FIGURES

TABLES

CORPORATE SAVING IN MALAYSIA

A. Introduction

1. IMF analysis suggests that Malaysia's current account (CA) surplus is higher than warranted by medium-term fundamentals and desired policies. National income account data up to 2015 suggest that private non-financial corporations could be a significant contributor to the CA surplus, followed by private financial firms. Given the importance of private non-financial corporations in Malaysia's national saving, staff undertook an analysis of saving to understand the history and identify the drivers.

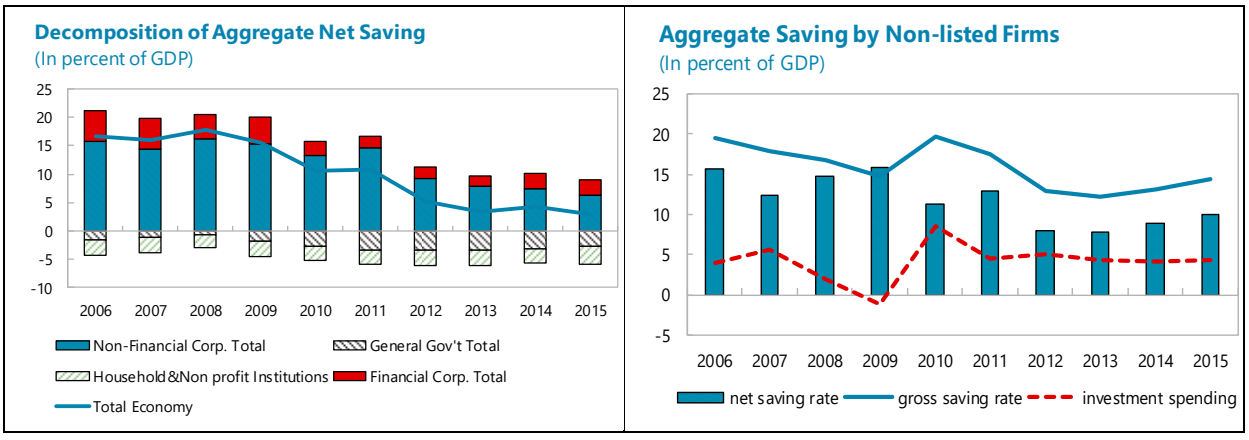
2. Leveraging firm-level data for listed firms, we focus on the contribution to the CA surplus of private non-financial corporations. Specifically, we aim to understand:

- Which categories of corporations are contributing most to national saving? How have corporate saving evolved over time?
- From an accounting perspective, what factors explain the change in corporate saving behavior?
- From an economic perspective, what are the underlying drivers of corporate saving? Is saving excessive?

B. Stylized Facts Based on National Income Account Data

3. From a global perspective, the corporate sector has shifted from a net borrower to a net saver (Chen et al., 2017; Dao and Maggi, 2018). This rise in gross saving does not seem to have led to an increase in capital investment, but instead a larger holding of liquid financial assets (cash).

4. In Malaysia, aggregate net saving has been on a declining trend since 2006, with non-financial corporations being the largest contributor. The contributions of the corporate sector to the CA surplus are partially offset by dissaving by the public sector, households[1], and non-profit institutions. Listed firms tend to invest more than non-listed firms, possibly reflecting their easier access to external financing.



[1] Nonetheless, it is important to note that households in Malaysia hold significant net financial assets (about 95 percent of GDP as of 2017), part of which may reflect precautionary motives.

