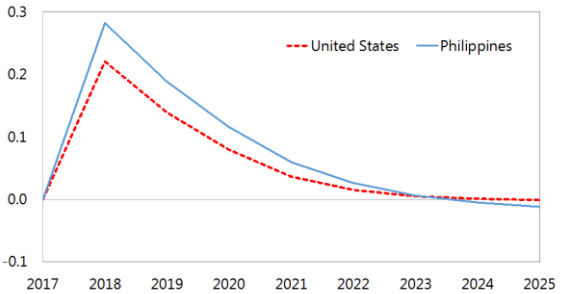
Real Investment

(In percentage point)



Source: IMF staff estimates.

Corporate Financing Premium 1/



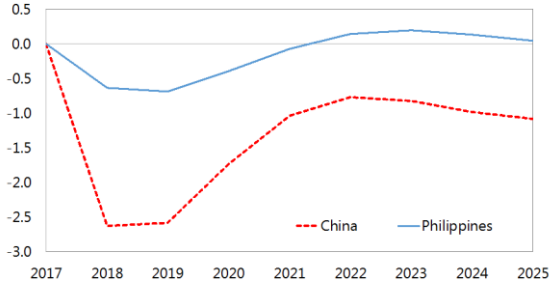
Source: IMF staff estimates.

Figure 4. Low Growth in China

(Percent deviation from case with no shocks)

Real GDP

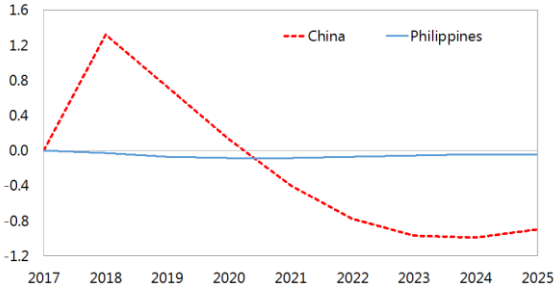
(In percentage point)



Source: IMF staff estimates.

Real Effective Exchange Rate

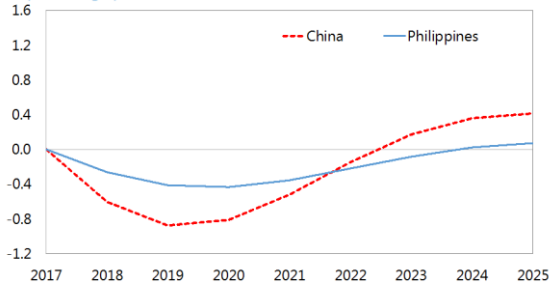
(Appreciation if greater than 0)



Source: IMF staff estimates.

Nominal Policy Rate

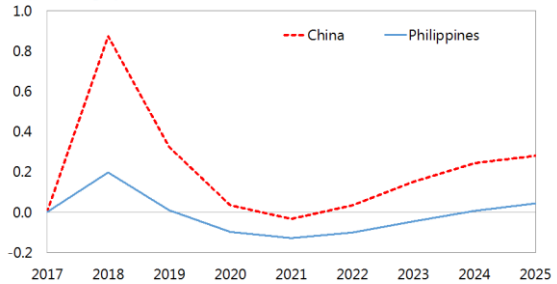
(In percentage point)



Source: IMF staff estimates.

Real Interest Rate

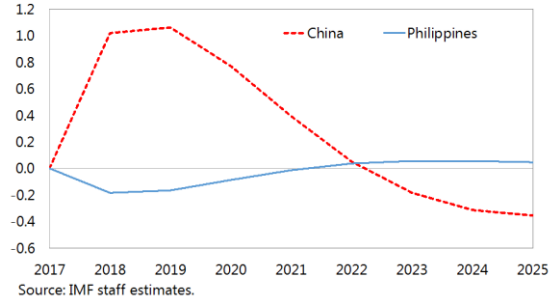
(In percentage point)



Source: IMF staff estimates.

Trade Balance

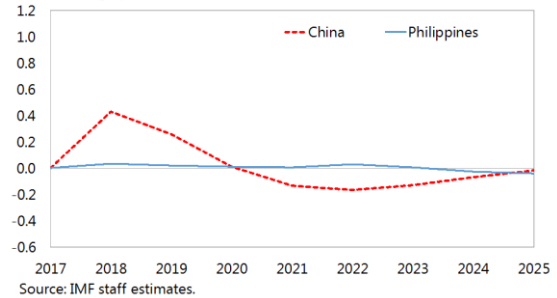
(In percent of GDP)



Source: IMF staff estimates.

Government Deficit-to-GDP Ratio

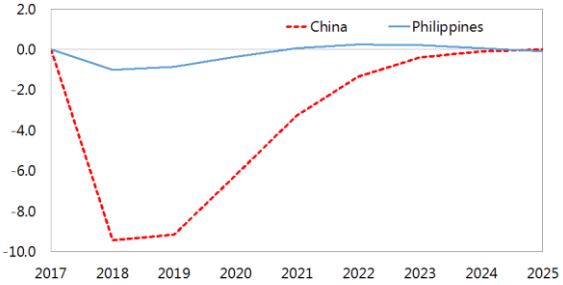
(In percentage point)



Source: IMF staff estimates.

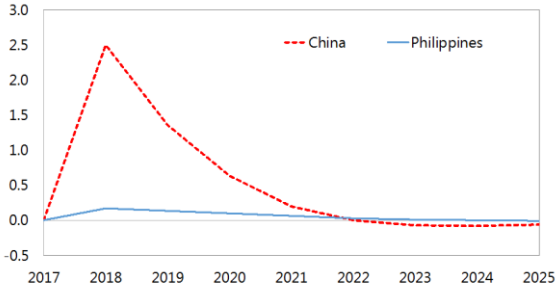
Real Investment

(Percentage point)



Source: IMF staff estimates.

Corporate Financing Premium 1/



Source: IMF staff estimates.

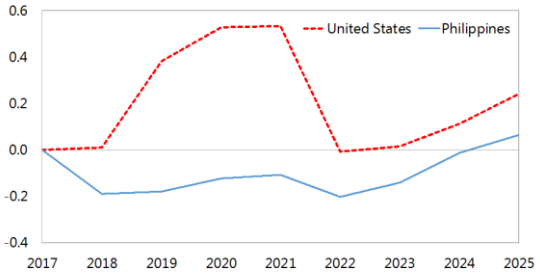
1/ For firms in the tradable sector.

Figure 5. Fiscal Expansion with Unproductive Infrastructure Investment

(Percent deviation from case with no shocks)

Real GDP

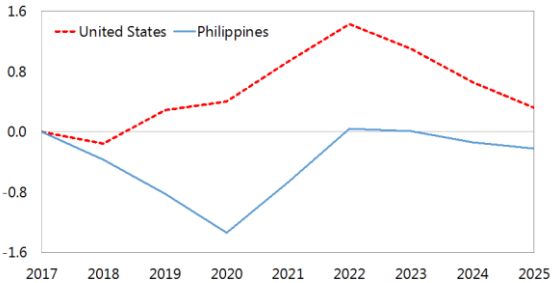
(In percentage point)



Source: IMF staff estimates.

Real Effective Exchange Rate

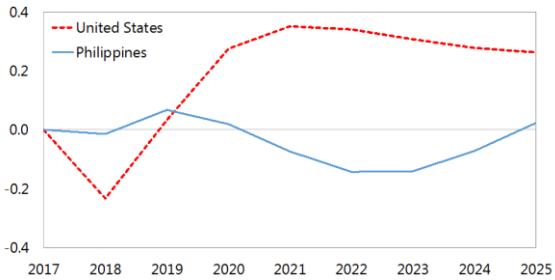
(Appreciation if greater than 0)



Source: IMF staff estimates.

