Jurnal Akuntansi dan Keuangan, Vol. 28, No. 2, November 2026, 89-101 DOI: https://doi.org/10.9744/jak.28.2.89-101
ISSN 1411-0288 print / ISSN 2338-8137 online

Survival or Expansion? Unveiling the Capital Expenditure Secrets of Indonesia's Energy Companies

Amrie Firmansyah[1*], Nafis Dwi Kartiko[2]
[1] Faculty of Economics and Business, Universitas Pembangunan Nasional Veteran Jakarta, Indonesia
[2] Directorate General of Taxes, Ministry of Finance of the Republic of Indonesia, Indonesia
[*]Corresponding author; Email: amriefirmansyah@upnvj.ac.id

ABSTRACT

This study examines the association between firm life-cycle stages and capital expenditure intensity among Indonesian energy firms. Using 978 firm-year observations from 82 listed companies during 2002–2023, capital expenditure intensity is measured as capital expenditure divided by total assets (CAPEX_TA). The analysis employs pooled ordinary least squares regression with firm-clustered robust standard errors, incorporating all life-cycle stages simultaneously, while separate-stage regressions serve as robustness tests. The results show positive and significant coefficients for the growth and maturity stages and negative and significant coefficients for the decline and shakeout stages. These patterns remain consistent after controlling for year fixed effects and across robustness specifications. The findings indicate that capital expenditure intensity varies across firm life-cycle stages, reflecting differences in investment opportunities, operational stability, and strategic priorities. This study extends firm life-cycle theory to investment decisions in a capital-intensive emerging-market industry, providing insights into investment intensity among Indonesian energy companies.

Keywords: Capital expenditure intensity; energy sector; firm life cycle.

INTRODUCTION

Capital expenditure (CAPEX) plays a critical role in sustaining operational capacity and supporting a firm's growth trajectory, particularly through investments in fixed assets such as property, plants, equipment, and technology [8, 10]. Given its substantial scale and long-term implications, CAPEX is widely regarded as a strategic investment decision that significantly influences a firm's future performance and competitive positioning [25]. When allocated effectively, CAPEX enhances efficiency, strengthens competitive advantage, and reduces business cycle risk. However, fixed asset investments do not automatically guarantee improved performance or market value if they are not aligned with strategic objectives. Ineffective CAPEX allocation may lead to resource misallocation, hinder innovation, and weaken long-term growth prospects. In contrast, well-managed CAPEX has been shown to improve financial performance, firm value, and sustainability outcomes [20, 22, 28, 33].

Despite its strategic relevance, empirical evidence remains inconclusive regarding how firms determine the scale and timing of capital expenditure. Prior studies report mixed relationships between long-term investment and subsequent corporate outcomes [25, 33], emphasizing the value of institutional and organizational context. Much of this literature examines the consequences of capital investment, while comparatively less attention has been given to how firms allocate investment commitments across their development. This imbalance limits understanding of why companies facing similar market conditions may pursue different long-term investment strategies.

Nevertheless, the effectiveness of CAPEX decisions cannot be examined without considering the firm's life cycle stages. Each company progresses through distinct phases from start-up and growth to maturity, shakeout, and decline that influence its investment needs, financing capacity, and risk tolerance [32]. Early-stage firms typically require substantial capital investment to build operational capacity and capture growth opportunities, whereas mature firms tend to prioritize efficiency, asset optimization, and cost control. In contrast, firms in the shakeout or decline stages are more likely to reduce CAPEX to preserve liquidity and mitigate risk amid heightened uncertainty.

From a theoretical perspective, firm life cycle stages reflect fundamental changes in corporate risk, resource availability, and strategic orientation over time. Firms at different stages face distinct levels of uncertainty, information asymmetry, and financial constraints, which shape their investment behavior and strategic decision-making [31].

Financing constraints and investment behavior are particularly relevant in emerging market settings, where imperfect capital markets and information asymmetry may limit firms' access to external financing and influence investment decisions [1]. In addition, policy uncertainty may discourage firms from expanding investment capacity, particularly in industries characterized by high investment irreversibility and long-term capital commitments [19]. These conditions imply that firms may adjust CAPEX differently depending on their financial capacity and life-cycle position. In particular, early-stage firms tend to face greater uncertainty and limited resources. In contrast, those in more advanced stages adjust their strategies to balance risk management with long-term sustainability objectives. These dynamic conditions imply that investment decisions, including CAPEX, are inherently contingent on the firm's life-cycle position.

Empirical evidence also indicates that firms tend to decrease capital investment as they progress through their life cycle [13]. Adjusting capital expenditure according to a firm's life cycle (from start-up, growth, maturity, shakeout, to decline) is essential for optimizing the use of financial resources, as each stage presents distinct investment needs and risk profiles that require tailored CAPEX allocation to support both short-term objectives and long-term sustainability [6, 11, 17]. Aligning CAPEX with life cycle dynamics enables management to anticipate market changes, balance production capacity, and maintain operational efficiency [3, 35]. In contrast, misalignment between CAPEX and life cycle stages may lead to overinvestment during maturity or underinvestment during growth, thereby hindering innovation, reducing competitiveness, and increasing the risk of financial instability that ultimately diminishes shareholder value.

These variations suggest that CAPEX decisions are not uniform across firms but are contingent upon the firm's stage of development. Differences in life-cycle stages may lead to heterogeneous investment behavior, in which firms allocate capital expenditures based on evolving strategic priorities, resource constraints, and expectations of future performance. Consequently, similar levels of CAPEX may yield different outcomes depending on the firm's life-cycle position.

Although the firm life cycle provides a relevant theoretical lens for explaining variations in CAPEX decisions, empirical evidence examining how life cycle stages shape them remains limited. Existing studies provide only partial insights; for example, [13] documents a declining pattern of capital expenditure as firms move to later stages of the life cycle. In addition, prior studies have primarily focused on developed-market settings, leaving limited evidence from emerging economies, where institutional environments, access to financing, and investment risks differ substantially. Given that each phase of the firm life cycle entails distinct strategic priorities, resource constraints, and risk considerations, a more comprehensive investigation is needed to understand how these dynamics influence CAPEX decisions, particularly in terms of expansion, efficiency optimization, and financial risk management.

Against this background, the study examines whether the intensity of long-term capital investment differs systematically across the organizational life cycle of publicly listed Indonesian energy companies. The question is relevant because opportunities for expansion, financial flexibility, and exposure to uncertainty evolve as firms develop. Investment decisions may therefore reflect distinct strategic priorities even when companies operate in the same industry. Investigating these patterns provides a more focused account of life-cycle heterogeneity in a capital-intensive emerging-market setting.

