Capital Expenditure Dynamics in ASEAN: Unveiling Determinants and The Impact of The COVID-19 Pandemic on Non-Financial Corporations

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CAPITAL EXPENDITURE DYNAMICS IN ASEAN: UNVEILING DETERMINANTS AND THE IMPACT OF THE COVID-19 PANDEMIC ON NON-FINANCIAL CORPORATIONS

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ABSTRACT

This study investigates the intricate determinants influencing the capital expenditure behavior of Non-Financial Corporations (NFCs) in major ASEAN countries over the past decade. Employing a fixed effect panel analysis encompassing 1,488 NFCs in Indonesia, Malaysia, Thailand, and the Philippines, our study unveils a robust and statistically significant relationship between corporate financial performance and capital expenditure. Notably, indicators such as profitability, market value, and cash flow rate demonstrate a positive association with heightened capital expenditure. Furthermore, macroeconomic conditions and policy-related variables emerge as influential factors affecting capital expenditure decisions. Stringent financial conditions tend to hamper firm investment decisions, whilst interest rate tends to exhibit limited efficacy in eliciting the anticipated impact on NFCs capex level. We also report that during the COVID-19 pandemic, most of our earlier findings remain consistent.

Keywords: Capital expenditure; Financial condition; COVID-19 pandemic.
JEL Classification: G32; G38.

I. INTRODUCTION

Non-Financial Corporations (NFCs) constitute an integral part of the macro financial system. It governs an imperative role as productive agents, producing goods and services whilst employing households, contributing to tax revenues for government, and providing investment opportunities for the financial sector. Activities and solvency of the NFCs thus intertwine with the quality of economic growth and financial system stability.

A pivotal aspect of NFCs' impact on the macroeconomy resides in their investment decisions. NFCs investments in capital assets create demand for labor which lead to job creation and economic growth (Khan and Reinhart, 1990; Dixit, 1997). Further, capital expenditure promotes technological advancement and adoption, which promotes productivity growth and contributes toward long-term economic expansion (Acemoglu *et al*., 2017; Tomizawa *et al*., 2020). Comprehending the trajectory of capital expenditure offers valuable insights into the broader business sentiment and economic outlook, facilitating policymakers in crafting effective strategies to foster investment and promote economic development.

NFCs capital expenditure decisions are influenced by micro- and macroeconomic factors. On micro-level, corporate investments are crucial source of growth and competitiveness for firms. It serves as a strategic tool for NFCs to enhance their productive capacity, innovate, and gain a competitive advantage (Wen *et al*., 2022). However, firms need to consider funding availability in making their investment decision. Firms possess the option of employing internal funding, such as utilizing cash reserves and cash flows, or external financing avenues, such as borrowing or rights issues. Under the Modigliani-Miller Theorem (1958), in a perfect and efficient capital market with no taxes, no transaction costs, and no information asymmetry, the value of a company is independent of how it is financed. However, the existence of market imperfections, inter alia information asymmetries, establishes the issue of financial constraints in which some firms would face difficulty in obtaining external financing (Fazzari *et al*., 1988). The issue aligns with the reasoning of pecking-order theory, arguing that companies have a natural preference for internal funds to finance their investments since it requires no additional costs or obligations to external parties.

In concordance, NFCs financial performance determine the financial resources available to fund its activities. Firms' sales and profitability generate cash flows which stands as the foundation for firms to allocate funds toward working capital and investment. NFCs, which generate strong cash flow, is better positioned to finance its investments without relying heavily on external sources of capital, allowing them to self-finance projects and reducing their dependence on debt or equity financing. Griner and Gordon (1995) argues that companies with stronger cash flows implies better positioned cash holding and positively impact capital expenditure decisions. Further, a firm's financial performance affects its debt capacity and determines its ability to take on additional debt. Rajan and Zingales (1995) argue that firm with higher debt capacity have better access to external financing thus tend to have higher level of capital expenditure. They also infer that firms with higher debt to equity ratio face greater financial risk and borrowing cost, thus restricting ability to undertake capital expenditure. Further, industry-

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specific characteristics and dynamics also govern the difference of investment behavior amongst firms.

On macroeconomic factors, the dynamics of the overall economic environment also play a role in shaping the investment decisions of NFCs. Empirical studies have found the influence of macroeconomic variables toward firms' capital expenditure, including economic indicators such as GDP growth, interest rate, exchange rate, and inflation (Bopkin and Onumah, 2009; Farooq *et al.*, 2023). Higher GDP growth and lower interest rate tend to increase investment, while higher inflation and uncertainty may hamper investment decision due to deterioration in the potential real return of investment. Some studies also show that macro variable dynamics, such as increasing interest rate, tend to have more pronounce effect on financially constrained firms (Bond and Meghir, 1994). Blanchard (1997) argues that the effect of macroeconomic variables on investment decisions may vary across business cycle conditions, indicating that the relationship between macroeconomic variables and capital expenditures may not be linear or may differ depending on the state of business cycle. Another study by Kuantan *et al*. (2021) also report that macroeconomic variables, including commodity price, may have different influence on capital expenditure of NFCs depending on the country's role or level of participation in the global value chain.

Further, some studies suggest that the dynamics of financial condition can affect investment decisions. The financial condition index which reflects the functioning of the financial system, availability of credit, and risk appetite, can influence investment decisions through financial accelerator mechanism (Bernanke *et al.*, 1999). This study finds that tightening financial condition increases borrowing costs and reduces access to credit, leading to decline in investment. Gilchrist and Zakrajšek (2012) also document that wider credit spreads which indicate tightening financial condition is associated with lower investment. On interest rate perspective, Carpenter and Guariglia (2008) show that low interest rate environment reduces the cost of debt financing which incentivizes higher capital expenditure, particularly for firms with stronger cash flow. Demyanyk and Van Hemert (2008) studies the subprime mortgage crisis and find that tightening financial condition, reflected by higher borrowing costs and reduced credit availability, led to contraction in investment activities. Finally, Demirgüç-Kunt and Maksimovic (1998) and Beck *et al.* (2005) suggests that the well-functioning legal institution and financial development reduce financial constraint issue, increasing financial access and promoting firm investment.

Moreover, there are also emerging factors which potentially pose structural changes in capital expenditure behavior, including the emergence of COVID-19 pandemic which has altered the landscape of economic agents' behavior. COVID-19 acts as a shock to corporate financial performance which pertains as important information for non-financial corporations to secure external financing. Jie *et al*. (2021) find that COVID-19 pandemic has negative implications on corporate investment in China. Khan (2022) pointed out that firms with financial constraint face larger decline in investment during the pandemic, while Alfaro *et al*. (2020) conjecture that firms with higher valuation in the stock market experience larger negative shocks on investment due to market uncertainty and financial constraint. BIS (2022) argues that policy intervention can mitigate the adverse effects of

COVID-19 pandemic on capital expenditure and financial system; for a survey of the COVID-19 pandemic on other aspects of the financial and economic system, see Phan and Narayan (2020), Narayan (2021), Sharma and Sha (2020) and Sha and Sharma (2020).