Nominal Policy Rate

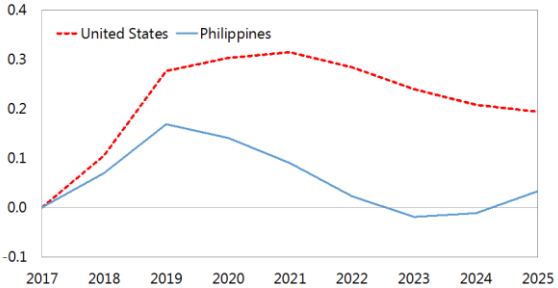
(In percentage point)



Source: IMF staff estimates.

Real Interest Rate

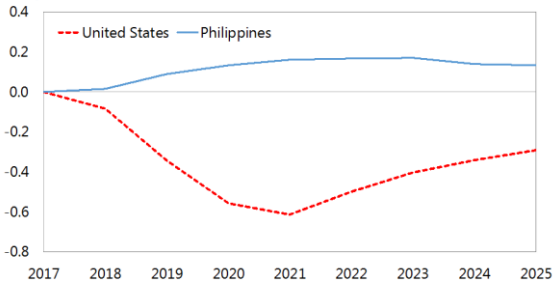
(In percentage point)



Source: IMF staff estimates.

Trade Balance

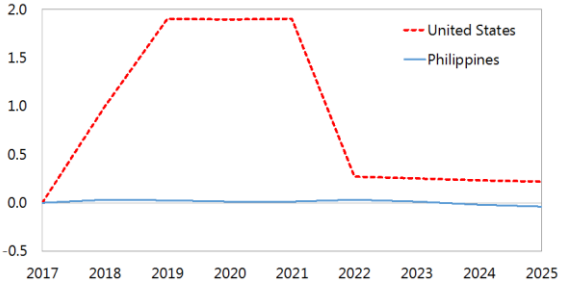
(In percent of GDP)



Source: IMF staff estimates.

Government Deficit-to-GDP Ratio

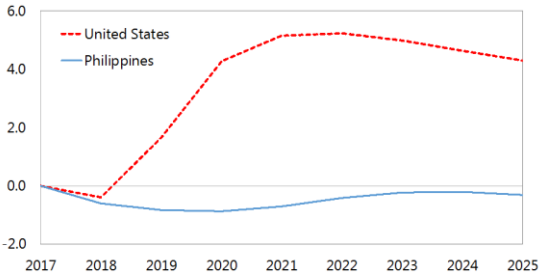
(Percentage point)



Source: IMF staff estimates.

Real Investment

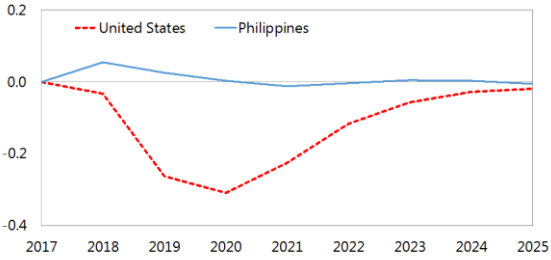
(In percentage point)



Source: IMF staff estimates.

Corporate Financing Premium 1/

(In percentage point)



Source: IMF staff estimates.
1/ For firms in the tradable sector.

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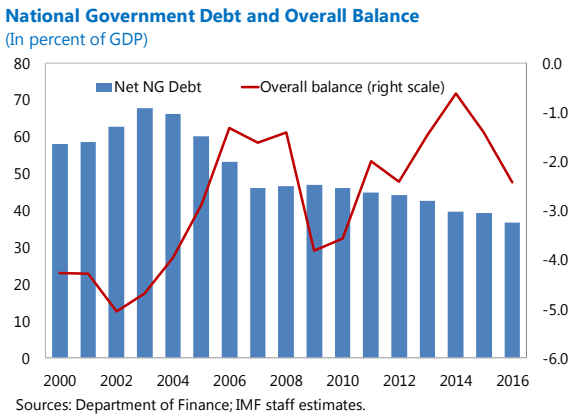
THE CASE FOR FISCAL RESPONSIBILITY LAW[1]

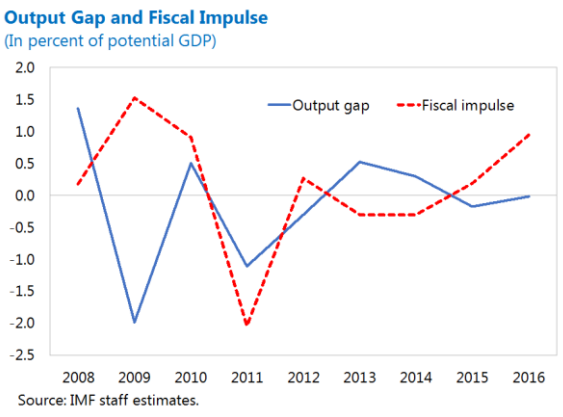
A non-statutory ceiling on the national government deficit has helped maintain macro-fiscal stability, but in the medium term the Philippines would benefit from a fiscal responsibility law (FRL) enshrining explicit fiscal rules with countercyclical elements and an independent fiscal council to improve accountability and transparency.

A. Introduction

1. A rule-based fiscal framework can improve credibility by building adequate fiscal buffers and making the conduct of fiscal policy transparent. Following a long period of fiscal consolidation in the aftermath of the Asian financial crisis, the Philippines has regulated fiscal policy by a non-binding ceiling on the national government budget deficit since 2010. This approach has served the country well in terms of macro-fiscal stabilization, but the fiscal policy framework can be further strengthened in the coming years by adopting a rule-based approach designed to avoid procyclical policy, ensure sufficient fiscal buffers against tail risks, make the conduct of fiscal policy accountable, transparent and predictable, keep the cost of borrowing low, and thereby promote long-term debt sustainability. There is ample empirical evidence indicating that countries with well-designed, binding fiscal rules tend to have stronger fiscal performance and better access to sources of funding than those without fiscal rules (Debrun and others, 2008; Schaechter and others, 2012; IMF, 2013).

Figure 1. National Government Debt, Deficit and Fiscal Impulse





2. Fiscal rules with countercyclical features would provide more effective operational guidance, especially considering the forthcoming surge in public investment. The fiscal policy stance, as measured by the cyclically-adjusted primary balance, moved by 1.2 percentage points of

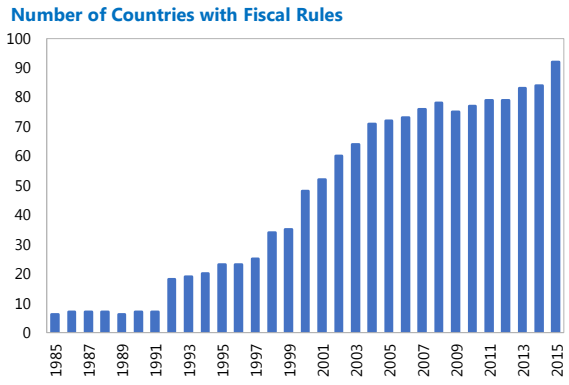
[1] Prepared by Serhan Cevik and based on a forthcoming working paper ("Economic Cycles and Fiscal Waves: The Case for Fiscal Responsibility Law in the Philippines").

potential GDP on a cumulative basis over the past two years, implying a significant fiscal impulse during a period of strong economic growth.[2] Especially in view of the coming increase in government spending on development projects, the Philippines would benefit from a comprehensive FRL setting out explicit fiscal rules and an independent fiscal policy council as a mean to improve accountability and transparency in managing fiscal risks and public financial resources and to anchor fiscal policy decisions to a sustainable path for public finances.