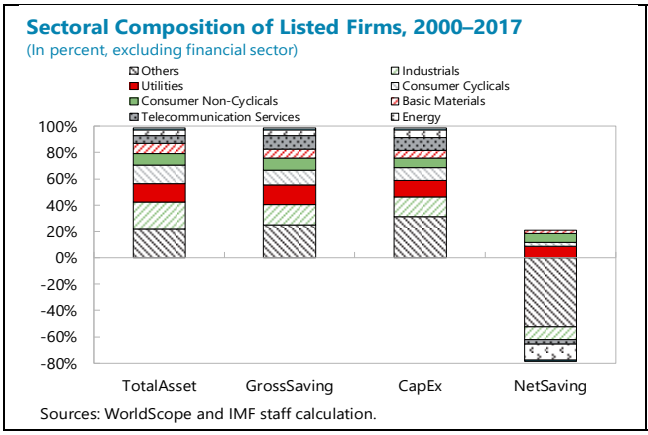
C. Firm Level Analysis

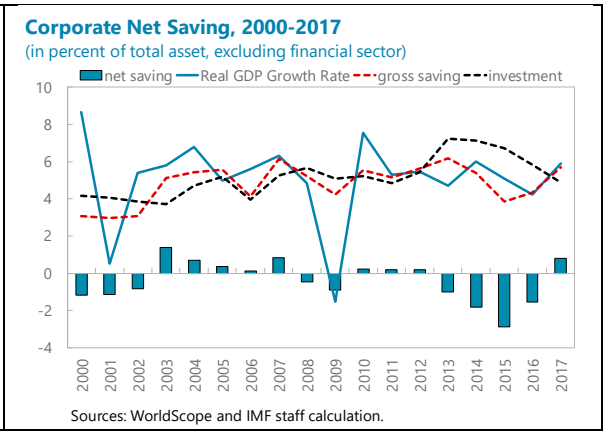
5. We employ balance sheet and income statement data for 1400 publicly listed firms over the period of 2000–2017 (currently about 940 active, total assets about 170 percent of GDP), drawing from the Thompson WorldScope Database. As the interpretation of cash and investment flows for financial corporations is different from that for non-financial corporations, this study focuses only on the financing decisions of non-financial corporations (see Fama and French, 2001; and DeAngelo et al., 2004). An important drawback is that the WorldScope database does not include information on non-listed firms, which might have different motives for saving from listed-firms. Key variables of interest are defined as follows:

- $Profit = Gross\ Operating\ Surplus - Taxes\ on\ Profits - Interest$;
- $Gross\ Saving = Profit - Net\ Dividends$;
- $Net\ Saving = Gross\ Saving - Investment$.

6. In the study period of 2000–2017, the following overall patterns are worth noting:

- **Most sectors were dissaving**[2] **over the period of 2000-2017.** Among all non-financial corporations, industrials, utilities, and consumer cyclicals are the largest net savers and they share similar saving/investment behaviors. Firms in the energy sector, telecommunications, and other non-categorized firms show significant negative net saving rates as gross saving is more than offset by large scale investments.
- **Gross saving exhibit cyclical fluctuations and investment was positively correlated with gross saving up to 2012.** Capital expenditure surged during 2013 and 2014, becoming a main engine of GDP growth, and began to decline thereafter. As a result, the net corporate saving rate remained largely stable around zero up to 2012 and entered the negative domain since 2013. It began to pick up since 2015 due to an upswing of gross saving and the continued decline of investment.





[2] Gross or and net saving rates are defined as shares of total asset, as opposed to profit, because profit can be either positive or negative.

7. The changes in the corporate saving rate almost entirely reflect the changes within each group of firms of similar size or age. We divide firms into groups $i = 1,2,\dots,I$ by quartiles of size or age, and then employ a standard decomposition method to quantify the contributions of the within- and between-group components to the cumulative changes in the corporate saving rate from 2000 to 2017. Specifically, the changes in the aggregate saving rates from period $t-1$ to t can be decomposed as follows:

$$\Delta s_t = \frac{1}{2}\sum_i (\omega_{i,t} + \omega_{i,t-1})\,\Delta s_{i,t} + \frac{1}{2}\sum_i (s_{i,t} + s_{i,t-1})\,\Delta\omega_{i,t},$$

where $\Delta s_{i,t} = s_{i,t} - s_{i,t-1}$ is the change in the gross (or net) saving rate of group i in period t and $\omega_{i,t}$ denotes the share of group i in total asset in period t. The first component in the above equation is the within-group effect; whereas the second component the between-group effect. As is shown in Table 1, the cumulative changes in the aggregate gross saving rate is entirely driven by the within-age group component. While part of the changes in the aggregate gross saving rate is due to the between-size group component, most of the changes is accounted for by changes in the within-size group component. In other words, the change in the aggregate saving rate is not mainly driven by the change in the share of old firms or large firms, relative to 2000; instead, it reflects that firms of similar age or size are behaving differently today compared to 2000, Similar trends are found in the changes in the net saving rate.