This study contributes to the existing literature in three major ways. Firstly, it investigates both micro- and macro-factors influences on capex with granular firm-level data for major ASEAN countries. Prior research focusing on the factors influencing capital expenditures at the firm level has predominantly centered on individual corporate performance, with limited incorporation of concurrent examination of macroeconomic factors, market dynamics, and policy variables within the same investigation. Secondly, expanding upon the investigation conducted by Rajan and Zingales (1995) regarding international evidence on the determinants of corporate leverage, this study extends its examination to explore the interplay between global financial dynamics and country-level macroeconomic conditions in influencing firms' investment decisions. Lastly, this study attempts to identify how COVID-19 pandemic alters the influence of micro- and macroeconomic factors on corporate investment behavior, with adding sectoral variances in the analysis.

This study utilizes fixed effect analysis on unbalanced panel data of 1488 NFCs in four major ASEAN countries including Indonesia, Malaysia, Thailand, and Philippines. These four countries represent approximately 73% of the ASEAN economy. Our focus on the four countries is also attributable to the accessibility of data essential for conducting the investigation. The research yielded three primary conclusions. Firstly, firm-level financial performances, macroeconomic conditions, and policy-related variables have substantial and consistent influence on NFCs capex decisions. We confirm the assertion that tighter financial condition or increased uncertainty deters firm investment decisions. Interestingly, we also find that in contrast to the monetary supply or overall economic liquidity, interest rates proved to be a less effective instrument in generating the expected influence on firm-level capital expenditure decisions. Secondly, during the period of COVID-19 pandemic, the significance of market valuation in determining NFCs capex diminished. Thirdly, we observed sectoral variation on the impact of financial instabilities on capex, with utilities sectors tending to be more resilient toward domestic and global financial volatility. Based on our findings, we propose that regulators should prioritize upholding favorable strategic environment for business and maintaining adequate money supply to support NFCs capex and foster economic growth.

The rest of the paper is organized as follows. Section II provides a discussion on our choice of data and methodology used in this study for empirical analysis. Section III presents our main findings followed by the final Section IV which concludes our study.

II. DATA AND METHODOLOGY
A. Model Specification and Hypotheses
In this section, we provide a discussion on the methodology used to investigate how individual firm financial performances and macroeconomic conditions affect

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the level of capital expenditure of NFCs. This study examines the influence of firm performance indicators, such as sales growth, profitability, indebtedness, and market valuation on the capex decision. The empirical approach also accounts for firm total assets which act as a proxy for financial constraint. We further explore the implication of cash flow rate, which is considered as the main factor determining the capex decision in the past literature (see for example, Tawiah and Keefe, 2022).

Further, we distinguish between the impact of economic growth and financial conditions, and also explore the influence of policy-related indicators including interest rate and money supply. We investigate both the macro-related demand and supply factors on capital expenditure decision, represented by GDP growth and financial condition, respectively. The examination of global financial conditions as a determinant in this research is informed by the perspectives articulated by Alter and Elekdag (2020) and Yarba and Guner (2020), who posit that the dynamics of global financial conditions and uncertainty possess the capacity to significantly influence corporations' strategic choices regarding leverage, consequently affecting investment decisions. We employ the Goldman Sachs Financial Condition Index (FCI) which reflects the degree of easiness in obtaining financing from the financial sector. The FCI is constructed based on a comprehensive set of financial indicators, encompassing longer-term interest rates, credit spreads, exchange rates, and equity prices, thereby extending beyond the scope of policy rates. Higher FCI indicates a more restrictive financial condition, and conversely. The indicator is constructed using a compilation of financial indicators which is expected to affect the trajectory of broad economic activities. Additionally, we utilize the volatility index (VIX) as a proxy for global financial uncertainty. We use central bank policy rate and macroeconomic money supply as proxies for policy variables. The money supply is measured as the ratio between the growth of M2 and the growth of GDP. We assume that the macro variable dynamics are exogenous to any individual firm.

We apply panel data analysis to account for individual heterogeneity and provide temporal dynamics in shedding firm-level capex decision behavior. Hsiao (2003) pointed out an advantage of using panel data analysis is to control individual heterogeneity. Utilizing panel analysis provides a sturdy basis for investigating the granular impacts of changing strategic environment, encompassing macroeconomic conditions, and policy changes (Baltagi, 2005). Our study on NFC investment utilizes the vast firm-level data to depict NFC behavior and its determinants.

First, we analyze the long-term relationship using firm-level panel data over the period 2010 to 2022 for 1488 firms in four ASEAN countries namely, Indonesia, Malaysia, Thailand, and Philippines. The analysis is undertaken with individual-firm fixed-effect model thus controlling for alternative channels on firms' idiosyncrasy. The impact of individual firms' financial performance and macroeconomic conditions toward NFCs capital expenditure is estimated using the following model:

$$logcapex_{it} = \beta_0 + \sum_j \gamma_j \, CorpFin_{j,it-1} + \sum_k \delta_k \, MacroFin_{k,ct} + \beta_1 \, i_{ct} +$$
$$\beta_2 \, m_{ct} + \mu_i + \varepsilon_{it} \tag{1}$$

Equation (1) builds upon the study of Rajan and Zingales (1995), with novel enhancement by incorporating macro financial conditions and policy variables. i, c, and t are indices for firm, country, and time, respectively. The log of capex ($logcapex_{it}$) is regressed on corporate financial performance (*CorpFin*) and macro financial condition (*MacroFin*). The corporate financial performance encompasses log of sales, log of total assets, return on assets, price-to-book value, and debt-to-equity ratio. Whilst the macro financial condition considers GDP growth, financial condition index, and VIX. Policy-related variables include interest rate (i) and macroeconomic money supply (m). Firm-level fixed effect (μ_i) is imposed to account for unobserved firm-level factors. The slope coefficients β_1 and β_2 measure the extent to which price and quantity approach of policy variables affect NFCs capex growth in the major ASEAN countries. Negative sign on β_1 and positive sign on β_2, respectively reflect the effectiveness of interest rate and money supply instrument in affecting NFCs capex and vice versa.

The second part of the analysis delves on how COVID-19 pandemic alters the determinants of NFCs' capex. We employ first-differenced model to capture the short-term dynamics of capex determinants while also considering how each factor's influence varies per different sectors. The sectoral differences are classified into three main groups, namely primary sector, secondary sector, and utilities sector. The classification adheres to Global Industry Classification Standard (GICS) with each sectoral group comprises as below:
1. Primary sector: Energy, materials, and consumer staples.
2. Secondary sector: Consumer discretionary, industrials, and real estate.
3. Utilities sector: Information technology, health care, telecommunication services, and utilities.

The logical basis underlying the sectoral grouping is based on two notions. First, the sectoral grouping is undertaken to facilitate a more nuanced understanding of economic dynamics across sectoral groups. The primary sectors reflect more on the demand for primary goods, which are expected to be more inelastic toward shocks, whilst the secondary sector is strongly driven by household income and wealth. In contrast, the utilities sector emphasizes the demand for innovation and services within the economy, signifying the expansion of infrastructure and amenities. Secondly, the grouping differentiates between sectors that are adversely affected by the COVID-19 pandemic and those minimally impacted and/or even benefitted from the pandemic. In this context, the secondary sectors are expected to be the most adversely impacted by the pandemic due to its reliance on close human-interaction and sensitivity to income fluctuations. The primary group, comprising energy, materials, and consumer staples, are also affected by mobility-restriction, albeit with expected less severe impact. The last group, namely the utilities group, encompasses sectors unaffected or potentially advantaged from the social distancing measures.