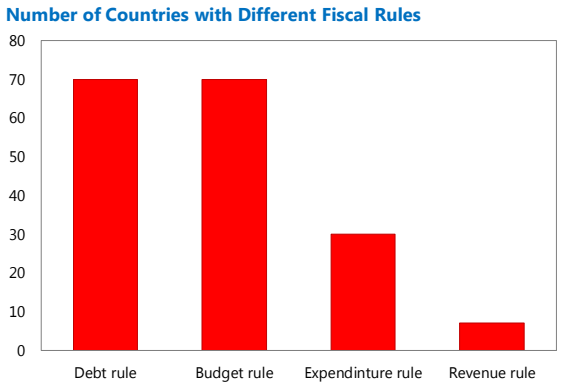
B. International Experience with Fiscal Rules

3. More than 90 countries across the world are now operating under fiscal rules, compared with five in 1990. Many countries have put in place permanent constraints on key fiscal aggregates through numerical limits on budget deficits, debt, expenditures, or revenue (Figure 2). These fiscal rules are designed to guide fiscal policymaking and anchor debt sustainability (Koptis and Symansky, 1998). The optimal design of fiscal rules varies from one country to another, depending on policy objectives and institutional capabilities. In this context, FRLs have become popular as a legal framework to enhance credibility, predictability and transparency by combining numerical rules with procedural regulations. Thereby, contrary to stand-alone fiscal rules, FRLs aim to provide a comprehensive framework to govern fiscal policy in a single piece of legislation.

Figure 2. Fiscal Rules Around the World



Source: IMF Fiscal Rules Dataset.



Source: IMF Fiscal Rules Dataset.

4. While a single rule offers simplicity, FRLs use a combination of different fiscal rules to address specific aspects for fiscal policy. As every fiscal rule has advantages as well as weaknesses, it is a common practice across the world to bring together the key elements of various fiscal rules in a fiscal responsibility framework. About 80 percent of the countries implementing rule-based fiscal policy use a combination of two or more rules—aiming to provide a medium-term anchor for fiscal policy and one (or multiple) operational target(s) on key fiscal aggregates. For example, a budget balance rule combined with a debt rule would provide a link to debt sustainability, while guiding short-term operational decisions. However, an expenditure rule, accompanied by a combination of a

[2] Fiscal impulse is measured as the change in the cyclically-adjusted primary balance as a share of potential GDP.

budget balance rule and a debt rule, would provide more effective operational guidance for fiscal policymaking and anchor debt sustainability to an appropriate long-term target.

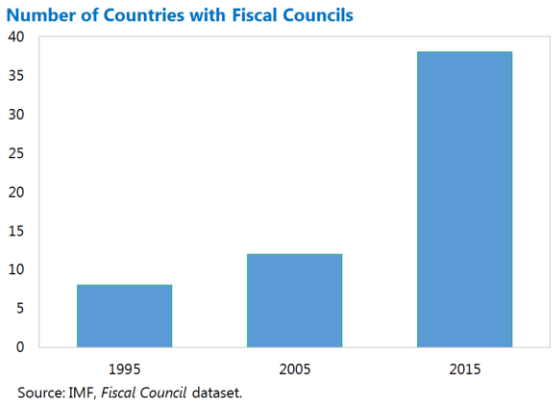
5. Comprehensive institutional coverage makes fiscal rules more transparent and accountable. In countries with a federal government (or large subnational governments), it is necessary to look beyond the central government to the fiscal positions of subnational entities. Furthermore, autonomous and semi-autonomous institutions, extra-budgetary funds, and state-owned enterprises (SOEs) may have extensive quasi-fiscal operations with a significant amount of contingent liabilities.[3] Therefore, as the national government is often forced to cover the losses and obligations of subnational governments and other public-sector institutions, the coverage of fiscal rules needs be comprehensive to avoid the possibility of undermining the FRL through off-budget transactions. Similarly, it is not advisable to exclude public sector investment from the coverage of fiscal rules, as it would create an incentive for inefficient investments and opportunistic reclassification of current into capital expenditure.

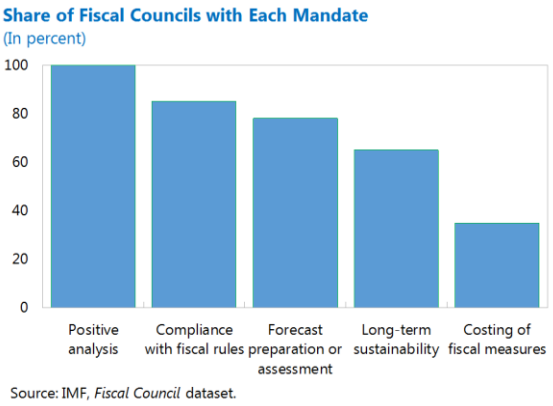
C. Advantages of Fiscal Councils

6. Independent fiscal councils have become an important institution to promote a "culture of stability" and support the implementation of fiscal rules. The number of countries with fiscal councils increased to 38 as of end-2015 from 12 a decade earlier (Figure 3). Although most of established fiscal councils are in advanced economies, there is growing interest in emerging markets and developing countries—ranging from Chile to South Africa. While governments as elected representatives maintain discretion in setting fiscal priorities and selecting appropriate instruments, fiscal councils are established as a nonpartisan agency to promote sustainable public finances through greater accountability and transparency and a more-informed public debate. With a mandate to furnish unbiased macroeconomic and budgetary projections and evaluate ex ante and ex post compliance with fiscal rules, an independent fiscal council provides objective assessments of the appropriateness of fiscal policies and enhances the effectiveness of fiscal rules (Debrun, Hauner, and Kumar, 2009). Cross-country analyses and country-specific case studies suggest that well-designed and nonpartisan fiscal councils are effective in improving fiscal outcomes in advanced as well as emerging market economies (Hageman, 2011; IMF, 2013).

[3] A contingent liability is an obligation that does not arise unless a particular event occurs. Some contingent liabilities are explicitly recorded as legal claims and guarantee agreements, while others are implicit, such as the government's implicit support to SOEs and PPPs. Some contingent liabilities are quantifiable (i.e., litigation claims), while others are not quantifiable until they turn into actual liabilities.

Figure 3. Fiscal Councils Across the World





7. The establishment of a fiscal council, however, does not by itself contribute to stronger fiscal performance. Using a sample of 58 advanced and developing countries over the period 1990-2011, Debrun and Kinda (2014) find that successful fiscal councils have unambiguous legal independence and adequate human resources to analyze fiscal measures and monitor adherence to numerical and procedural fiscal rules. Fiscal councils also have a mandate to analyze the efficiency of government expenditure in some counties (such as Korea and Slovenia) and to foster coordination among different spheres of the general government in other countries (such as Austria and Portugal).[4] Hence, while the mandate and structures of independent fiscal policy councils depend on country-specific circumstances, there are key features shared by successful fiscal councils: (i) professionalism and political independence; (ii) exclusive focus on fiscal policy and debt sustainability; (iii) objectivity and transparency in fiscal policy analysis with unfettered access to information; and (iv) clearly defined institutional mandate.

D. Calibrating Fiscal Rules for the Philippines

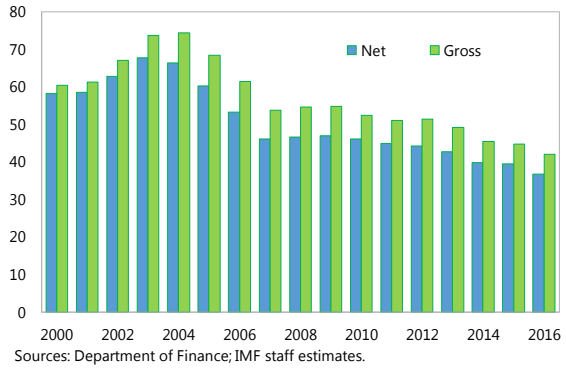
8. With the objective of anchoring the government's core fiscal operations, fiscal rules are designed to focus on the national government using unconsolidated data. In most countries, debt rules are set in gross rather than net terms. First, it is challenging to determine which government assets are truly liquid, especially in times of financial stress. Second, net debt may conceal the build-up of fiscal risks by masking important financing operations (such as bank recapitalization and loans to SOEs) that would be accounted for in gross debt. Third, the concept of net government debt is not as transparent as the definition of gross debt and far more difficult to communicate to the public. Although a broader coverage of fiscal activities—such as the nonfinancial public sector—would be more appropriate in assessing and adopting fiscal rules, limitations on the availability of detailed fiscal accounts across all layers of government do not allow calibration of fiscal rules at a broader level in the case of the Philippines. Besides the national government is responsible for the great majority of fiscal activities, with the rest of the public sector

[4] IMF (2013) provides a detailed assessment of examples of fiscal council mandates.

