



PHILIPPINES

SELECTED ISSUES

February 2020

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PHILIPPINES

SELECTED ISSUES

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CONTENTS

EXPORT PERFORMANCE IN THE CONTEXT OF GLOBAL TRADE TENSIONS	4
A. Introduction	4
B. Recent Evolution	5
C. Export Profile	6
D. U.S.-China Trade Tensions and Their Impact on Philippines' Exports	9
E. Comparing the Philippines' 2019 Exports vis-à-vis Vietnam, Mexico, and Bangladesh: A 6-Digit Trade Data Analysis	13
References	22
FIGURES	
1. Trade with the United States and China	5
2. Change in Exports of Goods to China and United States	6
3. Global Market Share and Export Diversification in the Philippines	7
4. Comparative Advantage	8
5. Participation in Global Value Chains	9
6. The Impact of United States and China Tariff	10
7. Exports by the Philippines to the United States	11
8. Exports by the Philippines to China	12
9. Changes in Export to the United States for HS 6-digit Products in the Tariff Lists	14
10. Change in Export to the United States for HS 6-digit Products Not in the Tariff Lists	16
11. Business Environment	17
TABLES	
1. Trade Profiles of the Philippines	18
2. Export Goods to United States, 2014–18	19

APPENDIX	
I. Dimensions of Trade Composition and GVCs	20
VULNERABILITY TO CLIMATE CHANGE AND NATURAL DISASTER	23
A. Philippines Vulnerability to Climate Change and Natural Hazards	23
B. Economic Impacts of Natural Disaster and Climate Change	24
C. Government Initiatives on Climate Change and Natural Disaster	27
D. Policy Recommendations	29
References	30
BOXES	
1. Typhoon Yolanda	25
2. Natural Disaster Risk Insurance	29
FIGURES	
1. Economic Impacts of Selected Storms	26
2. Debt Sustainability Analysis with Natural Disaster Shock	27
THE RISE AND FALL IN INFLATION DURING 2018–19	31
A. Introduction	31
B. Background—Broad Success in Reducing Inflation	32
C. Inflation Dynamics in 2018 and 2019	33
D. Model Decomposition of the Inflation Dynamics During 2018–19	34
E. Going Forward	37
BOX	
1. Inflation Expectation in the Model versus Survey	40
FIGURE	
1. Inflation Decomposition	36
TABLE	
1. Inflation by Items	33
EVOLUTION OF BANK CREDIT GROWTH IN THE PHILIPPINES	41
A. Introduction	41
B. Recent Credit Growth in Perspective	42
C. Is Real Estate Credit a Concern?	43
D. Do Other Sectors Deserve Close Monitoring? The Case of Consumer Loans	45
E. Conclusion	46

BOXES

1. Financial and Market Development in the Philippines _____ 47
2. Macroprudential Policy Measures in the Philippines _____ 49

CORPORATE LEVERAGE IN THE PHILIPPINES—A CONCERN? _____ 51

- A. Introduction _____ 51
- B. Nonfinancial Corporate Leverage in the Philippines _____ 52
- C. How Vulnerable Are Philippine Firms' Balance Sheets? _____ 55
- D. Policy Implications _____ 59

FIGURE

1. Foreign Currency Nonfinancial Corporate Debt _____ 54

TABLE

1. Average Impact on Philippine Corporate Earnings _____ 57

APPENDIX

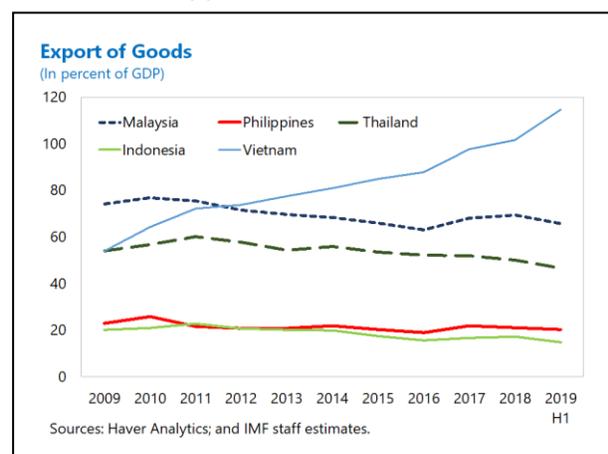
- I. Data Source _____ 60

EXPORT PERFORMANCE IN THE CONTEXT OF GLOBAL TRADE TENSIONS¹

Unlike many Asian countries, the Philippines' exports of goods have remained stable through the ongoing period of global trade tensions. Its low participation in global trade as well as in global value chains relative-to-peers seems to explain why the Philippines has not yet been negatively impacted by the trade tensions. On the other hand, despite its close trade ties with the United States, the Philippines has not benefitted much from trade diversion originated from the U.S.-China bilateral tariffs, unlike Vietnam and Mexico.

A. Introduction

1. The stable evolution of the Philippines' exports of goods in a context of global trade tensions is puzzling. On the one side, unlike most Asian economies, the Philippines has not experienced a fall in its total exports. On the other hand, the Philippines has not benefitted much from trade diversion created after the U.S.-China trade tensions, even though the U.S. and China are major trading partners. The purpose of this analysis is to shine light onto these two aspects, through an empirical strategy that combines both a high-level summary of key trade statistics—capturing comparative advantages and global value chain integration—and the use of disaggregated 6-digit trade data to distinguish between the performance of good categories on the U.S.-China tariff lists and good categories not on the tariff lists, as well as across countries.



2. In many goods categories affected by the U.S.-China trade tensions, that are exported by the Philippines, Vietnam, and Mexico, both Vietnam and Mexico have been able to substantially increase their exports, while the Philippines has not benefited as much. The comparative advantage of the Philippines in terms of exports resides in high tech industries, which constitutes its main exports (especially to the United States). The Philippines' exports to China are mostly concentrated on commodities, with a very small share of them touched by the Chinese tariffs imposed on U.S. producers. However, about ¼ of the goods exported to the U.S. by Philippine producers were included in the U.S. tariffs on Chinese producers (this share was about 1/3 and 2/3 percent for Vietnamese and Mexican producers, respectively). This different coverage explains part of the aggregated evolution differences in exports, but not all because Philippines was not able to scale up its exports to the U.S. as much as Vietnam and Mexico in many specific common products. Although beyond the reach of our analysis, the poor performance in this area might be

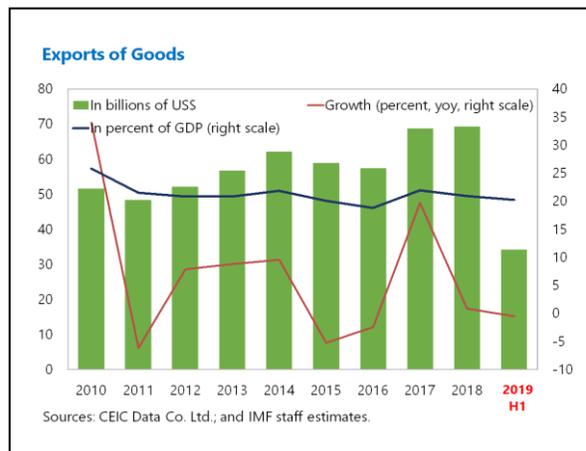
¹ Prepared by Eugenio Cerutti and Agnes Isnawangsih (APD).

related to the fact that despite recent progress, the ease of doing business in the Philippines remains difficult, mainly due to relatively high barriers to FDI and international trade hampering fuller market competition. Removing these structural impediments would be key to taking advantage of the realignment of Asian value chains amid the ongoing U.S.-China trade tensions, as well as Philippines’ young, educated, and growing population.

B. Recent Evolution

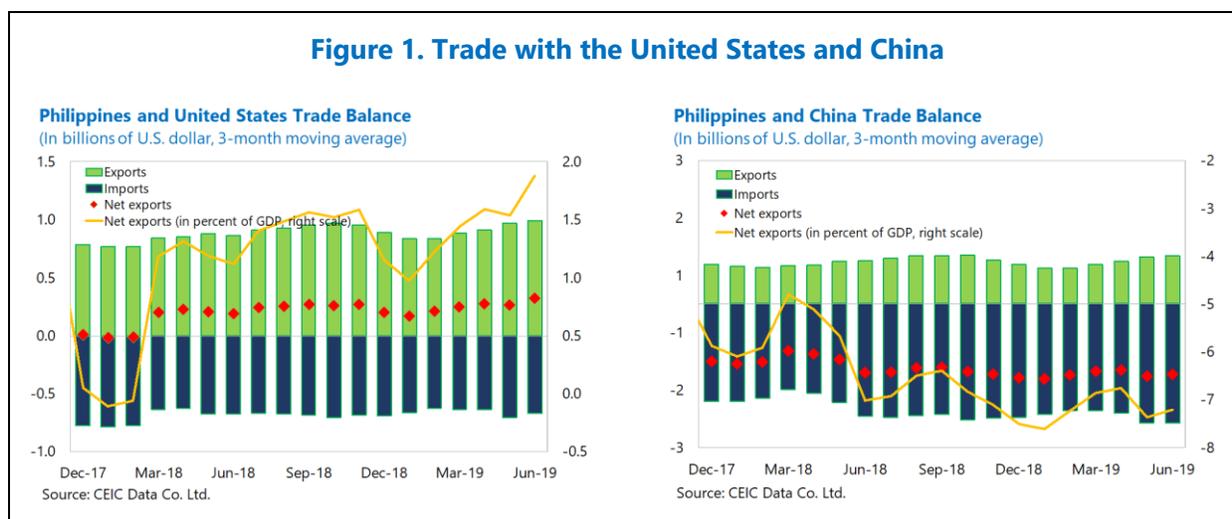
3. Philippines’ exports have slightly increased in dollar terms since 2017, but they have remained broadly stable in GDP terms.

Exports of services—which are about half of goods exports—increased by 7.6 percent or 0.2 percent of GDP, while exports of goods increased by 0.9 percent or 1 percent of GDP during 2018. The increase in electronics exports was offset by the decrease in agro-based products, mineral products, chemicals, and wood manufactures exports (Table 1). In the first half of 2019, exports of goods slightly decreased by US\$283 million (or almost 0.1 percent of 2018 GDP) compared to the same period in the previous year.

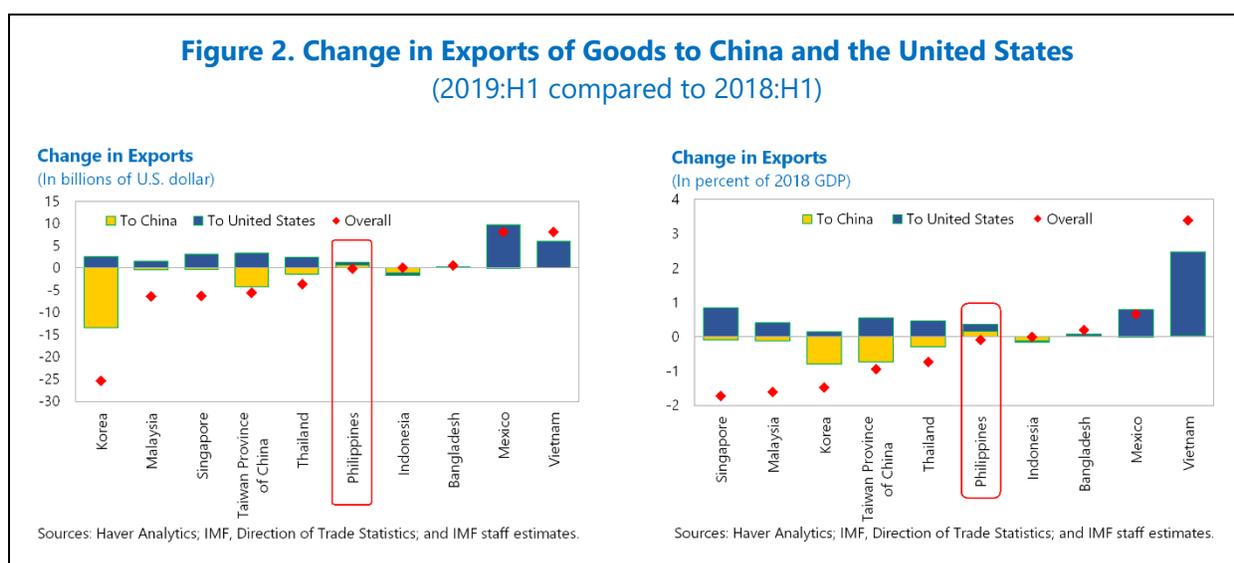


4. Philippines main trade partners include the United States and China.

The United States is the main destination market for Philippines’ exports, absorbing 15.3 percent of total exports. United States exports to Philippines are a bit lower, so the Philippines has a trade surplus in goods of about US\$0.2 billion. China ranked fifth among Philippines’ main export destinations after the U.S., Japan, Hong Kong SAR, and EU. Exports of goods to China and the United States increased, while exports to Japan, EU, and Korea decreased in 2018. In the case of China, Philippines has a trade deficit of around US\$1.1 billion. Exports to China comprise of 12.7 percent of the total (Figure 1).

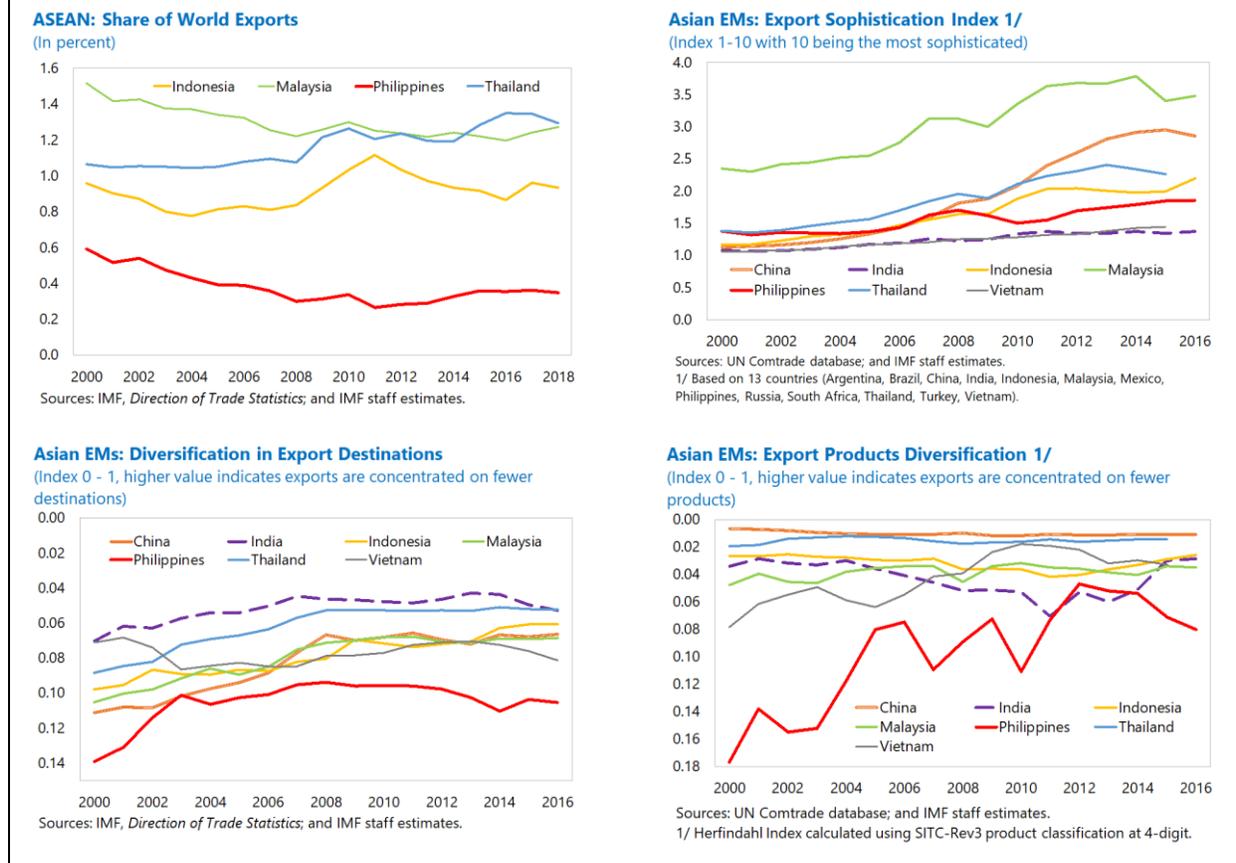


5. The Philippines does not appear to have benefitted much from the U.S.-China trade tensions, but it has performed better than many of its peers at the aggregate level. Unlike other Asian economies, the main export destination of the Philippines is the United States, reflecting a historically close relationship between these two countries. However, the Philippines has not seen a large increase in exports toward the United States. In the first half of 2019 exports to the U.S. and China slightly increased by US\$0.6 billion and US\$0.5 billion. Meanwhile, Mexico and Vietnam seem to have benefited from the trade war, with exports to the United States increasing by US\$9.7 billion and US\$5.9 billion, respectively (Figure 2). On the other hand, the Philippines' exports to China have not declined, as in the case for Korea, Taiwan Province of China, and Thailand, where such declines were larger than the increase in their exports to the United States (Figure 2). During 2014–18, Vietnam and Mexico have exported more products that have been listed in the 2018 U.S. tariff hikes than the Philippines. While Vietnam and Mexico exported 31 percent and 61 percent of products listed in the U.S. tariff hike to China, Philippines' share was about 24 percent (Table 2).



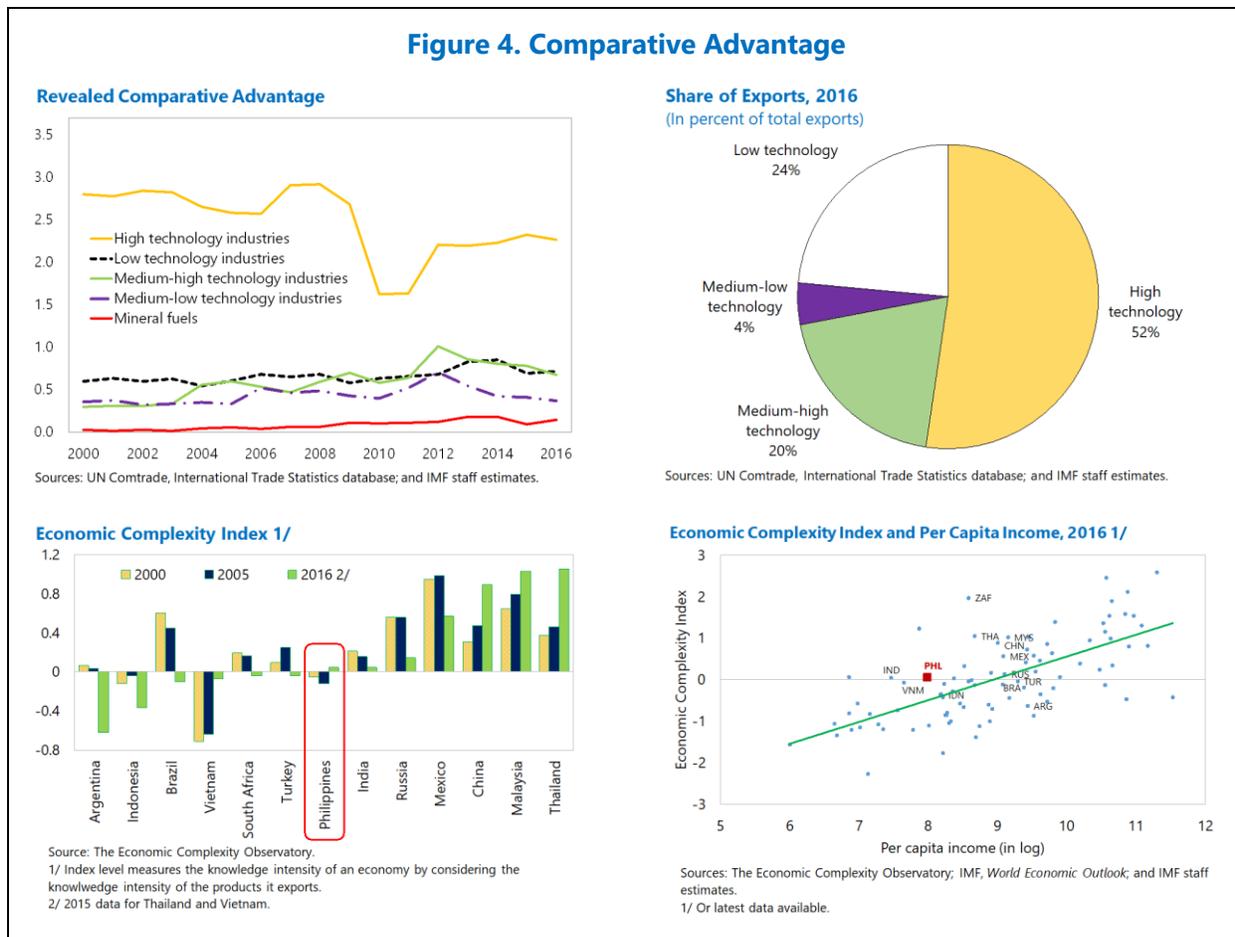
C. Export Profile

6. The Philippines' shares of export global market as well as its export diversification lag other ASEAN countries. Although the government has recently ramped up efforts to strengthen exports through existing and prospective trading agreements in the context of the Philippine Export Development Plan 2018–22, progress has been partial. The share of Philippines' goods exports has increased since 2013, but it is still below the 2000 level and it is the lowest among ASEAN-4 countries. Similarly, its export sophistication index—which measures productivity levels associated with country exports—has also improved, but it lags behind some other ASEAN-4 countries. Also, in terms of diversity of destinations and products, the Philippines' exports are more concentrated compared to other Asian emerging markets (Figure 3). Theoretically, higher concentration could be consistent with higher competitive pressure and possibly also greater innovation (Autor and others, 2017 as cited in Piazza, 2018).

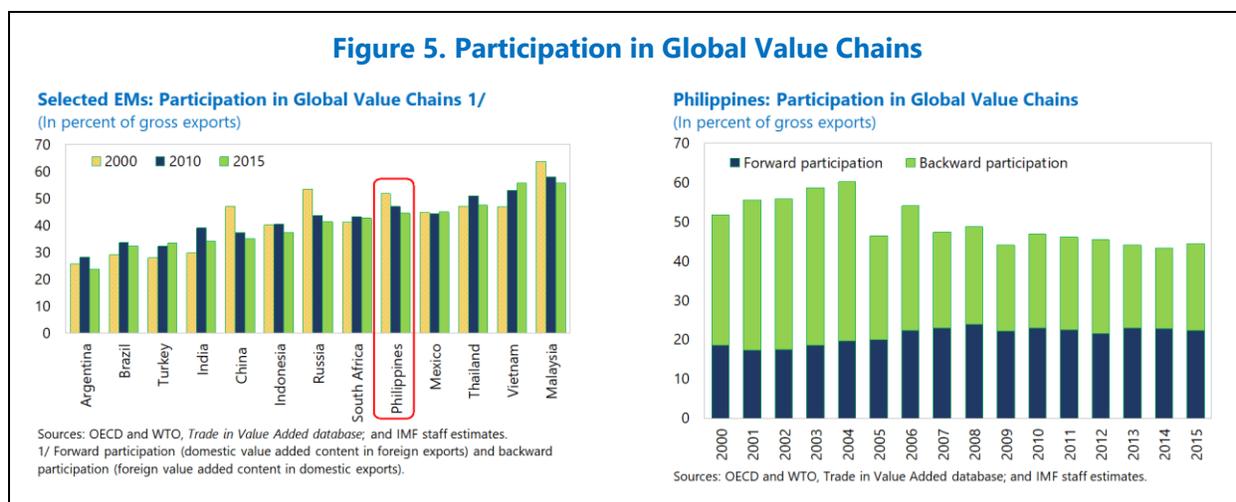
Figure 3. Global Market Share and Export Diversification in the Philippines

7. The comparative advantages of the Philippines in terms of exports resides in high tech industries, which constitutes its main exports. The Philippines has a revealed comparative advantage in exporting from high technology industries. They constitute more than 50 percent of total goods exports, and they were affected during the global financial crisis. The large drop in 2009–10 was caused by the significant decrease in Philippines exports of electronic integrated circuits semiconductor devices, storage units, and digital automatic data processing.² While high tech industries contribute 52 percent of its total exports, medium-high technology products cover about another 20 percent. The economic complexity index (ECI) suggests that the Philippines is capable of producing a diverse range of goods, which are less commonly produced by other countries. A high ECI is usually associated with high per capita income. Despite having a relatively high ECI, the Philippines per capita income is lower than other countries with similar ECI levels, such as Indonesia (Figure 4).