The analysis of change is undertaken to reveal the short-term influence of corporate financial performance and macro-conditions toward NFCs capital expenditure. To capture the COVID-19 pandemic effect we consider data over the period 2020 to 2022. The analysis further explores differentiation based on sectoral groups, including primary sector, secondary sector, and utilities sector. Thus, the following model is introduced:

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$$d(logcapex_{it}) = \varphi_1\, d(logcapex)_{it-1} + \sum_j \rho_j\, d(CorpFin_{j,it}) +$$
$$\sum_k \tau_k\, d(MacroFin_{k,ct}) + \varphi_2\, d(i_{ct}) + \varphi_3\, d(m_{ct}) + \epsilon_{it} \tag{2}$$

Where φ_1 governs the behavior of capex overtime, while ρ_j and τ_k reflects the analysis of change regarding capex toward shocks in corporate financial performance and macro financial conditions, respectively. The slopes, φ_2 and φ_3 represent the sensitivity of capital expenditure toward changes in interest rate and money supply, respectively. Negative sign on φ_2 and positive sign on φ_3, respectively represent the effectiveness of interest rate and money supply instrument in influencing NFCs capex in the short run and vice versa. Lastly, to shed light on sectoral specificities, we investigate whether the impact of firm-level performance and macroeconomic condition varies across different sectors by estimating the abovementioned models using data categorized in the following subsamples: primary sector, secondary sector, and utilities sector.

B. Data and Variable Definitions
This section provides a summary on data used in our empirical analysis. The firm-level dataset is obtained from the SNP Capital IQ for public listed companies where financial firms are excluded from our sample. We consider four major ASEAN countries namely, Indonesia, Malaysia, Thailand, and Philippines which results into 1488 NFCs over the period 2010 to 2022. The number of observations considered over 13-year period is approximately eighteen thousand. The number of firms for each sector and observed country is adequately dispersed. Table 1 serves as a matrix depicting the distribution of observations across sectors and countries, based on data availability in the study.

Table 1.
Observations by Sector and Country

Table 1 presents a matrix depicting the number of observations corresponding to each sector and country under observation. It shows the distribution of observations contingent upon the availability of data.

Sectors	Indonesia	Malaysia	Thailand	Vietnam	Subtotal
Consumer discretionary	53	95	62	19	229
Consumer staples	43	80	44	17	184
Real estate	32	74	42	41	189
Energy	28	18	13	9	68
Materials	45	94	67	21	227
Industrials	47	179	82	23	331
Information technology	5	72	28	7	112
Health care	10	17	16	1	44
Telecommunication services	18	14	29	8	69
Utilities	1	11	12	11	35
Subtotal	282	654	395	157	1488

Additionally, inspired by the work of Rajan and Zingales (1995), we select required control variables. These control measures include sales, size (total assets), profitability (return on assets), indebtedness (debt-to-equity ratio), and cash flow (free cash flow ratio towards capital expenditures). We also use measures of overall macroeconomic conditions to incorporate country-specific behavior. The macroeconomic variables are obtained from the Bloomberg portal on country indicators. Table 2 provides a concise summary of key statistics pertaining to the main variables under investigation, encompassing both macroeconomic and firm-level variables.

Table 2.
Summary Statistics (2010-2022)

Table 2 represents the summary statistics of the main variables, including the firm-level and macroeconomic variables. "Capex", "Sales", and "Total Assets" are the logarithmic transformation of capital expenditure, sales, and total assets, respectively. Capex indicates high standard deviation since we incorporate a diverse group of non-financial corporations (sectoral- and country-wise). Profitability is proxied using return on assets, while market valuation is the price-to-book value. GDP growth reflects the year-on-year GDP change. FCI is the normalized value of Goldman Sachs Financial Condition Index for each period. Capex has high standard deviation since we incorporate a large diverse fix of car emergency. The standard deviation of Capex is notably high due to the inclusion of diverse sector-country firm-level NFCs.

Key Variables	Mean	Median	Std dev	First Quartile	Third Quartile	Min	Max
Firm-Level Performance							
Capex	0.70	0.69	2.49	-0.79	2.30	-10.13	6.89
Sales	4.18	4.20	1.95	3.01	5.39	-11.51	10.11
Total Assets	4.85	4.69	1.68	3.68	5.87	-2.81	10.37
Macro Variables							
GDP growth	4.17	4.94	3.49	3.45	5.66	-8.23	15.47
Interest rate	3.11	3.00	1.54	2.00	3.50	0.50	7.75
FCI	-0.02	-0.16	0.75	-0.46	0.54	-2.25	2.73
VIX	-0.27	-0.28	0.68	-0.76	0.16	-1.40	1.06

Figure 1 illustrates the real GDP growth, while Figure 2 portrays the policy rates of the observed ASEAN countries. The four observed ASEAN countries tend to exhibit a relatively stable economic growth pre-COVID-19, with policy rates tending to be declining during that period. Economic growth experienced a significant decline in 2020 due to the COVID-19 pandemic, followed by a swift post-pandemic recovery, accompanied by a subsequent increase in interest rates.

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Figure 1.
ASEAN Countries GDP Growth

Figure 1 represents economic growth of the observed ASEAN Countries (Indonesia, Malaysia, Thailand, Philippines) representing approximately 73% of the ASEAN economy. The graph shows the trajectories of GDP growth across the four ASEAN countries over 2010-2022.
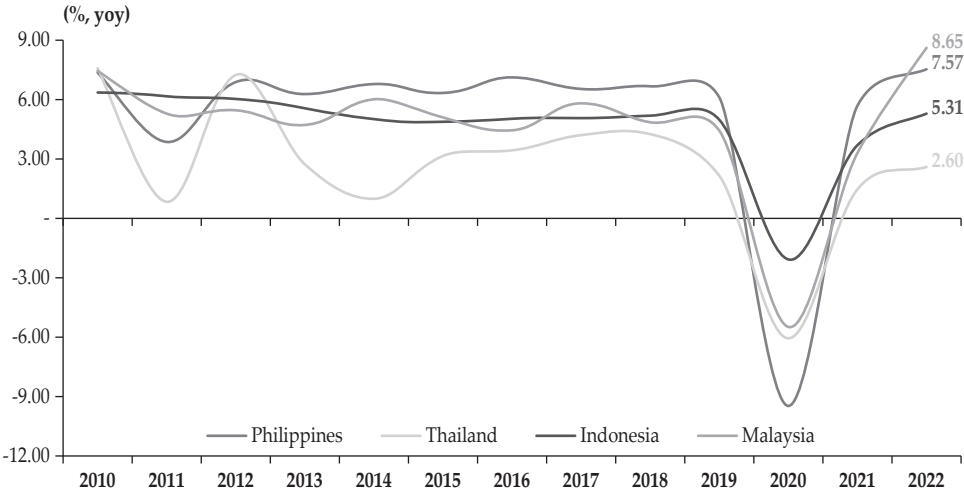
Source: S&P Capital IQ, Authors' Calculation.