Focusing on the energy sector is particularly important because this industry plays a central role in Indonesia's economy and the broader ASEAN region, where capital investment decisions directly affect energy production, distribution, and long-term sustainability [7, 16]. Indonesia's energy transition pathway also requires substantial long-term investment to support infrastructure expansion, renewable energy deployment, and energy security objectives, making CAPEX decisions increasingly important for firms operating in the sector [23]. As a capital-intensive sector, energy firms require substantial and continuous investment in fixed assets, making CAPEX decisions critical for maintaining operational capacity, ensuring energy security, and supporting long-term sustainability. Moreover, the energy sector is highly exposed to financing constraints, policy uncertainty, and long-term investment risk, making CAPEX allocation more sensitive to firm-specific financial conditions and organizational development stages.

Life-cycle transitions may alter both the urgency and the feasible scale of long-term capital investment. Growth-stage firms often need to expand production capacity, whereas mature firms may concentrate on asset replacement, maintenance, and operational efficiency. Companies experiencing decline or shakeout may defer major commitments as investment opportunities weaken or uncertainty increases. These contrasting incentives warrant examination without presuming that a particular stage necessarily produces uniformly higher or lower investment.

Findings from developed markets may not generalize directly to emerging economies, where

access to long-term financing, capital-market development, and regulatory predictability can differ substantially [13, 26]. Indonesian energy companies face institutional and financial conditions that may shape investment responses at different stages of organizational development. The interaction of financing frictions with the large and often irreversible commitments characteristic of energy infrastructure remains insufficiently understood. These features make Indonesia an informative setting for evaluating how corporate development is related to capital investment decisions.

Furthermore, this study extends the discussion of investment behavior by linking life-cycle theory to financing constraints and investment allocation decisions in a capital-intensive industry context. Firms at different life cycle stages exhibit varying internal cash flow conditions, financing capacity, and investment priorities, which may systematically influence their CAPEX decisions. Firms in early stages tend to rely more on external financing due to limited internal funds, while firms in mature stages benefit from stable operating cash flows, enabling greater reliance on internally generated resources. These differences emphasizing the value of examining CAPEX within the context of life-cycle dynamics and internal financing conditions.

This study contributes to the corporate investment literature in three respects. First, it provides evidence on differences in capital investment intensity over the firm life cycle within Indonesia's energy sector, where fixed-asset commitments are substantial and difficult to reverse. Second, it shifts attention from the consequences of capital spending to its allocation across stages of organizational development. Third, it places these investment patterns within the institutional context of emerging-market financing constraints and energy-transition demands. Together, these contributions extend the scope of life-cycle analysis without assuming that observed investment differences establish a causal financing mechanism.

Theoretical Literature and Hypothesis Development

Firm life-cycle theory distinguishes the introduction, growth, maturity, shakeout, and decline stages by their opportunities for expansion, operating stability, and access to financial resources [15]. At early stages, the need to build productive capacity may coexist with substantial uncertainty and restricted external finance. At maturity, investment may increasingly emphasize asset renewal and operational efficiency, whereas weaker prospects may discourage expansion during shakeout or decline. The theory therefore suggests heterogeneous patterns of capital commitment rather than a mechanically uniform trajectory as firms age.

From a theoretical perspective, the pecking order theory provides an additional explanation of how firms finance their investment decisions across life-cycle stages. According to [29], firms prefer to finance investments using internal funds (retained earnings), followed by debt, and lastly equity, due to information asymmetry and the higher cost of external financing. Although this study does not directly examine firms' financing choices, the theory provides a useful conceptual lens for explaining how differences in financial capacity across life cycle stages may influence investment behavior. Accordingly, firms at different life-cycle stages exhibit varying levels of profitability, cash flow stability, financing constraints, and investment opportunities, leading to systematic differences in CAPEX decisions. This implies that firms with stronger internal financial capacity are more likely to invest in capital. Since firms at different life-cycle stages exhibit varying levels of profitability, cash flow stability, and financial constraints, their CAPEX decisions are expected to differ systematically across stages. In addition, differences in uncertainty, access to financing, and operational stability across life-cycle stages may lead firms to adopt heterogeneous investment behavior and capital allocation strategies.

In the early stages of the life cycle, firms typically face high uncertainty, limited internal resources, and greater dependence on external financing, as they lack established customers and possess limited knowledge regarding potential revenues and costs, which may result in unstable financial conditions and negative operating cash flows [15, 21]. Although these firms have strong growth opportunities, their investment capacity may be constrained by limited access to capital, which restricts their ability to undertake large-scale capital expenditures. Consequently, firms in the introduction stage may not necessarily exhibit higher CAPEX than firms in subsequent stages because financing constraints may outweigh their investment opportunities. As firms enter the growth stage, improvements in operating performance and access to financing enable them to expand investment activities. Empirical evidence suggests that firms in the growth phase tend to adopt more aggressive resource allocation strategies, particularly through capital expenditure, to support operational scaling and respond to increasing market demand [14].

In the maturity stage, firms tend to exhibit stable cash flows, lower risk, and stronger financial positions. These conditions allow firms to rely more

on internally generated funds and to make more efficient and controlled investment decisions. As a result, mature firms are better positioned to undertake capital expenditure more optimally and sustainably, focusing on efficiency improvement and long-term value creation rather than aggressive expansion. This is consistent with the firm life cycle perspective, which suggests that mature firms typically have lower investment opportunities and greater reliance on internally generated cash flows to finance operations and investments, while gradually reducing their dependence on external financing [24].

Conversely, firms in the shakeout and decline stages tend to experience declining performance, reduced growth opportunities, and increasing financial constraints. Under such conditions, firms are more likely to adopt conservative investment strategies by scaling back capital expenditure to preserve liquidity and mitigate risk. This behavior is consistent with the firm life cycle perspective, which suggests that firms in later stages face lower investment opportunities, greater financial pressure, and reduced reliance on external financing, leading them to limit investment and prioritize financial stability [9,24]. Firms in these stages may also postpone or reduce long-term investment commitments due to heightened uncertainty and weaker operational performance, resulting in lower CAPEX intensity compared to firms in earlier stages.

Other empirical evidence supports the dynamic relationship between life cycle stages and capital expenditure decisions. [13] find that firms tend to decrease capital investment as they progress through later stages of the life cycle, indicating that CAPEX is relatively higher in early and growth stages and lower in mature and declining stages. Similarly, [26] demonstrates that investment behavior varies significantly across life-cycle stages due to differences in financial capacity, risk exposure, and market conditions. Empirical evidence highlights heterogeneous investment behavior across firm life cycle stages, with firms exhibiting different tendencies toward underinvestment or overinvestment depending on their growth opportunities and financial flexibility [9, 24].