² Revealed comparative advantage (RCA) index > 1 indicates that a country has revealed comparative advantage in exporting that group of products. RCA index compares the share of a group of products in a country's total exports with share of that group of products in total world exports (see Appendix I for further details).



8. Philippines’ participation in global value chains (GVC) has declined overtime, and it is below many ASEAN peers. Backward participation (foreign value added in domestic exports) has declined overtime, while forward participation (domestically produced intermediate goods to be used in third countries) has remained broadly stable. The benefits from GVC participation are often stressed in the literature. For example, participation in GVC could enhance productivity in tradable sectors through knowledge spillovers, technology transfers, and cost savings (Cheng and others, 2015). Likewise, Aslam and others, 2018, showed that an increase in GVC participation leads to higher employment growth for the average firms. The larger share of workers flowing from firms that do not innovate to high-tech firms is another way GVC participation boosts economies’ technological intensity. On the other hand, an increased participation in GVC may also create additional channels of contagion and/or spillovers from market financial stress. The Philippines’ low participation in global trade as well as in global value chains relative-to-peers seems to explain why the Philippines has not yet been negatively impacted by the trade tensions.



D. U.S.-China Trade Tensions and Their Impact on Philippines' Exports

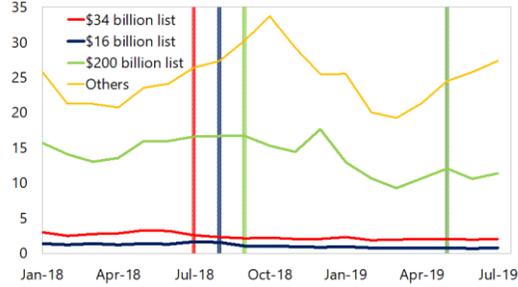
9. Even though the U.S.-China bilateral tariff hikes have decreased their bilateral trade, there is not much evidence that Philippines' exports to those two destinations have benefitted, even when looking at the specific goods affected by the tariffs. United States imports from China have fallen in all the three groups of goods once U.S. tariff hikes were imposed (\$34 billion, \$16 billion, and \$200 billion lists). Meanwhile, U.S. exports to China have also declined after China imposed retaliatory tariffs (\$34 billion, \$16 billion, and \$60 billion lists, see Figure 6). Despite its trade ties to both the U.S. and China, there is no aggregate evidence that the Philippines has largely benefitted from the U.S. tariff sanctions on China as well as from China's retaliatory tariffs on any of the targeted groups. Eugster and others (2019) observed that increases in bilateral tariffs will hurt output, employment, and productivity, not only in the affected economies, but also in bystanders up and down value chains. While some countries may benefit from trade diversion, higher tariffs would leave the global economy worse off.

10. At a good specific level, although tariff-affected products display relatively more positive increases, only a few specific Philippines' exports to the U.S. or China have significantly increased in dollar or percentage terms. Even though specific Philippines' export of goods (at 6-digit Harmonized-System (HS) classification) to the U.S. in the tariff-affected lists increased relatively more than in the non-affected tariff goods (see Figure 7, where above US\$5 million are displayed), only a few goods significantly increased in dollar or percentage terms. Parts of electrical goods (HS-854390) increased by 210 percent or US\$434 million in the last two quarters (2018:Q4 and 2019:Q1) compared to the same period last year. Over the same period, electrical static converter (HS-850440), parts of airplanes and helicopters (HS-880330), handbags (HS-420229) increased more than US\$50 million. While data processing machines (HS-847180), instruments and apparatus for measuring or checking semiconductor devices (HS-903082), and lighting sets (HS-940530) grew more than 5,000 percent, the growth values only ranging from US\$8 million to US\$11 million. Goods not in the list such as plastics articles (HS-392490) and data processing machines (HS-847141) increased by more than 6,000 percent or by around US\$40 million.

Figure 6. The Impact of United States and China Tariff

United States Imports from China 1/

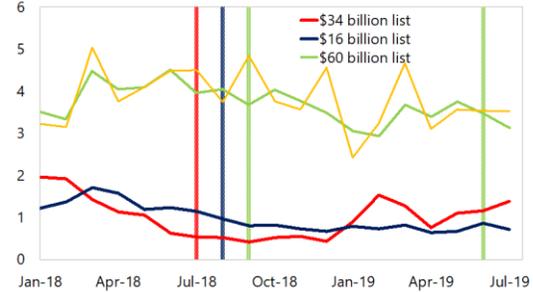
(In billions of U.S. dollar)



Sources: U.S. Department of Commerce; and IMF staff estimates.
 1/ Tariff-effective dates: July 6, 2018, 25 percent on initial \$34 billion list; Aug. 23, 2018, 25 percent on \$16 billion list; Sept. 24, 2018, 10 percent on \$200 billion list, rising to 25 percent May 10, 2019.

United States Exports to China 1/

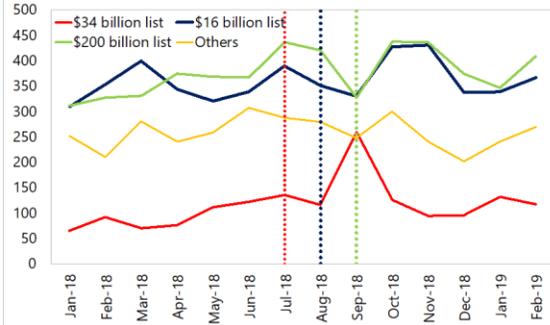
(In billions of U.S. dollar)



Sources: U.S. Department of Commerce; and IMF staff calculations.
 1/ Chinese tariff related dates: \$34 billion list announced on June 16, 2018, effective on July 6, 2018; \$16 billion effective on Aug. 23, 2018, and \$60 billion effective on Sept. 24, 2018 and June 1, 2019.

Philippines Export to the United States

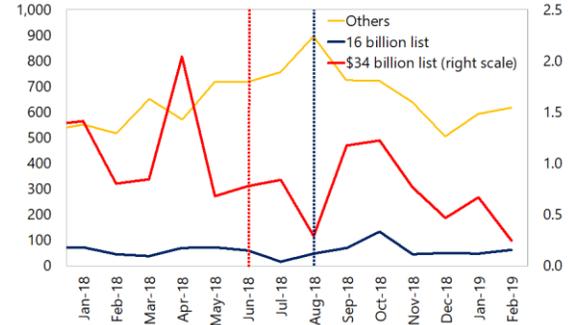
(In millions of U.S. dollar)



Sources: UN Comtrade, International Trade Statistics database; and IMF staff estimates.

Philippines Export to China

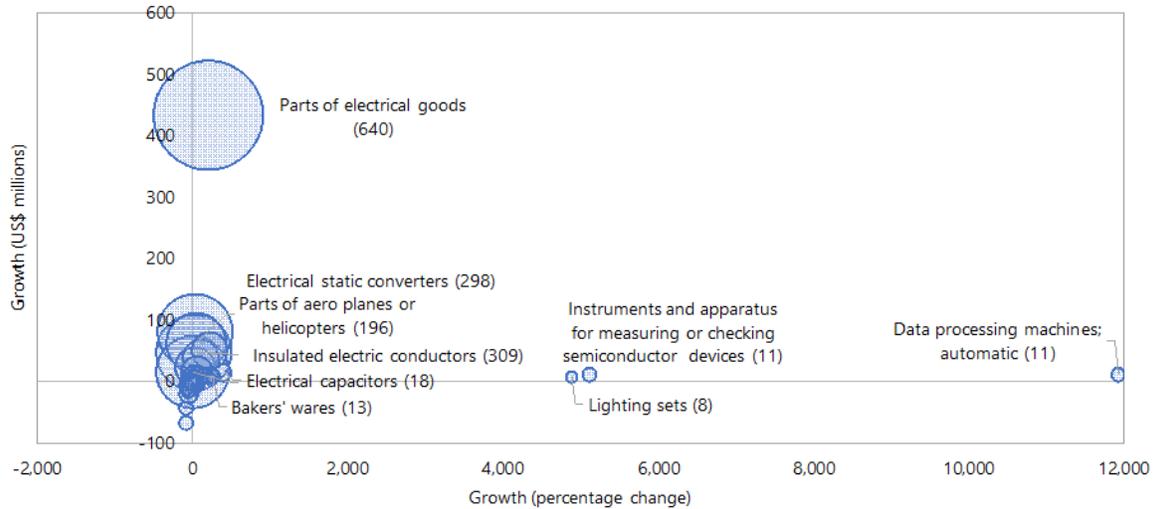
(In millions of U.S. dollar)



Sources: UN Comtrade, International Trade Statistics database; and IMF staff estimates.

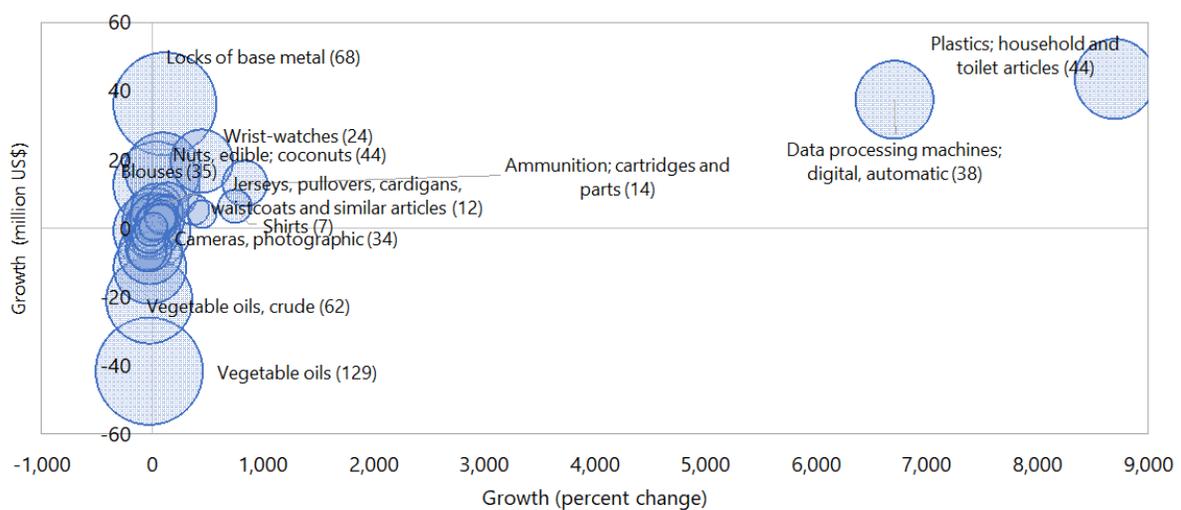
Figure 7. Exports by the Philippines to the United States

HS 6-digit Products in the United States—China Tariff List with Value Over US\$5 Million 1/
(2018:Q4 plus 2019:Q1 vs 2017:Q4 plus 2018:Q1)



Sources: UN, Comtrade, International Trade Statistics database; U.S. Department of Commerce; and IMF staff estimates.
1/ Circles represent values 2018:Q4 plus 2019:Q1 in millions of U.S. dollar.

HS 6-digit Products Not in the United States—China Tariff List with Value Over US\$5 Million 1/
(2018:Q4 plus 2019:Q1 vs 2017:Q4 plus 2018:Q1)

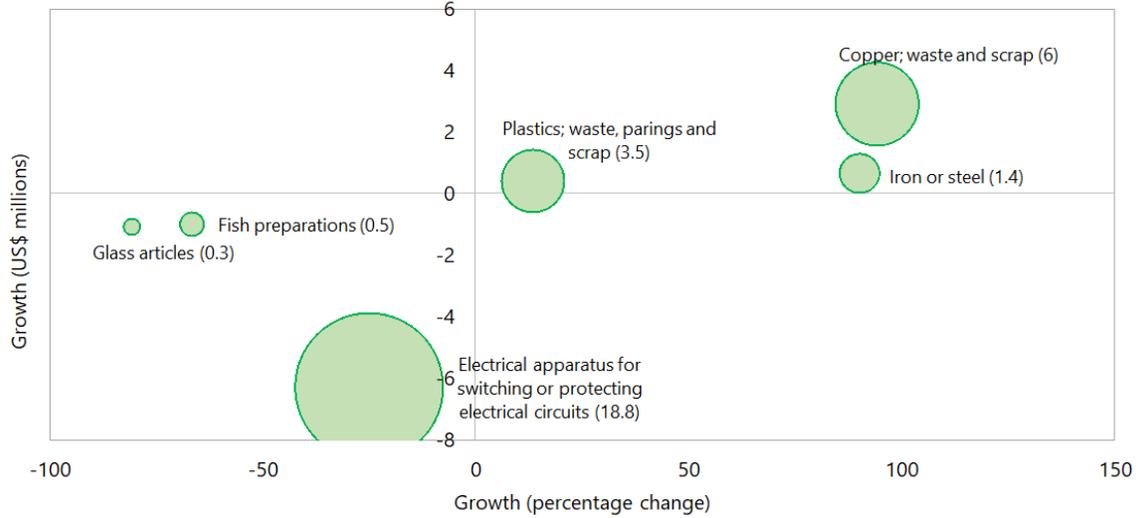


Sources: UN, Comtrade, International Trade Statistics database; U.S. Department of Commerce; and IMF staff estimates.
1/ Circles represent values 2018:Q4 plus 2019:Q1 in millions of U.S. dollar.

Figure 8. Exports by the Philippines to China

HS 6-digit Products in China—U.S. Retaliation Tariff List 1/

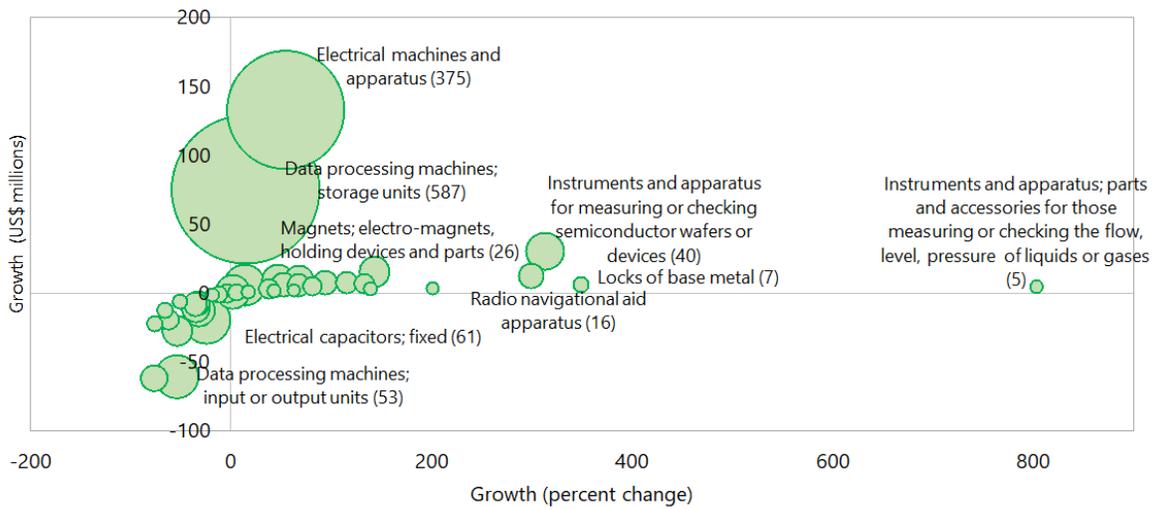
(2018:Q4 plus 2019:Q1 vs 2017:Q4 plus 2018:Q1)



Sources: UN Comtrade, International Trade Statistics database; U.S. Department of Commerce; and IMF staff estimates.
1/ Circles represent value 2018:Q4 plus 2019:Q1 in millions of U.S. dollar.

HS 6-digit Products Not in China—U.S. Retaliation Tariff List with Value Over US\$5 Million 1/

(2018:Q4 plus 2019:Q1 vs 2017:Q4 plus 2018:Q1)



Sources: UN Comtrade, International Trade Statistics database; U.S. Department of Commerce; and IMF staff estimates.
1/ Circles represent exports value in 2018:Q4 and 2019:Q1 in millions of U.S. dollar.

11. Only a few goods that Philippines exports to China have benefited from the retaliation tariffs on U.S. goods. Only a few Philippine export goods are in the China retaliation tariff lists against US producers. Moreover, only two goods, electrical apparatus HS-853690 and copper HS-740400, reach values above US\$5 million. Three goods—electrical apparatus HS-853690, fish preparations HS-160414, and glass articles HS-702000 decreased in the last two quarters. Three other goods—copper HS-740400, iron or steel HS-732690, and plastic HS-391590 increased by 13 percent to 94 percent or between US\$0.4 million to US\$3 million during the period. There were additional six goods that Philippines exported to China in the last two quarters (2018:Q4 and 2019:Q1) but not in the same period last year. The total value of these goods was below US\$5 million. Export goods not in the retaliation list with value over US\$5 million seemed to improve in general. Data processing storage units (HS-847170), electrical machine and apparatus (HS-854390) increased by US\$75 million and US\$132 million; instruments for measuring liquids or gases (HS-902690), locks (HS-830140), radio navigational apparatus (HS-852691), and instrument to measure semiconductor devices (HS-903082) increased by 300 percent or more.

E. Comparing the Philippines' 2019 Exports vis-à-vis Vietnam, Mexico, and Bangladesh: A 6-Digit Trade Data Analysis

12. A simple way to benchmark the performance of the Philippine exports is to compare them at a disaggregate level to the evolution of similar Vietnamese, Mexican, and Bangladesh exports. This is especially feasible if we focus on their exports to the United States using U.S. Department of Commerce trade import data, which is available at HS-6 digit and with a monthly frequency that allow us to focus on the first half of 2019. The disadvantage is that we cannot cover exports to China, but this is not a major constraint to the analysis given the results presented in the previous section.

13. The relatively better performance of Vietnam exports to the US vis-à-vis similar Philippine exports is clearly visible in most goods categories affected by the U.S.-China trade tensions. Although there are several goods categories where either the Philippines or Vietnam do not simultaneously export to the United States (see orange triangles in the top charts of Figure 9), there are many more goods where both countries compete in their exports to the U.S. (see other data levels which are classified following their degree of technology as presented in the analysis of comparative advantages in Figure 4). The scatter plots show that Philippines has performed much better than Vietnam in one specific high-technology product, "Digital Processing Units."³ The Philippines' export in this category increased by almost US\$450 million in 2019:H1 compared to 2018:H1, a much larger amount that Vietnam experienced on the same product (about US\$25 million). Nonetheless, this high-tech product seems to be the exception rather than the rule. Most goods are placed way below a 45-degree line in both top panels of Figure 9 (The right panel

³ Although the HS 6-digit classification does not match, this is the same item that we found classified as "Part of electrical goods" in the Philippines export data (see Figure 7) given the similar magnitudes.

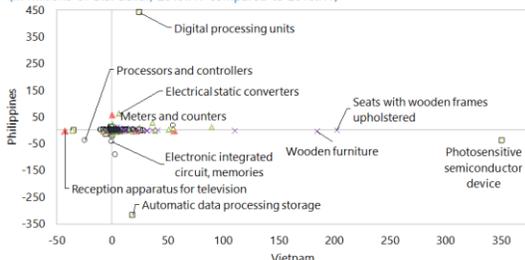
offers a close-up of the left-hand side panel, focusing only on goods that experimented a less than US\$60 million increase).⁴

Figure 9. Changes in Export to the United States for HS 6-digit Products in the Tariff Lists

All Products

Philippines and Vietnam

(In millions of U.S. dollar, 2019:H1 compared to 2018:H1)

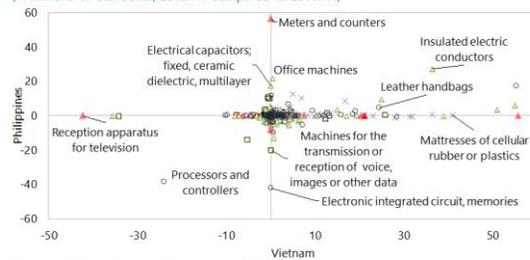


Sources: U.S. Department of Commerce; and IMF staff estimates.

Close-Up

Philippines and Vietnam

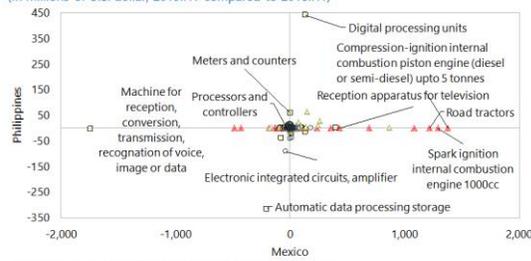
(In millions of U.S. dollar, 2019:H1 compared to 2018:H1)



Sources: U.S. Department of Commerce; and IMF staff estimates.

Philippines and Mexico

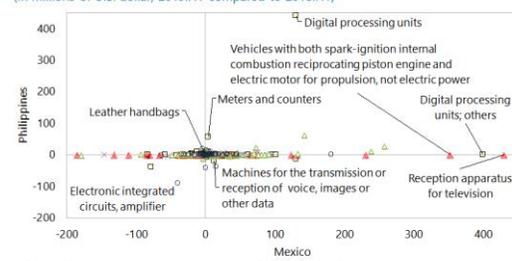
(In millions of U.S. dollar, 2019:H1 compared to 2018:H1)



Sources: U.S. Department of Commerce; and IMF staff estimates.

Philippines and Mexico

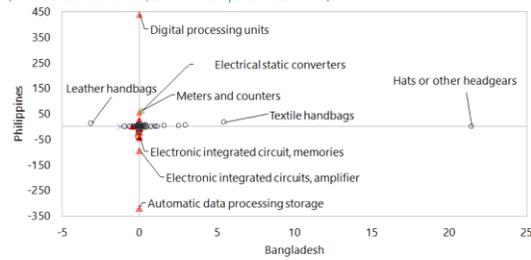
(In millions of U.S. dollar, 2019:H1 compared to 2018:H1)



Sources: U.S. Department of Commerce; and IMF staff estimates.

Philippines and Bangladesh

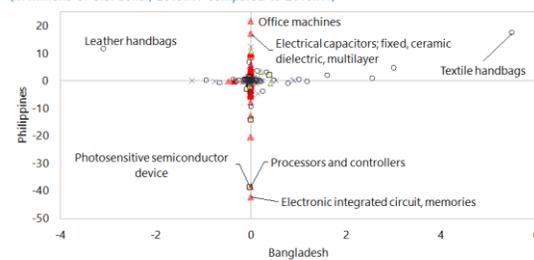
(In millions of U.S. dollar, 2019:H1 compared to 2018:H1)



Sources: U.S. Department of Commerce; and IMF staff estimates.