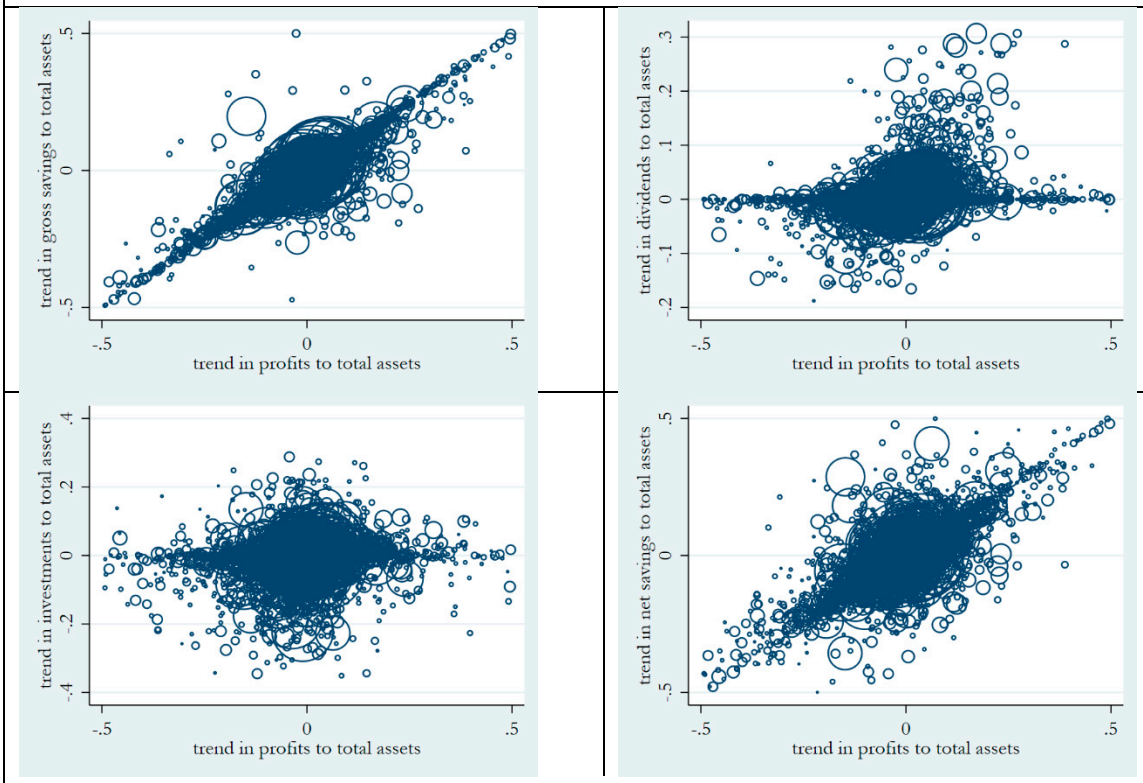
Table 1. Malaysia: Within-between Decomposition of Changes in Saving Rate
(2000–2017, percent contribution)

	gross savings		net savings	
	within	between	within	between
age	102.0	-2.0	117.2	-17.2
size	92.1	7.9	97.0	3.0

Notes: The table presents results from the within-between decomposition for groups of firms *i* defined by quartiles of age and quartiles of size.

8. Firm-level data confirm that in case of large profits (or, equivalently, cash flows), non-financial firms in Malaysia tend to increase their net saving, as opposed to paying more dividends or increasing investment. The four panels below plot the 10-year trend in percentage point in firm profit against the trends in the main components of it. The area of each circle corresponds to a firm's average size over the sample period. The top panels show a strong cross-sectional relationship between trends in gross saving rate and trends in profit relative to total asset, partly because of a weak correlation between profit and dividends. The bottom panels show that trends in investment are uncorrelated with trends in profit, leading to a meaningful positive relationship between profit and net saving rate. These conclusions are robust if the 10-year trend is replaced with a 5-year trend.

Figure 1. Firm's Profit and Saving Trends



Sources: WorldScope and IMF staff calculation.