Figure 2.
ASEAN Countries Policy Rate

Figure 2 represents central bank policy rate of the observed ASEAN Countries (Indonesia, Malaysia, Thailand, Philippines). The graph shows the dynamics of policy rate across the four ASEAN countries over 2010-2022.
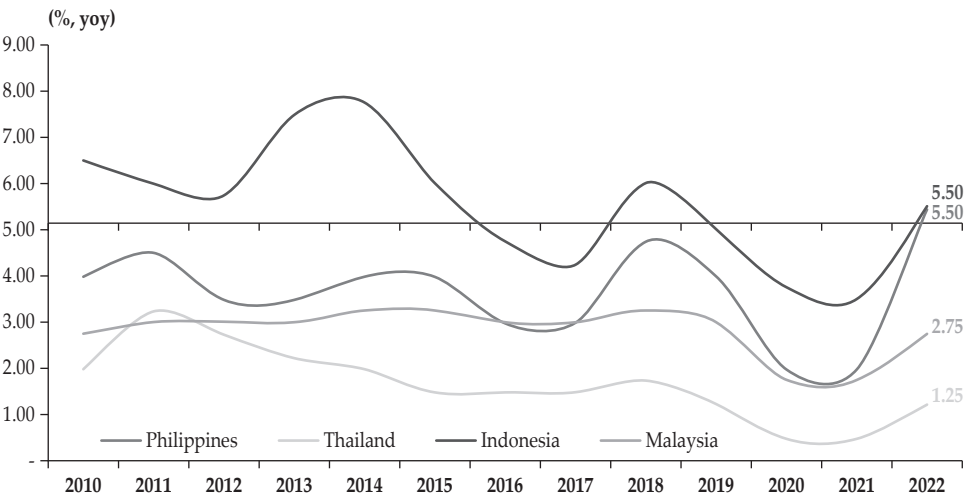
Source: S&P Capital IQ, Authors' Calculation.

Figure 3.
CBOE Volatility Index (VIX)

Figure 3 illustrates the volatility dynamics captured by the VIX index over 2007-2022. The VIX depicts the market sentiment and risk expectations for near-term volatility conveyed by S&P 500 index option prices.
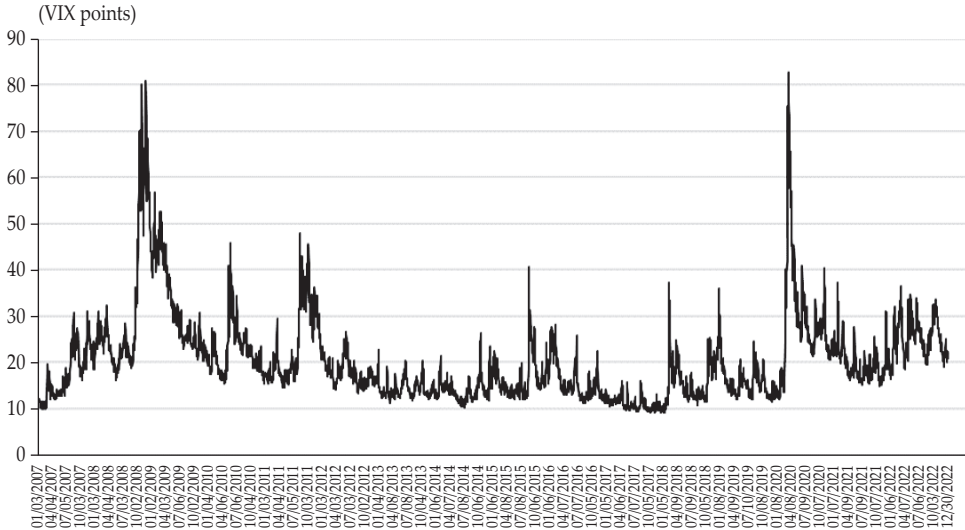
Source: Investing.com, Authors' Calculation.

Figure 4.
GS Financial Condition Index

Figure 4 depicts the temporal evolution of Goldman Sachs Financial Condition Index over 2010-2022. The FCI reflects the degree of easiness in obtaining financing from the financial sector in each country.
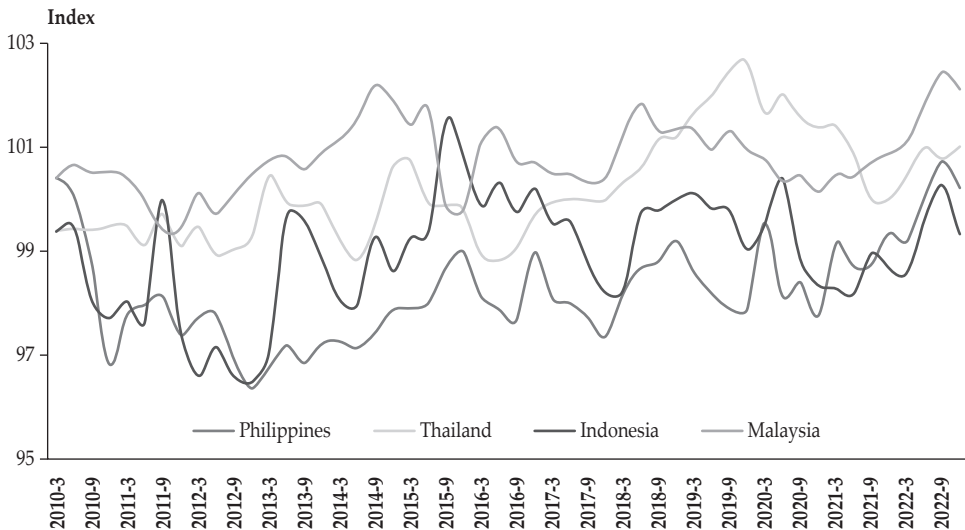
Source: Bloomberg, Authors' Calculation.

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Furthermore, the VIX index is used as a measure of market expectations on short-term volatility. The VIX is derived from the prices of options on the S&P 500 Index. It acts as a measure of market sentiment on the potential volatility of assets prices particularly in the stock market, which can affect the market value of firm's equity, its capability and appetite to access financing including firm investment purposes. The dynamics of VIX over 2007-2022 is depicted in Figure 3. A high VIX value indicates that market participants expect significant price volatility in the near future and vice versa. Volatility in the VIX can be driven by various factors, including but not limited to uncertainty about economic conditions, geopolitical events, occurrence of pandemic, and other market-moving news. Finally, we utilize the FCI as a metric reflecting the ease of obtaining financing from the financial sector. The progression of the FCI from 2010 to 2022 is depicted in Figure 4. The FCI exhibits long-term stability while displaying short-term seasonality and dynamics that vary across countries.

III. MAIN FINDINGS

This section comprises two subsections. We discuss our main findings in the first sub-section followed by the discussion on robustness check in the second subsection.

A. Regression Results

We start by examining how changes in NFCs financial performances and the overall macroeconomic condition can influence capex growth. Once we have established the baseline results, we proceed to conduct exploratory analysis to identify any indications of shifts in capital expenditure decisions in response to fluctuations in financial conditions. Next, our focus turns to understanding the connection between policy variables and capex growth in ASEAN countries. Throughout the study, we summarize the outcomes of sensitivity exercises to illustrate the factors that impact capital expenditure both in a general sense and specifically in the context of the post-COVID-19 outbreak.