Philippines and Bangladesh

(In millions of U.S. dollar, 2019:H1 compared to 2018:H1)



Sources: U.S. Department of Commerce; and IMF staff estimates.

▲ One country does not export ■ High technology ▲ Medium high X Medium low ○ Low

⁴ Plotting the evolution of Philippines' exports to the US together with the Chinese exports to the US also show that Philippines' additional exports to the US only represented a fraction of the decrease of Chinese exports.

14. The Philippines exports also performed worse than many similar Mexican exports, but this does not seem the case vis-à-vis Bangladesh exports since they mostly do not cover the same goods. Even though the overlap between Philippine and Mexican exports on the same goods is much lower given the large quantity of goods exported by Mexico but not Philippines to the United States (see orange triangles in the middle panels of Figure 9), there are still many high-tech and medium-tech goods where Mexico performed much better during 2019:H1 than the Philippines. The comparison with Bangladesh is a bit different. The Philippines exports much more goods included in the U.S. tariffs list against Chinese producers than Bangladesh (orange triangles are now in the vertical axis in the bottom panels of Figure 9). Almost all the goods where Bangladesh displayed much higher dollar increments during 2019:H1 were low-tech textile related products.

15. In sum, the disaggregated trade data evidence suggests that the Philippines was not able to scale up its exports to the United States as much as Vietnam and Mexico in many high- to medium-tech goods included in the U.S. tariff lists. Results are similar but do not display as large variations in most goods as shown in Figure 10. Although beyond the reach of our analysis, the evidence of the Philippines' poor performance to scale up production could be related to the fact that despite recent progress, the ease of doing business in the Philippines remains difficult, mainly due to relatively high barriers to FDI and international trade hampering fuller market competition (see Figure 11).⁵ Removing these structural impediments would be key to taking advantage of the realignment of Asian value chains amid the ongoing U.S.-China trade tensions, as well as Philippines' young, educated, and growing population.

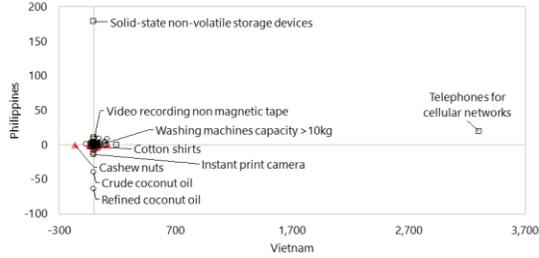
⁵ The Philippines improved its ranking in the 2020 World Bank *Doing Business* report. While it holds the 124th position last year, it is now ranked as the 95th country out of 190 economies. The government is continuing its efforts to further improve the business environment for investment and strengthen the trade sector through different strategies (e.g., fully operationalizing the National Single Window/TradeNet System and its integration into the ASEAN Single Window; relaxing restriction on foreign participation in more areas of investment; the review of existing FX policies governing trade and nontrade current account transactions, etc.).

Figure 10. Change in Export to the United States for HS 6-digit Products Not in the Tariff Lists

All Products

Philippines and Vietnam

(In millions of U.S. dollar, 2019:H1 compared to 2018:H1)

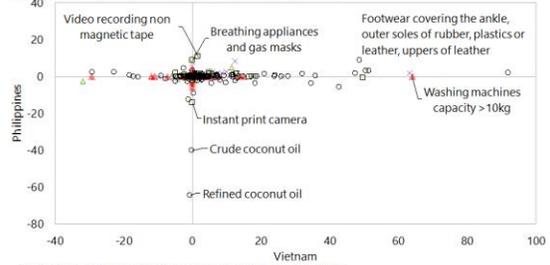


Sources: U.S. Department of Commerce; and IMF staff estimates.

Close-Up

Philippines and Vietnam

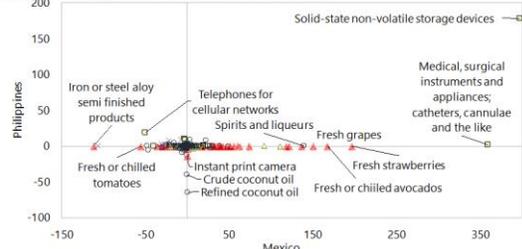
(In millions of U.S. dollar, 2019:H1 compared to 2018:H1)



Sources: U.S. Department of Commerce; and IMF staff estimates.

Philippines and Mexico

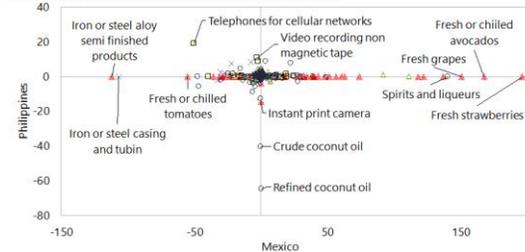
(In millions of U.S. dollar, 2019:H1 compared to 2018:H1)



Sources: U.S. Department of Commerce; and IMF staff estimates.

Philippines and Mexico

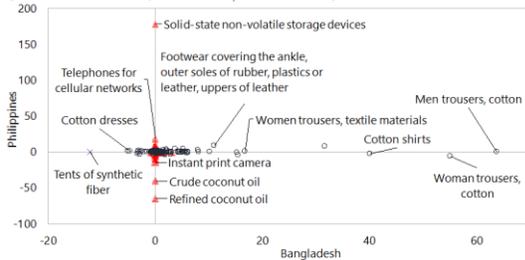
(In millions of U.S. dollar, 2019:H1 compared to 2018:H1)



Sources: U.S. Department of Commerce; and IMF staff estimates.

Philippines and Bangladesh

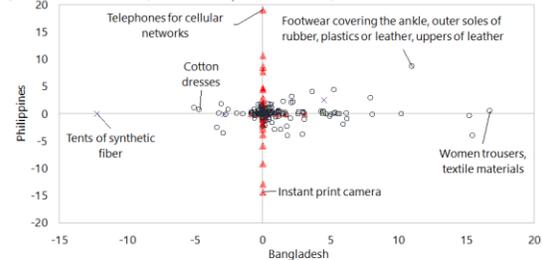
(In millions of U.S. dollar, 2019:H1 compared to 2018:H1)



Sources: U.S. Department of Commerce; and IMF staff estimates.

Philippines and Bangladesh

(In millions of U.S. dollar, 2019:H1 compared to 2018:H1)



Sources: U.S. Department of Commerce; and IMF staff estimates.

▲ One country does not export ■ High technology ▲ Medium high X Medium low ○ Low

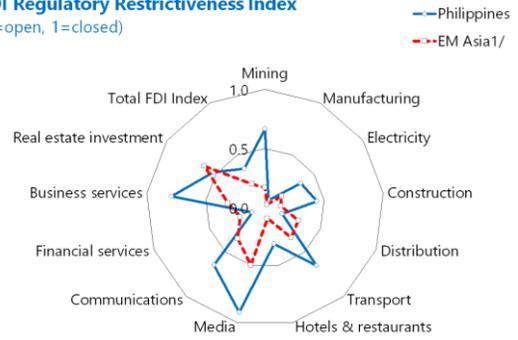
Figure 11. Business Environment

Global Competitiveness Index
(1=worst, 7=best)



Sources: World Economic Forum, Global Competitiveness Report 2017-18 edition; and IMF staff estimates.
1/ Average of India, Indonesia, Malaysia, Philippines, Thailand, and Vietnam.

FDI Regulatory Restrictiveness Index
(0=open, 1=closed)



Sources: OECD, FDI Regulatory Restrictiveness Index, 2018; and IMF staff estimates.
1/ Average of India, Indonesia, Malaysia, Philippines, Thailand, and Vietnam.

Table 1. Trade Profile of the Philippines

Merchandise	2017	2018		2017	2018
Exports (percent of GDP)	21.9	20.9	Imports (in percent of GDP)	30.6	34.1
Exports (billions of US\$)	68.7	69.3	Imports (in billions of US\$)	96.1	112.8
Services	2017	2018		2017	2018
Exports (percent of GDP)	11.1	11.3	Imports (in percent of GDP)	8.3	8.2
Exports (billions of US\$)	34.8	37.5	Imports (in billions of US\$)	26.1	27.0
Main partners (in percent of total)					
Exports	2017	2018	Imports	2017	2018
United States	14.1	15.3	China	18.2	19.5
Japan	15.8	14.9	Korea	8.8	10.0
Hong Kong SAR	13.1	13.8	Japan	11.4	9.6
European Union	14.0	12.8	European Union	6.9	7.6
China	11.7	12.7	United States	8.1	7.1
Singapore	5.8	6.2	Thailand	7.0	6.9
Thailand	4.0	4.3	Indonesia	6.6	6.1
Korea	6.3	3.8	Singapore	5.8	5.5
Taiwan POC	3.6	3.6	Taiwan POC	5.3	4.9
Malaysia	2.5	2.8	Malaysia	3.9	3.7
Trade by commodity (in percent of total)					
Main exports	2017	2018	Main imports	2017	2018
Electronics	56.8	58.5	Capital goods	32.6	31.6
Mach./transport equip.	7.5	7.5	Manufactured goods	12.6	13.2
Agro-based products	7.2	6.8	Mineral fuels	11.2	11.8
Mineral products	6.2	5.7	Elec. equip. raw materials	8.8	9.2
Chemicals	2.5	2.0	Chemical	9.7	9.1
Wood manufactures	1.8	0.5	Durable consumer goods	9.8	8.8
Main services exports	2017	2018	Main services imports	2017	2018
Other business services	44.7	44.4	Travel	45.3	44.6
Travel	20.1	19.9	Transport	19.2	19.7
Telecom, computer & inform	16.2	15.9	Other business services	19.1	17.2
Manufacturing services	9.9	10.7	Insurance & pension	5.7	5.7

Sources: IMF, *Direction of Trade Statistics*; CEIC Data Co. Ltd.; and IMF staff estimates.

Table 2. Export Goods to United States, 2014-18

(Average, 6-digit Harmonized System)

US tariff hikes	Products in the list Number	<u>Philippines</u>		<u>Vietnam</u>		<u>Mexico</u>	
		Number	Percent	Number	Percent	Number	Percent
\$16 billion	560	223	40	239	43	462	82
\$34 billion	199	72	36	99	50	172	87
\$200 billion	3214	644	20	889	28	1799	56
Average	1324	313	24	409	31	811	61

Source: IMF staff estimates.

Appendix I. Dimensions of Trade Composition and GVCs

Diversification is measured based on Herfindahl-Hirschman Index (HHI). The HHI is calculated as the sum of squared shares of each product in total export for export product diversification and the sum of squared shares of each export destination in total export for market diversification. If N denotes the number of export products or export destinations and s denotes the market share, HHI of a country is calculated as

$$HHI = \sum_{i=1}^N s_i^2$$

The HHI values range between $1/N$ to 1 with smaller index indicates more diversified or less concentrated market. Diversifications of export product and destination are analyzed for Philippines and its comparators. Product diversifications are calculated based on SITC Rev. 3 at 4-digit product classification and for destination HHIs are calculated using Direction of Trade Statistics data.

Revealed comparative advantage (RCA) is measured according to the RCA index introduced by Balassa (1965) that compares the share of a group of products in a country's total exports with the share of that group of products in total world exports. $RCA > 1$ indicates that a country has revealed comparative advantage in exporting that group of products. Likewise, $RCA < 1$ indicates that a country has revealed comparative disadvantage.

The RCA index for country c in exports of product p is calculated using the following formula:

$$RCA_{cp} = \left(\frac{x_{cp}}{\sum_c x_{cp}} \right) / \left(\frac{\sum_p x_{cp}}{\sum_c \sum_p x_{cp}} \right)$$

Where x_{cp} represents the exports of product p by country c . The numerator refers to the share of product p in the total exports of county c and the denominator refers to the share of product p in total world exports.

Hatzichronoglu (1997) and OECD (2003) developed export products classification based on level of skill and technology intensity. This classification has been modified to make it more relevant to Indonesia's export structure and data availability. Instead of ISIC Rev 3 product classification, we use SITC-Rev 3 at the 4 digit. Export products are classified into five categories: High, Medium-high, Medium-low, Low Technology and Mineral Fuels. Mineral Fuels group is added, as oil and gas are the main export products in Indonesia.

Export sophistication is constructed using Hausmann, Hwang and Rodrik (2007) framework. This measure aims to capture the productivity level associated with a country's exports. The evolution of sophistication displays trend in high-growth, rich countries versus slow-growing, poor economies. For each product, an associated income/productivity level (PRODY) is generated by taking a weighted average of the per capita GDP, where the weights reflect the RCA of a country in that product, p denotes export product or category, t time, c country, and Y per capita income

$$PRODY_{pt} = \sum_c (RCA_{cpt} * Y_{ct}).$$

Then the income/productivity level that corresponds to a country's export basket (EXPY) is constructed with the weights corresponding to the shares of these products in total exports.

$$EXPY_{ct} = \sum_p (x_{cpt} / \sum_p x_{cpt}) PRODY_{pt}$$

Economic complexity is a concept developed by Hidalgo and Hausmann (2009) to capture the amount of productive knowledge that is embedded in a country's products. The economic complexity index (ECI) encompasses two aspects: diversity—the number of distinct products that a country makes; and ubiquity—the number of countries that also make the same product. A country that is able to produce and export a wide variety of products (high diversity) and those that are less ubiquitous are ranked high on ECI. ECI ranks how diversified and complex a country's export basket is. We use ECI data calculated based on Simoes and Hidalgo (2011).

Global value chains (GVCs) are the position and participation of countries in global production. The GVC participation index indicates the extent to which a country is involved in a vertically fragmented production process (in relative and absolute terms). It distinguishes the use of foreign inputs in exports or backward participation and the use of domestic intermediates in third country exports or forward participation (De Backer and Miroudot, 2013). The OECD, in cooperation with the World Trade Organization (WTO), has developed estimates of trade flows in value-added terms. Inter-country input-output tables and a full matrix of bilateral trade flows are used to derive data on the value added by each country in the value chain.

References

- Aslam, A., F. Coelli, J. Eugster, G. Ho, F. Jaumotte, C. O. Buitron, and R. Piazza, 2018, "Is Productivity Growth Shared in Globalized Economy?," *April 2018 World Economic Outlook*, World Economic and Financial Surveys (Washington: International Monetary Fund). Available via the Internet: <https://www.imf.org/en/Publications/WEO/Issues/2018/03/20/world-economic-outlook-april-2018#Chapter 4>.
- Cheng, K., S. Rehman, D. Seneviratne, and S. Zhang, 2015, "Reaping the Benefits from Global Value Chains," IMF Working Paper No. 15/204 (Washington: International Monetary Fund).
- Eugster, J., F. Jaumotte, M. MacDonald, R. Piazza, 2019, "The Drivers of Bilateral Trade and The Spillovers from Tariffs," *April 2019 World Economic Outlook*, World Economic and Financial Surveys (Washington: International Monetary Fund). Available via the Internet: <https://www.imf.org/en/Publications/WEO/Issues/2019/03/28/world-economic-outlook-april-2019#Chapter 4>
- Piazza, R, 2018, "Relationship between Competition, Concentration, and Innovation." Box 4.4. in Chapter 4, "Is Productivity Growth Shared in Globalized Economy?," *April 2018 World Economic Outlook*, World Economic and Financial Surveys (Washington: International Monetary Fund). Available via the Internet: <https://www.imf.org/en/Publications/WEO/Issues/2018/03/20/world-economic-outlook-april-2018#Chapter 4>

VULNERABILITY TO CLIMATE CHANGE AND NATURAL DISASTER¹

The Philippines is one of the countries' most vulnerable to climate change risks and natural disasters. The economic cost of past typhoons and other disasters has been sizable, lowering real GDP, worsening current account balances, and putting pressure on fiscal accounts. The time interval between severe natural disasters has become shorter, implying that the country has less time to recover from severe storm damage than in the past. In this context, debt sustainability is both a function of the cost of the disaster—which can be easily accommodated by its current low debt levels—but also their frequency. To address climate change and natural disaster vulnerabilities, the Philippines' government has taken a number of initiatives, but additional measures would help to further contain and/or reduce damages, and to advance climate change mitigation.

A. Philippines Vulnerability to Climate Change and Natural Hazards

1. Philippines is one of the countries' most vulnerable to climate change risks and natural hazards—cyclones, landslides, floods, droughts. The vulnerability reflects its location in the western Pacific Ocean, surrounded by naturally warm waters, its reliance on climate-sensitive natural resources, and its settlement patterns, with most of the population residing along the vast coastlines. The UN *2016 World Risk Index* ranks the Philippines as the third most vulnerable country in terms of natural hazard risk.² Among more recent measurements, the *2019 Inform Global Risk Index*³ ranks Philippines as the country most susceptible to climate change and natural hazards. Similarly, the *Global Climate Risk Index*⁴ 2019 ranks it as the fifth most vulnerable to climate change-induced natural calamities, and the fourth most affected county by extreme weather events for the period 1998–2017. The study found that 47 percent of the country's



¹ Prepared by Md. Shah Naoaj (APD).

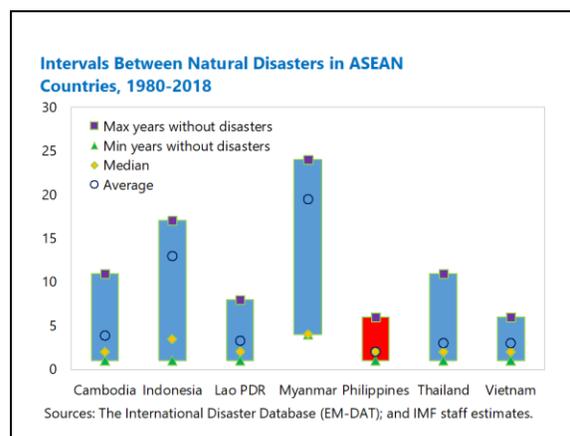
² United Nations University publishes the World Risk Index based on countries' exposure, vulnerability, susceptibility, lack of coping capacities and lack of adaptive capacities.

³ INFORM is a collaboration of the Inter-Agency Standing Committee Reference Group and the European Commission; it publishes natural hazard risk based on a country's hazards and exposure, vulnerability and lack of coping capacity dimension.

⁴ Germanwatch publishes the *Global Climate Risk Index*, analyzing to what extent countries and regions have been affected by the impacts of weather-related loss events such as storms, floods, heat waves.

population is exposed to climate hazards such as earthquakes, tsunami, floods, tropical cyclones and drought.

2. The time interval between natural disasters has become shorter in the Philippines, implying that the country will typically have less time to recover than in the past. Philippines is the most exposed country to natural disasters among ASEAN countries. Both the median and average time interval between severe disasters—disasters that impact at least 5 percent of the total population or 1 percent of the GDP—is about two years in the Philippines, with a maximum and minimum period of five and one year, respectively, shorter than for any other ASEAN country.⁵



B. Economic Impacts of Natural Disaster and Climate Change

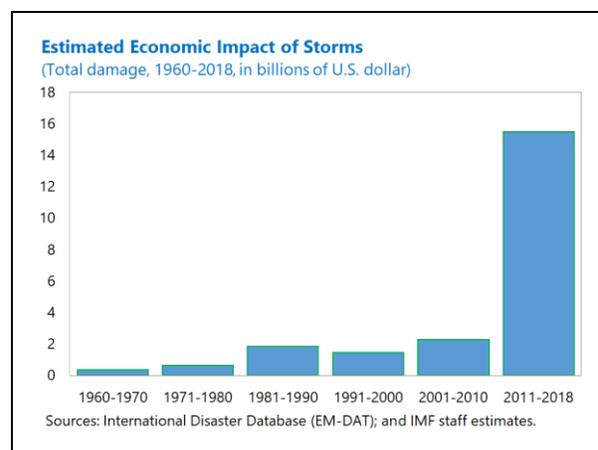
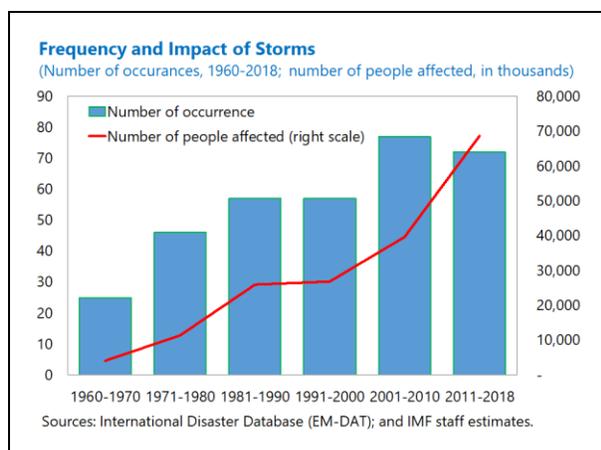
3. Typhoons and other disasters have a large impact on the Philippines economy. Two of the most recent typhoons, typhoon Pablo 2012 and typhoon Yolanda 2013 (Box 1), were considered as the most devastating (category 5) according to the Saffir–Simpson hurricane scale.⁶ The International Disaster Database⁷ shows (see charts below) that during 2011–2018 a total of 72 storms occurred. They affected about 68 million people, with a total estimated damage of US\$15 billion. The government and development partners, led by the World Bank and the United Nations, conducted a comprehensive Post-Disaster Needs Assessment (PDNA)⁸ for the Philippines in 2009. The estimated average total damage and losses from, and recovery needs to social, productive, and infrastructure sectors after a natural disaster was about 2.7 percent of GDP.

⁵ Three ASEAN countries are excluded from the chart, because at least two severe disaster observations are needed to calculate the disaster interval.

⁶ The Saffir-Simpson Hurricane Wind Scale is a 1 to 5 rating based on a hurricane's sustained wind speed; 5 means most devastating.

⁷ The international disaster database is a global database on natural and technological disasters, containing essential core data on the occurrence and effects of more than 21,000 disasters in the world, from 1900 to present. EM-DAT is maintained by the Centre for Research on the Epidemiology of Disasters (CRED).

⁸ In the PDNA, damage is estimated with respect to the replacement value of both public- and private-domain physical assets damaged or destroyed. Losses are estimated based on the changes in economic flows resulting from the temporary absence of the damaged assets or disruption to access to goods and services attributable to reduced revenue, higher operational costs, and actions taken to reduce risk.



Box 1. Typhoon Yolanda^{1/}

Typhoon Yolanda, the strongest storm ever to make landfall, struck the central Philippines on November 8, 2013, causing unprecedented damage to nine regions, covering 591 municipalities and 57 cities spread across 44 provinces. According to the United Nations, 6,201 people were killed, 1,785 remain missing, 4.1 million people were displaced, and 1.1 million houses were damaged or destroyed.^{2/} All told, 14 million people (more than 14 percent of the population) were impacted by the storm. Prior to the storm, the affected region accounted for 17½ percent of GDP and included 31 percent of the population (29 million people). The area is intensive in agriculture (27 percent of national output), with a smaller share of countrywide industry and services. Average household income in 2012 was 75 percent of the national average, and more than half of all households were heavily dependent on income from agriculture and remittances. Poverty rates in the region—ranging between 29 percent and 41 percent—were well above the national average of 22 percent.

The official estimate of the typhoon-related damage and loss amounts to US\$13 billion (about 5 percent of GDP), including destroyed physical assets and foregone income. As with previous disasters, the private sector is thought to have incurred about 90 percent of the cost. Private losses were uninsured. Preliminary estimates suggest that the impact on economic activity at the national level was fairly limited, reflecting the relatively lower incomes and weaker economic dynamism of the affected regions.