D. External Financing Dependence and Excess Net Saving by Firms

9. Industries have different dependence on external funds, depending on the technological characteristics of the industry. We define the external financing dependence (EFD) at the industrial level following a two-step process developed by Rajan and Zingales (1998). First, we derive a firm's EFD by summing the firm's use of external finance (borrowings and equity issues, which equals total capital expenditure less cash flows from operations) over a 10-year period and then divide it by the sum of capital expenditure over the same period, i.e., $(CapEx - Opt.CashFlow)/CapEx$.[3] Then, to summarize the EFDs across all firms in an industry, we use the industry median.[4]

10. While an industry's actual dependence on external financing may differ significantly across countries, its desired dependence on external funds is identified using the data on

[3] The sum of cash flows over a period of 10 years could be a good approximation of cumulative cash stock, unless the firm had a large initial cash stock in the beginning of the period (e.g., mature firms).

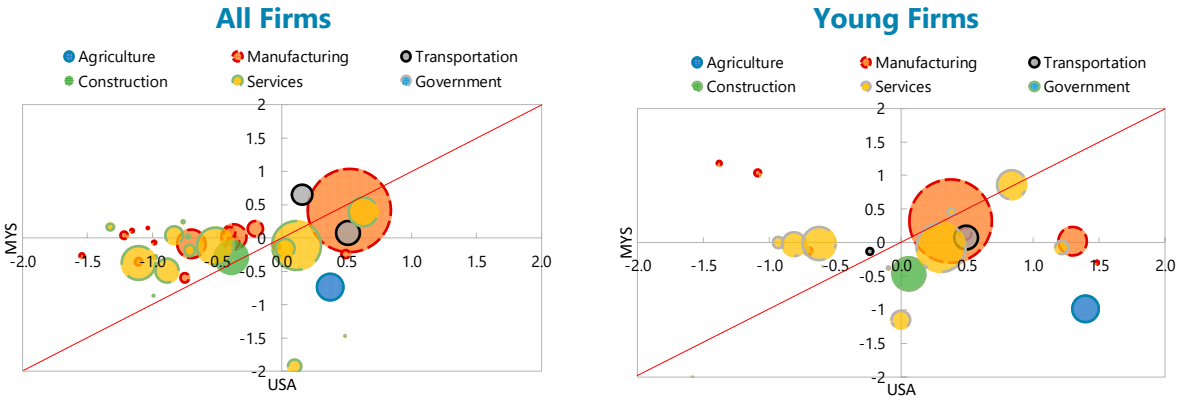
[4] Similar to Rajan and Zingales (1998), we treat large and small firms equally, which allows us to prevent large, mature firms from swamping the information of small firms (e.g., Apple's large free cash flow should mask the possible constraint faced by smaller IT firms).

firms in the United States and applied to other countries. This approach is reasonable because: (i) the production functions[5] of the same industry are similar across different countries—particularly, the same industry in the manufacturing sector is more likely to use similar technologies across different countries than the services sector does; and (ii) capital markets in the United States are relatively frictionless—as a result, the actual amount of external funds raised by a firm in the United States reflects the technological demand for financing, as opposed to supply constraints.

11. The trend analysis above indicates a high dependence of listed firms in Malaysia on internal funds (savings) to finance their investments or, equivalently, a lower dependence on external funds. This is particularly true when we compare the actual external financing dependence of firms in Malaysia with firms in the same industries in the United States. The top panels in the figure below show that across a variety of industries, there are significant gaps, in terms of use of external funds, between Malaysia and the United States, [6] particularly among young firms (i.e., less than ten years from listing).[7] This is perhaps because firms tend to depend more on external funds at early stage, as is shown by the declining median EFD of firms in the United States in the bottom panels below. In addition, the EFD gaps between Malaysia and the United States are largely attributable to the difference in industries with high desired EFDs.[8]

Figure 2. External Financing Dependence by Industry

(Comparison between Malaysia and United States)



Sources: WorldScope and IMF staff calculation.

Sources: WorldScope and IMF staff calcuation.

[5] Production function is used to represent the investment cycle of an industry driven by the technological characteristics associated with the industry, such as size of initial investment, implementation period, cash harvest period, and follow-up investment.