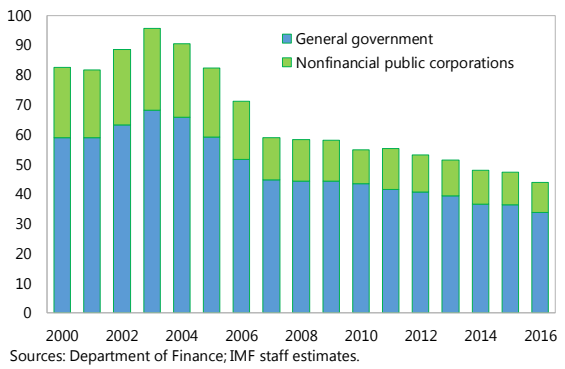
(particularly social security institutions and local governments) generating substantial primary surpluses.

9. The Philippines' gross national government debt declined to 42 percent of GDP in 2016 from the peak of 74.4 percent in 2004. Gross debt consists of all government liabilities that are debt instruments, while net debt is calculated as gross debt *minus* financial assets corresponding to debt instruments, which are defined as a financial claim requiring payments of interest and/or principal at a date, or dates, in the future. In the Philippines, the Bond Sinking Fund (BSF) holds government debt amounting to 5.2 percent of GDP in 2016, hence lowering the national government's debt stock from 42 percent of GDP on a gross basis to 36.8 percent of GDP in net terms (Figure 4). Furthermore, local governments and social security institutions run large surpluses and hold substantial amounts of national government debt. As a result, for the general government, including debt holdings of local governments and social security institutions, the consolidated net debt-to-GDP ratio amounted to 33.8 percent of GDP as of end-2016. On the other hand, including nonfinancial public enterprises, the consolidated nonfinancial public sector debt stock stood at 44.1 percent of GDP in 2016.

Figure 4. Layers of Government Debt



Sources: Department of Finance; IMF staff estimates.



Sources: Department of Finance; IMF staff estimates.

10. There is a large literature on the "safe" level of debt, but thresholds vary from one country to another and over time.[5] Even if a debt threshold is estimated with reasonable accuracy, it should not be treated as a long-term anchor for the level of government debt, as it could result in unsustainable debt dynamics during adverse shocks. This calls for imposing a sufficient "safety margin" between the debt target and the "maximum limit" for government debt, beyond which sustainability would be questionable and the government may not be able to lower or stabilize the debt ratio through the regular conduct of fiscal policy (Ostry and others, 2010). In line with the commonly-used debt threshold for emerging markets and developing countries, the appropriate "maximum debt limit" for the Philippines is assumed to be 60 percent of GDP and a debt anchor is

[5] Eberthardt and Presbitero (2015) and IMF (2016) provide comprehensive surveys of empirical and theoretical research in this area.

estimated to keep debt below this "maximum limit" with high probability even when adverse shocks occur. This is also consistent with recent empirical studies identifying the level of government debt beyond which it has a negative effect on economic growth, even taking into account the positive impact of public investment on growth (Checherita-Westphal, Hallett, and Rother, 2014; Fournier, 2016).

11. Projections of future government debt are subject to a plethora of policy uncertainties and exogenous shocks. First, there is policy uncertainty regarding the future development of taxation and government spending. Second, even if one assumes no changes in tax and expenditure policies, there is economic uncertainty, which must be taken into account. The growth rate of the economy, demographic changes as well as the interest rate at which the government can borrow determine the macro-financial environment that directly or indirectly affects the state of public finances. Since this economic environment is subject to exogenous shocks, assessing the optimal level of government debt requires an estimation of the joint probability distribution of economic fundamentals and the level of government debt.

12. The joint distribution of macroeconomic variables is estimated to perform multiple simulations. The "safe" level of gross debt-to-GDP ratio for the national government in the Philippines is then estimated using the stochastic simulation methodology proposed by Baum and others (2017). Each simulation generates a path for macroeconomic variables over the projection horizon, during which the variables are subject to shocks in each period.[6] Subsequently, medium-term debt trajectories consistent with each simulated path of macroeconomic variables are attained from the system of simultaneous equations formed by the debt accumulation equation (i.e., government budget constraint) and a fiscal reaction function (FRF) estimated over the past in which the level of the primary balance responds to the level of government debt and realizations of macroeconomic variables.[7] A debt anchor for the Philippines needs to be sufficiently low to protect the country against shocks, including natural disasters and contingent liabilities.[8] Furthermore, given the low level of tax revenue mobilization (relative to peers and its own potential), the Philippines could also experience a greater sensitivity of macro-financial conditions to debt sustainability at higher levels of indebtedness.

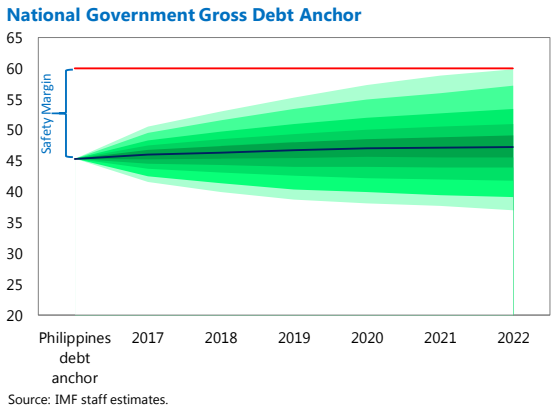
[6] Macroeconomic shocks are drawn from symmetric normal distributions, although the empirical evidence suggest that shocks can be skewed to the downside (Escolano and Gaspar, 2016). The impact of shocks on debt paths, however, depends on the initial level of debt. For example, an adverse shock to growth and/or interest rates will increase debt by more when the initial debt level is higher.

[7] The results remain broadly in line with the fiscal response estimated by the FRF for a panel of 26 large emerging market economies including the Philippines.

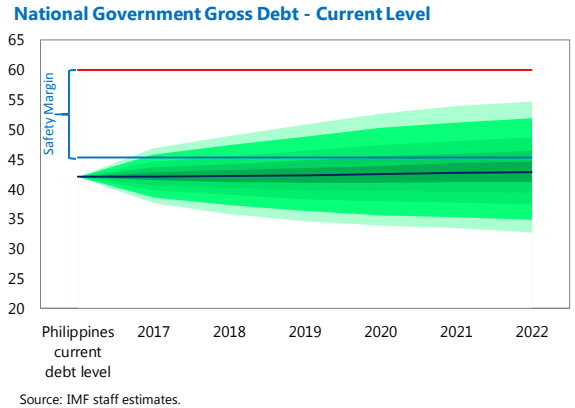
[8] According to a recent IMF study, a country is likely to experience the realization of large contingent liabilities every twenty years and the average fiscal cost of contingent liabilities is around 10 percent of GDP. Accordingly, this exercise assumes a realization of contingent liabilities amounting to 7 percent of GDP over the medium term.