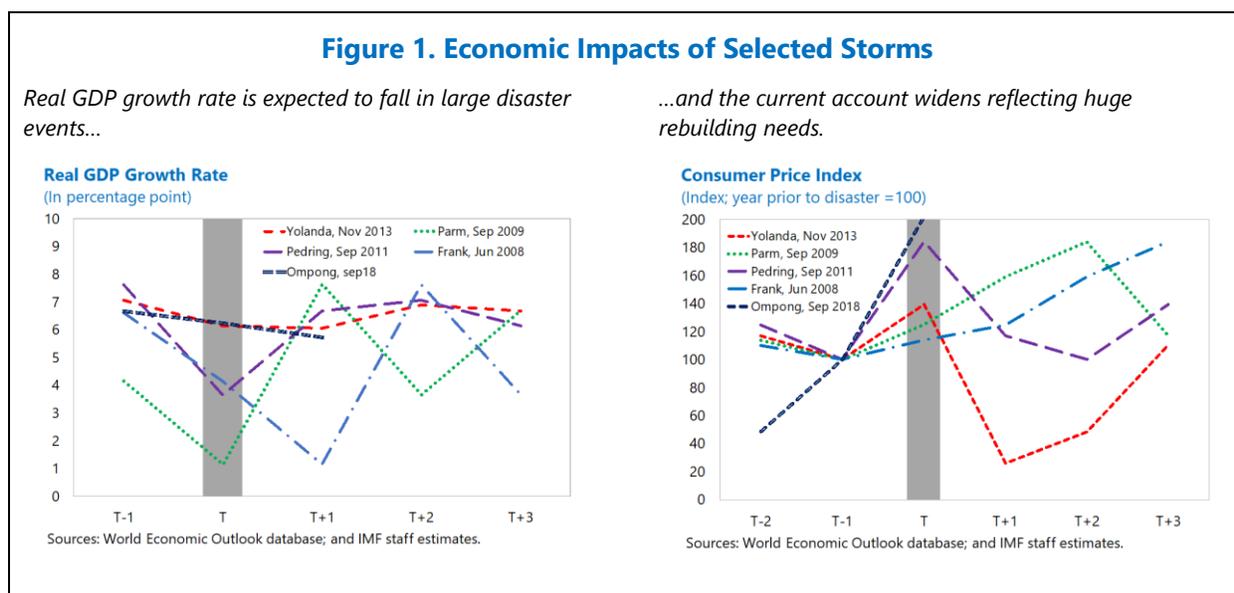
In response, the government has earmarked some P 120 billion (1 percent of GDP) for reconstruction spending in 2014. In addition, a Multi-donor Trust Fund was established to coordinate the deployment of foreign grants.

1/ IMF, *Philippines—Staff Report on the 2014 Article IV Consultation* (IMF Country Report 14/245).

4. The economic impact of past storms has been sizable, lowering real GDP, worsening current account balances, and putting pressure on the fiscal sector. A 2017 World Bank report⁹ estimates that each year, the Philippines incurs an average asset loss of US\$3.5 billion because of typhoons and earthquakes. Figure 1 summarizes the key attributes of the top five recent catastrophic natural disasters and their key economic impacts. Real GDP growth rate fell in the disaster year for all of the storms; however, the country reverted immediately in the following year

⁹ World Bank (2017). Press Release.

due to its capacity and strong economic fundamentals.¹⁰ Similarly, in the disaster year, the inflation pressures increased due to supply shock and balance of payments pressure.



5. Climate change could entail particularly severe effects on agriculture, which contributes 12 percent to GDP. Climate change would have a significant negative impact on the production of staple crops. For every 1°C increase over average temperatures when above 30°C temperature, rice, wheat and corn yields would likely decline by 10 percent (USAID, 2017). The International Food Policy Research Institute (2016) projects the net negative impact on the economy of climate change on agriculture to be about P 26 billion per year through 2050. Beyond the impact of changes in temperature and precipitation, climate change could also play a role through natural disasters on agriculture. From 2006–2013, the Philippines was struck by 75 disasters—mostly cyclones, tropical storms and floods—that caused US\$3.8 billion in accumulated damage and losses to the agriculture sector (FAO 2015).¹¹

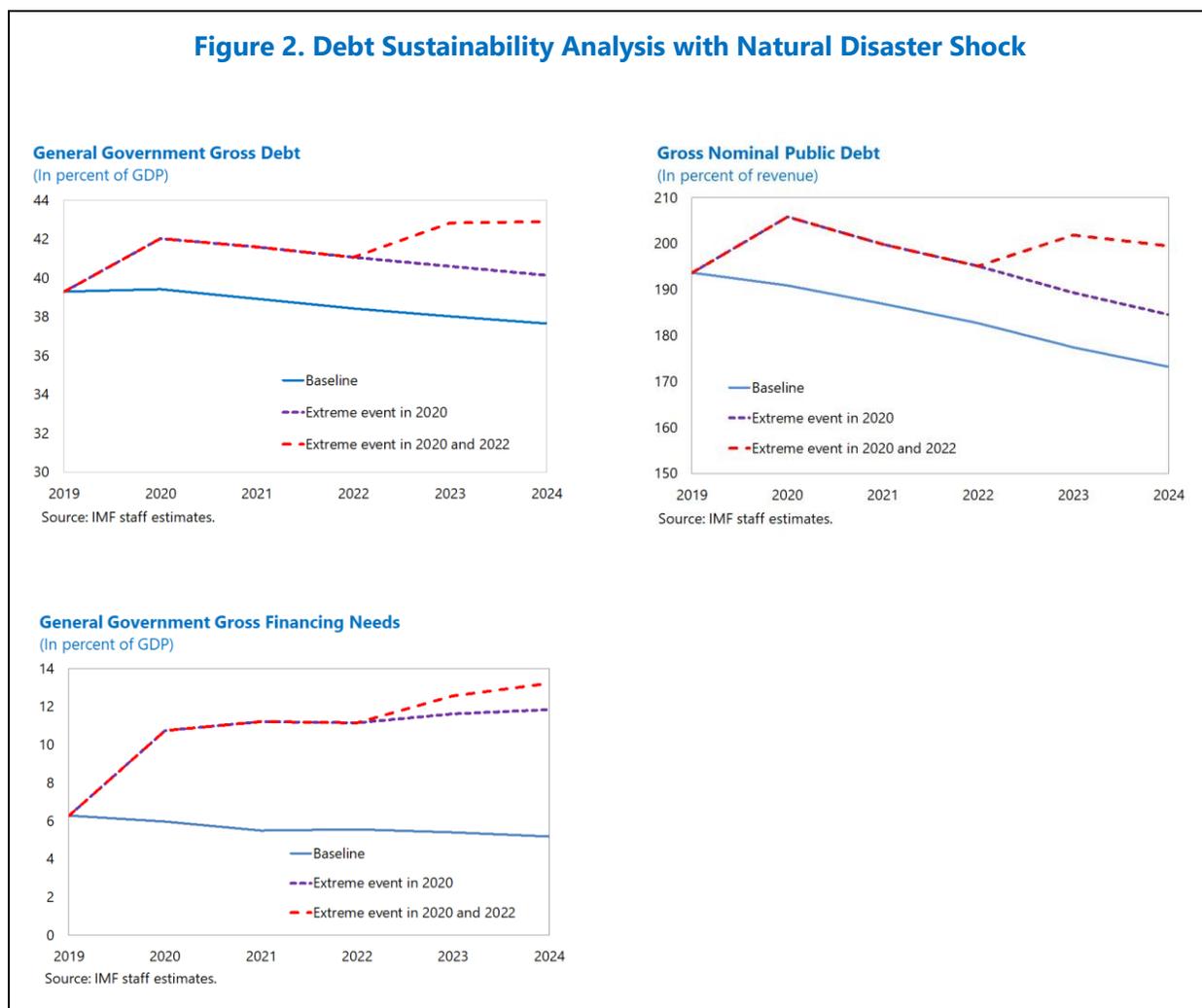
6. Natural disaster shocks could lead to higher risks to debt sustainability, depending on their size and frequency. In the baseline scenario, the debt-to-GDP ratio is projected to decline to 37.6 percent in 2024. An extreme natural disaster shock in 2020 would raise the debt to GDP ratio to 42 percent in that year, but it would decrease thereafter, reaching the pre-shock debt-to-GDP ratio level in 2024 about five years later—which is in line with the maximum interval between severe storms experienced by the Philippines during 1980–2014. If, instead, the interval between extreme shocks were shorter, such as the median two years interval between severe storms observed

¹⁰ Even though the overall country impact of natural disasters is sometimes small, the regional impact is often much more considerable on a regional basis. See for example “The Impact of Extreme Weather Episodes on the Philippine Banking Sector: Evidence from Regional Branch-Level Data,” which examines the impact of extreme weather episodes on the performance of the Philippine banking sector using regional and branch level data (BSP, 2019).

¹¹ The FAO (2015) analysis includes the impact on crops, livestock, fisheries, forestry, irrigation and other areas such as sector infrastructure, when referring to the damage and losses to the agriculture sector of a country.

during 1980–2014, debt ratios might not stabilize. This is captured by the extreme natural disaster shock scenario (Figure 2, red line), where the Philippines' general government gross debt is projected to increase to around 43 percent of GDP in 2024. Similarly, the gross public debt to revenue and gross financing need to GDP would increase to around 203 percent and 13 percent respectively. This scenario illustrates the importance of the frequency of extreme natural disaster shocks.

Figure 2. Debt Sustainability Analysis with Natural Disaster Shock

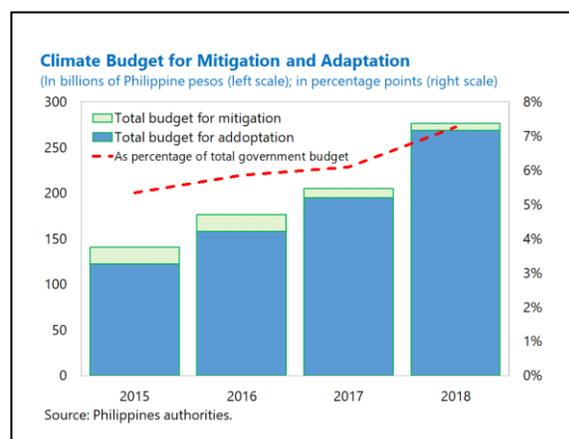


C. Government Initiatives on Climate Change and Natural Disaster

7. Philippines has submitted, in the context of the Paris Agreement, its intended nationally determined contribution (INDC) to reduce its greenhouse gas emissions by 70 percent by 2030 on the condition of international support, and it has also ratified the United Nations Framework Convention on Climate Change in 1994. Given the high vulnerability of the Philippines to climate change, the Climate Change Commission and National Disaster Risk Reduction and Management Council are working jointly to coordinate, monitor, and evaluate programs and actions on climate change. The government has allocated 7.26 percent of total

budget for climate adaptation and mitigation, of which only 0.2 percent was for climate mitigation. In the pursuit of reducing carbon emissions, Philippines started issuing climate bonds in 2016, with some momentum recently despite the fact that the size for the climate bond is still small. In August 2019, the government adopted the guidelines on green bond issuances under the ASEAN Green Bonds Standards. In addition, the Tax Reform for Acceleration and Inclusion (TRAIN) Act, implemented in 2018 raised taxes on coal from

P 10 (US\$0.19 cents) per metric ton in 1977–2017, to P 50 in 2018, P 100 in 2019, and P 150 (US\$2.85 cents) per metric ton in 2020. Nevertheless, the contribution of coal-fired power plants to total power production, which amounted to 50 percent in 2017, could increase further in the next five years, given committed coal-based capacity increases.¹² This trend highlights that there is a need for further measures to promote renewable energy, including, possibly, by increasing taxes on fossil fuels.



8. The Philippine government has taken a number of initiatives to address climate change vulnerabilities. These include enacting laws and regulations, climate change expenditure tagging, climate finance, green fund, blue carbon initiative and climate resilient green growth. The 2009 Climate Change Act requires local government units (LGUs) to draft local climate change action plans while the Disaster Risk Reduction and Management Act of 2010 marked a shift of policy focus from disaster response to risk reduction and preparedness. The National Climate Change Action Plan (NCCAP) 2011–28 prioritizes seven key areas including, food security, ecological and environmental stability, climate-friendly industries and services, sustainable energy. In 2015, the department of budget and management developed a climate change expenditure tagging system that identifies government agencies’ climate change-related expenditures. The budget allocated to this category has been rapidly rising, including through the national disaster reduction and management fund focused on climate-related infrastructure investment.

9. The government is working on strengthening financial resilience through innovative approaches to combat natural disaster. These include initiatives to both reduce risk and strengthen preparedness for potential events. The government declared national Disaster Risk Reduction and Management Plan (NDRRRMP) 2011–28. The NDRRRMP covers four areas: (i) Disaster Prevention and Mitigation; (ii) Disaster Preparedness; (iii) Disaster Response; and (iv) Disaster Rehabilitation and Recovery. The Philippines has emerged, in particular, as a leading nation among emerging economies in Asia with regard to its approach to financial preparedness for disasters. As

¹² The Philippine Department of Energy (2018) projects additional power capacity of 8618 MW until 2025, of which 6325 MW are based on coal-fired power plants (Power Development Plan 2017–2040). Committed capacity refers to power generation projects that have already secured financial closing and have a definite timeline for commercial operation.

part of its efforts, the government formulated a Disaster Risk Financing and Insurance Strategy in 2015, which provides a framework for enhancing financial resilience at the national, local, and individual levels. The Philippine City Disaster Insurance Pool (PCDIP) has been developed to address this need for rapid access to early recovery financing. Moreover, along with Natural Disaster Risk Insurance (Box 2), the Philippines has also participated in the first regional catastrophe risk pool under the Southeast Asia Disaster Risk Insurance Facility.

Box 2. Natural Disaster Risk Insurance

The government's Disaster Reduction Financing and Insurance Strategy combines a variety of risk financing instruments to protect against events of different frequency and severity. A recent initiative is the introduction of a catastrophe insurance program (US\$390 million)^{1/} in collaboration with the World Bank to protect government assets. Under the program, a government-owned insurance agency would provide protection against catastrophic risks to the national government and participating local governments. Subsequently, the risks would be passed on to a group of private international reinsurance companies through a competitive bidding process with the World Bank acting as an intermediary. This program complements the government's existing natural disaster-related reserves and contingency credit lines, as well as the central bank's financial inclusion initiative targeted for people with limited access to insurance and other basic financial products.

^{1/} World Bank (2019), Press Release.

D. Policy Recommendations

10. The Philippines needs to continue its strategy to plan for climate change. Philippines has been one of the most pro-active developing countries to invest in adapting to climate change and develop a national policy agenda. The approach has paid off, and there is a high degree of awareness of the climate change challenges among stakeholders and the public. Explicit recognition of the costs of natural disasters and climate change in macroeconomic frameworks and debt sustainability analyses would be important, particularly given the risks that such events could become increasingly severe and more frequent. Prudent fiscal and financial sector policies and buffers will provide flexibility to absorb adverse shocks. Nevertheless, more resources for climate change adaptation and mitigation are urgently needed, including for boosting production and use of renewable energy. The authorities could consider using greenhouse gas emissions pricing in this regard—using instruments such as carbon taxes or emissions trading systems.

References

- Acevedo, Sebastian, 2019, "Gone with the Wind: Estimating Hurricane and Climate Change Costs in the Caribbean," IMF Working Paper No. 16/199 (Washington: International Monetary Fund).
- BSP, 2019, "The Impact of Extreme Weather Episodes on the Philippine Banking Sector: Evidence from Regional Branch-Level Data," in *Report on the Philippine Financial System, First Semester 2019* (Manila: Bangko Sentral ng Pilipinas).
- Food and Agriculture Organization of the United Nations, 2015, "The Impact of Natural Hazards and Disasters on Agriculture, Food Security and Nutrition." Available via the Internet: <http://www.fao.org/3/a-i5128e.pdf>
- International Monetary Fund, 2019, *Fiscal Monitor: How to Mitigate Climate Change* (Washington).
- , 2015, *Dominica—Request for Disbursement Under the Rapid Credit Facility*, IMF Country Report No. 15/316 (Washington).
- Nishizawa, Hidetaka, Scott Roger, and Huan Zhang, 2019, "Fiscal Buffers for Natural Disaster in Pacific Island Countries," IMF Working Paper No. 19/150 (Washington: International Monetary Fund).
- Department of Energy, 2018, "Power Development Plan 2017–2040," Available via the Internet: https://www.doe.gov.ph/sites/default/files/pdf/electric_power/pdp_2017-2040.pdf.
- Rosegrant, Mark W., and others, 2016, "The Economywide Impacts of Climate Change on Philippine Agriculture," IFPRI Climate Change Policy Note 1 (Washington: International Food Policy Research Institute).
- USAID, 2017, *Climate Change Risk in Philippines: Country Fact Sheet* (Washington: United States Agency for International Development).

THE RISE AND FALL IN INFLATION DURING 2018–19¹

Inflation rates declined in 2019 after they rose sharply in 2018. Understanding the sources of inflation dynamics is key to formulate the monetary policy response. A semi-structural dynamic model is used to decompose these dynamics in the Philippines during 2018–19. The results suggest that increases in global oil prices, shocks to domestic food prices, and the relatively loose monetary policy stance up to early 2018 explain much of the rise in inflation rates in 2018. The decline in inflation rates in 2019 is largely attributed to the unwinding food and energy inflation increases, and the tighter monetary policy.

A. Introduction

1. Inflation rates were volatile in 2018 and 2019. On a year-on-year basis, inflation rates rose from 2.9 percent at end-2017 to 6.7 percent in September 2018, then declined to 0.8 percent as of October 2019. Several factors, including changes in oil and rice prices, an increase in excise tax rates, monetary policy adjustments, and the changes in the cyclical positions of the economy, are widely cited as contributors to the volatile inflation dynamics.

2. A semi-structural model is used to decompose the inflation dynamics into the contributions of various exogenous shocks. These shocks can be broadly classified into several major categories: global oil and food prices, domestic pass-through of commodity prices, monetary policy, growth and inflation in the United States, shocks to aggregate demand, and other cost push shocks etc. The model is a version of the IMF's "Forecasting and Policy Analysis System" (FPAS) based model. It has a standard core structure based on New Keynesian models, including: (1) Phillips curves to model prices; (2) a dynamic IS curve for the demand-side dynamics; (3) uncovered interest parity; and (4) a version of the Taylor rule. Expectations are forward-looking, consistent with the projections of the model itself. The technical details of the model are discussed in Guo and others (2019). Compared with econometric models, inflation expectations (which are a major component in the Phillips curve) are "rational" in our model: they are consistent with the future inflation path projected by the model itself (Box 1).

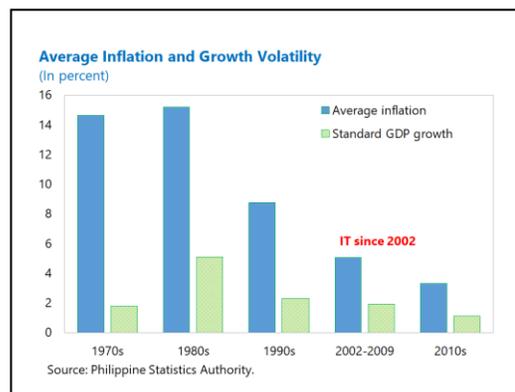
3. The purpose of the decomposition exercise is to better understand the underlying sources of the recent inflation dynamics and, thereby, contribute to the current debate about inflation prospects and the appropriate monetary policy stance.

¹ Prepared by Si Guo (APD).

B. Background—Broad Success in Reducing Inflation

4. Inflation has been better anchored since the Philippines adopted inflation targeting (IT) in 2002.

Average inflation rates declined from 9.7 percent (y/y) in the 1990s to 4.6 percent during 2002–09, and 3.1 percent during 2010–18. The lower inflation rates after 2002 coincided with less volatile real GDP growth.

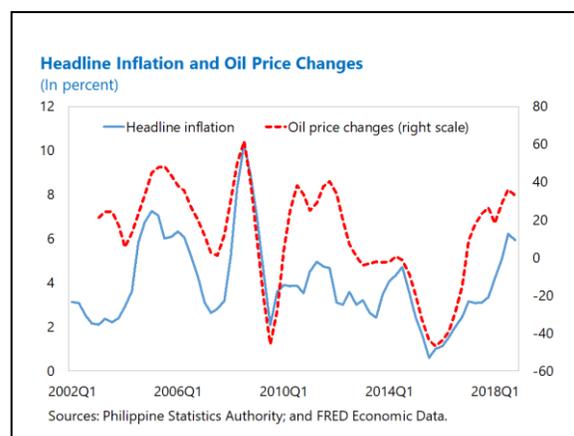


5. Monetary operations have improved, which has enhanced the transmission of monetary policy and the functioning of the IT regime.

Historically, volatile cross border capital flows and the lack of effective sterilization tools in the toolkit of the Bangko Sentral ng Pilipnas (BSP) used to create misalignments between the BSP's policy rate and short-term market interest rates, dampening the transmission of monetary policy. This was especially obvious in 2016, when T-bill rates and interbank rates were substantially below the policy rates as a result of capital inflows.² Since late 2017, the BSP has improved its liquidity management by using its Term Deposit Facility (TDF) to absorb excess liquidity. As a result, market rates have generally been anchored by policy rates, and the rise in policy rates in 2018 was transmitted to the long-term government bond yields and bank lending rates. All these changes will further improve the functioning of the IT framework.

6. Despite these improvements, in a small open economy such as the Philippines, inflation is inevitably affected by external factors.

Historically, inflation in the Philippines has been sensitive to international oil prices: the oil price increases in 2005, 2008, and 2018 all led to notable pickups in headline inflation. In addition, the low inflation in 2015 and 2016 (0.7 percent and 1.3 percent, y/y) was likely associated with the low inflation in trading partner countries at the time, especially China.³ These external factors contribute to the inflation volatility in the Philippines and create challenges for policymakers to gauge the source of inflation.

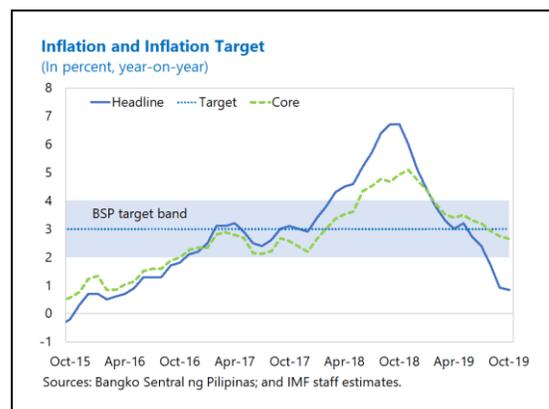


² In the Philippines, nonresidents can invest in the T-bill market but are not allowed to have access to the BSP's standing facilities. Thus, when there are capital inflows, the yields for the T-bills are usually lower than interbank rates that are largely influenced by the BSP's standing facilities.

³ China is the biggest trading partner of the Philippines. The PPI inflation in China had been negative from early 2012 to late 2016.

C. Inflation Dynamics in 2018 and 2019

7. Inflation rates rose sharply in the first three quarters of 2018. The CPI increased by 5.7 percent from end-2017 to September 2018. Much of the increase was observed in 2018:Q1 (after the hike in excise taxes in January 2018) and 2018:Q3. By components, food and energy price increases contributed the most to the rise in the headline CPI. In particular, the price of rice, representing 9.6 percent of the CPI basket, increased by 10.2 percent in the first three quarters of 2018. However, the contributions from core CPI items were also nonnegligible.



8. Inflation decreased in late 2018 and 2019. CPI inflation started to decelerate in late 2018 and eventually moved back into the target band (2–4 percent) in February 2019. Much of the deceleration was due to lower food and energy inflation. Core inflation, on the other hand, held up.