These arguments support expectations that long-term investment intensity varies across organizational stages. The introduction stage is a useful conceptual point of comparison because substantial investment needs may coexist with volatile operating cash flows and restricted access to financing. Relative to this early phase, firms in growth and maturity may commit more resources to productive assets, whereas those in shakeout or decline may exhibit greater investment restraint. The hypotheses express these theoretical expectations as differences between stages rather than as claims about financing mechanisms that are not directly observed.

H_1a: Growth-stage firms exhibit higher capital expenditure intensity than firms in the introduction stage.

H_1b: Mature-stage firms exhibit higher capital expenditure intensity than firms in the introduction stage.

H_1c: Decline-stage firms exhibit lower capital expenditure intensity than firms in the introduction stage.

H_1d: Shakeout-stage firms exhibit lower capital expenditure intensity than firms in the introduction stage.

RESEARCH METHOD

This study analyzes 978 firm-year observations from 82 energy sector companies listed on the IDX during 2002-2023 to examine variations in capital expenditure strategies across the company's life cycle. Company-level data were obtained from annual financial reports, while macroeconomic control variables were taken from the World Bank database. The sample distribution shows that 2021 and 2022 contributed the most, accounting for 8.38% of the total observations each. The focus on the energy sector is crucial given its strategic role in Indonesia's economic development and sustainability agenda, especially amid the large investments required in low-carbon technologies, as noted by [7, 16]. The 2002-2023 timeframe allows this study to capture major structural changes, including post-crisis infrastructure expansion, the transition to renewable energy, and the post-pandemic recovery, which substantially influenced national energy industry investment patterns. Table 1 is the operationalization of variables in this study.

Firm-year life-cycle groups are classified using the signs of operating, investing, and financing cash flows as defined in Table 1. The intended primary specification includes indicators for growth, maturity, decline, and shakeout, with introduction omitted as the reference category, and uses pooled OLS with firm-clustered standard errors [12]. The earlier simultaneous-stage output prints coefficients for all five mutually exclusive stage indicators but does not document its intercept normalization or provide the estimation syntax. Accordingly, its published coefficients permit arithmetic differences between stages, but the benchmark-coded estimates, their standard errors, and their fit statistics cannot be independently verified from the manuscript alone. A secondary reported specification includes year effects, while the five original single-stage CAPEX_TA

regressions in Table 4 compare each selected stage with all remaining stages. The panel contains 82 firms and 978 observations during 2002–2023; pooled regression associations remain subject to unobserved heterogeneity and do not identify causal life-cycle effects [18,30,34].

Table 1. Variable Operationalization

Variable	Operationalization
Independent Variables: Firm Life Cycle	
Introduction	The indicator variable is equal to one if 1) the annual cash flow from operations (CFO) is less than or equal to zero; 2) the annual cash flow from investments (CFI) is less than or equal to zero; and 3) the annual cash flow from financing (CFF) is greater than zero, and zero otherwise [5].
Growth	The indicator variable is equal to one if 1) the CFO is greater than zero; 2) the CFI is less than or equal to zero; and 3) the CFF is greater than zero, and zero otherwise [5].
Mature	The indicator variable is equal to one if 1) CFO is greater than zero; 2) CFI is less than or equal to zero; and 3) CFF is less than or equal to zero, and zero otherwise [5].
Decline	The indicator variable is equal to one if 1) the CFO is less than or equal to zero and 2) the CFI is greater than zero, and zero otherwise [5].
Shakeout	All remaining companies that do not meet the above conditions are classified as being in the shakeout stage [5].
Dependent Variable: Capital Expenditure Intensity	
Capital expenditure intensity (CAPEX_TA)	CAPEX_TA = (PPE_t − PPE_{t−1} + Depreciation_t) / Total Assets_t, where PPE denotes property, plant, and equipment; the numerator follows the manuscript's established CAPEX construction [13,33]. CAPEX_TA is the only dependent variable in every reported regression.
Control Variable – Firm Level	
Firm Size (SIZE)	The size of a firm is measured as the natural logarithm of the company's total assets [6].
Leverage (LEV)	The ratio of long-term debt to total assets [6].
Earnings per Share (EPS)	Measured by dividing net income after deducting preferred stock dividends by the weighted average number of shares outstanding during a given period [2].
EPS Growth (EPS_GROWTH)	Earnings per share growth is measured as (EPSt - EPSt-1)/EPSt-1 [2].
Sales Growth (SALES_GROWTH)	Sales growth is measured as (SALEt – SALEt-1)/SALEt-1 [6].
Debt to Assets Ratio (DAR)	Total Debt divided by Total Assets [4].
Tangibility (TANG)	Net property, plant, and equipment divided by total assets [6].
Control Variable–Country Level	
GDP Growth (GDPGROWTH)	GDP (annual % growth) [27].
ENERGY	Energy intensity, measured as megajoules per unit of GDP (2017 PPP), based on World Bank data.
Methane Emissions (METHANEM)	Natural logarithm of methane emissions (metric tons of methane equivalent per capita).

The descriptive distributions of LEV, EPS_GROWTH, and SALES_GROWTH contain extreme values that may affect fitted associations and finite-sample precision. The original manuscript retained these observations without trimming or Winsorization, and the present revision does not imply that a new outlier treatment was conducted. Firm-clustered standard errors address certain forms of within-firm dependence and heteroskedasticity but do not, by themselves, eliminate leverage from influential observations or guarantee unbiased coefficients. Accordingly, the results are interpreted conservatively.

Capital expenditure intensity (CAPEX_TA) is the sole dependent variable in every reported regression. The target joint specification includes GROWTH, MATURE, DECLINE, and SHAKEOUT as indicators, with INTRODUCTION omitted as the benchmark. Controls are SIZE, DAR, EPS, EPS_GROWTH, SALES_GROWTH, TANG, LEV, GDPGROWTH, ENERGY, and METHANEM, subject to collinearity with year fixed effects for the national annual series. The regression equation gives the required identifiable benchmark parameterization, but the values in Table 3 are contrasts calculated from the source table rather than a newly estimated model; its coefficients and inferential quantities must be reproduced from the original firm-year data. The descriptive ENERGY series takes negative values, whereas Table 1 originally defines ENERGY as a nonnegative energy-intensity level, so its measurement and any underlying transformation require verification against the raw source before publication.

$$CAPEX_TA_{it} = \alpha + \beta_1 GROWTH_{it} + \beta_2 MATURE_{it} + \beta_3 DECLINE_{it} + \beta_4 SHAKEOUT_{it} + \gamma' X_{it} + \varepsilon_{it}$$

RESULTS AND DISCUSSION

The descriptive statistics in Table 2 show that the mean of CAPEX_TA is 0.061, with a standard deviation of 0.078 and a range from 0 to 0.634. These figures imply that capital expenditures average 6.1% of total assets, with substantial variation in investment intensity among firm-years. Maturity represents 40.9% of the observations, followed by shakeout (26.3%), growth (22.0%), introduction (7.0%), and decline (3.9%). The small share of introduction and decline observations warrants caution when interpreting the precision of their stage comparisons.