Table 3 presents the baseline findings. In Column 1, we first examine the influence of changes in financial performances and GDP growth on capital expenditure. Control variables show the expected result, with higher sales and total assets correspond to higher capital expenditure. Further, firm financial performances including profitability, market valuation, and cash flow rate all have positive and statistically significant coefficients. This indicates that favorable corporate performances, both in terms of real aspects such as income generation and cash flow, as well as from a market perspective that defines company valuation, are associated with higher NFCs capital expenditure. Furthermore, we observe that GDP growth, which reflects the overall economic condition, also has a positive impact on capex. Specifically, for each one percentage point increase in GDP growth (presenting higher economic performance), there is an associated increase in capex (approximately 0.29 percentage points).

Columns 2, 3, and 4 each introduce additional variables into the equation to examine how changing financial conditions and policy variables affect the

capital expenditure decisions of NFCs. In Column 2, we include the policy rate variable, which appears to have a positive impact on NFCs' capex. This positive effect could be attributed to the signal of a stronger economy with rising demand, prompting businesses to accelerate their investment plans to take advantage of the current borrowing costs, considering that lending rates might increase in the future. It also supports the notion that economic conditions have higher contribution to firms' marginal propensity to invest compared to the changes in interest rate. In Column 3, the focus shifts on exploring the relationship between variation in financial conditions and capex decisions, which is a central aspect of this study. Our findings reveal that tighter financial conditions, represented by a higher financial condition index, correspond to lower capex. This is likely because tighter financial conditions can lead to higher costs and difficulties for firms in accessing finance. The coefficients associated with the financial condition index are statistically significant at -0.075, indicating that a one standard deviation increase in the financial condition index would result in a reduction of 7.5% in NFCs' capex. Moving to Column 4, we investigate the impact of money supply on NFCs' capex decisions. Our results indicate that a higher money supply, reflecting stronger macroeconomic liquidity, can improve the capex decisions of NFCs. This finding suggests that liquidity plays a crucial role in supporting NFCs' capex decisions, as it influences the availability of financial resources for the economy to invest.

Table 3.
Baseline: Implication of Firm Financial Performance and Macroeconomic Dynamics on Capital Expenditure

Table 3 presents the baseline model result, illustrating the factors influencing the capital expenditure of Non-Financial Corporations. "Capex", "Sales", and "Total Assets" are the logarithmic transformation of capital expenditure, sales, and total assets consecutively. Firm-level performance indicators include profitability, market value, indebtedness, and cash flow, represented by return on assets, price-to-book value, debt-to-equity ratio, and free cash flow rate. Macroeconomic variability is captured through GDP growth and VIX, while financial condition is represented by FCI. Policy variables are reflected in money supply and interest rate, signified by the ratio of broad money supply (M2) to GDP and policy rate, respectively.

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
Sales	0.329 ***	0.313 ***	0.313 ***	0.282 ***	0.281 ***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Total Asset	0.795 ***	0.844 ***	0.844 ***	0.937 ***	0.939 ***
	(0.025)	(0.025)	(0.025)	(0.026)	(0.026)
Profitability	0.302 ***	0.267 ***	0.267 ***	0.204 **	0.203 **
	(0.076)	(0.076)	(0.076)	(0.076)	(0.076)
Market value	0.011 ***	0.010 ***	0.010 ***	0.011 ***	0.011 ***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Indebtedness	-0.003 .	-0.003 .	-0.003 .	-0.003 *	-0.003 *
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Cash flow	0.000***	0.000 ***	0.000 ***	0.000 ***	0.000 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP growth	0.040 ***	0.040 ***	0.041 ***	0.014 ***	0.016 ***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)

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Table 3.
Baseline: Implication of Firm Financial Performance and Macroeconomic
Dynamics on Capital Expenditure (Continued)

	(1)	(2)	(3)	(4)	(5)
VIX	-0.093 ***	-0.113 ***	-0.109 ***	-0.158 ***	-0.148 ***
	(0.013)	(0.013)	(0.013)	(0.026)	(0.026)
Financial Condition		-0.126 ***	-0.121 ***	-0.091 ***	-0.083 ***
		(0.013)	(0.014)	(0.014)	(0.014)
Money Supply			0.004 *		0.006 ***
			(0.002)		(0.002)
Interest Rate				0.231 ***	0.235 ***
				(0.014)	(0.014)
VIX * Interest Rate				0.048 ***	0.047 ***
				(0.009)	(0.009)
R-squared (within)	0.158	0.163	0.163	0.177	0.177
Firm fixed effects	YES	YES	YES	YES	YES

In Column 5, we take into consideration financial conditions and policy-related variables (both interest rate and money supply) to assess the consistency of their impact toward NFCs capex. Our findings reveal that the coefficients of these variables remain largely consistent with minimal changes in the size of their impact. Specifically, we observe that tighter financial conditions along with high level of corporate indebtedness act as factors that can negatively affect the capex decisions of NFCs. It is in line with the debt overhang theory which pointed that firms with high level of existing debt become reluctant to undertake additional investment even if there is a rise in potentially profitable opportunities. This indicates that the internal financial condition of firms and macro financial strategic environment play a significant role in either hindering or supporting higher NFCs' capex.

Table 4 reports results obtained using first-differenced equation which examines the dynamics of NFCs' capital expenditure decisions on the COVID-19 outbreak. To do this, we introduced an autoregressive model with a one-period lag of capex. We note that the coefficient for one-period lag of capex is negative and statistically significant. This indicates that NFCs' capex tends to revert to its average level over time. The control variables, including sales, total assets, and cash flow, still demonstrated positive coefficients which signifies their continued positive influence on capex decisions. However, the market valuation variable is found to be statistically insignificant suggesting that company valuation has a neutral impact on capex decisions during the pandemic era. This could be attributed to the erratic movement of market valuation during the pandemic, making it a weaker indicator to assure investment decisions for companies. It further suggests that market valuations during periods of stress do not accurately mirror the fundamental value of firms and fail to offer the forward-looking insights essential for guiding NFCs' investment decisions. Moreover, our findings indicate that macroeconomic conditions, as represented by GDP growth, and policy-related variables (interest rate and money supply) maintained their long-term influence on capex decisions even after the pandemic.

Furthermore, we distinguish the NFCs capex behaviour during the pandemic period for three broad sectors, namely the primary sector, secondary sector, and utilities sector. The firm performance control variables show slightly different results compared to our earlier findings. Interestingly, sales tend to have less significant effect on firm investment decisions. The significance of sales in affecting capex is also divergent between the aggregate level and sectoral level, indicating an aggregation bias. It reaffirms the need to observe the behavior of capex determinants in a more granular manner compared to only on aggregate level. Further, in the utility sector, cash flow does not seem to have a positive impact on capex in the short-term stress period. This contrasts with the primary and secondary sectors, where the impact of cash flow positively influences the decision-making process regarding firm capital expenditures.

Table 4.
COVID-19 Pandemic and Capital Expenditure Behavior Across Sectors

Table 4 outlines the result for the short-run model concentrating on the dynamics of capital expenditure and the evolving impact of its determinants following the occurrence of COVID-19. $Capex_{t-1}$ represents the lagged logarithmic form of capital expenditure. The model utilizes first-differencing to capture short-term dynamics.