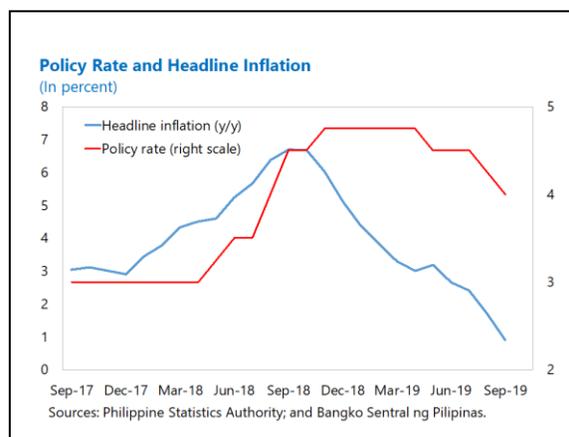
Table 1. Inflation by Items
(In percent)

	CPI Weight	2017 Dec (y/y)	2018 Jan-Sep (y/y, annualized)	2018 Sep- 2019 Sep
Headline	100	2.9	7.6	0.9
Food, beverages and tobacco	39.9	3.7	11.7	0.0
Energy related 1/	15.5	4.9	9.4	-2.6
Core (non-energy, non-food)	44.6	1.6	3.2	3.0

Sources: Philippine Statistics Authority; and IMF staff estimates.

1/ Energy related items include electricity, gas, fuel and transportation.

9. Policy responses during 2018–19. The Monetary Board meets eight times a year in the Philippines. After the February and March 2018 meetings, the Monetary Board decided to keep the policy rate unchanged despite the increasing inflation rates, noting the temporary factors that pushed up inflation rates and the relatively benign inflation forecasts at that time. After the May 2018 meeting, when inflation pressure became more broad-based, the Monetary Board started to increase the policy rate. Policy rates were increased by 175 basis points from May 2018 to November 2018. The higher policy rate was transmitted to financial markets. The average bank lending rates increased from 6.03 percent in May 2018 to 7.02 percent in December 2018 and 7.42 percent in March 2019. Credit growth to the private sector decelerated from 17.4 percent (y/y) in May 2018 to 9.9 percent (y/y) in March 2019, and 7.6 percent (y/y) in June 2019. Meanwhile, a few nonmonetary measures were also deployed or planned to help curb inflation, including increasing transfers to low-income families⁴ and relaxing the quota on rice imports. In 2019, when inflation rates were back in the target band and global economic conditions changed,⁵ discussions about cutting interest rates began. In May 2019, the BSP reduced the policy rate by 25 basis points to 4.5 percent. Subsequently, the policy rate was cut further to 4.25 percent and 4 percent, respectively, in August and September 2019.



D. Model Decomposition of the Inflation Dynamics During 2018–19

10. The rise in inflation during 2018 was mainly driven by the following factors:

- *Global oil prices.* Brent oil prices increased from an average of US\$54 per barrel in 2017 to US\$75 per barrel in 2018:Q3. This increase affected headline inflation directly, through the rise prices of energy items (electricity, fuel and transportation), and indirectly through higher energy costs in production. This can be seen in the contribution to headline inflation of global oil prices, which turned positive in 2018 (yellow bars in Figure 1).

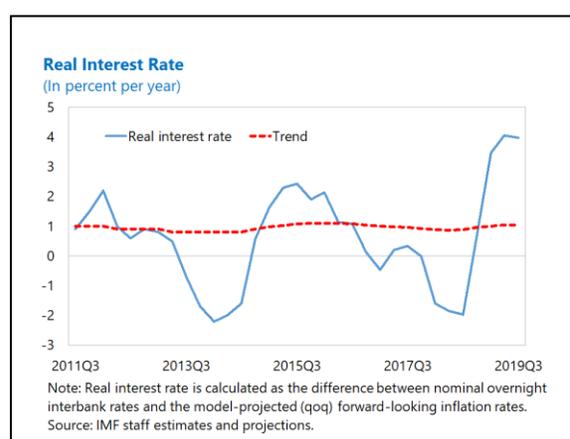
⁴ The rationale for using transfers to contain inflation was that higher transfers to low-income families would reduce the need to increase minimum wage, which is determined in annual bargaining. A smaller increase in the minimum wage will result in less pressure on labor cost and inflation. The effectiveness of this measure remains to be evaluated, as higher transfers can also put upward pressure on inflation through increasing workers' purchasing power.

⁵ The main changes to global conditions include the trade tension and the prospective of monetary loosening in other countries, especially the United States.

- *Domestic shocks to food prices.* The impact of food-related (domestic and global) shocks is shown by the light green bars in Figure 1. The contribution from food prices was the highest in 2018:Q3, but still smaller than that of oil prices. Overall, food prices in the Philippines increased by 9.3 percent (annualized) in the first three quarters of 2018 (Table 1). The contribution of food prices to headline inflation mainly reflected domestic sources, such as disruptions to domestic rice production and inventories,⁶ as well as the excise tax hike on beverages and tobacco implemented in January 2018.⁷

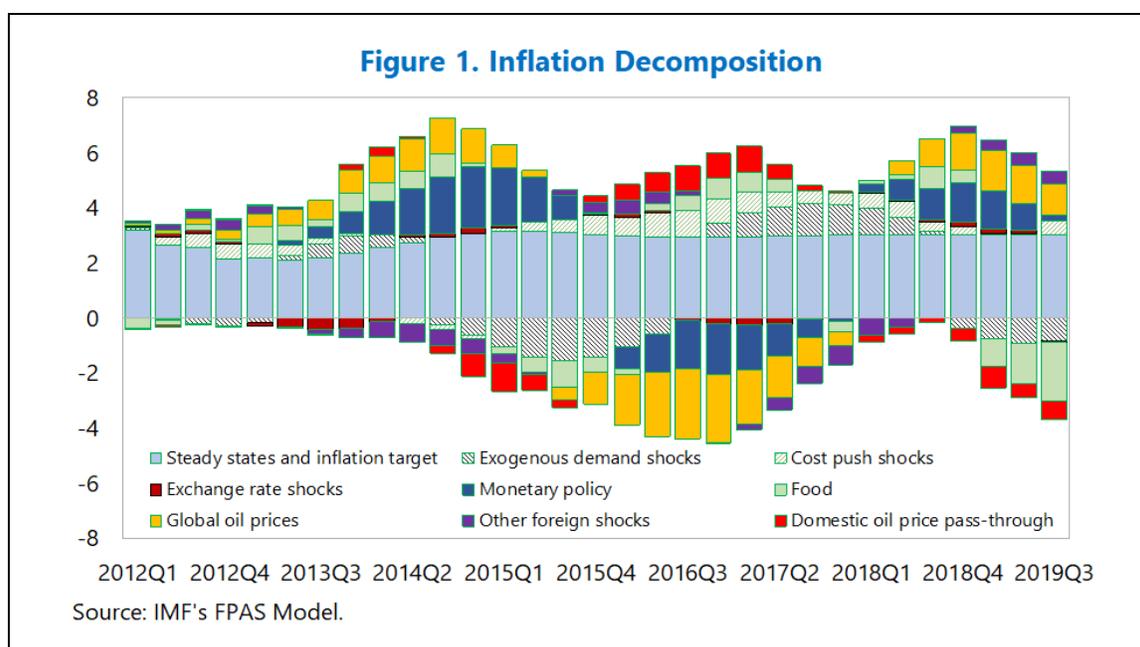


- *The accommodative monetary policy during 2017-2018:H1.* Interest rates contribute to inflation through their impact on output gaps and exchange rates in the model. The contributions of monetary policy to inflation is measured by the blue bars in Figure 1. Monetary policy was relatively accommodative before the interest rate hikes in 2018. The real interest rates, defined as the interbank rates subtracting the expected inflation, were close to or below zero percent during 2017 and 2018:H1, and hence clearly lower than the neutral real rate, which is estimated at 1–2 percent (see IMF Country Report No. 18/287). Apart from the policy rate, the generally low interest rates were also partly the result of the large unsterilized capital inflows experienced before late-2017.
- *Stronger growth and inflation in the United States.* Their contributions to the inflation in the Philippines are measured by the purple bars in Figure 1. Much of the inflation impact can be attributed to the pickup in U.S. inflation in the first half of 2018.



⁶ Rice price inflation reached its peak at 10.7 percent (y/y) in October 2018. The weight of rice is 9.6 percent in the CPI basket.

⁷ Higher excise taxes were implemented in January 2018 on tobacco and beverages (as well as oil products). Its (positive) contributions to inflation are largely captured in the contributions of food prices (light green bars). However, the separation between the impact of excise taxes and other food-related factors is not available because it would require the specification of separate Phillips curves for tobacco and beverage items.



11. The declining inflation pressure during 2018:Q4-2019:Q3 was mainly driven by the following factors:⁸

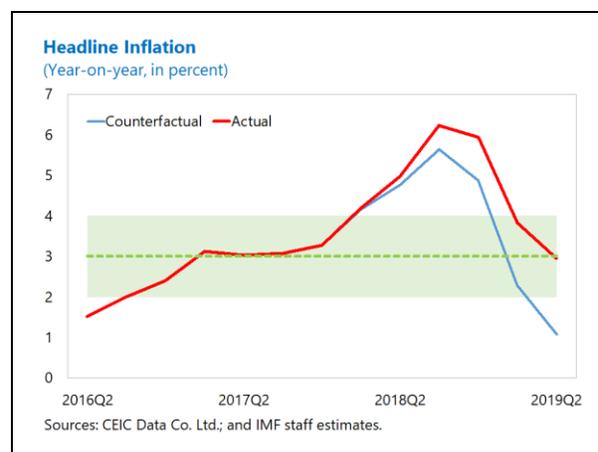
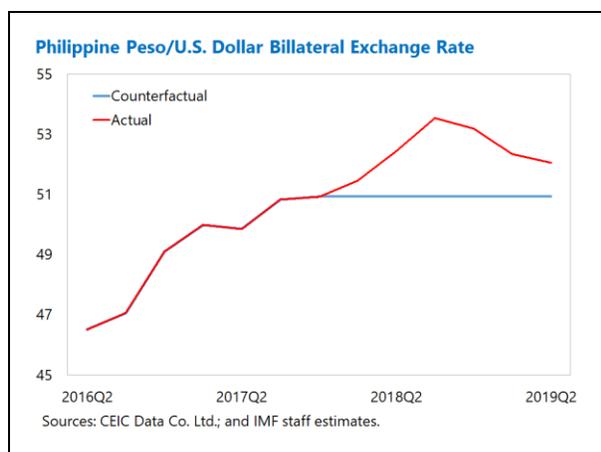
- *Unwinding of domestic food price shocks.* As shown in Figure 1 (light green bar), the contributions of food-related shocks turned negative in 2019. This was mainly explained by the decline in domestic rice prices after the relaxation of rice import quotas and, to a lesser extent, the waning of the temporary inflation impact of the excise tax hike.
- *Oil price pass-through.* The effects are measured by the red bars in Figure 1. In the Philippines, even though there is no oil subsidy and hence retail fuel prices are very responsive to global prices, the prices of other energy-intensive items (such as transportation and electricity) often exhibit some stickiness and do not move one to one with global oil prices. That is, there is a domestic pass-through effect which decides the difference between the movements of domestic energy prices and global oil prices. Usually, when oil prices rise, the pass-through effect tends to suppress the increase in transportation and electricity prices. On a quarter-to-quarter basis (not shown in Figure 1), this pass-through effect was the strongest in 2018:Q3 and 2018:Q4 when the trend of oil price hike started to stall and then reversed.⁹ The delayed passthrough of the increase in oil prices propagated to a larger drag on inflation pressure in 2019 on a year-to-year basis.

⁸ It should be noted that the decomposition exercise is model based, hence to some extent the results would depend on the specifications of the model.

⁹ This probably reflects that transportation and electricity suppliers could adopt the “wait-and-see” approach to delay the pass through of previous (up to 2018:Q3) oil price increase.

- *Tighter monetary policy.* This can be seen from the shrinking blue bars in Figure 1 in 2019. It should be noted that the positive contribution of monetary policy as of 2019:Q3 does not imply that monetary policy was still accommodative by then¹⁰—it mostly reflects the **lagged effects** of accommodative policies before the interest rate hikes.

12. The depreciation of peso contributed to rise in inflation moderately during 2018. In a counterfactual scenario with unchanged peso/U.S. dollar rate from end-2017 to 2019:Q2, year-on-year inflation rates could be about 0.6 percent lower at the peak (Figure 1).



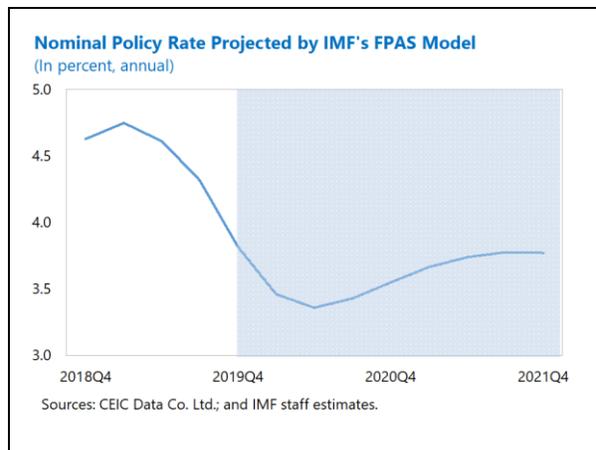
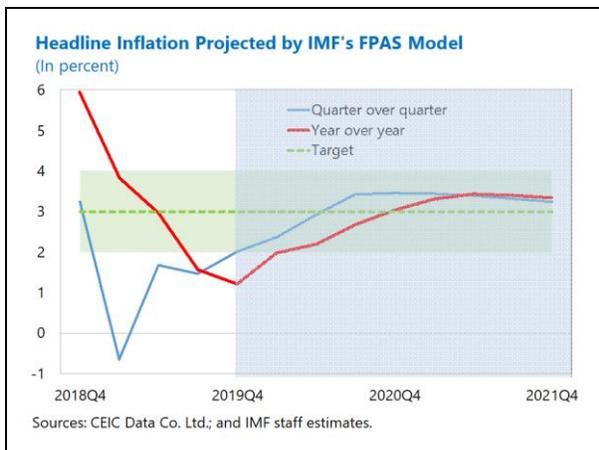
E. Going Forward¹¹

13. In the baseline forecast of the model, inflation rates will temporarily fall below the target band before converging back to the 3 percent mid-point of the target band. This forecast reflects the baseline assumptions that global oil prices (Brent) will remain around US\$65 per barrel in the next two years, food inflation will remain moderate at around 4 percent in 2020–2022,¹² and that the policy rate will broadly follow the path implied by the model's Taylor rule. The model projects that inflation rates (y/y) will decline below the target band in 2019:H2 because of the negative base effect from the sharp increases earlier in 2018: inflation had risen sharply in 2018:Q3 (7.5 percent q/q, annualized), especially food inflation (11.3 percent, q/q, annualized). However, starting in 2020, inflation is project to move back to the target band, as the base effect wanes.

¹⁰ As shown in the "Real Interest Rate" figure, the real interest rate as of 2019:Q2 was higher than neutral level.

¹¹ The projections in this section were produced based on the information as of November 2019.

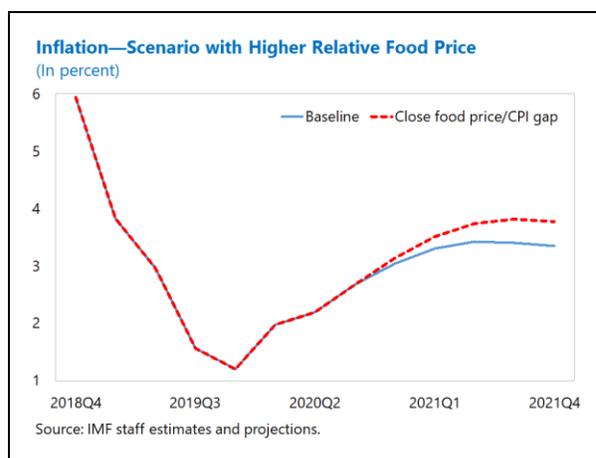
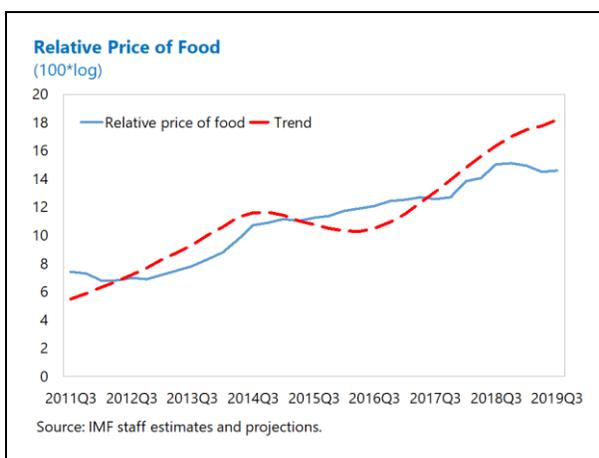
¹² The average food inflation rates during 2002-2019:Q2 and 2010-2019:Q2 were 4.8 percent and 4.3 percent, respectively.



14. Implications on monetary policy. Our model suggests that a broadly neutral monetary policy stance, with the possibility of some moderate loosening would be appropriate to achieve the inflation target within the usual one- to two-year horizon. In the baseline projections, interest rates would be around 3.5–4 percent in 2020.¹³ However, monetary policy stance should be data-dependent, as illustrated by the plausible alternative scenarios presented below.

15. Alternative scenarios.¹⁴

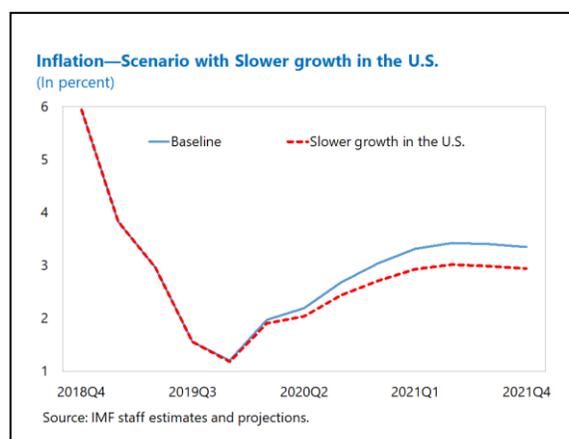
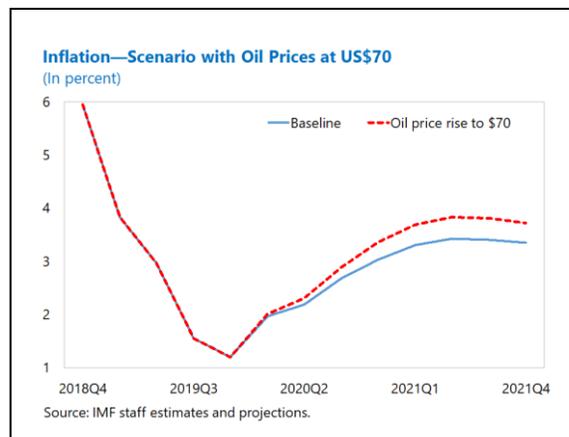
- *Higher domestic food inflation.* The left chart below shows that the prices of food items relative to the CPI basket were below the trend as of 2019:Q2. Assuming a "catch-up" of food prices relative to the CPI would imply a higher food inflation (around 5 percent annually) than our baseline assumption (4–4.5 percent). This would obviously raise the projected headline inflation for the medium term (dashed line in the right chart below).



¹³ The model assumes a 4 percent nominal interest rate in the steady state (1 percent neutral real interest rate plus 3 percent inflation).

¹⁴ All scenarios assume that domestic interest rates will adjust following an assumed Taylor rule.

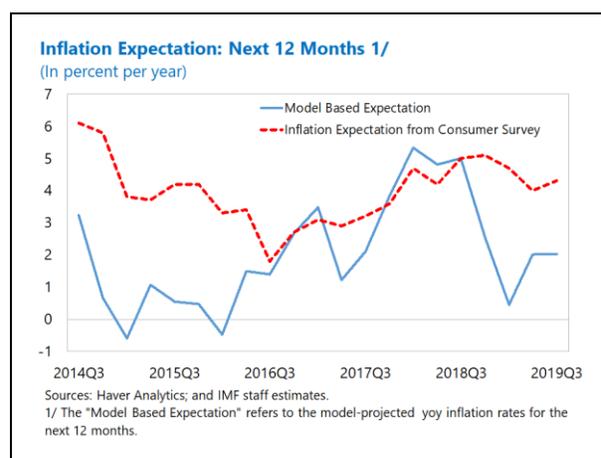
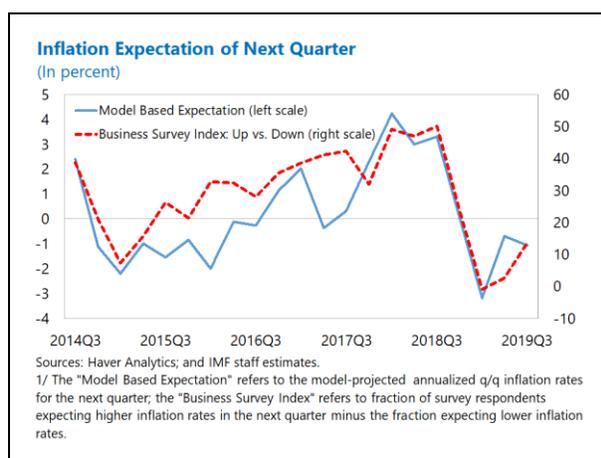
- *Higher oil prices.* If oil prices increase to US\$70 per barrel in 2019:Q4 (from the baseline assumption around \$65 per barrel) and stay constant till 2023. The projected inflation path would be generally higher than baseline.
- *Lower growth in the United States.* In the baseline, the model uses the IMF's October 2019 WEO projection for U.S. growth. Under the alternative assumption that the growth in the U.S. would be slower than expected—with U.S. output levels in 2020–21 0.5 percentage points below baseline—the projected inflation path would be generally lower.



Box 1. Inflation Expectation in the Model versus Survey

Inflation expectation enters the model through the forward-looking Phillips curve. Because the FPAS model is essentially a rational expectation model, inflation expectation used in the model is “rational” in the sense that it is consistent with the model’s own forecasts.^{1/} Obviously, the model-consistent inflation expectation is not necessarily comparable with the survey-based inflation expectation, because the latter is usually highly adaptive. We report the model-consistent inflation expectation (annualized q/q and y/y) and the comparison with survey-based expectation in the two charts below.

- Model-consistent inflation expectation (for next quarter and next year) rose sharply during 2017:Q4-2018:Q1 and started to decline in 2018:Q4. The dynamics are likely driven by the movements of oil prices and monetary policy.
- Model-consistent inflation expectation is more comparable with business survey-based inflation expectation in the Philippines. There is a larger discrepancy between the expectation from the model and the consumer survey—which is likely driven by the adaptive nature of consumer survey.^{2/}



1/ This is in comparison with some models with “adaptive” inflation expectations. In those models, the expected inflation rates used in the models’ Phillips curves are usually different from the inflation rates forecasted within the model.

