MINISTRY OF EDUCATION AND TRAINING **MINISTRY OF FINANCE**

ACADEMY OF FINANCE

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CAPITAL MOBILIZATION FOR SUSTAINABLE GROWTH OF LISTED PLASTICS ENTERPRISES IN VIETNAM

Major: Finance – Banking
Major Code: 9.34.02.01

SUMMARY OF DOCTORAL DISSERTATION IN ECONOMICS

HA NOI, 2026

This dissertation was completed at:
ACADEMY OF FINANCE

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The dissertation will be defended before the Academy-level Dissertation Examination Committee at the Academy of Finance.

At ..... on ..... , 2026.

INTRODUCTION

1. Rationale of the research topic

The growth of an enterprise is always accompanied by a need for additional capital, which can only be financed from retained earnings or from external sources such as borrowing, trade credit, bonds and shares, each with a different cost, maturity and level of risk. According to Higgins's (1977) sustainable growth model, given its profitability, profit-distribution policy and capital structure, an enterprise can only grow up to a certain rate if it issues no new equity and does not change its leverage; when actual growth exceeds this rate, the enterprise must adjust its borrowing, equity issuance, dividend policy or asset-use efficiency. The problem of financially sustainable growth is therefore closely tied to the choice of the scale, structure and methods of capital mobilization.

Vietnam's plastics industry has grown at an average of 10-12% per year, with more than 4,000 enterprises and products present in over 170 countries, yet it depends heavily on imported raw materials and has large capital needs for equipment renewal, technology upgrading and the green transition. Over 2019-2025, the growth of listed plastics enterprises showed many signs of unsustainability: revenue fluctuated sharply, the sustainable growth rate (SGR) tended to decline, and some enterprises suffered prolonged declines in revenue and profit; total capital rose from VND 41,102 billion to VND 71,663 billion, but capital-use efficiency did not keep pace. An important cause is the inadequate capital-mobilization structure, which relies heavily on short-term debt, while internal accumulation has narrowed and access to long-term capital channels remains limited. In light of this situation, the PhD candidate has chosen the dissertation topic “Capital Mobilization for Sustainable Growth of Listed Plastics Enterprises in Vietnam”.

2. Literature review related to the research topic

On sustainable growth, Higgins (1977), Platt, Platt and Chen (1995), Van Horne (2002), Alam and Zahid (2008) and Lockwood and Prombutr (2010) laid the foundations of the PRAT model and the measurement of SGR; recent studies (Şahin and Ergün, 2018; Altahtamouni et al., 2022; Vuković, Tica and Jakšić, 2022) have extended this work to compare actual growth (AGR) with SGR and have confirmed the role of asset turnover and profitability. Domestically, Pham Thi Van Anh (2012, 2016), Pham Xuan Toan et al. (2016) and Le Bao Toan et al. (2025) have applied the SGR framework to a number of specific industries.

On capital mobilization for sustainable growth, international studies report inconsistent results: financial leverage has positive, negative or nonlinear effects

(Akhtar et al., 2022); short-term and long-term debt may have opposing effects; trade credit promotes growth when it serves as an alternative source of financing but turns negative beyond a certain threshold (Tingbani et al., 2022); and the cost of capital has a positive effect in developed markets but a negative one in emerging markets. Most studies examine only one financing channel, use a single growth measure and rely on multi-industry samples; the equity-issuance channel remains under-researched. Domestic studies (Nguyen, Ho and Vo, 2019, and others) mainly assess the current situation or individual capital-mobilization channels without linking them to the sustainable-growth objective; research on plastics enterprises has so far been limited to production costs, financial performance, working capital and firm value.

On this basis, the dissertation identifies three sequentially related research gaps: (i) theoretically, there is no unified analytical framework that treats capital mobilization as the process of meeting the capital needs of growth under constraints of maturity, cost and risk, and that assesses its outcome through the capacity for financially sustainable growth; (ii) empirically, no study has simultaneously examined the capital-mobilization channels (leverage, short-term debt, trade credit, new debt, share issuance) together with the cost of capital in relation to both SGR and the actual growth rate (AGR); (iii) in terms of subject and context, no study has examined capital mobilization in connection with the sustainable growth of Vietnam's plastics enterprises over 2019-2025, a period affected by COVID-19 and by volatility in interest rates and the bond market.

3. Research objectives, tasks and questions

The research objective is to propose solutions to improve capital mobilization for the sustainable growth of listed plastics enterprises in Vietnam through 2030, with a vision to 2035.