13. Stochastic simulations indicate that the optimal debt anchor for the national government in the Philippines is 45 percent of GDP in gross terms. After setting the "maximum limit" on national government gross debt at 60 percent of GDP and given the country's macroeconomic and fiscal performance over the period 1980-2016, the simulation analysis of future debt trajectories shows that national government gross debt must remain below 45 percent of GDP in the long term, which is equivalent to a general government net debt of about 35 percent of GDP. This "safety margin" of 15 percent of GDP—difference between the maximum debt limit of 60 percent of and the debt target of 45 percent—would ensure that the "maximum limit" is not breached with a probability of 5 percent over the medium-term horizon (Figure 5).[9] In other words, we consider 45 percent of GDP as the "safe" level of gross debt that the national government can maintain without experiencing fiscal distress over the medium term.[10] Therefore, since the current level of gross national government debt is just below the estimated debt anchor, the Philippines has some fiscal space to scale up public investments over the medium term, without endangering debt sustainability, as long as its pace consistent with tax revenue efforts and the economy's absorption capacity to avoid the risk of overheating.

Figure 5. National Government Gross Debt Anchor Simulations



Source: IMF staff estimates.



Source: IMF staff estimates.

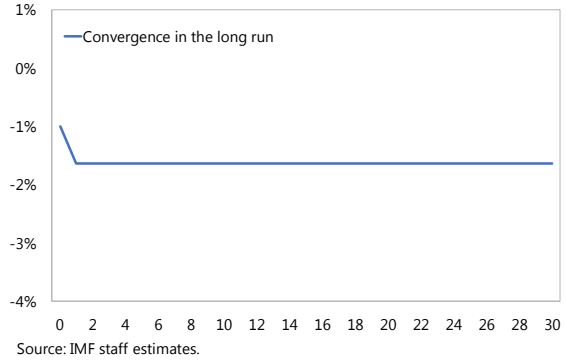
14. To provide operational guidance under the debt target, a structural budget balance rule is calibrated to maintain a countercyclical fiscal policy stance. While the overall budget balance is a commonly used indicator to assess the fiscal policy stance, it is a deficient measure as it includes factors beyond the control of policymakers. Even the primary balance excluding interest income and payments is still affected by macroeconomic developments. A structural indicator would provide a better assessment of the underlying (or permanent) fiscal position by removing cyclical factors, one-off revenues and expenditures, and potentially other temporary effects from the headline budget balance. Accordingly, the structural primary deficit target is derived to bring about

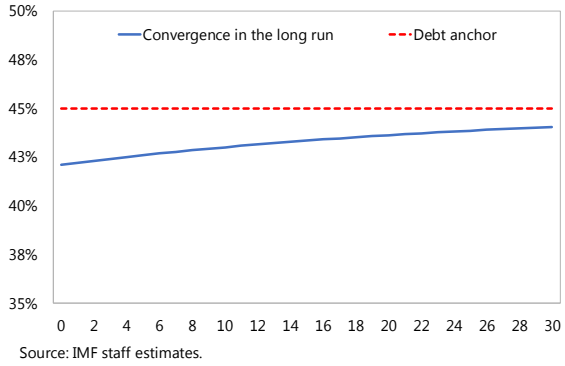
[9] Fan charts show capture uncertainty surrounding the baseline projection from the 5th to 95th percentile of the distribution, with each shade of color representing a 5 percent level of likelihood.

[10] This would also provide a reasonable cushion against natural disasters. The fiscal cost of natural disasters in the Philippines amounted to 0.6 percent of GDP on average and as much as 4.6 percent of GDP over the period 1960-2015.

a gradual convergence toward the debt target set at 45 percent of GDP. Calibrating the budget balance path over the economic cycle yields a cyclically-adjusted primary deficit target of 2 percent of potential GDP for the national government (Figure 6). If implemented in 2017, this would imply a fiscal loosening by about 1 percentage points of potential GDP relative to the policy stance in 2016, but it would be still consistent with the national government's overall deficit target of 3 percent of GDP and keep the national government gross debt-to-GDP ratio below the proposed debt anchor.

Figure 6. National Government Debt Anchor and Deficit Path





15. To bring stronger operational guidance and better manage aggregate demand, the structural primary balance rule should be linked to an expenditure rule. While a debt anchor and a structural primary balance rule are considered to be adequate, adopting an expenditure rule would provide additional macroeconomic stabilization properties in an emerging market economy with significant development needs. Assuming that there is no significant cyclical component to expenditure and automatic stabilizers operate only on the revenue side in the Philippines, we conclude that there is no difference between nominal expenditure and structural expenditure.[11] Also, it is assumed that the structural tax ratio (computed as the ratio of cyclically-adjusted revenues to potential GDP) remains constant unless there is a significant change in tax policies. Under these assumptions, the optimal expenditure rule links the annual growth rate of total national government spending (excluding targeted social assistance) to nominal potential GDP growth.

E. Conclusion

16. The Philippines would benefit from a well-designed FRL ensuring fiscal rules designed for debt sustainability and countercyclical policy. There is no one-size-fits-all fiscal rule, but there are common threads in assessing the appropriateness of fiscal policy and how it should be optimized for aggregate demand management. While the national government's non-binding ceiling on the overall budget deficit is helpful, it does not constitute an appropriate operational target to guide fiscal policy over the economic cycle, reduce spending volatility in the absence of a

[11] This is consistent with empirical evidence showing that revenues are far more sensitive than expenditure to the economic cycle (Price, Dang, and Guillemette, 2014)

binding constraint on primary expenditures, and explicitly link the fiscal stance to the government's intertemporal budget constraint. To this end, given the country's adequate analytical capacity and policy track-record, the following combination of fiscal rules—based on the stochastic simulation exercise—is recommended to formulate policymaking with countercyclical properties and an explicit reference to long-term debt sustainability:

- A gross debt target of 45 percent of GDP for the national government (which is equivalent to a general government net debt of about 35 percent of GDP);
- A structural budget balance target defined as the cyclically-adjusted national government primary deficit of 2 percent of potential GDP;
- An expenditure rule that limits the annual growth rate of total expenditures excluding targeted social assistance to nominal potential GDP growth; and
- A limit on the stock of contingent liabilities, including PPPs, set at 10 percent of GDP for the general government.

17. Fiscal rules should have sufficient flexibility to respond to exogenous shocks, while being supported by explicit enforcement procedures and corrective mechanisms. The FRL needs to balance credibility and flexibility in responding to developments outside the direct control of policymakers. To this end, the Philippines should have well-defined escape clauses that allow for temporary deviations from the fiscal rules according to: (i) a limited number of pre-specified exceptional and unforeseeable exogenous events such as large-scale natural disasters and severe financial crises and deep economic recessions; (ii) clear guidelines on the interpretation and determination of such events; and (iii) an unambiguous transition path to compliance with the fiscal rules and the regime that applies during the convergence period.[12]

18. The FRL's success in guiding policy and shaping public expectations depends on effective enforcement and correction mechanisms. The success of fiscal rules in guiding policymakers as well as shaping expectations in general depends on predetermined provisions for dealing with deviations from the fiscal rules. Empirical evidence indicates that fiscal rules with no effective enforcement mechanism result in worse fiscal outcomes than fiscal rules with well-defined enforcement directives (Debrun and others, 2008). To this end, the Philippines should introduce enforcement sanctions with reputational costs (i.e., public report to Congress) in case of deviations from the fiscal rules and a specific timetable to offset such deviations over a certain period of time. In this context, the establishment of an independent fiscal council is particularly important to provide unbiased macro-fiscal projections and evaluate compliance with fiscal rules. This would enhance transparency and accountability of fiscal operations and buttress credibility of the rule-based fiscal policy framework.

[12] Budina, Kinda, Schaechter, and Weber (2012) provide a detailed account of escape clauses across all countries with a rule-based fiscal policy framework.