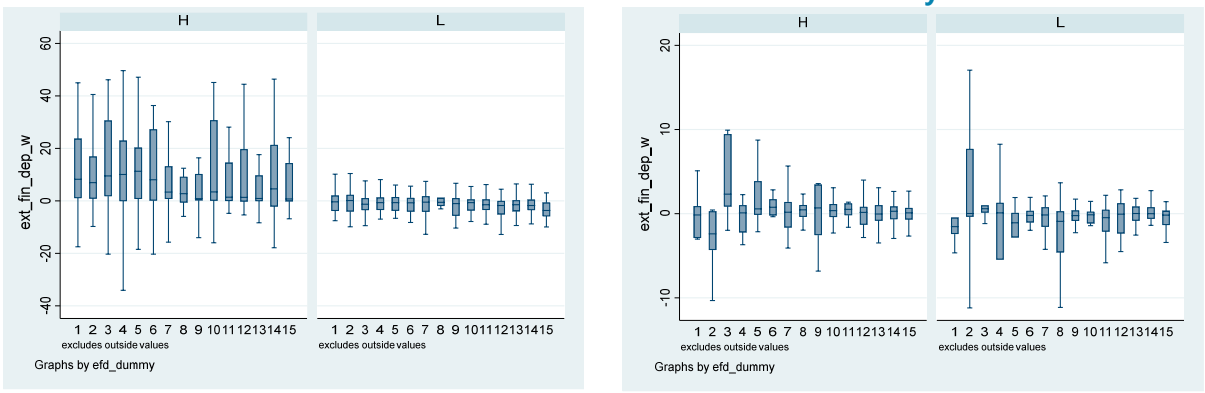
[6] The 45-degree line (red solid line) represents industries with identical EFD in Malaysia as in the United States. The size of each bubble is proportional to the total asset size of the corresponding industry. The bubbles below the 45-degree line designate industries that depict lower external financial dependence in Malaysia compared to the US. In addition, the chart does not show industries with large X-values and small Y-values (i.e., industries with large EFD in the United States). These outliers include transportation by air, chemicals and allied products, etc.

[7] The interquartile range of Malaysian industries' EFDs is 1.1 (75th percentile: 0.7; 25th percentile: -0.4); whereas it is 2.1 (75th percentile: 1.4; 25th percentile: -0.7) for American industries.

[8] We define an industry is of high EFD if its desired EFD is above the median EFD across all industries. The headers H and L in the bottom panels below correspond to industries with high and low EFD, respectively.

Figure 3. External Financing Dependence by Age

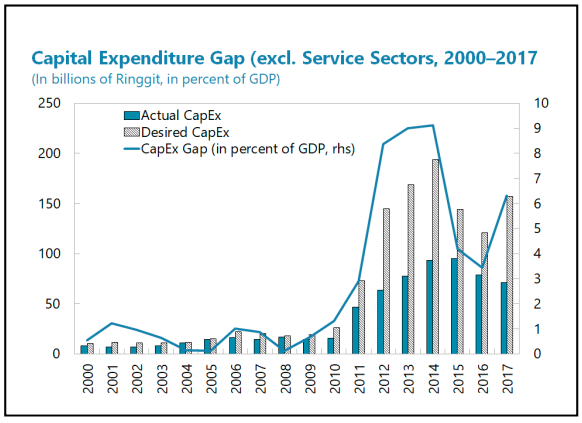
(Number of years since IPO)



Sources: WorldScope and IMF staff calculation.

Note: The header H and L refer to industries with high and low external financing dependence, respectively. We define an industry is of high EFD if its desired EFD is above the median EFD across all industries.

12. Capital expenditure (CapEx) shortfall could be used as a proxy for excess net saving by firms. Taking the cash flow of a firm as given, the firm can generate excess net saving through under-investment. While paying less dividends could lead to over-saving (gross), it is more reasonable to assume that the investment channel plays a more significant role in understanding excess saving by firms. Specifically, the *CapEx gap* of a firm j in industry i, $CapEx\ Gap_{ij}$, is defined as the amount of investment required to restore its actual capital expenditure, over a 10-year period, to the desired dependence of external financing of industry i, $EFD_i^{desired}$. That is,



$$CapEx\ Gap_{ij} = CapEx_{ij}^{desired} - CapEx_{ij}^{actual},$$

where $CapEx_{ij}^{desired} = Opt.CashFlow_{ij}/\left(1 - EFD_i^{desired}\right)$.[9] To make this approach more plausible, we also make a distinction between the $EFD_i^{desired}$ for young and old firms in industry i, respectively. Preliminarily calculation shows that the total CapEx gap of all listed firms (excluding the services sector) accounts for 2.8 percent of GDP on average from 2000 to 2017.