The research tasks are: (i) to systematize and develop the theory of capital mobilization, financially sustainable growth, and capital mobilization for enterprises' sustainable growth, and to draw lessons from the experience of typical plastics enterprises abroad; (ii) to analyze and assess the current situation over 2019-2025, combining qualitative analysis with a quantitative model to identify achievements, limitations and their causes; (iii) to propose solutions through 2030, with a vision to 2035.

Central research question: How should listed plastics enterprises in Vietnam mobilize capital to ensure sustainable growth? Specific questions: (1) How should capital mobilization for an enterprise's financially sustainable growth be understood, and through what mechanisms do capital-mobilization channels exert their effects? (2)

Were the scale, structure, methods and cost of capital mobilization of listed plastics enterprises over 2019-2025 consistent with their sustainable growth capacity? (3) How are the capital-mobilization channels related to SGR and AGR? (4) What capital-mobilization solutions do the different groups of enterprises need through 2030, with a vision to 2035?

4. Research subject and scope

Research subject: capital mobilization to ensure the financially sustainable growth of enterprises.

Research scope:

- *In terms of content:* analyzing the current state of capital mobilization for the sustainable growth of listed plastics enterprises in Vietnam.

- *In terms of space:* 28 plastics enterprises listed on HOSE, HNX and UPCOM.

- *In terms of time:* the study covers 2019-2025, spanning the pre-pandemic period (2019), the pandemic (2020-2021), volatility in interest rates, raw-material prices and the bond market (2022-2023), and recovery (2024-2025); the solutions apply from 2026 onward.

5. Research methodology

The dissertation combines analysis and synthesis, comparison, the collection of secondary information from the audited financial statements of the 28 enterprises, qualitative methods (desk research, descriptive statistical analysis) and quantitative methods.

The quantitative method uses a panel-data model covering 28 enterprises over 7 years (196 observations), processed in Stata in four steps: (i) building the model with two dependent variables, SGR and AGR; (ii) choosing between Pooled OLS, FEM and REM using the F test, the Breusch-Pagan test and the Hausman test, replaced by the Sargan-Hansen test (xtoverid) with clustered standard errors and cross-checked with the Mundlak test when the classical Hausman test is unreliable; (iii) testing for model defects (VIF, modified Wald, Wooldridge, Pesaran CD) and correcting them with FGLS or a fixed-effects estimator with Driscoll-Kraay standard errors; (iv) testing each variable for endogeneity using second- and third-order lags as instruments, the control-function approach and 2SLS, with first-stage F statistics, Kleibergen-Paap, Hansen J, C statistics and Anderson-Rubin; GMM is not used because of the limited number of enterprises.

6. New contributions of the dissertation

In terms of theory and academia: (i) The dissertation systematizes, supplements and clarifies the theory of capital mobilization for enterprises' sustainable

growth. It builds an analytical framework of capital mobilization for enterprises' financially sustainable growth, in which capital mobilization is examined in the relationship between the capital needs of growth, financing channels, maturity and the cost of capital on the one hand and the capacity for sustainable growth on the other; (ii) The dissertation examines the experience of plastics enterprises in several countries in mobilizing capital for sustainable growth and draws four lessons that Vietnam can refer to and apply; (iii) it examines the capital-mobilization channels simultaneously in relation to both SGR and AGR on the same sample, showing that the same channel may relate to the two measures in opposite directions: the share of short-term debt is positively associated with SGR but negatively with AGR; new share issuance is positively associated with both; and new borrowing is positively associated only with AGR.

In terms of practice: (i) The dissertation provides a quantitative picture of the scale, structure, methods and cost of capital mobilization and the sustainable growth capacity of listed plastics enterprises over 2019-2025, and identifies the differences between groups of enterprises by SGR; (ii) it proposes a system of solutions differentiated by enterprise group and linked to the identified limitations and causes, which can serve as a reference for corporate managers, investors, credit institutions and regulators.

7. Structure of the dissertation

Apart from the introduction, conclusion, list of references and appendices, the dissertation consists of three chapters: Chapter 1: General theory of capital mobilization for enterprises' sustainable growth; Chapter 2: Current state of capital mobilization for the sustainable growth of listed plastics enterprises in Vietnam; Chapter 3: Solutions for capital mobilization to ensure the sustainable growth of listed plastics enterprises in Vietnam.