Box 1. Advantages and Disadvantages of Different Types of Fiscal Rules

Different fiscal rules trade off the extent of debt stabilization with the degree of countercyclical properties. Operational fiscal rules differ according to the type of budgetary aggregate that they seek to constrain, and have different advantages and drawbacks. Accordingly, the design of a rule-based fiscal policy framework should address the need for short-term economic stabilization and ensure fiscal sustainability over the long term.

- **Debt rules**, such as a ceiling on the debt-to-GDP ratio or a debt brake mechanism, safeguard fiscal solvency by linking the fiscal stance to debt sustainability over the medium term. However, debt rules are not typically effective as operational fiscal rules, as policy changes impact debt dynamics with a lag beyond the annual budget horizon, and do not have desirable countercyclical properties to stabilize macroeconomic fluctuations.

- **Budget balance rules**, such as a ceiling on the overall budget deficit, are relatively easy to monitor and implement and can support debt sustainability. However, if specified in nominal terms, budget balance rules do not have stabilization properties and tend to lead to procyclical fiscal policy. Structural budget balance rules (such as the cyclically-adjusted budget balance), on the other hand, account for economic shocks and allow automatic stabilizers to operate. While these features augment the stabilization role of fiscal policy, inherent uncertainties in estimating the output gap make structural balance rules difficult to monitor and communicate.

- **Expenditure rules**, such as a ceiling on nominal expenditure growth or as a percent of GDP, are operationally simple and provide clear guidance on how to adjust the fiscal stance over time.[1/] While expenditure rules provide economic stabilization properties, they require a reliable medium-term budget framework to avoid the built-up of large deficits and deterioration in the net asset position due to persistently lower revenue generation.

- **Revenue rules**, such as a floor or ceiling on revenues, seeks to increase revenue collection or avert an excessive tax burden. Revenue rules have no direct link to debt sustainability and would result in a procyclical fiscal policy, if there is no accompanying rule on expenditure growth or a ceiling on the general government budget deficit.

1/ Some countries adopt "golden rules" excluding investment spending, but this tends to complicate the implementation of fiscal rules and weaken fiscal sustainability, as it creates an incentive for inefficient investments and opportunistic reclassification of current into capital expenditure, and leads to higher current spending associated with maintenance of a higher level of public capital stock (Caseres and Ruiz-Arranz, 2010; IMF, 2014).

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DOES TAXATION STIFLE CORPORATE INVESTMENT?[1]

This paper conducts *a firm-level analysis of the effect of taxes on capital spending in member states of the Association of Southeast Asian Nations (ASEAN). Using panel data on nonfinancial firms over the period 1990–2014 and controlling for firm characteristics and country-level differences, it is found that taxation facilitates private investment (possibly by enabling public investment in infrastructure and human capital and proper functioning of institutions), but as the tax burden increases, its effect turns negative and stifles fixed investment growth. This adverse effect of higher tax burden is particularly pronounced in in the Philippines and Thailand, which may partly reflect the differences in the efficiency and quality of government spending funded by tax revenues.*

A. Introduction

1. The interaction between taxation and economic activity persists as an important issue at the core of public policy. The global economy is on a recovery path, but maintaining the momentum will require sustained investment growth. In Asia, while gross capital formation remains high—increasing from the post-Asian financial crisis low of 29 percent of GDP in 1999 to 33 percent during the period 2011–15, there is considerable variation across countries in private fixed investments (Figure 1). It is critical to macroeconomic performance to understand the dynamics of corporate investment, which constitutes the lion's share of private investment. Empirical studies suggest that profitability and leverage are important in shaping investment behavior at the firm level, while macroeconomic, financial and institutional factors determine the overall conduciveness of the business climate. Accordingly, the effect of corporate income tax (CIT) on private fixed investments in ASEAN countries is investigated using firm-level balance sheet data on a large sample of nonfinancial firms over the period 1990–2014.[2]

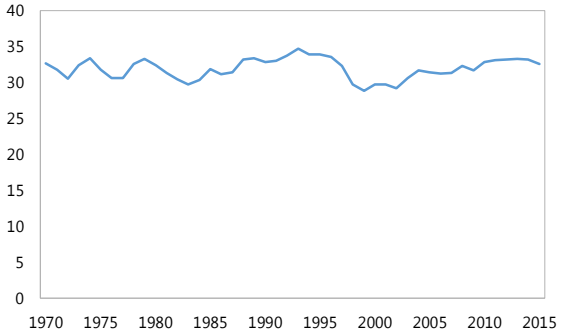
2. There is an extensive literature on the potential determinants of business investment dynamics, but the impact of taxation remains elusive. One strand of the literature uses firm-level data and, consistent with standard models of factor demand, focuses on output and the cost of capital (Hall and Jorgenson, 1967; Auerbach, 1983; King and Fullerton, 1984; Auerbach and Hassett, 1992). In particular, according the neoclassical model of investment, capital formation is a function of expected future profitability, leverage, and financing constraints (Summers, 1981; Hayashi, 1982; Hubbard, 1998; Kalemli-Ozcan, Laeven, and Moreno, 2015). While there are many empirical studies in this area of the literature, results differ substantially, especially with regard to the strength of influence of the tax component of the user cost of capital on capital formation in the private sector (Chirinko, Fazzari, and Meyer, 1999; Schaller, 2006; Gilchrist and Zakrajsek, 2007). On the one hand, taxation is expected to lower firms' capital investment (and total factor productivity) by raising the user cost of capital, distorting factor prices, and reducing after-tax return on investment. On the

[1] Prepared by Serhan Cevik and Fedor Miryugin and based on a forthcoming working paper ("Does Taxation Stifle Corporate Investment? Firm-Level Evidence from ASEAN Countries").

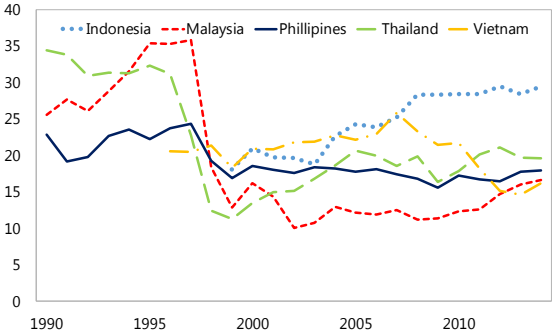
[2] Owing to data limitations, the empirical analysis is based on a sample of firms located in Indonesia, Malaysia, the Philippines, Thailand, and Vietnam.

other hand, taxation provides resources for public infrastructure investments and proper functioning of government institutions that are key to firms' performance and hence appetite for new investment projects. As shown by Barro (1990) and, more recently, Aghion and others (2016), the overall impact of taxation on firm performance depends on the relative weight of these two effects, which can vary depending on the size of the government and the composition and efficiency of spending and taxation.

Figure 1. Fixed Investment Trends



Sources: World Bank.



Sources: World Bank.

3. Tax policy and administrative reforms can unlock a virtuous circle of efficient governance and private investment. Empirical evidence indicates that excessive tax burden reduces incentives for capital spending by raising the user cost of capital and distorting resource allocations. A fair and efficient tax system is therefore key to promoting private investment and concurrently raising revenues for public investment in physical and human capital. To this end, a simpler CIT code can encourage entrepreneurial activity by new and existing firms and reduce compliance costs across all segments of the corporate sector. While there is room to reduce the statutory CIT rate in some countries, an alternative reform option is to limit the CIT on "excess returns" on equity to reduce tax-induced investment distortions and promote long-term growth. However, given that ASEAN countries have relatively low tax revenue-to-GDP ratios, it is necessary to develop a far-reaching strategy for corporate tax reform aiming to strengthen tax compliance and broaden the tax base, while reducing tax burden on the corporate sector.