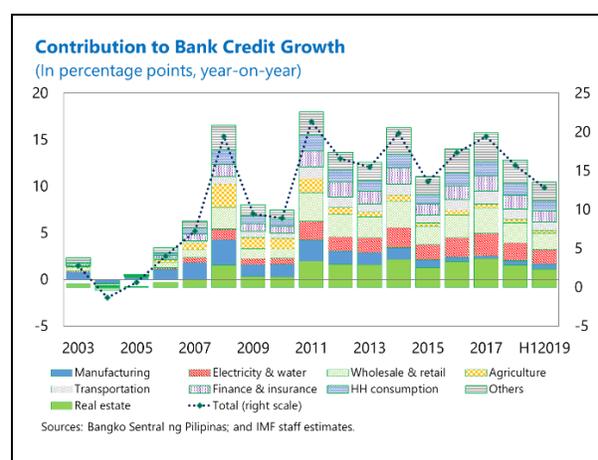
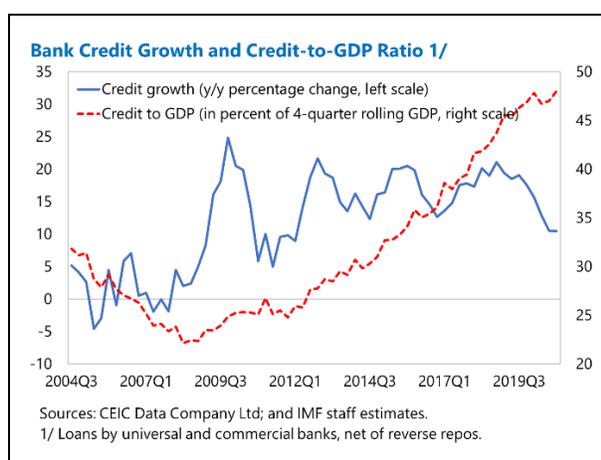
2/ There are three published survey-based inflation expectation series in the Philippines. The business survey conducted by the BSP asks the “inflation expectation of the next quarter.” It reports the difference between the fraction of respondents who think the inflation in the next quarter would rise vs. those who think inflation would decline. The consumer survey conducted by the BSP asks the “inflation expectation of the next 12 months.” The “Consensus Forecast” asks investment banks about their inflation forecasts. Because the inflation expectation in the consensus forecast is reported by calendar year (e.g., the respondent interviewed in September 2018 would be asked to report their inflation forecast for calendar year 2018 and 2019, instead of the inflation between September 2018 and September 2019), we only compare our model-consistent inflation expectation with the business survey and consumer survey.

EVOLUTION OF BANK CREDIT GROWTH IN THE PHILIPPINES¹

After several years of rapid expansion, bank credit growth has recently slowed. Risks of reacceleration remain a concern against the backdrop of empirical analyses suggesting that early warning signals for a credit boom emerged in 2014–18. Residential real estate loans appear to warrant close monitoring, given the large banking system exposure to the sector and its recent important contribution to rapid loan growth.

A. Introduction

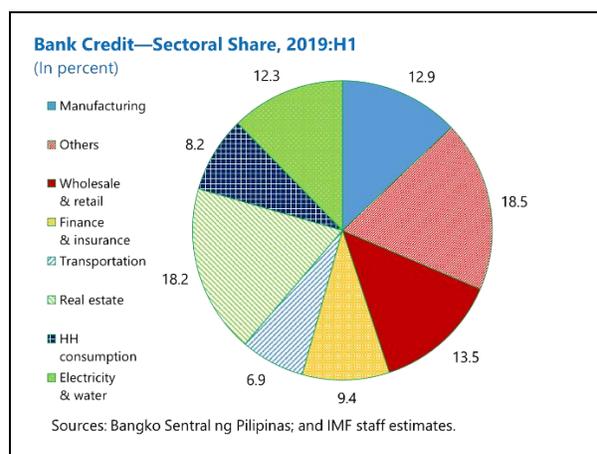
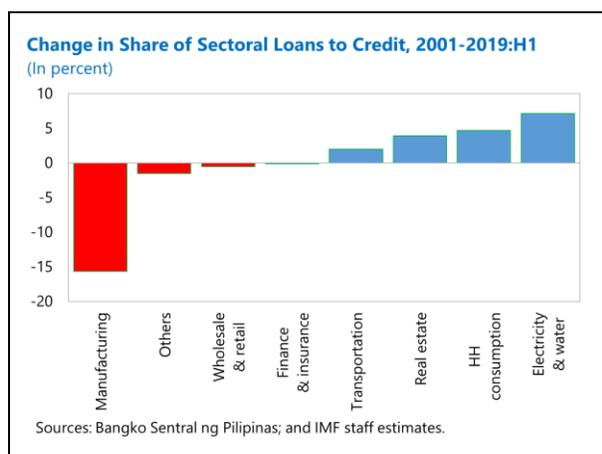
1. Credit growth has slowed recently after several years of rapid expansion. Growth in bank credit decelerated from a peak of 21.1 percent in September 2017 to 10.5 percent in September 2019. The slowing is partly due to the recent tightening of monetary policy and lending standards and partly due to weaker aggregate demand. The cooling in credit growth since mid-2018 has been especially pronounced in utilities, wholesale and retail trade, transportation and real estate sectors.



2. This paper evaluates whether the recent rapid credit expansion qualifies as an aggregate credit boom and examines credit developments and vulnerabilities in real estate sector and consumer loans. Despite the double-digit growth in credit in 2010–2018, the credit-to-GDP ratio in the Philippines remains relatively low at about 50 percent. While the rapid credit expansion in recent years partly reflects the financial deepening accompanying economic development (Box 1), it has also raised financial stability concerns, especially in sectors where credit growth was relatively higher for a sustained period, such as real estate and consumer loans. This paper uses several methodologies developed by earlier studies in the literature to gauge the risk of

¹ Prepared by Narin Kruey (APD).

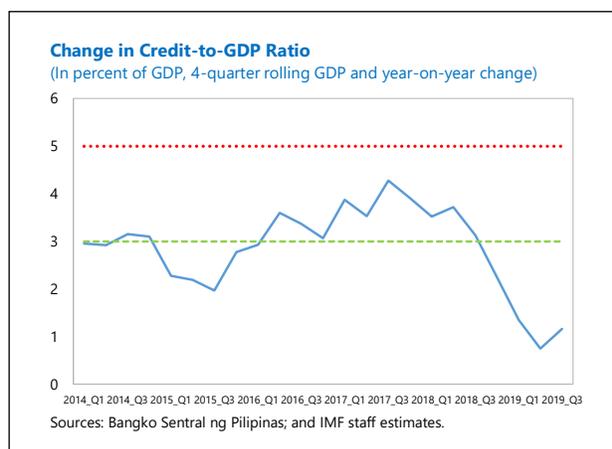
a credit boom in the Philippines and examines the underlying vulnerabilities in real estate and consumer loans.



B. Recent Credit Growth in Perspective

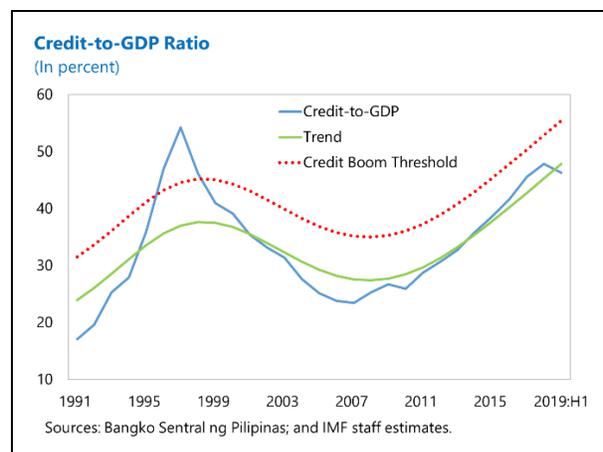
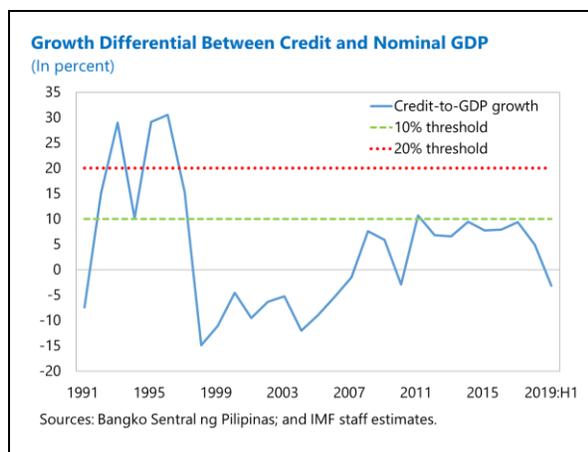
3. The findings from complementary methodologies show that credit reached near-credit boom levels between 2014 and 2018 but has moderated to trend more recently. This is especially remarkable considering that there was no other episode of credit boom since the 1990s.

- The methodology proposed in the IMF’s April 2011 *Global Financial Stability Report* does not detect a credit boom after 2000. Nevertheless, some early warning signs emerged at the end of 2014 and again from 2016 to early 2018. In this approach, early signs of a credit boom are defined as increases in the credit-to-GDP ratio above 3 percent (y/y) and a severe credit boom is present if the increase is above 5 percent. With the moderation in credit growth since the end of 2018, the change in the credit-to-GDP ratio now is well below the 3 percent threshold.

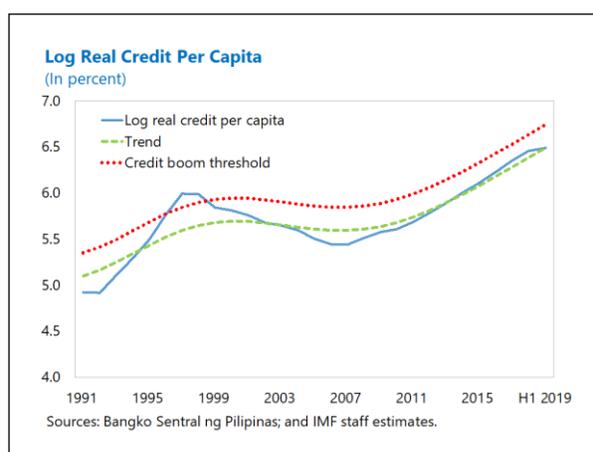


- The methodology proposed by Dell’Aricia and others (2012) suggests that credit booms were present in 1993 and in 1995–96 but not afterwards. The methodology identifies a credit boom if one of two conditions is satisfied: (i) the growth differential between credit and nominal GDP exceeds 20 percent or (ii) the growth differential between credit and nominal GDP exceeds 10 percent and the deviation from trend is greater than 1.5 times its standard deviation. In 1993 and 1995–96, credit growth exceeded nominal GDP growth by more than 20 percentage points, while growth of credit exceeded that of GDP by 10 percent (left chart) and the deviation from trend was above the threshold boom in 1996–1997 (right chart). No signal of a credit boom has

been observed since, except for some early warning signals in 2011, 2014, and 2017, when the growth differential between credit and nominal GDP reached the 10 percent threshold and credit-to-GDP ratios were above their long-term trend.



- Based on the approach of Mendoza and Terrones (2008), which identifies credit booms when the real credit per capita deviates from its Hodrick-Prescott trend by 1.75 times of its standard deviation, no sign of credit boom is detected since the last boom in 1997–1998. However, there were positive real credit per capita gaps during 2014–2018 when the real credit per capita was above its long-term trend.



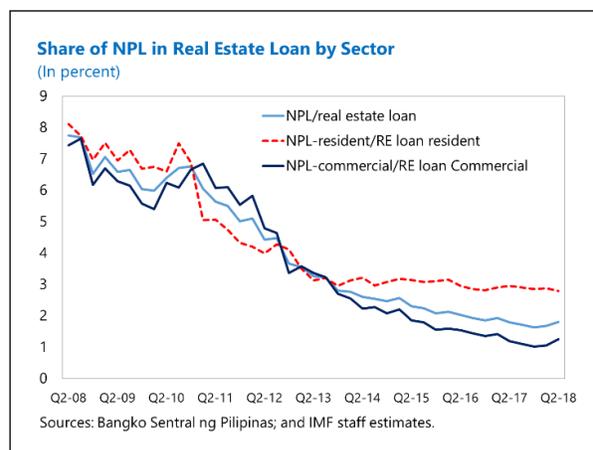
C. Is Real Estate Credit a Concern?

4. The near-boom credit episodes detected between 2014 and early 2018 coincided with strong lending growth in the real estate sector. The latter contributed importantly to the strong overall lending growth of close to 20 percent during this period. Notwithstanding some moderation recently, credit to real estate has continued to outpace that in manufacturing and other sectors. It now accounts for the largest share in total loans outstanding (18 percent).

5. Strong property demand from a few key players drove the real estate credit growth.

The recent rise of Chinese online gaming companies operating in the Philippines (Philippines Offshore Gaming Operators—POGO) has led to a large inflow of Chinese workers and increased demand for residential and office properties. The dynamic business process outsourcing (BPO) industry has been another important driver of property demand, while demand for residential housing has also remained strong. Property prices have risen in this environment, translating into higher credit needs for many buyers.

6. The quality of real estate loans remains sound, despite a recent uptick in NPLs. As of end-2018:Q2, NPL ratios for real estate loans were at record low levels after a steady decline. The relatively stable NPL ratio for residential loans has not followed the continuous decrease in the NPL ratio of commercial real estate loans. This could partly reflect the fact that the 20 percent limit on the share of total bank loans to commercial real estate is binding, which could be keeping bank lending focused on high-quality projects.

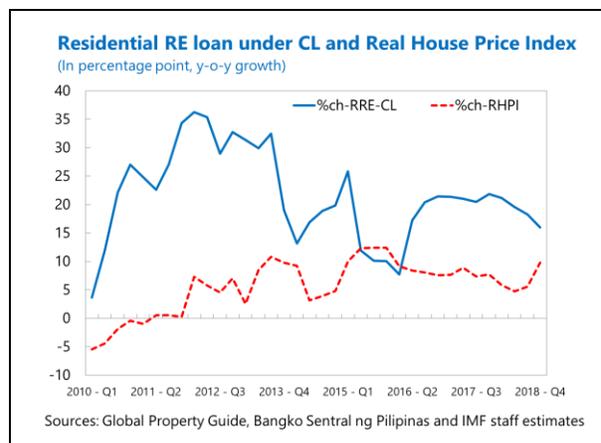
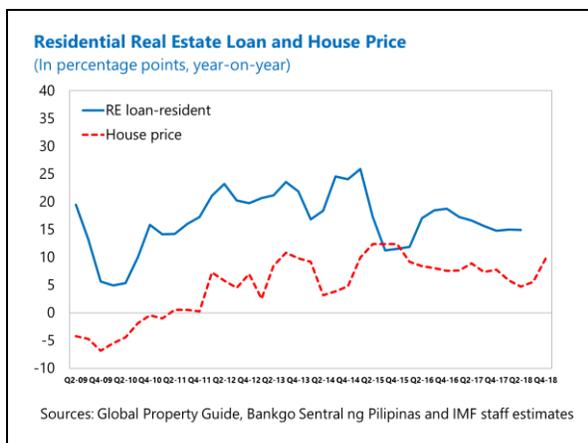


7. Continued strong real house price increases amid the cooling in residential real estate lending suggests a need for close monitoring of related market risks. House price increases in 2018 were broadly similar to those in 2017 despite the slowdown in real estate credit growth.² The latter could have partly reflected the tighter lending requirements to the real estate sector in effect since mid-2018.³ Meanwhile, the increase in real house prices could be associated with high real estate demand from POGO companies and workers, which typically does not involve credit from the domestic banking system, or, possibly, increased shadow-banking activities by real estate developers, with increased indirect exposure by domestic banks.⁴

² The IMF Research Department house price series used is based on Global Property Guide data and it is not yet available for 2019. An alternative price series, Residential Real Estate Price Index (RREPI), which starts only in 2015 but is available through 2019:H1, indicates a very small variation on aggregate house prices (just 0.4 percent y/y in 2019:Q2), but with some heterogeneity across type of properties. The prices of duplexes, condominium units and townhouses grew y/y by 12.5 percent, 9.6 percent and 4.3 percent, respectively in 2019:Q2. By contrast, the price of single detached/attached houses declined by 4.2 percent.

³ Prudential measure of submitting a new Report on Project Finance Exposures of real estate loans was implemented in June 2018, on top of real estate lending cap at 20 percent of TLP.

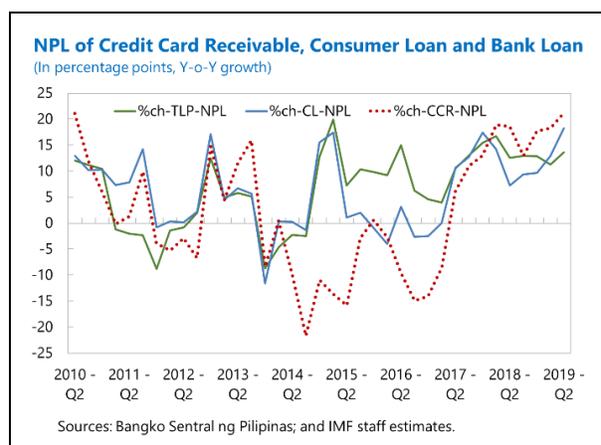
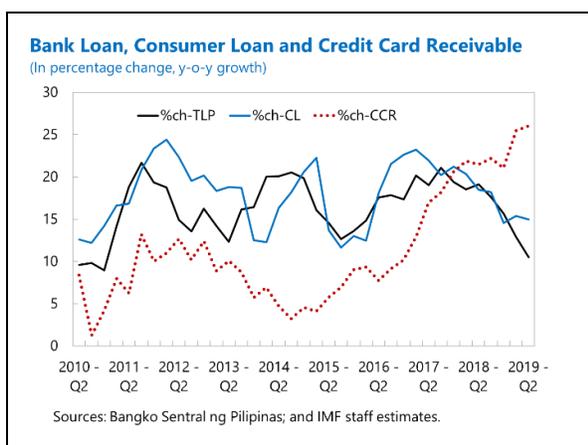
⁴ In the Philippines, presale funding is common practice. Buyers often make advances for properties still under development. These advances are trade receivables from the perspective of real estate developers, who keep ownership of the property until buyers cancel their total balance at the time of the delivery of the property. Buyers often use bank mortgage credit to pay the developers the full amount, but some developers also directly or indirectly might finance the final purchase of the property. The findings from a recent IMF study (IMF Country Report, 15/247), however, suggest that such activities are likely concentrated in a small set of firms.



8. BSP has introduced several macroprudential measures to identify and prevent the buildup of financial stability risks. These include Basel III Liquidity and Net Stable Funding Ratios, and a countercyclical capital buffer (CCyB), which has not yet been activated, as well as the Real Estate Stress Test (REST), real estate sectoral exposure limits, and mortgage collateral value limits. The Philippines’ Macroprudential Policy Measures (Box 2) discusses in greater detail the prudential measures introduced by the BSP since 2007, including newly-introduced measures on the real estate sector credit.

D. Do Other Sectors Deserve Close Monitoring? The Case of Consumer Loans

9. The rapidly increasing credit card receivables, which have relatively high NPLs, might also warrant closer monitoring by regulators. Banks’ credit card receivables (CCRs) used to grow at a rate far below that of consumer loans (CL) or the total loan portfolio (TLP) until the end of 2016. Since then, credit card lending has gradually gained momentum, with growth rates peaking at 26.1 percent (y/y) in 2019:Q2. In contrast, growth in consumer loans and total bank loans has slowed, to rates close to 10 percent. Noticeably, the rapid growth in CCRs has also led to deterioration in their loan quality, with related NPLs increasing by 21.4 percent in 2019:Q2, relatively higher than those in CLs and TLPs, and higher than the 18.2 percent increase recorded in the previous quarter.



E. Conclusions

10. Systemic financial stability risks related to bank credit are currently contained, although credit risks with higher risk sectors, including real estate, warrant close attention.

Credit growth has recently cooled, and the credit-to-GDP ratio remains relatively low in the ASEAN context. No credit booms have been detected after 1990s, but some early warning signals were found between 2014 and early 2018. Data gaps between official data and actual lending from both formal and informal financial institutions, including with regards to corporate interlinkages, prevent broader systemic financial stability assessments.

11. The risks of high credit growth resuming call for preparing a strategy for proactive macroprudential intervention. Credit could reaccelerate, as key demand drivers behind the recent slowing have reversed or are expected to reverse, including the fiscal and, partially, the monetary policy stance. Timely activation of the CCyB should be considered once risks of broad-based rapid credit growth reemerge, while targeted measures such as loan-to-value and debt-to-income caps as complementary instruments would be preferable if such risks are more sector-specific. They would provide for a more macroprudential approach that directly and more timely targets the demand for housing-related loans. Such an approach addresses systemic financial stability risks more effectively by better capturing the market impact of individual financial institutions and the interactions with the real economy.

Box 1. Financial and Market Development in the Philippines

A recent IMF study (2015) indicates that there is a significant, bell-shaped relationship between financial development (FD) and economic growth. Based on a sample of 128 countries including AEs, EMs, and LIDCs over 1980–2013, the study finds that financial development increases growth, but the effects weaken at higher levels of FD and eventually become negative.

To overcome the shortcomings of the credit to GDP ratio as a proxy for FD, the study uses a new comprehensive FD index that captures both financial institutions (FI) and markets (FM). The overall FD index and sub-indices cover 183 countries from 1980. Financial institutions include banks, insurance companies, mutual funds and pension funds. Financial markets include stock and bond markets. FD is defined as a combination of market depth (size and liquidity), financial access (ability of individuals and companies to access financial services), and efficiency (ability of institutions to provide financial services at low cost and with sustainable revenues and the level of activity of capital markets).

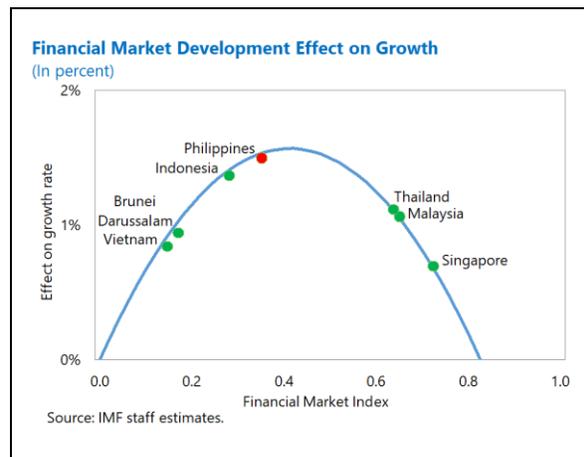
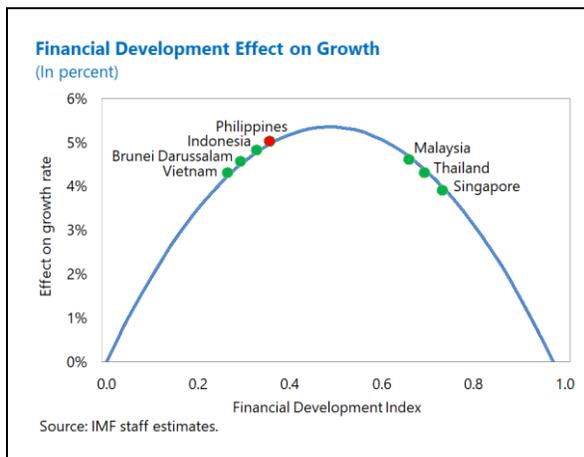
The Philippines has already benefited from substantial progress in the development of domestic capital market. Additional reforms aim to provide a stable and reliable yield curve, increase long-term savings and finance, and diversify domestic bond market participation, including through the launch of an Expanded Primary Dealer System, re-introduction of a repurchase market in the Philippines based on the international standard Global Master Repurchase Agreement, and improvements in the operation of the over-the-counter government bond market. The BSP, Securities and Exchange Commission (SEC), the Department of Finance (DOF) and the Bureau of the Treasury (BTr) are also supporting other innovations to enhance market liquidity and lower price volatility, and to promote security issuance by the private sector. The launch of BTr's Retail Treasury Bond online ordering platform in February this year, for example, promotes financial inclusion and taps unserved segment of society, as it allows for direct participation by retail customers, including Overseas Filipinos. Also, package 4 of the government's Comprehensive Tax Reform Program supports the capital market development through fairer, simpler and more efficient taxation of financial instruments.