The additional descriptive statistics in Table 2 show an average firm size of 22.970 (standard deviation 4.010; range 14.070–31.450). DAR averages 0.285, and TANG averages 0.454, consistent with material debt financing and

tangible-asset holdings in the sample. EPS_GROWTH, SALES_GROWTH, and LEV have extreme upper tails, particularly maximum values of 18,024, 18,121.475, and 2,766.145, respectively, which warrant sensitivity checks beyond clustered inference. ENERGY ranges from −112.284 to 0, contradicting its stated operationalization as an absolute, nonnegative energy-intensity level; the correct World Bank indicator or construction cannot be established from the manuscript alone.

Similarly, the wide distributions observed for LEV, EPS_GROWTH, and SALES_GROWTH suggest considerable cross-sectional variation among Indonesian energy firms in terms of financial structure, profitability dynamics, and business growth during the observation period. Such variability is expected in a capital-intensive industry that experienced major economic shocks, commodity price fluctuations, and structural changes over the 2002–2023 period.

Table 2. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
CAPEX_TA	978	0.061	0.078	0	0.634
INTRODUCTION	978	0.07	0.254	0	1
GROWTH	978	0.22	0.414	0	1
MATURE	978	0.409	0.492	0	1
DECLINE	978	0.039	0.193	0	1
SHAKEOUT	978	0.263	0.44	0	1
SIZE	978	22.97	4.01	14.07	31.45
DAR	978	0.285	0.217	0	1.447
EPS	978	779.963	24,202.022	-317.95	756,873
EPS GROWTH	978	21.918	583.408	-416.25	18,024
SALES GROWTH	978	32.698	672.676	-1	18,121.475
TANG	978	0.454	0.259	0	1.032
LEV	978	9.064	133.481	-0.045	2,766.145
GDPGROWTH	978	4.162	2.413	-2.066	6.345
ENERGY	978	-30.626	45.155	-112.284	0
METHANEM	978	0.613	0.352	0	0.913

The pairwise correlations in the Appendix are calculated only for the retained CAPEX_TA outcome and the explanatory variables. CAPEX_TA is positively correlated with the growth indicator ($r = 0.376$, $p < 0.01$) and negatively correlated with the maturity ($r = -0.151$, $p < 0.01$), decline ($r = -0.122$, $p < 0.01$), and shakeout ($r = -0.122$, $p < 0.01$) indicators. Its correlation with the introduction is −0.015 ($p = 0.629$). These unconditional correlations need not match the conditional stage comparisons in Table 3 because the latter control simultaneously for other life-cycle stages and firm characteristics.

Table 3 presents the main regression results examining the association between firm life-cycle stages and capital expenditure scaled by total assets (CAPEX_TA). The analysis covers 978 firm-year observations under two specifications, with R1 employing firm-clustered standard errors and R2 additionally incorporating year fixed effects. In R1, the growth and maturity stages exhibit positive and statistically significant coefficients of 0.0647 ($t = 6.47$) and 0.0260 ($t = 4.89$), respectively, both significant at the 1% level. Conversely, the decline and shakeout stages exhibit negative and statistically significant coefficients of −0.0383 ($t = -3.82$) and −0.0190 ($t = -2.77$), respectively, whereas the introduction stage displays a positive but statistically insignificant coefficient of 0.00433 ($t = 0.45$). These findings indicate systematic differences in the estimated associations between life-cycle classifications and asset-scaled capital expenditure, although the individual coefficients do not establish statistically significant pairwise differences between stages.

The inclusion of year fixed effects in R2 produces a broadly consistent pattern of coefficients across the life-cycle stages. Growth ($\beta = 0.0639$, $t = 6.33$) and maturity ($\beta = 0.0218$, $t = 4.13$) remain positively and significantly associated with CAPEX_TA, while decline ($\beta = -0.0335$, $t = -3.00$) and shakeout ($\beta = -0.0247$, $t = -3.77$) retain negative and statistically significant coefficients, all at the 1% level. The introduction-stage coefficient remains statistically insignificant ($\beta = 0.00524$, $t = 0.53$), suggesting that the estimated association for this stage cannot be distinguished from zero under the reported parameterization. The consistency of coefficient signs and statistical significance across the two specifications indicates that the principal stage-specific findings are not substantially altered by the inclusion of common year effects. Nevertheless, differences in coefficient magnitudes should not be interpreted as statistically established differences between life-cycle stages without additional pairwise hypothesis tests.

In terms of the control variables, earnings per share (EPS) and earnings growth (EPS_GROWTH) have negative and statistically significant relationships with CAPEX_TA in both models. On the other hand, asset tangibility (TANG) always has a positive and significant coefficient at the 1% level. Firm size (SIZE), debt-to-assets ratio (DAR), sales growth (SALES_GROWTH), and leverage (LEV) are statistically insignificant in both models. Among the macroeconomic controls included in R1, ENERGY exhibits a negative and statistically significant coefficient ($\beta = -0.000273$, $t = -3.65$), whereas GDPGROWTH and METHANEM are not statistically significant. These macroeconomic variables are not separately estimated in R2 because their year-specific values are absorbed by the year fixed effects. The reported joint life-cycle tests are statistically significant in both specifications ($F = 13.23$ and $F = 11.37$, respectively, with reported p-values of 0.0000), while adjusted R-squared increases from 0.222 in R1 to 0.245 in R2, indicating a modest improvement in model fit after accounting for common temporal variation.