CHAPTER 1
GENERAL THEORY OF CAPITAL MOBILIZATION FOR ENTERPRISES' SUSTAINABLE GROWTH

1.1. CAPITAL MOBILIZATION OF ENTERPRISES

1.1.1. Capital and its role for enterprises

Business capital is the monetary expression of the total value of assets that an enterprise has invested and used in production and business activities for profit-making purposes. Capital has four basic characteristics: it represents the value of tangible and intangible assets; it is constantly moving and changing form; it has a time value; and it can be mobilized from various sources. Capital is a prerequisite for the formation, survival and development of an enterprise.

1.1.2. Concept and classification of enterprise capital sources

An enterprise's capital sources are the financial resources used to form and supplement the assets it needs, enabling it to operate effectively and achieve its long-term growth objectives. Capital sources are classified by ownership relationship (equity and liabilities); by mobilization and use period (regular and temporary capital); and by mobilization scope (internal capital from retained earnings and external capital such as bank loans, trade credit, share and bond issuance, and asset leasing). Each form has its own advantages and limitations, requiring enterprises to choose a structure suited to their industry and stage of development.

1.1.3. Concept and indicators for assessing enterprises' capital mobilization

Capital mobilization is the process by which an enterprise seeks, accesses and uses internal or external financial resources to meet its investment needs, expand its scale and sustain long-term development, while balancing the pace of growth with financial stability. Assessment indicators include: the scale and growth rate of total capital, equity and liabilities; the equity ratio and the debt ratio; the structure and growth rate of each capital-mobilization channel; and the weighted average cost of capital (WACC).

1.1.4. Factors affecting enterprises' capital mobilization

Internal factors include the enterprise's characteristics (type of enterprise, line of business), the capability and reputation of its leadership, its financial situation, its business performance and its collateral assets. External factors include the macroeconomic environment and the legal framework; monetary, interest-rate, tax and exchange-rate policies; the credit policies of commercial banks and financial institutions; the development of the capital market; and the government's orientation for supporting enterprises.

1.2. SUSTAINABLE GROWTH OF ENTERPRISES

1.2.1. The inevitability of sustainable growth and the factors affecting enterprises' sustainable growth

Growth reflects an increase in an enterprise's scale of operations, asset value, revenue or profit, and is an inevitable requirement for meeting market demand and maintaining competitive position. Growth is classified by resource (internal, external), by nature (horizontal, vertical, diversified), by time horizon, by sustainability and by pace; it is affected by internal factors (financial capacity, governance, technology, human resources, market, brand) and external factors (macroeconomy, legal framework, industry competition, technology).

1.2.2. Sustainable growth of enterprises

An enterprise's sustainable growth is the maximum growth rate it can achieve without disrupting its financial balance or becoming excessively dependent on external capital. According to Higgins (1977), borrowing increases only in proportion to equity so as to keep the target debt ratio unchanged; sustainable growth therefore does not rule out the use of debt but requires a stable level of debt use. Financially sustainable growth manifests itself in four dimensions: the consistency between AGR and SGR; the balance of the capital and maturity structure; the ability to generate cash flow and meet payment obligations; and the efficiency and cost of capital use, with SGR as the central indicator.

When AGR exceeds SGR for a prolonged period, an enterprise is prone to capital shortages, rising leverage and solvency risk; when AGR is significantly below SGR, the enterprise falls into sluggish growth. However, the AGR-SGR gap is only an initial signal of financing pressure, not necessarily a capital shortage, and must be cross-checked against cash flow, solvency and debt obligations. Imbalances are corrected through three groups of policies: capital mobilization, profit distribution and investment.

1.2.3. Indicators for assessing growth and sustainable growth of enterprises

The net-revenue growth rate and the after-tax-profit growth rate reflect actual growth. The sustainable growth rate is determined using Higgins's PRAT model: SGR = Return on equity (ROE) × Retention ratio. Monitoring AGR and SGR together helps identify whether an enterprise is growing beyond its self-financing capacity or operating below its potential.

1.3. CAPITAL MOBILIZATION FOR ENTERPRISES' SUSTAINABLE GROWTH

1.3.1. Capital mobilization and sustainable growth

In essence, growth is the expansion of business scale, manifested in an increase in total assets; since every increase in assets must be financed by a corresponding amount of capital, capital mobilization is a mandatory material condition for growth. The relationship between capital mobilization and sustainable growth is bidirectional: mobilized capital determines the pace and limits of growth, while growth outcomes determine the capacity to mobilize capital in the following period. Capital mobilization exerts its effect in three ways: the scale of capital sets the ceiling on the growth rate; the nature of the capital source determines financial risk; and the efficiency of capital use determines whether growth creates or destroys value. Capital mobilization is therefore a necessary but not sufficient condition for sustainable growth.