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Overall	**Primary**	**Secondary**	**Utilities**
$Capex_{t-1}$	-0.275 ***	-0.278 ***	-0.257 ***	-0.343 ***
	(0.015)	(0.024)	(0.022)	(0.037)
Sales	0.085 *	0.001 *	0.112*	0.113
	(0.038)	(0.087)	(0.051)	(0.091)
Total assets	1.005 ***	0.8380 ***	1.426 ***	0.765 ***
	(0.093)	(0.166)	(0.153)	(0.187)
Market value	-0.002	-0.007	-0.010	0.004
	(0.004)	(0.005)	(0.009)	(0.006)
Cash flow	0.000 ***	0.000	0.000 ***	-0.000 **
	(0.000)	(0.000)	(0.000)	(0.000)
GDP growth	0.050 ***	0.040 **	0.062 ***	0.036
	(0.011)	(0.016)	(0.018)	(0.029)
Interest rate	0.035	0.064	0.023	0.017
	(0.038)	(0.051)	(0.059)	(0.104)
Money supply	0.019 ***	0.018 **	0.021 **	0.012
	(0.005)	(0.007)	(0.008)	(0.012)
Financial Condition	-0.105 *	-0.135 *	-0.116 .	-0.058
	(0.049)	(0.067)	(0.077)	(0.117)
VIX	-0.179 ***	-0.142 **	-0.236 ***	-0.096
	(0.038)	(0.052)	(0.059)	(0.094)
R-squared (within)	0.139	0.151	0.149	0.161

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Moreover, FCI and VIX which reflect the dynamics of domestic and global financial conditions, respectively, demonstrate significant impact on capex in the primary and secondary sectors. However, for the utility sector, these financial condition indicators are statistically insignificant. It indicates that primary and secondary sectors are more sensitive towards pandemic shock since it heavily relies on household (end user) purchasing power and mobility to generate sales. These sectors further face obstacles in implementing production processes with physical distancing requirements and regulations. In contrast, the utility sector, comprising information technology, healthcare, telecommunication services, and utilities subsectors, is relatively less sensitive towards the short-term stress of financial condition. It indicates that the utility sector tends to be resilient towards pandemic shock since these sectors experience an uptake in demand on the period. Further, we also find that policy variables such as interest rate and money supply have less influence on the capex of secondary and utility sectors, compared to the primary sector. This suggests that the retail and end-user primary sectors display a heightened sensitivity to short-term cost of funds and liquidity during stress periods. Conversely, the industrial and utility sectors exhibit diminished sensitivity to policy rates and money supply since these sectors predominantly rely on long-term investment decisions and are more driven by the fundamentals of the business model.

B. Robustness Check
B.I. Using an Alternative Interest Rate Measure
Here, we examine whether our earlier findings are consistent with the use of an alternate measure of interest rate. Throughout the analysis we measure interest rate using the policy rate determined by the central bank in each country. However, while policy rate drives market player expectations, it does not necessarily translate into contemporaneous market response. On the other hand, the behavior of NFC is closely linked to the market rate which directly affects their cost of financing.

We use 3-month money market yield as an alternative measure of interest rates and re-estimate both Equations (1) and (2). The rationale behind this selection is straightforward: the short-term money market yield exhibits a direct linkage to the policy rate, and alterations in money market yields are anticipated to instigate changes in the overall interest rate. Consequently, such fluctuations influence a firm's cost of financing, thereby impacting its investment decisions. Moreover, the selection of this proxy utilizes the availability of comparable financial market instruments within the observed country. Tables 5 and 6 reports results obtained using the 3-month money market yield in Equation (1) and (2), respectively.

The findings align with the primary estimation, wherein the coefficient associated with the interest rate term is reported positive and statistically significant. This implies that NFCs capital expenditure exhibits an upward trend during periods characterized by increasing interest rates. This outcome supports the notion that investment decisions of NFCs are notably influenced by the prevailing business environment. During expansionary phases marked by burgeoning markets and economies, which are usually accompanied by an uptick in interest rates driven by heightened demand for financing, firms tend to demonstrate a behavior of

increasing their investments. This propensity is attributed to the positive business outlook during such periods. The findings suggest that cost of capital exerts a relatively diminished impact on firms' investment decisions compared to the perception of business environment.

Table 5.
Robustness Test for Equation (1): 3-Month Yield

Table 5 shows the result of the first robustness test for the baseline equation (1). The model employs the 3-month money market securities yield as a substitute for the previously used policy rate in the baseline model, aiming to assess the robustness of the effects of Non-Financial Corporation (NFC) determinants.

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
Sales	0.329 ***	0.313 ***	0.313 ***	0.300 ***	0.299 ***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Total Asset	0.795 ***	0.844 ***	0.844 ***	0.875 ***	0.876 ***
	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)
Profitability	0.302 ***	0.267 ***	0.267 ***	0.260 **	0.260 **
	(0.076)	(0.076)	(0.076)	(0.076)	(0.076)
Market value	0.011 ***	0.010 ***	0.010 ***	0.010 ***	0.010 ***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Indebtedness	-0.003 .	-0.003 .	-0.003 .	-0.003 *	-0.003 *
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Cash flow	0.000***	0.000 ***	0.000 ***	0.000 ***	0.000 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP growth	0.040 ***	0.040 ***	0.041 ***	0.028 ***	0.029 ***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
VIX	-0.093 ***	-0.113 ***	-0.109 ***	-0.169 ***	-0.149 ***
	(0.013)	(0.013)	(0.013)	(0.025)	(0.026)
Financial Condition		-0.126 ***	-0.121 ***	-0.138 ***	-0.132 ***
		(0.013)	(0.014)	(0.014)	(0.014)
Money Supply			0.004 *		0.006 ***
			(0.002)		(0.002)
3-month Yield				0.105 ***	0.110 ***
				(0.011)	(0.012)
VIX * 3-month Yield				0.034 ***	0.031 ***
				(0.007)	(0.007)
R-squared (within)	0.158	0.163	0.163	0.167	0.168
Firm fixed effects	YES	YES	YES	YES	YES

Table 6.
Robustness Test for Equation (2): 3-Month Yield

Table 6 shows the result of the first robustness test for the short-run equation (2). The model utilizes the 3-month money market securities yield as an alternative to the previously employed policy rate, aiming to assess the robustness of the effects on NFC capital expenditure determinants.