B. Data and Methodology

4. The dataset used in this study consists of annual observations on a total of 826,739 listed and unlisted companies in five ASEAN countries. The analysis focuses on nonfinancial firms across 11 sectors[3] in five ASEAN countries based on detailed and

[3] The sectors include agriculture, construction, information technology, manufacturing, mining, professional and administrative services, real estate, transportation and storage, utilities, wholesale and retail trade, and a broad category referred as others.

harmonized firm-level financial data from the Orbis database compiled by Bureau van Dijk Electronic Publishing.[4] In total, the complete sample consists of an unbalanced panel of 826,739 unique enterprises with 3,283,494 firm-year observations over the period 1990–2014. Similar to any other large-scale micro dataset, however, the Orbis data require careful management to ensure consistency and comparability across firms and countries and over time. Following the data cleaning principles suggested by Kalemli-Ozcan and others (2015), observations with negative values of investment, assets, sales, and debt are filtered out. To minimize the effect of extreme outliers, 1 percent of observations on both tails of the distribution of firm-level regression variables is excluded from the analysis. Accordingly, the estimations are based on an unbalanced panel of 799,321 firms in five ASEAN countries with 2,087,133 firm-year observations during the period spanning from 1990 to 2014.

5. The sample of nonfinancial firms—drawn from the Orbis database—is unevenly distributed across countries and sectors. The dataset has 714 firms in Indonesia; 260,879 in Malaysia; 31,079 in the Philippines; 499,257 in Thailand; and 7,392 in Vietnam. Accordingly, the great majority is concentrated in Thailand and Malaysia, accounting for 95 percent of 799,321 firms covered in our sample.[5] It is important to note that the number of firms covered in the Orbis database varies from one year to another, increasing considerably after 2000. In terms of sectoral coverage, the dataset covers 11 nonfinancial sectors excluding public services. Excluding the "others" category, most of the firms in our sample belong to the manufacturing sector and account for 30.8 percent of observations over the sample period, followed by trade sector with 30.3 percent of observations and administrative services with 13.6 percent of observations.

6. Capital formation at the disaggregated level is investigated in a large panel of nonfinancial firms with 3,283,494 firm-year observations. The dependent variable is the ratio of net fixed investment to total assets and the main variable of interest is a firm-specific measure of corporate tax burden as gauged by the ratio of corporate income tax (CIT) expense to sales.[6] To obtain consistent estimates, the empirical model incorporates firm characteristics (such as size, sales, profitability and the leverage ratio) and controls for macroeconomic and structural differences among ASEAN countries during the period 1990–2014. We also include the square values of explanatory variables (and the lagged dependent variable in dynamic models) to capture nonlinear behavior (and persistency) in corporate investment decisions. Employing alternative methods, we estimate both static and dynamic models of firm-level investment in physical capital in order to address the heterogeneity of firms and to control for country-specific and time effects. Static specifications of the model are estimated using the fixed-effect model, while dynamic specifications are estimated employing the system generalized method of moments (GMM) approach proposed

[4] The Orbis database covers both public (listed) and private (non-listed) firms including small and medium-sized enterprises (SMEs) in a broad universe of advanced and developing countries.

[5] The number of firms included in the regression analysis is lower than 799,321 firms in our panel as we scale net investment with lagged assets.

[6] The marginal effective marginal tax rate is arguably a better measure of the firm-specific tax burden (Devereux and Griffith, 1998), but its calculation requires data on depreciation and amortization, among others, which are not available for the great majority of ASEAN firms covered in this study.

by Arellano and Bover (1995) and Blundell and Bond (1998), which is better in dealing with various econometric issues including potential endogeneity of the explanatory variables.

C. Empirical Results

7. The granular empirical analysis reveals nonlinear patterns of behavior in firms' fixed investment decisions. Controlling for firm characteristics and macro-structural factors across countries, the dynamic estimation results, presented in Table 1, indicate significant persistence in capital spending over time. With regards to firm size, large companies are found to undertake significantly less investment than others, but this is not a linear connection as very large firms invest more than others. Similar nonlinear behavior is observed with the impact of sales on investment, with a negative coefficient on its square term. This may reflect the fact that firms tend to experience higher operating costs with increasing sales, which in turn dampens investment appetite. On the other hand, the opposite dynamics are observed with profitability, as higher profitability leads to more fixed investment. This could also reflect the fact that more profitable firms are able to carry the tax burden and at the same time allocate more resources to fixed investment. The results show an intricate pattern of nonlinear behavior with regards to leverage, as greater levels of indebtedness become increasingly detrimental to capital spending by nonfinancial firms. Finally, for the main variable of interest, the nonlinear estimations indicate that taxation facilitates business investment by enabling public investment in infrastructure and human capital and proper functioning of government institutions. However, as the tax burden increases, its effect turns negative and stifles fixed investment growth in ASEAN countries.[7]

8. Country-specific estimations, albeit with limited number of observations, are broadly consistent with cross-country panel estimations. Since the estimated parameters based on a panel of ASEAN firms represent an "average" effect of various firm characteristics and macro-structural factors, the dynamic model of business capital formation is also estimated using the panel of firms in each ASEAN country in the sample. Even though this exercise reduces the number of observations (especially in countries with limited coverage in the Orbis dataset), it provides a more granular analysis of the nonlinear dynamics of corporate fixed investment at a disaggregated level for each country.[8] These results are broadly consistent with our cross-country panel estimations, but do show variations among the four ASEAN countries included in the country-specific regression analysis. In particular, with regards to the main variable of interest, we find that a moderate level of corporate taxation has a significant positive effect on business fixed investment in all countries except Vietnam, where it appears to be insignificant but still positive.

9. The Philippines stands out with greater adverse effect of higher tax burden on corporate investment spending. Similar to cross-country estimations, a nonlinear pattern is observed with the square term of the tax burden having a significant negative impact on firm-level capital spending. This adverse effect of higher tax burden is particularly pronounced in in the

[7] While the focus is on taxation, the analysis also provides evidence for the importance of macroeconomic stability and governance reforms to raise private investment growth sustainably.

[8] Due to the lack of observations in the Orbis database, it is not possible to estimate the model for Indonesia.

Philippines and Thailand, which may partly reflect the differences in the efficiency and quality of government spending funded by tax revenues. For example, in 2016, the Philippines was ranked 20th for macroeconomic environment, but 95th for infrastructure and 81st for health and education out of138 countries by the World Economic Forum's Competitiveness Index.