Inserted efforts by the authorities in the next four years have been applauded, and bolder reform initiatives in achieving deeper capital market development are even more encouraged. The Capital Market Development Council (CMDC), which is co-chaired by the Financial Executives Institute of the Philippines (FINEX), along with other regulatory agencies and market participants, has agreed to measures further promoting depth and liquidity in the Philippine capital markets, to support the financing of growth and development.

The Philippines could benefit from further financial development, capital market development and financial institutions depth improvement. Although financial sector in the Philippines is more advanced than it is in Indonesia, Brunei and Vietnam, the value of the IMF's FD index is still below the value at which financial development has the largest positive growth effects. Further financial development will thus be important to support growth.

Box 1. Financial and Market Development in the Philippines (Concluded)

Construction of the Financial Development Index		
	Financial Institutions	Financial Markets
Depth	<ol style="list-style-type: none"> 1. Private-sector credit (% of GDP) 2. Pension fund asset (% of GDP) 3. Mutual fund asset (% of GDP) 4. Insurance premiums, life and non-life (% of GDP) 	<ol style="list-style-type: none"> 1. Stock market capitalization to GDP 2. Stocks traded to GDP 3. International Debt securities government (% of GDP) 4. Total debt securities of nonfinancial corporations (% of GDP) 5. Total debt securities of financial corporation (% of GDP)
Access	<ol style="list-style-type: none"> 1. Branches (commercial banks) per 100,000 adults 2. ATMs per 100,000 adults 	<ol style="list-style-type: none"> 1. Percent of market capitalization outside of top 10 largest companies 2. Total number of issuers of debt (domestic and external, nonfinancial corporations, and financial corporations)
Efficiency	<ol style="list-style-type: none"> 1. Net interest margin 2. Lending-deposits spread 3. Non-interest income to total income 4. Overhead costs to total assets 5. Return on assets 6. Return on equity 	<ol style="list-style-type: none"> 1. Stock market turnover ratio (stocks traded/capitalization)¹



Box 2. Macroprudential Policy Measures in the Philippines

Measures	Status	Description
Broad-based tools 1/		
Countercyclical capital buffer	Yes	The CCyB is was adopted on December 6, 2018, but it was set initially at a buffer of zero percent subject to upward adjustment to a rate determined by the Monetary Board when systemic conditions warrant but not to exceed two and a half percent (2.5%). Any increase in the CCyB rate shall be effective 12 months after its announcement. Decreases shall be effective immediately. The mechanism to operationalize the CCyB, including the decision-making framework, is not yet in place. <i>BSP Circular No. 1024 of December 06, 2019</i>
Capital conservation buffer	Yes	A capital conservation buffer (CCB) of 2.5% composed of Common Equity Tier 1 (CET1) capital has been effective since January 1, 2014. <i>BSP Circular No. 781 of January 15, 2013</i>
Limit on leverage ratio	Yes	A 5.0% minimum leverage ratio was implemented starting from July 1, 2018. The Basel III Leverage Ratio monitoring period was extended to June 30, 2018, and migration from monitoring to a Pillar 1 minimum requirement starting July 1, 2018. <i>BSP Circular No. 990 of January 22, 2018</i>
Cap on Credit Growth	No	
Other broad-based measures to increase resilience or address risks from broad-based credit booms	Yes	-A Real Estate Loan limit of 20% of a bank's total loan portfolio, with certain exclusions, is in place since February 4, 2008. -Real Estate Stress Test Limit (REST) limits are 10% of the CAR and 6% of CET1 after adjusting for a stress scenario resulting in a 25% write-off rate on real estate exposures and real and other properties acquired. REST limits took effect in July 2014. -The bank uniform stress testing program started end-June 2014. -Report granular information on their real estate loans to mid- and high-end housing units; residential real estate price index; commercial real estate loans and a new Report on Project Finance Exposures including type of infrastructure project and project phase. The new report was implemented on June 30, 2018. <i>BSP Circular No. 600 of February 04, 2008. The Circular took effect February 24, 2008</i> <i>BSP Circular No. 839 of June 27, 2014; Memorandum No. M-2012-046</i> <i>September 21, 2012 Memorandum No. M-2014-032 of August 11, 2014 and Circular No. 976 of October 10, 2017</i>
Household sector tools		
Household sector capital requirement	No	
Cap on loan-to-value ratio	No	
Cap on debt-service to income ratio	No	
Cap on household credit growth	No	
Fiscal measures to contain systemic risks	No	
Corporate sector tools		
Corporate sector capital requirement	No	
Loans/eligibility restrictions	No	
Exposure caps on corporate credit	Yes	Real estate loans for commercial properties cannot exceed 20% of total loan portfolio. <i>BSP Circular No. 600 of February 04, 2008. The Circular took effect February 24, 2008.</i>

Box 2. Macroprudential Policy Measures in the Philippines (Concluded)

Measures	Status	Description
Liquidity tools (banking sector)		
Liquidity Coverage Ratio	Yes	Starting in January 1, 2019, universal and commercial banks are required to maintain LCR on solo and consolidated basis of at least 90% and 100%. The subsidiary banks and QBs will be subject to a minimum LCR of 100% from January 01, 2020 onwards (70% during observation period). The stand-alone TBs, RBs, CBs, and QBs, on the other hand, will be subject to a Minimum Liquidity Ratio (MLR) of 20% by January 1, 2019. <i>BSP Circular No. 905 of March 10, 2016 and BSP Circular No. 996 of February 08, 2018 BSP Circular No. 1035 of March 15, 2019</i>
Net Stable Funding Ratio (NSFR)	Yes	Universal and commercial banks, including their subsidiary banks and quasi banks, are required to comply with an NSFR of 100% on an ongoing basis from January 1, 2019 (70% during the observation period). <i>BSP Circular No. 1007 of June 6, 2018 BSP Circular No. 1034 of March 15, 2019</i>
Net open foreign exchange positions	Yes	Since March 8, 2007, bank's allowable Net Open Foreign Exchange Position (either overbought or oversold) shall be the lower of 20% of their unimpaired capital or US\$50 million. Banks shall submit a report on the daily consolidated foreign exchange position. <i>Circular No. 561 of March 8, 2007.</i>
Foreign exchange swaps or derivative positions	Yes	Limits and higher risk weights on Non-Deliverable Forward (NDF) were imposed in 2011-13 to curb speculative attacks on the Philippine Peso by raising capital charge from 10% to 15% and limits of 20% and 100% of unimpaired capital for domestic banks and foreign bank branches on a bank's gross exposures to peso NDF transactions. <i>BSP Circular No. 740 of November 16, 2011 and BSP Circular No. 790 of March 06, 2013</i>
Other measures to mitigate systemic liquidity risks	Yes	The BSP issued Circular No. 1014 (published on 27 September 2018, effective 12 October 2018) on the Currency Rate Risk Protection Program (CRPP) and Circular No. 1015 (published on 9 October 2018, effective 24 October 2018) on the implementation guidelines of the CRPP. The CRPP Facility was enhanced to ease the demand pressures in the foreign exchange spot market. <i>BSP Circular 1014 of September 24, 2018 BSP Circular 1015 of October 05, 2018</i>
Tools for systemic liquidity risk and nonbank sector		
Asset management industry	No	
Pension funds	No	
Insurance companies	No	
Tools for SIIIs and Interconnectedness		
Capital surcharges for systemically important institutions (SIIIs)	Yes	Higher loss absorbency (HLA) requirement (additional CET1 requirement ranging from 1.5% to 2.5%) for identified D-SIBs. The requirements shall be phased-in from January 1, 2017 with full implementation by January 1, 2019. <i>BSP Circular No. 856 of October 29, 2014 and Circular No. 904 of March 19, 2016</i>
<p>1/ These broad-based tools are only applicable to the banking sector and in some cases to investment firms.</p> <p>2/ Circular No 855 (9 October 2014) amended the regulations by providing a real estate mortgage (REM) collateral value of 60 percent of appraised value. The cap on REM collateral value differs from a loan to value limit. The collateral cap is relevant in determining whether a loan is secured or unsecured as well as the corresponding provisioning requirements.</p> <p>Note: In addition to these MPMs, the Philippines has extensive capital flow management (CFM) measures on FX transactions and borrowings—mostly to banks. For instance, banks have to obtain a separate license to handle FX transactions, and their access to non-deliverable forwards (NDFs) are constrained. However, many of the CFM measures do not apply for NBFIs and nonfinancial corporations as well as transactions in cash or in foreign soil (that are not repatriated), which led to developing substantial and efficient informal FX and derivatives markets that are even larger than formal markets.</p>		

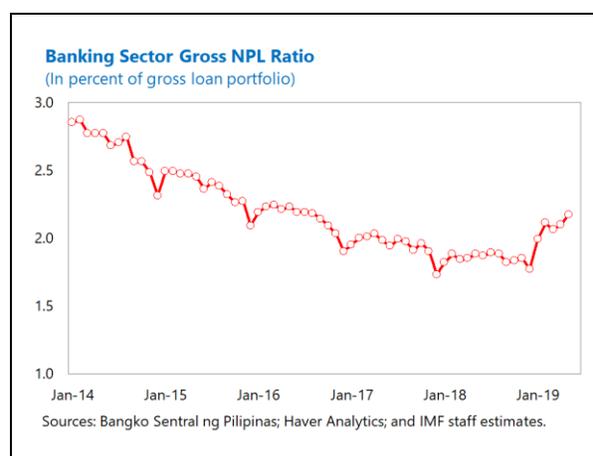
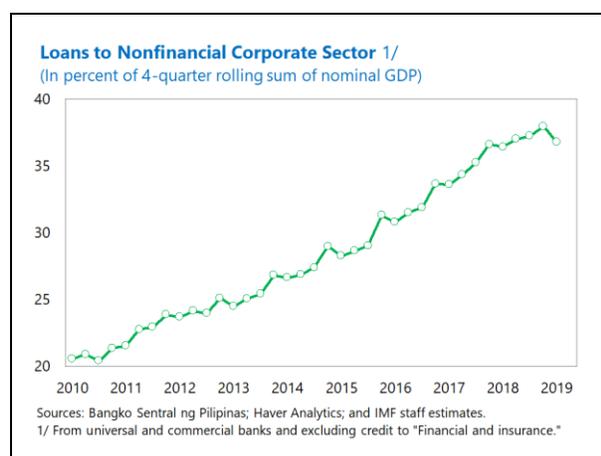
CORPORATE LEVERAGE IN THE PHILIPPINES—A CONCERN?¹

Using a novel firm-level dataset with detailed information on firms' debt structure, this chapter shows that Philippine firms are highly leveraged by regional standards with relatively greater exposures to FX shocks, and their debt service capacity deteriorated somewhat during 2018, although still comparable to historical levels. The results from stress tests suggest that Philippine firms' balance sheets have room to sustain large temporary shocks. Nevertheless, policies that promote domestic financial market development would help reduce exposures to exchange rate fluctuations.

A. Introduction

1. Nonfinancial corporate leverage in the Philippines has steadily increased since 2010.

Low global interest rates and strong macroeconomic performance have contributed to a steady rise in nonfinancial corporate debt and leverage since the global financial crisis. While part of this trend reflects Philippine firms' growing need to finance their productive investments, the higher indebtedness could also amplify the impacts of adverse macroeconomic shocks and possibly strain the bank balance sheets. Against some early signs of deteriorating credit quality, as indicated by the recent pickup in the nonperforming loan (NPL) ratio,² this chapter documents Philippine firms' leverage over the last five years and assesses their balance sheet vulnerability under illustrative stress scenarios.



2. The granular diagnosis of Philippines' nonfinancial corporate sector vulnerability has been hampered by data gaps (IMF, 2018). For example, information on the currency composition of corporate debt is not readily available,³ preventing an accurate assessment of their balance sheet exposures to exchange rate risks. More generally, the lack of timely data on nonfinancial corporate

¹ Prepared by Minsuk Kim (APD).

² NPL ratios by sector are not publicly available.

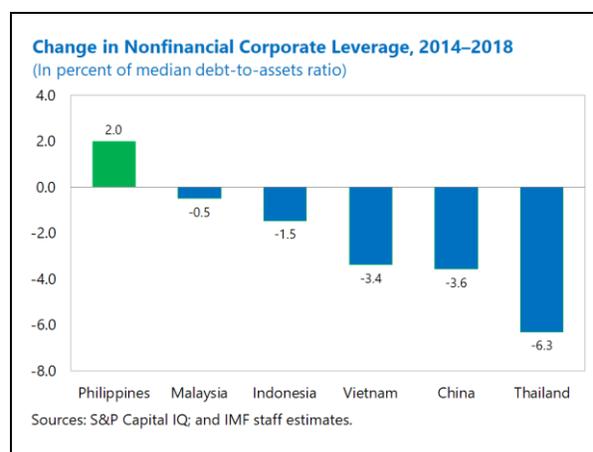
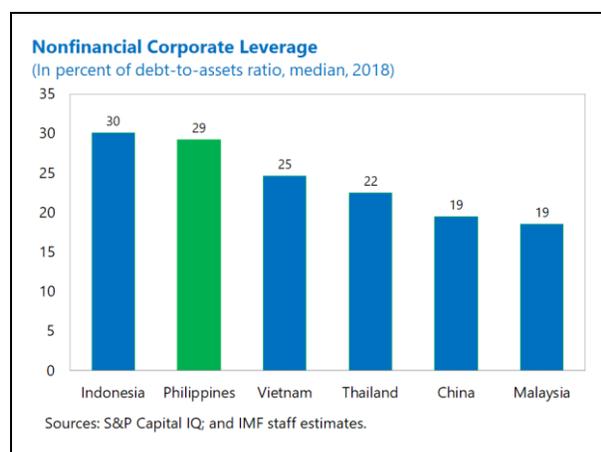
³ Bangko Sentral ng Pilipinas, 2017 *Financial Stability Report*.

balance sheets has constrained the BSP's ability to identify and monitor emerging systemic risks and formulate targeted policy measures.

3. Philippine firms' leverage and vulnerability are examined by using a novel firm-level dataset. The dataset is constructed from S&P's Capital IQ database and comprises over 160 listed and nonlisted nonfinancial firms in the Philippines during 2014–2018. In contrast to other commercial databases, the Capital IQ database provides detailed balance sheet information on firms' debt structure, including the currency of denomination and the type of debt instrument (for example, bonds or loans). The use of actual FX liability information, instead of estimates based on macro-level statistics, is a novel feature of the analysis in this paper. Appendix I provides further description of the dataset.

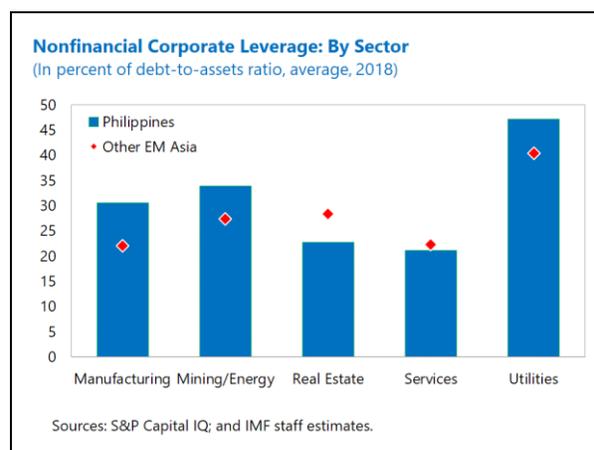
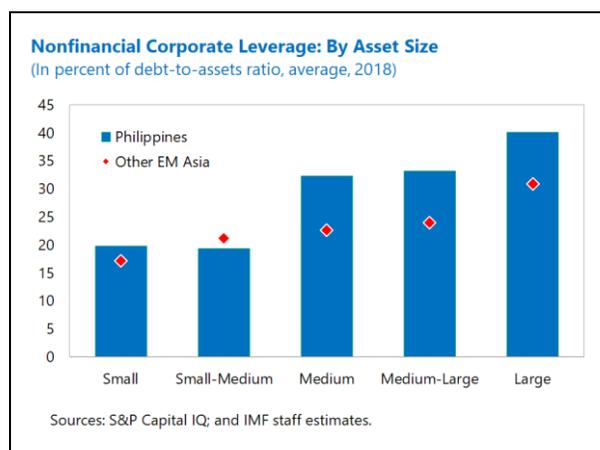
B. Nonfinancial Corporate Leverage in the Philippines

4. Philippine firms' leverage ranks among the highest in the region after a sustained rise over the recent years. The median nonfinancial corporate leverage, measured by the total debt to total assets ratio, has increased by 2 percentage points in the Philippines since 2014. This trend is in clear contrast to most other major emerging market (EM) Asian economies, where nonfinancial firms have deleveraged their balance sheets over the same period. Consequently, the level of Philippine firms' median leverage stands among the highest in the region as of end-2018. This assessment also holds with alternative measures of leverage. In terms of the net debt to earnings ratio, for example, Philippine firms have the highest median leverage in the sample at 265 percent.

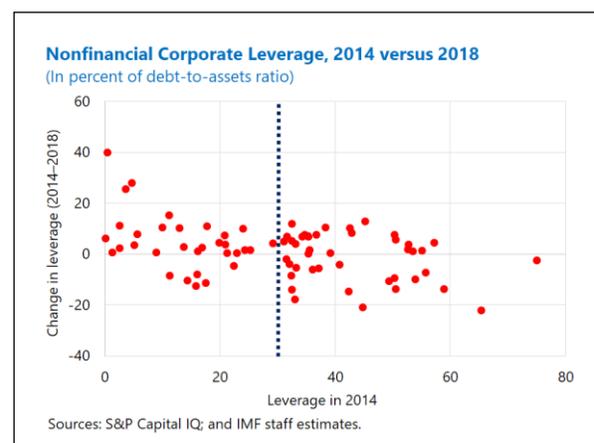


5. Corporate leverage is higher among larger firms and those in the utilities and mining/energy sectors. Firms are divided into quintile groups according to their asset size, in which "Medium" firms indicate those with the total asset size between the 40th and 60th quintile in the sample. Overall, "Medium" and larger firms are found to be more leveraged, with an average leverage ratio above 30 percent. On average, these firms are also more leveraged than their peers in other EM Asian economies. In terms of sectors, firms in utilities and mining/energy firms are the

most leveraged, followed by manufacturing and real estate.⁴ Mining/energy is also the sector in which leverage increased the most over the last five years.



6. Firms with low or moderate initial leverage increased their leverage, whereas high-leverage firms deleveraged. This pattern is confirmed by comparing each firm's cumulative change in leverage during 2014–2018 against their leverage level in 2014. The results show that most firms with an initial leverage ratio of 30 percent or below in 2014 increased their leverage over this period, whereas high-leverage firms generally reduced their leverage.



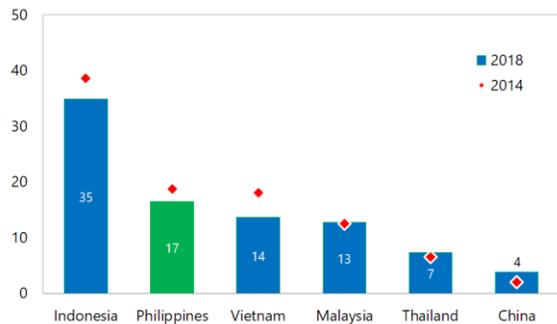
7. A significant share of Philippine firms' outstanding debt is denominated in foreign currencies. Philippine firms carried on average about 17 percent of their debt in foreign currencies as of end-2018, slightly lower than the 19 percent in 2014. The foreign currency debt was predominantly denominated in U.S. dollars (86.5 percent), followed by Japanese Yen (2.7 percent). In terms of the debt instrument, about 79.1 percent of the foreign currency debt was in the form of bank loans, followed by bonds and notes (13.6 percent) and other instruments (for example, capital lease). Furthermore, the foreign currency debt share was higher among larger firms and those in utilities, mining/energy, and manufacturing sectors. For some firms in mining and manufacturing, this could reflect the existence of natural hedges in the form of foreign currency income. In the absence of information on firms' hedging, the next section presents an alternative approach to examine the balance sheet exposure to exchange rate risks.

⁴ Real estate here also comprises construction.

Figure 1. Foreign Currency Nonfinancial Corporate Debt

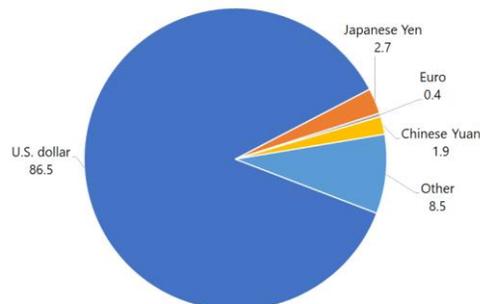
Philippine firms hold a significant share of their debt in foreign currencies...

Share of Foreign Currency Debt
(In percent of total debt, average)



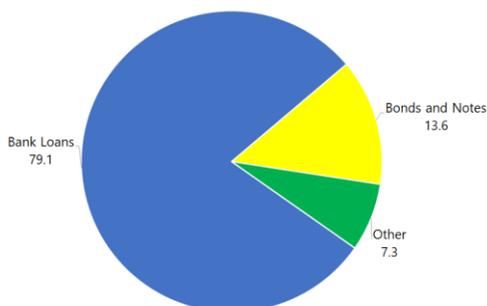
...predominantly in U.S. dollars.

Composition of FX Debt by Currency
(In percent of total FX debt, 2018)



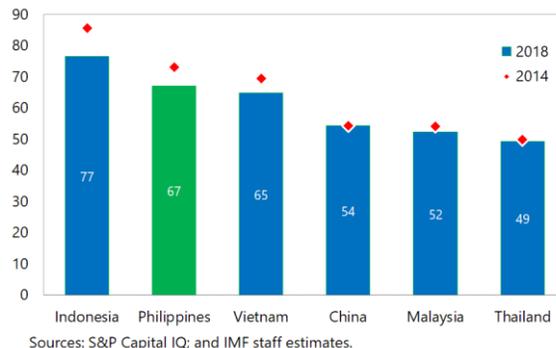
...and in the form of bank loans.

Composition of FX Debt by Instrument
(In percent of total FX debt, 2018)



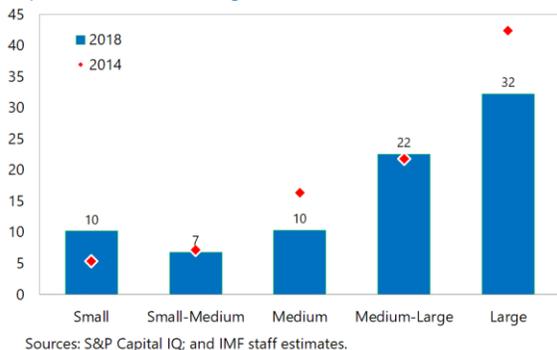
The share of firms holding a positive amount of foreign currency debt is also among the highest in the region.

Share of Firms with Foreign Currency Debt
(In percent of total number of sample firms in each economy)



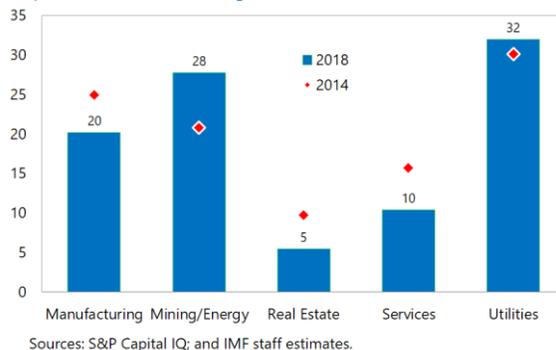
The foreign currency debt share is substantially larger among large firms...