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Overall	**Primary**	**Secondary**	**Utilities**
$Capex_{t-1}$	-0.275 ***	-0.248 ***	-0.257 ***	-0.343 ***
	(0.015)	(0.025)	(0.022)	(0.036)
Sales	0.082 *	0.007	0.108 *	0.114
	(0.038)	(0.086)	(0.051)	(0.089)
Total assets	1.008 ***	0.846 ***	1.430 ***	0.768 ***
	(0.093)	(0.165)	(0.153)	(0.184)
Market value	-0.002	-0.007	-0.010	0.004
	(0.004)	(0.005)	(0.009)	(0.006)
Cash flow	0.000 ***	0.000	0.000 ***	-0.000 **
	(0.000)	(0.000)	(0.000)	(0.000)
GDP growth	0.040 ***	0.036 *	0.048 **	0.029
	(0.011)	(0.015)	(0.018)	(0.028)
3-month Yield	0.065 .	0.067	0.073	0.041
	(0.034)	(0.044)	(0.055)	(0.092)
Money supply	0.017 ***	0.017 *	0.018 *	0.0109
	(0.005)	(0.007)	(0.007)	(0.011)
Financial Condition	-0.105 *	-0.140 *	-0.114	-0.052
	(0.047)	(0.064)	(0.075)	(0.111)
VIX	-0.149 ***	-0.130 *	-0.195 **	-0.097
	(0.038)	(0.051)	(0.061)	(0.093)
R-squared	0.139	0.150	0.149	0.161

B. II. Using an Alternative Financial Condition Measure

Moreover, we conduct a robustness check by employing an alternative measure of the financial condition index. This analysis serves the dual purpose of investigating the potential influence of the chosen financial condition measure on our estimate and reinforcing our comprehension of how uncertainties in financial markets impact the investment decisions of NFCs. Specifically, we assess the sensitivity of our estimates to uncertainty by utilizing the Economic Policy Uncertainty (EPU) index. Both indicators serve as manifestations of perceptions and expectations regarding economic and financial conditions, thereby influencing the sentiment within the financial sector and impacting the facilitation of lending by financial institutions.

The EPU index gauges the level of uncertainty concerning economic policy within a given country. It captures the degree to which businesses, households, investors, and participants in financial markets experience uncertainty regarding the direction of economic policy and its potential impact on the broader economy. Widely recognized as a pertinent indicator, the EPU index is instrumental in discerning financial market dynamics. Elevated levels of policy uncertainty often instigate caution among investors and financial market participants, contributing

to domestic financial market volatility. Furthermore, such uncertainty can exert an influence on market sentiments and capital flows.

Results reported in Tables 7 and 8 affirm the negative impact of financial uncertainty on NFCs Capex. The coefficient associated with the EPU index is found to be negative and statistically significant. This observation underscores that an uncertain financial condition acts as a deterrent to firms' investment decisions. The overall implication is that the conventional impact of interest rate, represented by the policy rate, does not systematically affect investment as existing conjectures. This signals a departure from the traditionally assumed IS relationship, which posits that an increase in interest rates would deter investment.

Table 7.
Robustness Test for Equation (1): Economic Policy Uncertainty Index

Table 7 shows the result of the second robustness test for the baseline equation (1). The model employs the Economic Policy Uncertainty Index as a substitute for the previously used FCI which represents the ease of financing in the baseline model, aiming to assess the robustness of the effects of Non-Financial Corporation (NFC) determinants.

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
Sales	0.329 ***	0.289 ***	0.288 ***	0.270 ***	0.299 ***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Total Asset	0.795 ***	0.926 ***	0.927 ***	0.980 ***	0.983 ***
	(0.025)	(0.026)	(0.026)	(0.026)	(0.026)
Profitability	0.302 ***	0.203 **	0.203 **	0.169 **	0.169 *
	(0.076)	(0.076)	(0.076)	(0.075)	(0.075)
Market value	0.011 ***	0.010 ***	0.010 ***	0.010 ***	0.010 ***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Indebtedness	-0.003 .	-0.003 *	-0.003 *	-0.003 *	-0.003 *
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Cash flow	0.000***	0.000 ***	0.000 ***	0.000 ***	0.000 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP growth	0.040 ***	0.014 ***	0.016 ***	0.001	0.003
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
VIX	-0.093 ***	-0.040 **	-0.037 **	-0.111 ***	-0.102 ***
	(0.013)	(0.013)	(0.013)	(0.026)	(0.027)
EPU		-0.213 ***	-0.211 ***	-0.164 ***	-0.161 ***
		(0.011)	(0.011)	(0.012)	(0.012)
Money Supply			0.005 **		0.006 ***
			(0.002)		(0.002)
Interest Rate				0.180 ***	0.184 ***
				(0.015)	(0.015)
VIX * Interest Rate				0.044 ***	0.043 ***
				(0.008)	(0.008)
R-squared (within)	0.158	0.176	0.176	0.184	0.184
Firm fixed effects	YES	YES	YES	YES	YES

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Table 8.
Robustness Test for Equation (2): Economic Policy Uncertainty Index

Table 8 shows the result of the second robustness test for the short-run equation (2). The model utilizes the Economic Policy Uncertainty Index as an alternative to the previously employed FCI, aiming to assess the robustness of the effects on NFC capital expenditure determinants.

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Overall	Primary	Secondary	Utilities
$Capex_{t-1}$	-0.273 ***	-0.275 ***	-0.255 ***	-0.343 ***
	(0.015)	(0.024)	(0.022)	(0.036)
Sales	0.074 .	0.026	0.099 .	0.112
	(0.038)	(0.086)	(0.051)	(0.089)
Total assets	1.013 ***	0.858 ***	1.432 ***	0.773 ***
	(0.092)	(0.165)	(0.152)	(0.185)
Market value	-0.002	-0.008	-0.011	0.004
	(0.004)	(0.005)	(0.009)	(0.006)
Cash flow	0.000 ***	0.000	0.000 ***	-0.000 **
	(0.000)	(0.000)	(0.000)	(0.000)
GDP growth	0.003	0.011	0.005 **	0.014
	(0.010)	(0.014)	(0.016)	(0.028)
Interest Rate	-0.046	-0.025	0.075	-0.015
	(0.044)	(0.044)	(0.068)	(0.111)
Money supply	0.001	-0.002	-0.000	0.004
	(0.005)	(0.007)	(0.007)	(0.012)
EPU	-3.257 ***	-3.447 ***	-4.090 **	-1.419
	(0.790)	(1.023)	(1.255)	(2.123)
VIX	-0.574 ***	-0.556 ***	-0.738 ***	-0.259
	(0.113)	(0.150)	(0.179)	(0.297)
R-squared	0.141	0.155	0.152	0.161

The result underscores the imperative for policymakers to intensify their focus on financial conditions, which plays a pivotal role in shaping the ease or difficulty with which firms secure funding. Our findings further encourage financial policymakers to broaden their attention to the business cycle and environment, emphasizing the necessity of considering the multifaceted factors influencing firms' access to financial resources beyond conventional interest rate mechanisms.

B. III. Using an Alternative Measure of Market Valuation

Finally, we utilize stock market indices to investigate the impact of market valuation on NFCs capital expenditure decisions. The incorporation of stock indices serves as a proxy for price-to-book value, a variable featured in our primary analytical framework. A stock index, reflecting the weighted average of stock prices based on market capitalization for each country's stock exchange, is employed in the model. The rationale behind this approach is straightforward: while price-to-book value provides detailed insights into how individual market players assess a company's value, stock indices offer a more comprehensive, helicopter-view assessment of

NFCs' business prospects across the country. Moreover, stock indices encapsulate market sentiment in the short term.

Stock indexes exhibit a notable and positive influence on firms' investment decisions, serving as a reflection of a company's overall prospects. The stock market index also plays a pivotal role in shaping investment sentiment within the broader context of market conditions. These indices are instrumental in conveying a comprehensive snapshot of the prevailing economic landscape, encompassing various sectors and industries, thereby providing valuable insights for investors in their decision-making processes.