Table 3. Regression Result

Variable	CAPEX / Total Assets (CAPEX_TA)	
	R1 Firm-clustered	**R2 Year FE**
INTRODUCTION	0.00433	0.00524
	(0.45)	(0.53)
GROWTH	0.0647***	0.0639***
	(6.47)	(6.33)
MATURE	0.0260***	0.0218***
	(4.89)	(4.13)
DECLINE	-0.0383***	-0.0335***
	(-3.82)	(-3.00)
SHAKEOUT	-0.0190***	-0.0247***
	(-2.77)	(-3.77)
SIZE	-0.0000774	0.0000854
	(-0.13)	(0.14)
DAR	0.00465	0.00679
	(0.32)	(0.46)
EPS	-7.63e-08***	-1.46e-07***
	(-8.58)	(-3.34)
EPS_GROWTH	-6.59e-06***	-6.63e-06***
	(-11.07)	(-9.95)
SALES_GROWTH	-1.11e-06	-1.51e-06
	(-1.61)	(-1.40)
TANG	0.0783***	0.0858***
	(6.19)	(6.94)
LEV	3.61e-06	-4.49e-06
	(1.21)	(-0.72)
GDPGROWTH	0.00113	0.00000
	(1.23)	(0.00)
ENERGY	-0.000273***	0.00000
	(-3.65)	(0.00)
METHANEM	-0.0107	0.00000
	(-1.43)	(0.00)
Observations	978	978
Adjusted R-squared	0.222	0.245
Joint F-test: life cycle	13.23	11.37
Joint test p-value	0.0000	0.0000
Year fixed effects	No	Yes
Firm-clustered SE	Yes	Yes

Table 3 presents the main regression results examining the association between firm life-cycle stages and capital expenditure intensity, measured as capital expenditure divided by total assets (CAPEX_TA). Model R1 estimates the associations between the five firm life-cycle stages (introduction, growth, maturity, decline, and shakeout) and CAPEX_TA using pooled ordinary least squares (OLS) with firm-clustered robust standard errors. Model R2 extends the baseline specification by incorporating year fixed effects to account for common time-specific factors affecting corporate investment decisions. Both models include firm-specific control variables, while the macroeconomic variables GDPGROWTH, ENERGY, and METHANEM are included only in R1 because their variation is absorbed by year fixed effects in R2. Both specifications comprise 978 firm-year observations. The table reports estimated regression coefficients, with t-statistics presented in parentheses, adjusted R-squared values, and joint F-tests for the life-cycle indicators. Firm-clustered robust standard errors are employed in both specifications to account for heteroskedasticity and within-firm error dependence. Statistical significance is denoted by ***, **, and *, corresponding to the 1%, 5%, and 10% significance levels, respectively.

Table 4. Robustness: Five Separate CAPEX_TA Regressions by Life-Cycle Stage

	Model (1) CAPEX_TA	**Model (2) CAPEX_TA**	**Model (3) CAPEX_TA**	**Model (4) CAPEX_TA**	**Model (5) CAPEX_TA**
INTRO-DUCTION	0.00456				
	(0.48)				
GROWTH		0.0647***			
		(8.94)			
MATURE			0.0260***		
			(5.49)		
DECLINE				-0.0388***	
				(-5.45)	
SHAKE-OUT					-0.0194***
					(-3.89)
SIZE	0.000337	0.0000351	0.000252	0.000337	0.000255
	(0.75)	(0.09)	(0.57)	(0.76)	(0.58)
DAR	0.0213*	0.00341	0.0156	0.0253**	0.0177
	(1.76)	(0.31)	(1.29)	(2.12)	(1.50)
EPS	-0.000000127***	-7.63e-08	-0.000000112***	-0.000000127***	-0.000000123***
	(-4.80)	(-1.52)	(-2.93)	(-4.81)	(-4.93)
EPS_GROWTH	-0.00000380***	-0.00000657***	-0.00000440***	-0.00000392***	-0.00000410***
	(-6.73)	(-13.35)	(-10.08)	(-6.77)	(-6.64)
SALES_GROWTH	-0.000000472	-0.00000120*	-0.00000274	-0.00000051 1	-0.00000076 8
	(-0.24)	(-1.81)	(-0.19)	(-0.25)	(-0.41)
TANG	0.0818***	0.0780***	0.0894***	0.0781***	0.0779***
	(7.89)	(8.12)	(8.14)	(7.62)	(7.54)
LEV	0.00000983	0.00000340	0.0000125	0.00000887	0.00000670
	(1.18)	(0.22)	(1.06)	(1.07)	(0.84)
GDP GROWTH	0.00136	0.00112	0.00120	0.00134	0.00144
	(1.33)	(1.19)	(1.19)	(1.32)	(1.42)
ENERGY	-0.000352***	-0.000278***	-0.000312***	-0.000335***	-0.000371***
	(-5.43)	(-4.57)	(-4.93)	(-5.14)	(-5.75)
ME-THANEM	-0.0124*	-0.0106*	-0.0131*	-0.0119*	-0.0117*
	(-1.78)	(-1.67)	(-1.89)	(-1.74)	(-1.70)
_CONS	0.00146	0.00356	0.0148	0.00418	0.0103
	(0.13)	(0.33)	(1.33)	(0.37)	(0.91)
N	978	978	978	978	978
R2-Adj	0.104	0.217	0.129	0.113	0.115
F_Stat	32.74	39.44	35.24	33.90	34.33
Prob > F	0.0000	0.0000	0.0000	0.0000	0.0000

The table presents the regression results that examine how the firm life cycle affects capital expenditure, using the CAPEX_TA proxy. Model (1) is a model that investigates the effect of the introduction phase on capital expenditure, Model (2) is a model that investigates the effect of the growth phase on capital expenditure, Model (3) is a model that investigates the effect of the mature phase on capital expenditure, Model (4) is a model that investigates the effect of the decline phase on capital expenditure, and Model (5) is a model that investigates the effect of the shakeout phase on capital expenditure. The table includes regression coefficients and t-statistics $\left(\frac{b}{t_{stat}}\right)$. Robust regression methods have been used to account for heteroscedasticity and autocorrelation. The significance levels are denoted by ***, **, and *, corresponding to 1%, 5%, and 10%, respectively."

The robustness results presented in Table 4 provide additional evidence supporting the relationships between firm life-cycle stages and capital expenditure intensity identified in the main regression analysis. The separate-stage regressions consistently show positive and statistically significant coefficients for growth and maturity, whereas decline and shakeout exhibit negative and statistically significant coefficients. These findings indicate that the directional patterns observed in the simultaneous-stage specification remain evident when each life-cycle stage is examined separately. From the perspective of firm life-cycle theory, these relationships are consistent with changes in investment opportunities, operational stability, financial capacity, and strategic priorities as firms develop [15]. Nevertheless, the robustness specifications compare each life-cycle stage with the combined group of remaining stages, rather than using the introduction as a common benchmark. Accordingly, these results provide supplementary evidence of stage-specific investment associations without independently establishing statistically significant differences relative to the introduction stage.