Table 1. Cross-Country and Country-Specific Dynamic Estimations

Variables	Cross-country	Malaysia	Philippines	Thailand	Vietnam
	Dependent variable: Investment-Asset Ratio				
Firm characteristics					
Investment-Asset Ratio, lag	**0.135*** [0.011]**	**0.111*** [0.014]**	**0.191*** [0.074]**	**0.191*** [0.026]**	**0.252*** [0.062]**
Investment-Asset Ratio^2, lag	**-0.029*** [0.004]**	**-0.025*** [0.006]**	**-0.064* [0.037]**	**-0.050*** [0.014]**	**-0.100** [0.050]**
Total Assets, lag	**-0.102*** [0.007]**	**-0.172*** [0.012]**	**-0.067*** [0.019]**	-0.004 [0.006]	-0.066 [0.055]
Total Assets^2, lag	**0.003*** [0.000]**	**0.005*** [0.000]**	**0.002** [0.001]**	-0.000 [0.000]	0.002 [0.002]
Sales, lag	**0.036*** [0.004]**	**0.044*** [0.006]**	0.018 [0.013]	**0.029*** [0.004]**	**-0.103** [0.043]**
Sales^2, lag	**-0.001*** [0.000]**	**-0.001*** [0.000]**	-0.000 [0.000]	**-0.001*** [0.000]**	**0.003** [0.001]**
Debt-Asset Ratio, lag	**0.025*** [0.005]**	0.105 [0.173]	0.063 [0.051]	**-0.009* [0.005]**	0.070 [0.047]
Debt-Asset Ratio^2, lag	**-0.003*** [0.001]**	-0.221 [0.304]	-0.081 [0.085]	**0.001* [0.001]**	-0.102 [0.062]
Profit-Asset Ratio, lag	-0.002 [0.008]	0.020 [0.014]	0.046 [0.057]	**-0.017** [0.008]**	0.071 [0.119]
Profit-Asset Ratio^2, lag	0.005 [0.004]	**0.012* [0.006]**	-0.183 [0.127]	0.003 [0.004]	0.015 [0.475]
Tax-Sales Ratio	**0.269*** [0.054]**	**0.239*** [0.072]**	**0.440* [0.248]**	**0.384*** [0.117]**	0.341 [0.601]
Tax-Sales Ratio^2	**-0.527* [0.285]**	-0.493 [0.349]	**-3.553** [1.442]**	**-2.024* [1.204]**	1.854 [7.056]
Macroeconomic and institutional controls					
Real GDP per Capita, lag	**0.015*** [0.003]**	-0.059 [0.049]	**-0.838*** [0.230]**	**-0.180*** [0.032]**	**-0.684** [0.345]**
Real GDP Growth, lag	**-0.003*** [0.001]**	**0.001* [0.001]**	**0.007** [0.004]**	0.000 [0.000]	-0.051 [0.032]
Credit to Private Sector, lag	**-0.028* [0.014]**	**-0.229*** [0.056]**	**1.688*** [0.265]**	**0.065*** [0.023]**	0.204 [0.163]
Trade Openness, lag	**-0.025*** [0.009]**	**-0.098*** [0.016]**	**-0.312** [0.155]**	**-0.085*** [0.031]**	0.350 [0.241]
Public Investment, lag	0.001 [0.002]	**0.040*** [0.009]**	-0.023 [0.031]	0.008 [0.011]	-0.018 [0.025]
Rule of Law, lag	**0.028*** [0.005]**	**0.025*** [0.004]**	-0.008 [0.010]	**-0.016** [0.007]**	0.003 [0.010]
Corruption, lag	**0.015*** [0.006]**	**0.028** [0.013]**	0.023 [0.034]	-0.005 [0.007]	**1.514*** [0.544]**
# of observations	160,676	98,898	6,493	51,950	3,297
# of firms	90,087	56,536	4,186	27,280	2,053
AR1 p-val.	0	0	0	0	0.001
AR2 p-val.	0.129	0.298	0.887	0.269	0.765
# of instruments	400	47	44	50	41

Note: Robust standard errors clustered at a firm level are displayed in brackets. *** p<0.01, ** p<0.05, * p<0.1. A constant is included in all regressions, but not shown in the table.

Source: IMF staff estimates.

D. Conclusion

10. Fair and efficient taxation is pivotal in funding public investment in infrastructure and human capital and thereby stimulating private investment. Taken together, the empirical findings provide supportive evidence that tax policy and administration can do more to promote capital formation in the private sector and concurrently raise additional revenue for much-needed government spending on physical and human capital. In particular, corporate taxes need to be integrated into a coherent tax structure designed to encourage entrepreneurial activity by new and existing firms and tax compliance across all segments of the business sector. For example, Dabla-Norris and others (2017) find that tax compliance costs tend to be disproportionately higher for small and young businesses and thereby tax administration reforms aimed at lowering compliance costs reduce the productivity gap of small and new firms relative to larger and older firms.

11. A simpler CIT code can create a level playing field and reduce compliance costs, especially for smaller firms. This would in turn promote fixed investment by existing and new firms and attract foreign direct investment. Size-dependent and sector-specific preferential tax treatments through exemptions, incentives and other relief measures—a prevalent feature of tax regimes across all countries—distribute the burden of taxation disproportionately, reduce administrative and economic efficiency, and result in below-potential tax revenue generation.[9]

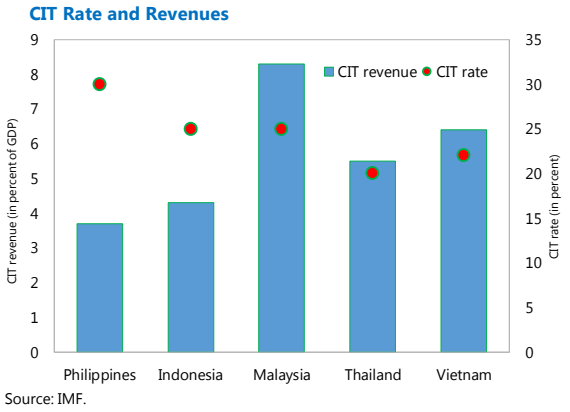
12. The Philippines has room to modernize the CIT regime in a revenue-neutral way by lowering the statutory rate and eliminating distortionary exemptions. The empirical results show that an excessive level of taxation reduces incentives for private investment by raising the user cost of capital and distorting resource allocations. The Philippines has the scope to cut the statutory CIT rate toward the regional average in a gradual manner, which could encourage domestic investment and attract foreign direct investment.[10] But the extensive use of tax concessions and exemptions—estimated to amount 1.5 percent of GDP in 2014—results in distortions and keeps CIT productivity in the Philippines at almost half of its better performing peers (Figure 2).[11]

[9] Using firm-level data from European countries, Benedek and others (2017) find evidence that size-related tax incentives can weigh on firm productivity and growth.

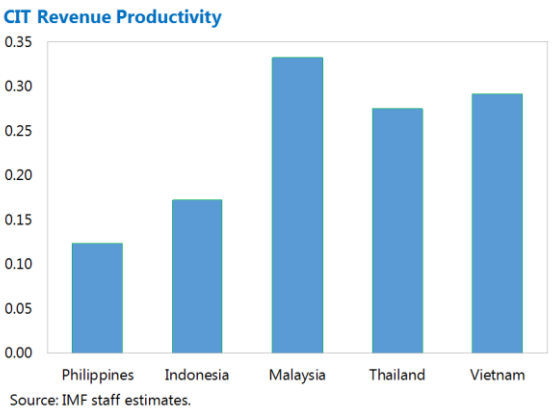
[10] In the case of the Philippines, a one percentage point reduction in the statutory CIT rate would result in a revenue loss of about 0.1 percent of GDP.

[11] The CIT productivity is measured as CIT revenue as a percentage of GDP, divided by the statutory CIT rate.

Figure 2. Corporate Tax Landscape Across ASEAN



Source: IMF.



Source: IMF staff estimates.

13. An alternative reform option is to limit the CIT on "excess returns" on equity instead of a firm's entire stream of income, especially as ASEAN economies mature. According to the allowance for corporate equity (ACE) scheme, investments earning a "normal" return on investments are exempt from the CIT through a deduction of an imputed return on equity.[12] This allowance equals the product of a firm's equity capital including taxable profits net of corporate tax payments and an appropriate rate of interest such as the interest rate on long-term government bonds (Cnossen, 1996). The ACE allowance therefore approximates a firm's normal profits, and the CIT is imposed only on economic rents (profits in excess of the allowance). The ACE system would also address discriminatory treatment of equity financing, eliminate the taxation of marginal investment, and provide opportunities for simplifying the corporate tax regime. While the ACE scheme would reduce investment distortions and promote long-term growth, it can also narrow the tax base and, consequently, lower revenue mobilization, especially in ASEAN countries with relatively low tax revenue-to-GDP ratios. Therefore, it is critical to develop a comprehensive approach to corporate tax reform aiming to reduce the tax burden while simultaneously strengthening tax compliance and introducing base-broadening measures, like phasing out tax incentives and preferential treatment, which complicate the system and erode the revenue base.

[12] Klemm (2006) and De Mooji (2011) provide an overview and applications of the ACE scheme around the world.

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