As shown in Table 9, market valuation has an overall positive impact towards firms' investment decisions. However, the effect of market valuation represented by stock market indices tend to be disrupted when we account for financial condition index, indicating multicollinearity between these variables. All in all, the sign and significance of other variables representing the effect of corporate performance, macro-dynamics, and policy variables toward NFCs capital expenditure remain consistent, indicating robustness of the earlier findings.

Moreover, the results derived from the short-run model depicted in Table 10 demonstrate a consistent pattern to the main estimation. First, it reaffirms that market valuation tends to be statistically insignificant towards firms' capex decision during the COVID-19 pandemic period. Our findings indicate a consistent pattern across both aggregate and sectoral analyses. Second, the result reaffirms the positive and statistically significant effect of money supply on firms' investment, particularly in the primary and secondary sector, indicating the effectiveness of monetary aggregate in influencing NFCs cost of capital and investment decisions. Lastly, financial condition index and VIX have a negative impact on NFCs capex, except for those in the utility group.

Table 9.
Robustness Test for Equation (1): Stock Market Index

Table 9 shows the result of the third robustness test for the baseline equation (1). The model employs the stock market index price as a substitute for the previously used price-to-book value which represents market value in the baseline model, aiming to assess the robustness of the effects of Non-Financial Corporation (NFC) determinants.

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
Sales	0.341 ***	0.329 ***	0.329 ***	0.298 ***	0.297 ***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Total Asset	0.814 ***	0.842 ***	0.842 ***	0.933 ***	0.935 ***
	(0.024)	(0.025)	(0.025)	(0.025)	(0.025)
Profitability	0.307 ***	0.294 ***	0.294 ***	0.249 **	0.249 ***
	(0.063)	(0.063)	(0.063)	(0.063)	(0.063)
Stock Index	0.004 ***	0.001	0.001	0.002 *	0.002 *
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Indebtedness	-0.002	-0.002	-0.002	-0.002 .	-0.002 .
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Cash flow	0.000***	0.000 ***	0.000 ***	0.000 ***	0.000 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

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Table 9.
Robustness Test for Equation (1): Stock Market Index (Continued)

	(1)	(2)	(3)	(4)	(5)
GDP growth	0.036 ***	0.040 ***	0.040 ***	0.011 **	0.013 ***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
VIX	-0.110 ***	-0.118 ***	-0.115 ***	-0.163 ***	-0.154 ***
	(0.013)	(0.013)	(0.013)	(0.026)	(0.026)
Financial Condition		-0.126 ***	-0.120 ***	-0.077 ***	0.066 ***
		(0.015)	(0.016)	(0.016)	(0.016)
Money Supply			0.003 .		0.006 ***
			(0.002)		(0.002)
Interest Rate				0.238 ***	0.242 ***
				(0.014)	(0.014)
VIX * 3-month Yield				0.048 ***	0.047 ***
				(0.008)	(0.008)
R-squared (within)	0.167	0.171	0.171	0.185	0.186
Firm fixed effects	YES	YES	YES	YES	YES

Table 10.
Robustness Test for Equation (2): Stock Market Index

Table 10 shows the result of the third robustness test for the short-run equation (2). The model utilizes the stock market index as an alternative to the previously employed price-to-book value in measuring market valuation, aiming to assess the robustness of the effects on NFC capital expenditure determinants.

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Overall	Primary	Secondary	Utilities
Capex$_{t-1}$	-0.279 ***	-0.282 ***	-0.258 ***	-0.345 ***
	(0.015)	(0.023)	(0.022)	(0.036)
Sales	0.221 ***	0.272 ***	0.127 *	0.109
	(0.035)	(0.064)	(0.051)	(0.089)
Total assets	0.869 ***	0.753 ***	1.464 ***	0.691 ***
	(0.083)	(0.161)	(0.146)	(0.146)
Stock Index	1.129	-0.703	1.709	1.608
	(0.905)	(1.236)	(1.405)	(2.205)
Cash flow	0.000 ***	-0.000 ***	0.000 ***	-0.000 **
	(0.000)	(0.000)	(0.000)	(0.000)
GDP growth	0.041 ***	0.034 *	0.051 **	0.032
	(0.012)	(0.016)	(0.018)	(0.028)
Interest Rate	0.041	0.074	0.054	-0.005
	(0.038)	(0.051)	(0.058)	(0.097)
Money supply	0.017 ***	0.018 *	0.018 *	0.009
	(0.005)	(0.007)	(0.008)	(0.012)
Financial Condition	-0.057	-0.130 .	-0.063	0.010
	(0.056)	(0.075)	(0.090)	(0.131)
VIX	-0.154 ***	-0.119 ***	-0.210 ***	-0.101
	(0.038)	(0.052)	(0.060)	(0.090)
R-squared	0.141	0.211	0.157	0.170

IV. CONCLUDING REMARKS

This paper conducts a comprehensive examination of the determinants shaping NFCs capital expenditure in four major ASEAN countries over the past decade. The primary objective is to discern a reliable correlation between corporate financial performance and firm-level capital expenditure decisions. The research underscores a robust and statistically significant relationship between corporate financial performance and capital expenditure, with profitability, market value, and cash flow rate positively associated with higher capital expenditure. Conversely, heightened indebtedness is found to impede capital expenditure. Additionally, macroeconomic conditions and policy-related variables significantly impact capital expenditure decisions, with a more restrictive financial environment placing pressure on capital expenditure choices, resulting in lower capex outcomes.

Furthermore, the study delves into the influence of financial conditions on capital expenditure decisions in the aftermath of the COVID-19 pandemic outbreak, with added nuanced sectoral analysis. Despite the consistent effects observed for capex determinants, a noteworthy observation is the diminishing significance of market valuation in influencing capex decisions, particularly evident across various sectors. The utilities sector, in particular, demonstrates resilience to financial condition dynamics and displays insensitivity towards monetary aggregates, suggesting a sector-specific resistance to these factors in the context of capital expenditure decisions. This study also identifies that macroeconomic conditions and financial pressures exert an influence on primary and secondary sectors.

These findings suggest that it is imperative for policymakers to foster a conducive strategic environment for businesses, fortify corporate governance frameworks, and adopt proactive macroprudential policies. The study yields three key policy insights. Firstly, the study advocates for a nuanced policy approach, suggesting that a singular policy rate's efficacy in stimulating NFCs' investment in the ASEAN region is comparatively limited in contrast to the broader impact of financial conditions. Secondly, interest rates demonstrate heightened effectiveness in mitigating the impact of volatility on global financial conditions, suggesting a potential avenue for policy intervention. Lastly, the COVID-19 pandemic has reshaped the landscape of capital expenditure determinants, with sectoral nuances. In times of distress, capex decisions tend to disregard market valuations, and smaller firms facing financial constraints encounter greater challenges in securing financing. Improving liquidity in the financial sector is identified as broadly effective compared to adjusting the policy rate.

As far as our knowledge extends, this study stands as an inaugural comprehensive investigation into the interplay between corporate financial performance, macroeconomic conditions, and policy-related factors regarding NFCs' capital expenditure in the ASEAN region. This study underscores the imperative role of financial conditions, both VIX and FCI, in determining NFCs' capex decisions. Future studies can leverage a more extensive dataset covering both publicly listed and non-publicly listed private companies for further insights and validation.

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