[9] Some caveats are worth mentioning. First, the identification of the desired EFDs for Malaysian firms hinges on the assumption that firms in the same industry share similar technologies and investment cycles across countries. This assumption would be challenged, for example, by the distinct roles that firms in different countries play in the global value chain. Second, this is only a partial equilibrium result, in the sense that it does not consider the counterfactual effect of increased capital expenditure on future cash flows (i.e., operational cash flows are taken as given).

E. Determinants of Net Saving by Firms

13. Many drivers could help explain why firms tend to generate excess net savings in the form of liquid financial assets. Following the literature, a firm's saving behavior can be rationalized by the following motives: (i) reducing future transaction costs when the costs of raising external funds are high (Almeida et al., 2004); (ii) the precautionary demand for cash to manage a potential liquidity shortfall when external financing is not available (Han and Qiu, 2007); (iii) the misalignment between managers' and shareholders' propensity to save, which could be exacerbated by weak corporate governance (Opler et al., 1999; Aoyagi and Giovanni, 2014; Sher, 2014); and (iv) avoiding higher tax on repatriated profits by holding excess cash balances abroad. In addition, this paper suggests that the desired external financing dependence, which reflects the technological features of an industry, be an important determinant of corporate saving.

14. Random effect panel data regressions are employed to test the above theories. We will focus empirical tests on the first two hypotheses above (namely, the transaction cost theory and the precautionary demand theory) and the role of external financing dependence, as well as the interaction between them. Specifically, we estimate the following equation:

$$s_{ijt} = \alpha \cdot EFD_i^{desired} + \gamma \cdot \overline{profit_{it}} + x_{ijt}'\beta + \theta_t + \epsilon_{ij} + u_{ijt}$$

where $EFD_i^{desired}$ is industry i's desired external financing dependence, $\overline{profit_{it}}$ is industry i's average profit as a share of total asset in period t, x_{ijt} is a vector of firm-specific variables for firm j in industry i in period t, and θ_t is year dummies. The firm-specific vector, x_{ijt}, includes $size_{ijt}$, age_group_{ijt}, I_gov_{ijt}, $I\_foreign_{ijt}$, Q_{ijt}, and $cash\_vol_{ijt}$. Specifically, $size_{ijt}$ is the natural logarithm of total asset and age_group_{ijt} is the quartile of firm age since incorporation. I_gov_{ijt} and $I\_foreign_{ijt}$ are ownership dummies, with $I\_gov_{ijt} = 1$ if government is the largest stakeholder of firm j and $I\_foreign_{ijt} = 1$ if firm j is a foreign company.[10] Q_{ijt} is Tobin's Q, measured by the ratio of the sum of market capitalization and total debt to total assets. $cash\_vol_{ijt}$ measures the cash flow volatility over the past 5 years. In alternative specifications, x_{ijt} also includes some interaction terms between firm-specific characteristics and the desired external financing dependence. Estimation results are presented in Table 2. Column (1) to (6) run the baseline specification with only one firm-specific variable included at a time. Column (7) shows the results for the full regression with both industry- and firm-specific variables.[11]

15. For both industry- and firm-specific variables, signs of the statistically significant coefficients support the transaction cost and precautionary saving theories and the role of external financing dependence.

- *On industry-specific variables*: the negative relationship between net saving and industry-specific desired external financing dependence is intuitive. This is because when averaging over time, industries that rely more heavily on external finance for technological reasons should invest

[10] Ownership data is obtained from Orbis and matched to the WorldScope database using industry category, incorporation year, and firm size.

[11] Coefficients on the year dummies are not shown in the table to save space.

more than other industries. The positive coefficient on industry-specific average profit reflects the propensity of firms to save part of cash flow for either transaction cost or precautionary demand motives. The negative coefficient on the square of industry-specific average profit implies that firms in more profitable industries tend to invest a larger share of cash flow and thus save less.