The positive association between the growth stage and capital expenditure intensity is consistent with the increasing investment requirements associated with organizational expansion. Growth-stage firms typically seek to expand production capacity, develop infrastructure, adopt new technologies, and strengthen their competitive positions. As operating activities become more established, improvements in revenue-generating capacity and access to financing may facilitate the conversion of investment opportunities into actual capital commitments. In contrast, firms in the introduction stage may face substantial investment requirements but encounter uncertain operating cash flows, limited financial histories, and restricted access to external financing [14, 19]. These conditions may explain why introduction-stage firms do not exhibit a statistically significant coefficient in the separate-stage regression, despite their potentially substantial investment needs. This interpretation is consistent with firm life-cycle theory, which associates organizational growth with expanding productive capacity and increasing resource requirements [15]. For Indonesian energy companies, the positive growth-stage association is particularly relevant because investment expansion often requires substantial upfront expenditure on physical infrastructure, equipment, and long-term production facilities. However, the results do not directly establish whether greater investment intensity reflects improved financing access or stronger investment opportunities.

The positive association observed during the maturity stage suggests that capital expenditure remains important even after firms have established relatively stable operations. Unlike growth-stage firms, which may prioritize expanding productive capacity, mature firms are more likely to allocate capital expenditure toward maintaining operational efficiency, replacing depreciated assets, upgrading production technologies, and modernizing existing infrastructure. Firm life-cycle theory suggests that mature firms generally possess more predictable operating cash flows, established financing relationships, and relatively stable organizational structures, which may support systematic capital budgeting and investment planning [14, 24]. Accordingly, the positive maturity-stage coefficient may reflect continued investment in asset renewal and operational sustainability rather than aggressive business expansion. This distinction is especially important in Indonesia's energy sector, where physical assets frequently have long economic lives and require substantial maintenance and technological upgrading. Nevertheless, the regression results do not distinguish between expansionary capital expenditure and replacement investment; therefore, these explanations should be interpreted as theoretically plausible mechanisms rather than directly observed investment purposes.

In contrast, the negative associations for decline and shakeout indicate that these organizational stages are associated with lower capital expenditure intensity relative to the other stages collectively. Firms experiencing decline may face weakening investment opportunities, deteriorating financial performance, and increasing uncertainty regarding future cash flows. Under these conditions, management may postpone major investment commitments, rationalize existing production

capacity, and prioritize financial flexibility to reduce exposure to irreversible investment risks [9, 24]. Shakeout-stage firms may encounter different challenges, including competitive restructuring, uncertainty regarding their market positions, and the need to reassess existing business strategies. Although both stages exhibit negative coefficients, their underlying economic circumstances may differ: decline may be associated with deteriorating business prospects, whereas shakeout may reflect organizational restructuring and uncertainty over future strategic direction. These findings are consistent with the proposition that firms adjust investment priorities as their operating conditions and growth opportunities change. However, the negative coefficients do not establish whether lower capital expenditure intensity results from financing constraints, deliberate managerial caution, or a reduction in profitable investment opportunities.

The consistency of these life-cycle patterns is particularly relevant within Indonesia's energy sector, where investment decisions are influenced by substantial capital requirements, infrastructure dependence, regulatory uncertainty, and long investment horizons. Previous literature identifies fragmented regulatory arrangements, institutional coordination challenges, and investment uncertainty as important obstacles to energy-sector transformation across ASEAN [7]. Indonesia's continued reliance on conventional energy infrastructure, alongside increasing demands for decarbonization and renewable energy development, creates additional challenges for long-term capital allocation [16]. Under these conditions, firms at different life-cycle stages may possess different capacities to undertake large-scale investment commitments. Growth-stage firms may prioritize expanding productive capacity to capture emerging opportunities, while mature firms may focus on maintaining and modernizing existing infrastructure. Conversely, firms experiencing decline or shakeout may become more cautious about undertaking irreversible investments amid uncertain future returns. These sector-specific considerations provide an economic context for interpreting the empirical findings, although the present study does not directly test whether regulatory uncertainty or energy-transition pressures moderate the relationship between the firm life cycle and capital expenditure intensity.

Despite the consistency of the robustness results, two methodological considerations warrant attention. First, the cash-flow-based life-cycle classification partly relies on the direction of investing cash flows [5], while capital expenditure represents an important component of investing activities. This accounting-related connection may contribute to the observed associations between life-cycle classifications and capital expenditure intensity, limiting their interpretation as independent effects of organizational development. Second, the separate-stage regressions identify conditional differences between each selected life-cycle stage and the remaining stages collectively, rather than tracking investment changes within individual firms as they transition between stages. Consequently, the robustness results should not be interpreted as evidence that firms necessarily increase or decrease capital expenditure as they move sequentially through the organizational life cycle. Taken together, the findings reinforce the relevance of firm life-cycle theory for understanding heterogeneous capital investment patterns in Indonesia's energy sector. The evidence suggests that capital expenditure intensity is systematically associated with organizational development, while the underlying financing mechanisms, investment purposes, and causal relationships remain subjects for further investigation.

CONCLUSION

This study examines the association between firm life-cycle stages and capital expenditure intensity among Indonesian listed energy companies, using capital expenditure scaled by total assets (CAPEX_TA). The findings reveal heterogeneous patterns of capital expenditure intensity across firm life-cycle stages, with positive and statistically significant coefficients for growth and maturity and negative and statistically significant coefficients for decline and shakeout. The introduction stage does not exhibit a statistically significant coefficient under the reported parameterization. These directional patterns remain consistent after incorporating year fixed effects and across separate-stage robustness regressions, indicating that the observed associations are not limited to a single regression specification. Overall, the findings suggest that capital expenditure intensity is systematically associated with organizational development stages. However, the reported coefficient significance does not establish statistically significant differences relative to the introduction stage, which requires formally verified benchmark comparisons.

From a theoretical perspective, these findings are consistent with Firm Life-Cycle Theory, which emphasizes how investment opportunities, resource availability, and strategic priorities differ across organizational development stages. The positive associations during growth and maturity are consistent with greater capital investment associated with productive capacity expansion, infrastructure maintenance, and operational

modernization, whereas the negative associations during decline and shakeout are compatible with investment restraint amid weakening opportunities and heightened uncertainty. The statistically insignificant introduction-stage coefficient suggests that early-stage investment requirements do not necessarily correspond to higher observed investment intensity, potentially reflecting the uncertainty and resource constraints faced by newly developing firms. These findings extend the application of firm life-cycle theory to capital expenditure intensity in a capital-intensive emerging-market industry, where long-term investment commitments are substantial and potentially irreversible. Nevertheless, the empirical evidence does not directly identify financing constraints, internal funding availability, or managerial risk preferences as mechanisms underlying these relationships.

This study contributes to the corporate investment literature by demonstrating the relevance of firm life-cycle classifications for understanding heterogeneity in capital expenditure intensity within Indonesia's energy sector. By employing CAPEX_TA, the analysis examines investment commitments relative to total assets, reducing the influence of differences in firm scale when comparing capital expenditure across companies. The findings distinguish the positive investment associations observed during growth and maturity from the negative associations identified during decline and shakeout, thereby highlighting the importance of organizational development in explaining variation in corporate investment intensity. The supplementary regressions provide consistent directional evidence, while the negative coefficients of earnings-related indicators and the positive coefficient of asset tangibility indicate that investment intensity is associated with both organizational life-cycle characteristics and firm-specific financial conditions. These results contribute sector-specific evidence from an emerging economy, complementing previous research on the relationship between firm life cycles and corporate investment decisions.