Share of Foreign Currency Debt by Asset Size
(In percent of total debt, average)

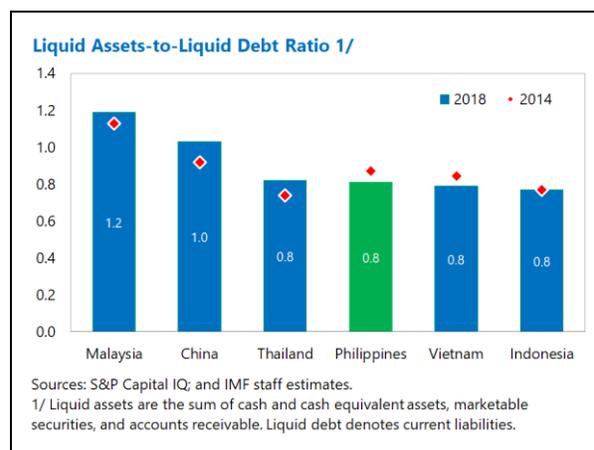
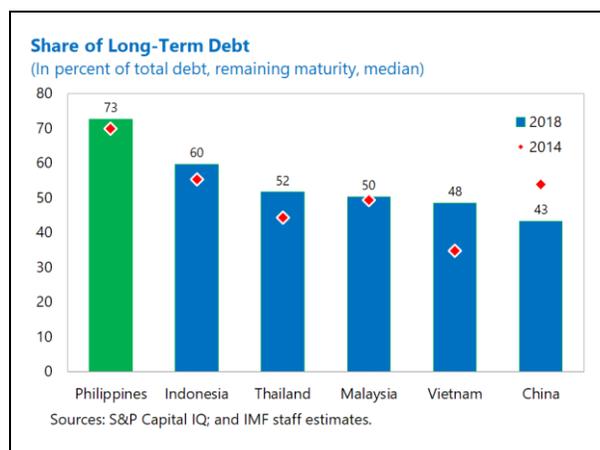


...and in utilities, mining and energy, and manufacturing sectors.

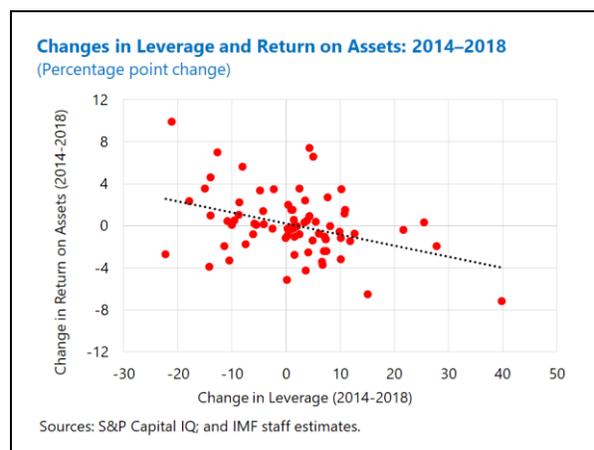
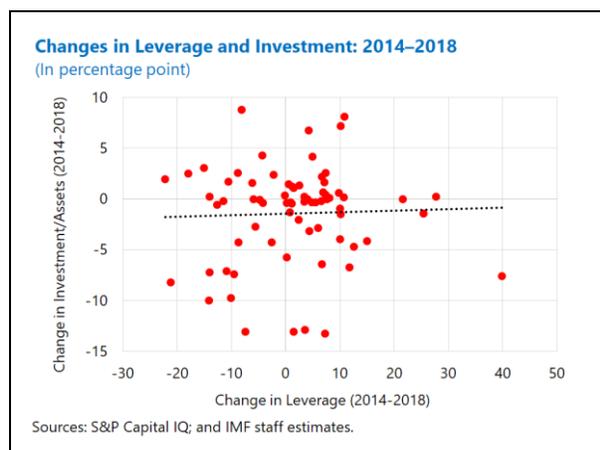
Share of Foreign Currency Debt by Sector
(In percent of total debt, average)



8. The maturity structure appears favorable. As of end-2018, Philippine firms had on average about three thirds of their outstanding debt with a maturity of over one year, which is significantly higher than their regional peers. The quick ratio, defined as the ratio between liquid assets-to-liquid debt, is also comparable to that of other firms in the region. Together, these findings appear to indicate a relatively low exposure to liquidity risks for Philippine firms.



9. The rise in leverage was not accompanied by strong corporate performance. Philippine firms that increased their leverage during 2014–2018 did not significantly increase their investment with respect to assets over the same period while their profitability, measured by the return on assets, declined. These trends point to the possibility that the increase in leverage was driven more by supply of credit to nonfinancial firms, which averaged 16.8 percent over this period, rather than by demand.



C. How Vulnerable Are Philippine Firms' Balance Sheets?

10. Philippine firms' solvency is examined using the interest coverage ratio (ICR). The ratio, defined as the earnings before tax and interest expenses (EBIT) to interest expenses ratio, measures the firms' capacity to service its debt payments out of its earnings. In this chapter, a firm's debt service burden is considered as "high" if the firm's ICR is lower than 2, which indicates that the firm uses over half of its earnings to service its debt.

11. Firms' capacity to service their debt deteriorated in 2018, returning to the historical levels.

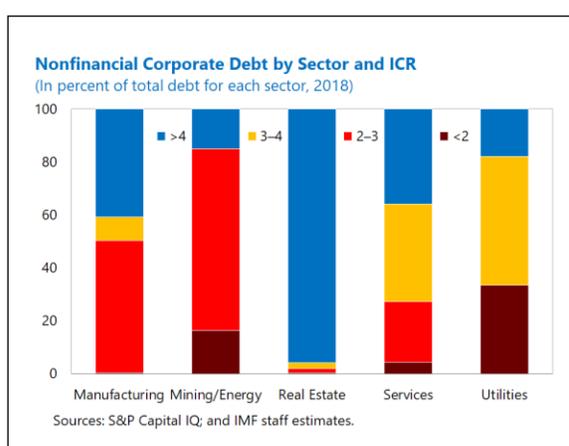
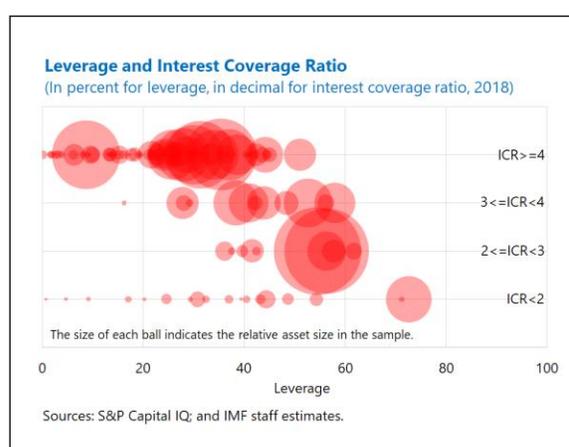
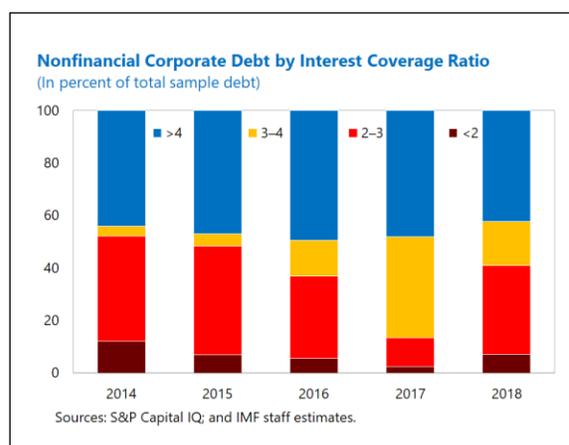
About 41 percent of Philippine firms used more than one third of their EBIT to make interest payments, with 7 percent of them spending more than half of their EBIT on interests. Although Philippine firms' earnings rose by 22 percent in 2018, the increase in market interest rates and exchange rate depreciation led to a 38 percent rise in interest payments from 2017.

12. As expected, more leveraged firms are facing higher debt service burden.

Firms with leverage ratios above the median level have an average ICR ratio of 2.7, compared to 3.5 for those with below-median leverage. Furthermore, although larger firms tend to be more leveraged, many of them also have higher debt service capacity (as shown by the relative scarcity of large firms with ICR below 3), which is an important mitigating factor from a systemic stability perspective. Nonetheless, some of the largest firms in the sample used more than one third of their earnings for interest payments, which warrants caution.

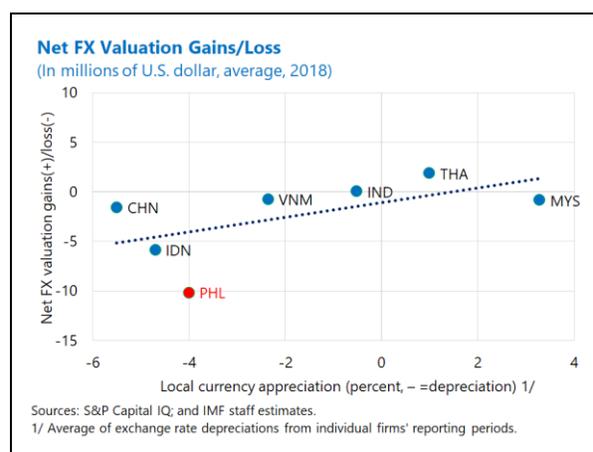
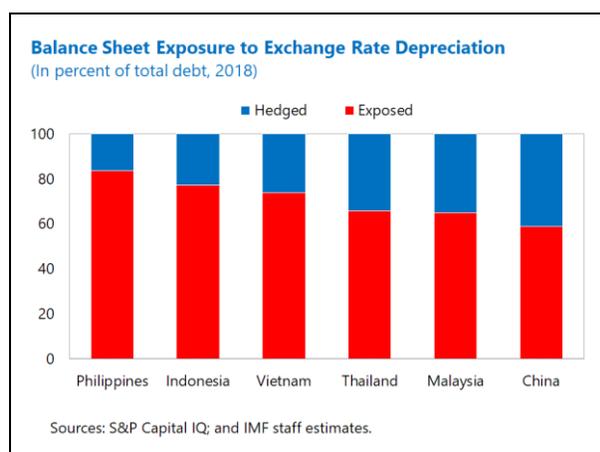
13. The debt service burden is relatively high among firms in utilities and mining and energy sectors. Among these sectors, mining and energy and utilities appear relatively more vulnerable, with 14 percent and 34 percent of each sector's total debt held by firms facing high debt service burden (ICR<2), respectively. Nonetheless, the share of these sectors' debt in the sample is relatively low (5 percent for mining and energy and 16 percent for utilities). Moreover, these sectors consist of a small set of large sample firms, which suggests that the low ICR could reflect firm-specific rather than sectoral performance.

14. Using the accounting information on firms' net FX valuation gains associated with their assets and liabilities, the sample is divided into two groups (see Appendix I for additional details). The first group ("Exposed") consists of firms that reported net FX valuation loss when the exchange rate depreciated, on average, during the post-crisis period, which implies these firms



tended to carry more unhedged foreign currency liabilities than assets. Similarly, the second group (“Hedged”) consists of firms that reported net average FX valuation gains from depreciation.

15. The results show that Philippine firms are relatively more exposed to exchange rate depreciation than other EM Asian firms. In 2018, about 84 percent of total sample debt was held by “Exposed” firms in the Philippines, which is higher than in other major EM economies in the region. This finding appears consistent with the larger average FX valuation loss incurred by Philippine firms in 2018 than Indonesian firms, although Indonesian firms held a higher share of their debt in foreign currencies and the peso depreciated less than the Indonesian rupiah in this period.



Illustrative Stress Tests

16. Philippine firms' balance sheet vulnerability is tested with different stress scenarios. Using a framework similar to that of Jones and Karasulu (2006), shocks to different subcomponents of corporate earnings are applied to assess their impacts on Philippine firms' debt service capacity. The subcomponents considered comprise interest expenses, net FX valuation loss, and operating income. The size of the shock to each component is set to match the change in the amount between 2007 and 2008 and between 2012 and 2013. These differentials are then applied to the benchmark levels in 2018 for each firm.⁵ Table 1 presents the average impacts on these components and EBIT under the two stress scenarios. In Scenario I, the only negative shock to firms' EBIT is the exchange rate shock, which is set to generate an average increase in net FX loss of 182 percent from the 2018 level (equivalent to 0.4 percent of 2018 GDP). In

Table 1. Average Impact on Philippine Corporate Earnings

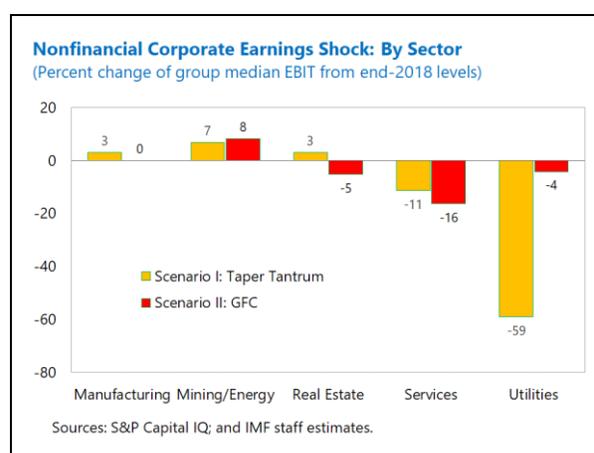
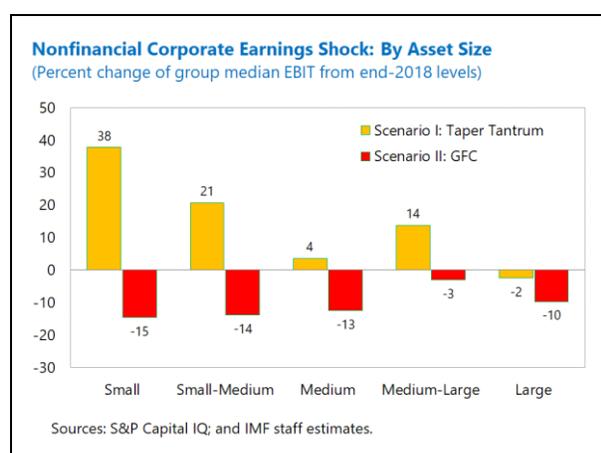
	Operating Income	Net FX Loss	Interest Expense	EBIT
	(Percentage change from 2018 levels)			
Scenario I (Taper Tantrum)	1.5	182	-5.2	-6.1
Scenario II (GFC)	-3.9	156	-2.4	-9.8
Memorandum items:	(In millions of U.S. dollar)			
Average (2018)	232.5	10.1	53.8	240.6
Standard deviations (2009-2018)				
Within firm	131.7	27.4	34.9	136.3
Between firm	235.0	12.6	70.1	246.7
Overall	300.6	30.9	90.3	320.2

Source: IMF staff estimates.

⁵ For example, if a firm experienced a decline in the operating income amounting to P 10 million in 2008, this same amount is subtracted from the same firm's operating income in 2018.

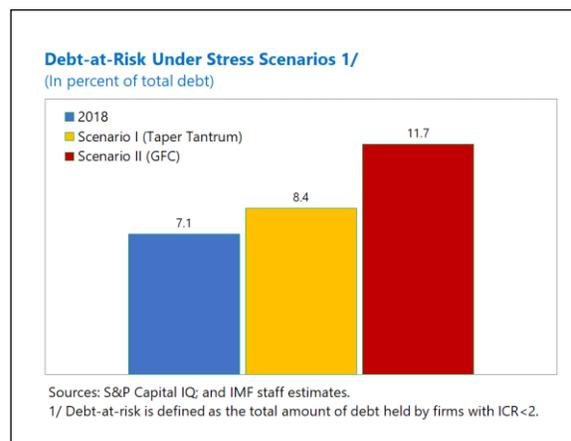
Scenario II, operating income is assumed to decline by 3.9 percent, in addition to an average 156 percent increase in net FX loss. In both scenarios, interest expenses are assumed to *decline* slightly on average, consistent with Philippine firms' experience during the global financial crisis and the Taper Tantrum episode.

17. The stress scenarios differ markedly in terms of the impacts on the earnings distribution across firm sizes and sectors. In Scenario I, the negative earnings shock is largely concentrated among large firms, especially in utilities, whereas in Scenario II the shock is more evenly distributed. This difference in the distributional impacts reflects the nature of shocks in these scenarios. As Scenario I only features exchange rate shocks, the decline in EBIT is the largest among large firms and in utilities, consistent with the findings above that it is these groups of firms that tend to hold the highest shares of foreign currency-denominated debt.

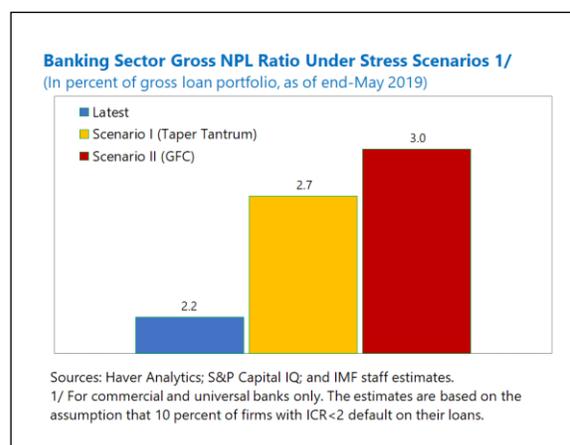


18. The results indicate that Philippine firms' balance sheets are sufficiently healthy to absorb large adverse shocks in the short term.

Under Scenarios I and II, the share of total debt held by firms with ICR less than 2 would rise to 8.4 percent and 11.7 percent, respectively, from the benchmark level of 7.1 percent in 2018. Against the median level of 7.9 percent during 2009–2018, these levels appear to be manageable. Among the three types of shocks considered, a negative shock to firms' operating income appears to have the largest impact on EBIT, followed by interest rate and exchange rate shocks.



19. The impacts on banks' balance sheets appear to be manageable. Under the additional assumption that 10 percent of firms with ICR less than 2 default on their debt,⁶ the average gross NPL ratio among commercial and universal banks is expected to rise to 2.7 percent under Scenario I and 3 percent under Scenario II, against the end-May 2019 level of 2.2 percent. These NPL ratios are comparable to the levels observed in 2014. Considering the ample capital buffers of Philippine banks (above 15 percent of risk-weighted assets on average), however, the shocks appear to be manageable.



20. These assessments, however, should be taken with caution. First, the test does not consider the vulnerability in the household sector, which could put additional pressures on banks' balance sheets under stress scenarios. Second, given the higher average leverage ratio in 2018, the balance sheet impacts from negative macroeconomic shocks could be nonlinear, leading to disproportionately larger losses compared to past stress episodes. Finally, these tests do not assess the potential negative impacts on firms' real activities, especially investment. Empirical studies find a robust negative relationship between leverage and investment (IMF, 2015), which should be considered when evaluating the broader macroeconomic vulnerability.

D. Policy Implications

21. Given the risks of slowing growth, active policies might be needed to limit a further increase in corporate leverage. Although the stress results show that Philippine firms' balance sheets can sustain large short-term shocks, targeted macro-prudential measures could be considered to contain further increases in leverage in some sectors. Corporate insolvency regimes could also be strengthened pre-emptively to prepare for a potential increase in corporate failures in the future.

22. In the long run, policies that promote domestic financial market development would help reduce exposure to exchange rate fluctuations. Using a large international firm-level dataset spanning 21 major EM economies, including the Philippines, Kim (2019)⁷ finds evidence that firms in developed financial markets carry less unhedged dollar debt compared to those in less developed financial markets. Domestic financial market development could help reduce firms' need to borrow externally in unhedged foreign currencies by allowing an easier access to hedging instruments.

⁶ For comparison, Chow (2015) considers a stress scenario in which firms with ICRs less than 1.5 default with a probability of 15 percent.

⁷ Kim, Minsuk, 2019, "[Financial Development, Exchange Rate Fluctuations, and Debt Dollarization: A Firm-Level Evidence](#)," IMF Working Paper No. 19/168.

Appendix I. Data Source

Firm-Level Dataset

This study uses a firm-level dataset constructed from the corporate balance sheet database provided by Capital IQ, S&P Global Market Intelligence.

One advantage of the Capital IQ database over other commercial databases such as Worldscope and Orbis is the availability of detailed information on firms' outstanding debt held in their balance sheets. Its Debt Capital Structure database, in particular, provides information on the individual debt instruments held by each firm at a given point in time, including the principal amount due, the currency of denomination, and the type of instrument (for example, whether bank loans or bonds).

Information on debt instruments is collected from company financial reports filed to national regulatory agencies, typically available in the supplementary note accompanying the main financial statements. Compared with primary debt issuance databases, such as Dealogic and Thomson One, Capital IQ has the advantage of providing direct and comprehensive information on firms' liability exposure to exchange rate risks.

The data downloaded from Capital IQ are cleaned following the usual procedures in the literature, including the following steps:

- Drop all firm-year observations in which the difference between the sum of total liabilities and the equity and total assets is greater than US\$10,000.
- Drop all firm-year observations in which the amount of cash and cash equivalents and that of tangible assets are greater than the total assets, respectively.
- Drop any firm with a negative value for total assets in any year.
- Drop all firm-year observations in which the difference between the sum of due amounts for individual debt instruments (downloaded from the Debt Capital Structure database) and the total principal due outstanding (downloaded from the main financial statements database) is greater than US\$100,000.
- Drop all firm-year observations in which the outstanding debt denominated in individual currencies exceeds the total debt.

Furthermore, all firms that do not carry any outstanding debt are excluded from the sample. Restricting the sample to firms with debt allows this paper to focus solely on firms' choice of funding currencies.

The final sample consists of a total of 164 firms over the period of 2014–2018 (160 listed and 4 non-listed). The total market capitalization of listed sample firms accounts for 77 percent of the Philippine Stock Exchange's market capitalization (US\$258 billion as of end-2018).

Balance Sheet Exposure to Exchange Rate Fluctuations

To examine the balance sheet vulnerability to exchange rate shocks, information on net FX translation gains in firms' income statements is exploited. A firm's standard income statement typically includes an accounting item on the firm's net FX valuation gains on its assets and liabilities, reported as part of nonoperating income (also referred as "FX translation gains or loss" in accounting). This item reports the net gain or loss incurred to the firm due to the valuation changes in its foreign currency-denominated assets and liabilities as a result of the change in the exchange rate between two financial years.

To understand how this item would be affected by changes in the exchange rate, it is instructive to consider an actual example presented in San Miguel Corporation's *2017 Annual Report*, a large Philippine conglomerate with businesses in food and beverage, energy, and infrastructure. Table A.1 shows how the company's earnings (before tax) would change due to a one-peso increase (that is, depreciation) against the U.S. dollar in 2018.

Under this scenario, the company expects to earn an additional income of P 2,403 from the revaluation of their foreign currency-denominated assets while losing P 5,885 due to their foreign currency-denominated liabilities. As a result, the net valuation loss is expected at P 3,482, implying that the company holds more unhedged foreign currency liabilities than assets. By contrast, if a company earns a net positive income due to currency depreciation, this would imply that the company holds more unhedged foreign currency assets than liabilities.

Table A.1. Net Valuation Effect on Income

(Assuming one-peso depreciation against U.S. dollar)

	Effect on income
Assets	
Cash and cash equivalents	2,031
Trade and other receivables	334
Prepaid expenses and other current assets	8
Noncurrent receivables	30
Sub-total	2,403
Liabilities	
Loans payable	-450
Accounts payable and accrued expenses	-618
Long-term debt	-4,016
Finance lease liabilities	-785
Other non-current liabilities	-16
Sub-total	-5,885
Net total	-3,482