- *On firm-specific variables*: consistent with the empirical literature, firm size is negatively correlated with the net saving rate, possibly because larger firms can access external funds at lower cost or because they have accumulated ample savings in the past. The coefficient on firm age quartile is negative after controlling for firm size, consistent with our finding that young firms are more dependent on external funds than mature firms, which could explain why they tend to save more. Government-linked companies (GLCs) save less than private firms, partly because—as data is shown—they are paying more dividends to shareholders and invest more than private firms. There is no statistically significant difference in the net saving rate between domestic and foreign firms. The negative relationship between the net saving rate and Tobin's Q seems inconsistent with either theory of transaction cost or precautionary demand—as it implies that firms with more future investment opportunities do not want to save more in the current period to hedge against possible liquidity shortfalls in the future. Nevertheless, after interacting Tobin's Q with the desired external financing dependence, the coefficient on the interaction term turns positive. That is, promising firms in industries with larger EFD have an incentive to save more, consistent with both transaction cost and precautionary saving motives. The coefficient on cash flow volatility is insignificant in the full regression.

F. Policy Implications

16. While preliminary, the above results suggest that relaxing firms' external financing constraints and lifting productivity growth could help encourage investment and reduce excess corporate saving. On one hand, the low external fund utilization relative to the U.S., as well as the higher propensity to save among promising firms in external financing dependent industries, all suggest that some firms in Malaysia could be financially constrained. This conclusion is complemented by RAM Business Confidence Index for 2018Q3-Q4, which indicates that SMEs are pessimistic about access to bank financing. Therefore, reforms that aim at relaxing the financial constraints faced by some firms in Malaysia (e.g., financial deepening measures) could help unleash investment demand by these firms. On the other hand, while we showed that firms in more profitable industries tend to invest more, the number of profitable investment opportunities could be increased by further encouraging total factor productivity growth. Policies that aim at lifting productivity growth (e.g., improving education and encouraging innovation, technology adoption, and a move up the value chain) could be expected to lead to an increase in new investment opportunities over the medium term, which would help with rebalancing.

Table 2. Malaysia: Regressions on Corporate Net Saving

	Specifications						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Industry-specific features							
$EFD^{desired}$	-0.026	-0.021	-0.022	-0.020	-0.021	-0.026	-0.015
	(0.005)***	(0.005)***	(0.005)***	(0.004)***	(0.004)***	(0.005)***	(0.004)***
average profit	0.291	0.288	0.288	0.290	0.289	0.293	0.285
	(0.029)***	(0.029)***	(0.029)***	(0.028)***	(0.028)***	(0.029)***	(0.028)***
average profit^2	-0.292	-0.289	-0.289	-0.304	-0.304	-0.294	-0.298
	(0.044)***	(0.044)***	(0.044)***	(0.042)***	(0.042)***	(0.044)***	(0.042)***
Firm-specific variables							
size	0.046	0.047	0.047	0.038	0.038	0.046	0.040
	(0.002)***	(0.002)***	(0.002)***	(0.002)***	(0.002)***	(0.002)***	(0.002)***
age quartile	-0.023	-0.021	-0.021	-0.018	-0.018	-0.023	-0.014
	(0.003)***	(0.003)***	(0.003)***	(0.003)***	(0.003)***	(0.003)***	(0.003)***
I_gov		-0.065					-0.074
		(0.026)**					(0.021)***
I_foreign			-0.029				-0.025
			(0.019)				(0.017)
Tobin's Q				-0.0011			-
				(0.0002)***			-
$Tobin's\ Q*EFD^{desired}$					0.0008		0.0007
					(0.0002)***		(0.0002)***
cash flow vol.						-0.005	-0.002
						(0.002)**	(0.002)**
Obs.	11.495	11.495	11.495	10,847	10,847	11,472	10,845
No. of Firms	953	953	953	927	927	948	925
R^2	0.047	0.068	0.066	0.047	0.046	0.049	0.070

Note: Standard errors are reported in parentheses. *** p<1%, ** p<5%, * p<10%.

G. Conclusions

17. In the past two decades, Malaysian companies have maintained high net saving rates, contributing to relatively large national saving. Micro firm level data suggest that corporate gross saving is procyclical due to procyclical profits and acyclical dividend payments. Increases in gross saving does not lead to higher investment, but rather to a larger holding of liquid financial assets (net saving). In external-financing dependent industries, there is evidence of gaps between the actual and desired level of external financing, particularly among young firms. Using CapEx gap as a proxy, our calculation suggests that industrial firms contribute positively to the current account surplus. Moreover, regression results show that the transaction cost and precautionary saving motives, as well as their interaction with external financing dependence, could play an important role in explaining corporate net saving. To reduce excess corporate saving, policies could aim at relaxing firms' financial constraints and lifting productivity growth.