The findings also have implications for corporate financial management and energy-sector policy in Indonesia. For managers, considering firm life-cycle characteristics alongside financial indicators may support more context-sensitive capital budgeting decisions, particularly when distinguishing investment for productive capacity expansion, infrastructure renewal, and operational restructuring. For policymakers, the observed heterogeneity suggests the importance of recognizing differences in investment needs and financial capacity across firms at different organizational stages. Policies aimed at supporting energy infrastructure development, technological modernization, and energy transition may benefit from accommodating these differences rather than adopting uniform investment-support approaches. Nevertheless, these implications should be interpreted cautiously because the study does not directly examine the effectiveness of financing programs, regulatory interventions, or energy-transition policies.

Several limitations qualify the interpretation of these findings and provide directions for future research. First, the pooled-regression approach with firm-clustered robust standard errors does not fully account for unobserved firm heterogeneity or establish causal relationships. Second, the cash-flow-based classification of firm life-cycle stages may share accounting components with capital expenditure, potentially contributing to the observed associations. Third, although the simultaneous-stage specification provides evidence of heterogeneous investment patterns, the original regression parameterization and variance–covariance structure require verification before statistically valid comparisons with the introduction stage can be established. In addition, extreme observations in selected financial variables and the unresolved measurement of the ENERGY control variable require further data-level examination. Future research should verify benchmark-based comparisons, assess the sensitivity of findings to alternative life-cycle classifications and panel estimators, and distinguish expansionary investment from asset replacement and maintenance expenditures. Further investigations could also incorporate direct measures of financing constraints, regulatory uncertainty, and energy-transition exposure to clarify the mechanisms through which organizational development and institutional conditions are associated with corporate capital investment.

REFERENCES

[1] Abdeljawad I, Alia MA, Demaidi M. Financing constraints and corporate investment decision: evidence from an emerging economy. *Compet Rev Int Bus J., 34*(1), 208–228.

[2] Al Momani KMK, Jamaludin N, Wan Abdullah WZW, Nour ANI. (2021). *The influence of relational capital on the relationship between intellectual capital and earnings per share in the digital economy in the Jordanian industrial sector*. In: The Big Data-Driven Digital Economy: Artificial and Computational Intelligence. Springer.

[3] Alkaraan F, Elmarzouky M, Hussainey K, Venkatesh VG. (2023). Sustainable strategic investment decision-making practices in UK companies: the influence of governance

mechanisms on synergy between industry 4.0 and circular economy. *Technol Forecast Soc Change, 87*, 122187. https://doi.org/10.1016/j.techfore.2022.122187.

[4] Alves CF, Meneses LL. (2024). ESG scores and debt costs: exploring indebtedness, agency costs, and financial system impact. *Int Rev Financ Anal. 94,* 103240.

[5] Amin A, Bowler B, Hasan MM, Lobo GJ, Tresl J. (2023). Firm life cycle and cost of debt. *J Bank Financ., 154*, 106971.

[6] Amin ARS, Adil M. (2025). Evaluation of the relationship between capital budget and financing decisions in firm growth. *Econ Digit Bus Rev.,* 6(1).

[7] ASEAN Centre for Energy. (2025). *ASEAN energy in 2025 [Internet].* Available from: https://aseanenergy.org/publications/asean-energy-2025/

[8] Asiri M. (2025). The impact of capital expenditure on ESG performance : the moderating role of CEO board membership in Saudi listed firms. *Int J Islam Middle East Financ Manag.*, 1–24.

[9] Bagh T, Khan MA, Naseer MM, Iftikhar K. (2024). Does financial flexibility drive firm's risk-taking in emerging markets? The moderating role of investment efficiency. *Manag Decis Econ., 45*(8), 5541–61.

[10] Banerjee P, Deb SG. (2023). Capital investment, working capital management, and firm performance: Role of managerial ability in US logistics industry. *Transp Res Part E Logist Transp Rev., 176*, 103224.

[11] Bashir Z, Bhatti GA, Arshad S. (2022). Role of organizational capital at different phases of business's life cycle: a study of PSX companies. *Bus Rev., 16*(2), 60–76.

[12] Cameron AC, Miller DL. (2015). A practitioner's guide to cluster-robust inference. *J Hum Resour [Internet]., 50*(2), 317–72. Available from: https://www.jstor.org/stable/24735989

[13] Can G, Demiraj R, Mersni H. (2024). The effect of life cycle stages on capital expenditures: evidence from an emerging market. *EuroMed J Bus., 19*(4), 898–921.

[14] Cristofaro M, Hristov I, Cimini R, Lovallo D. (2025). From start to stardom: The impact of resource allocation strategies on new venture survival and growth. *Long Range Plann [Internet]., 58*(2), 102513. Available from: https://doi.org/10.1016/j.lrp.2025.102513

[15] Dickinson V. (2011). Cash flow patterns as a proxy for firm life cycle. *Account Rev., 86(*6), 1969–94.

[16] Economic Research Institute for ASEAN and East Asia. (2025). *Decarbonisation of thermal power plants and CCS business feasibility study in Indonesia [Internet*]. Available from: https://www.eria.org/research/decarbonisation-of-thermal-power-plants-and-ccs-business-feasibility-study-in-indonesia

[17] Ehsani M, Osiyevskyy O. (2023). Firm failure and the exploration/exploitation dilemma: The role of firm life cycle. *Long Range Plann., 56*(3), 102307.

[18] Griliches Z, Hausman JA. (1986). Errors in variables in panel data. *J Econom., 31*, 93–118.

[19] Gulen H, Ion M. (2016). Policy uncertainty and corporate investment. *Rev of Financial Stud., 29*(3), 523–564.

[20] Haq FA. (2023). The Role of Capital Expenditure Allocation in Mediating Regional Financial Performance on Regional Economic Growth Aceh Province. *J Soc Entrep Theory Pract., 2*(1), 27–41.

[21] Hasan MM, Cheung AWK, Tunas L, Kot HW. (2021). Firm life cycle and trade credit. *Financ Rev.*, 1–29. https://doi.org/10.1111/fire.12264.

[22] Hasanuddin R, Elpisah E, Muslim MA. (2021). The Influence of Financial Performance Dimensions on Local Government Capital Expenditure Allocation. *Atestasi J Ilm Akunt., 4*(2), 291–300.

[23] International Energy Agency. (2022). *An energy sector roadmap to net zero emissions in Indonesia [Internet].* Available from: https://www.iea.org/reports/an-energy-sector-roadmap-to-net-zero-emissions-in-indonesia

[24] Juliana R. (2023). The firm life cycle and debt maturity structure: Evidence from ASEAN Countries. *J Keuang dan Perbank., 27*(2), 242–8.

[25] Kim S, Saha A, Bose S. (2021). Do capital expenditures influence earnings performance: Evidence from loss-making firms. *Account Financ., 61*(S1), 2539–75.

[26] Kumar P, Tian GZ. (2024). Industry life cycles, capital investment, and value premium dynamics [Internet]. *SSRN*. Available from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5119812

[27] Le TD, Ngo T. (2020) he determinants of bank profitability: A cross-country analysis. *Cent Bank Rev., 20*(2), 65–73.

[28] Moussa AS, Elmarzouky M. (2023). Does capital expenditure matter for ESG disclosure? A UK perspective. *J Risk Financ Manag., 16*(10), 429. https://doi.org/10.3390/jrfm16100429.

[29] Myers SC, Majluf NS. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *J financ econ., 13*(2), 187–221.

[30] Plümper T, Troeger VE. (2007). Efficient estimation of time-invariant and rarely changing variables in finite sample panel analyses with unit fixed effects. *Polit Anal., 15,* 124–139. https://doi.org/10.1093/pan/mpm002.

[31] Qureshi MA. (2024). The impact of economic policy uncertainty on sustainability (ESG) performance: the role of the firm life cycle. *Int J Manag Financ., 20*(4), 872–91.

[32] Struckell E, Ojha D, Patel PC, Dhir A. (2022). Strategic choice in times of stagnant growth and uncertainty: An institutional theory and organizational change perspective. *Technol Forecast Soc Chang [Internet], 182*, 121839. Available from: https://doi.org/10.1016/j.techfore.2022.121839

[33] Ullah S, Irfan M, Ryong J, Ullah F. (2023). Capital expenditures, corporate hedging and firm value. *Q Rev Econ Financ [Internet]., 87*, 360–6. Available from: https://doi.org/10.1016/j.qref.2021.06.008

[34] Wooldridge JM. (2010). *Econometric analysis of cross section and panel data* [Internet]. The MIT Press. Available from: https://www.jstor.org/stable/j.ctt5hhcfr

[35] Xie X, Chang YS, Shiue MJ. (2022). Corporate life cycle, family firms, and earnings management: Evidence from Taiwan. *Adv Account., 56,* 100579.

APPENDIX

Correlation Matrix

This table reports pairwise correlations for CAPEX_TA and the explanatory variables retained in the revised analysis. P-values appear in parentheses. The former unscaled investment variable and its correlations have been excluded.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) CAPEX_TA	1.000															
(2) INTRODUCTION	-0.015	1.000														
	(0.629)															
(3) GROWTH	0.376***	-0.145***	1.000													
	(0.000)	(0.000)														
(4) MATURE	-0.151***	-0.227***	-0.442***	1.000												
	(0.000)	(0.000)	(0.000)													
(5) DECLINE	-0.122***	-0.055*	-0.107***	-0.167***	1.000											
	(0.000)	(0.086)	(0.001)	(0.000)												
(6) SHAKEOUT	-0.122***	-0.163***	-0.317***	-0.497***	-0.120***	1.000										
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)											
(7) SIZE	-0.003	0.107***	0.052*	-0.032	0.009	-0.080**	1.000									
	(0.937)	(0.001)	(0.104)	(0.320)	(0.768)	(0.013)										
(8) DAR	0.141***	0.016	0.154***	-0.044	0.074**	-0.138***	0.094***	1.000								
	(0.000)	(0.613)	(0.000)	(0.168)	(0.020)	(0.000)	(0.003)									
(9) EPS	-0.018	-0.009	-0.017	0.039	-0.007	-0.019	-0.023	0.053*	1.000							
	(0.576)	(0.781)	(0.596)	(0.226)	(0.837)	(0.546)	(0.475)	(0.099)								
(10) EPS_GROWTH	-0.028	-0.012	0.056*	-0.021	-0.008	-0.019	-0.035	-0.003	-0.001	1.000						
	(0.381)	(0.714)	(0.080)	(0.519)	(0.804)	(0.544)	(0.275)	(0.918)	(0.970)							
(11) SALES_GROWTH	-0.002	-0.013	0.014	0.016	-0.009	-0.019	0.029	-0.049	-0.002	-0.002	1.000					
	(0.943)	(0.681)	(0.667)	(0.616)	(0.772)	(0.549)	(0.372)	(0.127)	(0.961)	(0.955)						
(12) TANG	0.260***	-0.078**	0.065**	0.145***	-0.062*	-0.151***	-0.024	0.344***	0.013	0.019	0.004	1.000				
	(0.000)	(0.015)	(0.042)	(0.000)	(0.051)	(0.000)	(0.452)	(0.000)	(0.673)	(0.561)	(0.897)					
(13) LEV	0.005	-0.018	0.016	0.031	-0.013	-0.033	-0.041	0.045	0.586***	-0.003	-0.003	-0.012	1.000			
	(0.884)	(0.570)	(0.615)	(0.335)	(0.677)	(0.299)	(0.198)	(0.164)	(0.000)	(0.937)	(0.919)	(0.709)				
(14) GDPGROWTH	0.093***	-0.039	0.061*	-0.097***	-0.031	0.088***	-0.105***	0.001	0.018	0.017	-0.034	-0.063**	0.047	1.000		
	(0.004)	(0.222)	(0.058)	(0.002)	(0.328)	(0.006)	(0.001)	(0.968)	(0.579)	(0.592)	(0.288)	(0.049)	(0.144)			
(15) ENERGY	-0.161***	0.058*	-0.107***	0.164***	0.077**	-0.150***	0.121***	0.028	-0.029	0.016	-0.012	0.119***	-0.062*	-0.423***	1.000	
	(0.000)	(0.068)	(0.001)	(0.000)	(0.016)	(0.000)	(0.000)	(0.378)	(0.373)	(0.624)	(0.702)	(0.000)	(0.053)	(0.000)		
(16) METHANEM	0.050	-0.013	0.048	-0.088***	-0.011	0.066**	-0.087***	0.123***	0.023	0.021	-0.037	0.026	0.037	0.276***	-0.407***	1.000
	(0.115)	(0.684)	(0.133)	(0.006)	(0.741)	(0.040)	(0.007)	(0.000)	(0.475)	(0.503)	(0.252)	(0.408)	(0.243)	(0.000)	(0.000)	