1.3.2. Capital mobilization sources for enterprises' sustainable growth

According to Higgins's model, every capital-mobilization channel affects sustainable growth through ROE, through the retention ratio or through the stability of the financing source. (i) Retained earnings are the only source that entails no repayment obligation and no direct mobilization cost; they are the pillar of internal growth, but their scale depends on profitability. (ii) Short-term debt is flexible and supports working capital but carries refinancing risk, which is most serious when it finances long-term assets. (iii) Long-term debt allows capacity expansion and creates a positive leverage effect and a tax shield when the economic rate of return exceeds the interest rate. (iv) Corporate bonds provide access to large amounts of long-term capital but require a solid market position and information transparency, and create pressure at maturity. (v) Trade credit carries no nominal interest but has a hidden cost when early-payment discounts are forgone. (vi) External equity creates no repayment obligation but dilutes ownership and may reduce ROE in the short term. (vii) Other channels include finance leases, cyclical liabilities, preferential capital and green capital.

1.3.3. Research model of the impact of capital mobilization on sustainable growth

The dissertation uses two parallel models with the same set of explanatory variables for two dependent variables: SGR (the capacity to self-finance growth) and AGR (actual revenue growth): $Rit = \beta0 + \beta1LEVit + \beta2STDit + \beta3TCRit + \beta4EQISSit + \beta5DEBTISSit + \beta6BLGit + \beta7WACCit + \beta8ATOit + \beta9SIZEit + \beta10COGSRit +$

β11COVIDit + εit. The independent variables fall into three groups: the existing capital structure (debt-to-equity ratio - LEV, short-term debt to total debt - STD, accounts payable to suppliers to total debt - TCR); new capital mobilization (share-issuance capital to beginning-of-period total assets - EQISS, additional borrowing to beginning-of-period total assets - DEBTISS, growth rate of outstanding bank loans - BLG); and the cost of capital (WACC, with the cost of equity estimated by CAPM). Control variables include total asset turnover (ATO), size (SIZE), the ratio of cost of goods sold to net revenue (COGSR) and a COVID-19 dummy variable.

Based on the transmission mechanism through the four PRAT components and the characteristics of plastics enterprises, the dissertation formulates 10 hypotheses: LEV has a negative effect on SGR and a positive effect on AGR (H1); STD has a negative effect on both (H2); TCR has a positive effect on both (H3); EQISS has a positive effect on both (H4); DEBTISS has a positive effect on AGR and a negative effect on SGR (H5); BLG and WACC have negative effects on both (H6, H7); ATO and SIZE have positive effects (H8, H9); COGSR has a negative effect (H10). The results of the two models are compared by sign and significance level, not by the direct magnitude of the coefficients; the coefficients of LEV, EQISS, ATO and COGSR are interpreted taking into account their mechanical relationship with the components of SGR.

1.4. INTERNATIONAL EXPERIENCE IN CAPITAL MOBILIZATION FOR SUSTAINABLE GROWTH OF PLASTICS ENTERPRISES IN SELECTED COUNTRIES AND LESSONS FOR VIETNAM

1.4.1. Experience of plastics enterprises in selected countries in capital mobilization for sustainable growth

The dissertation studies three typical cases. Rain Industries Limited (India) has revenue and profit dependent on raw materials whose prices move with oil prices; it reduced debt during favorable periods, but when prices reversed, losses caused equity to fall faster than debt was repaid, and trade credit contracted precisely during the crisis. Scientex Berhad (Malaysia) increased leverage in step with profit growth, maintained a dividend payout ratio of about 34-35%, and issued Sukuk bonds only when it needed to finance long-term assets. SCG Packaging Public Company Limited (SCGP, Thailand) remained profitable throughout 2022-2025 despite falling revenue; its free cash flow exceeded 10 billion baht each year; its debt-to-equity ratio rose in a controlled manner from 0.60 to about 0.96 times to finance acquisitions in ASEAN, with EBIT at about 3.6 times interest expense; steadily growing retained earnings were the pillar, with borrowing playing only a supplementary role.

1.4.2. Lessons for Vietnam

From the three cases above, the dissertation draws four lessons: (i) control leverage according to the business cycle, build a sufficiently large equity buffer, and increase leverage only when profit grows commensurately; (ii) use retained earnings as the main source of financing for regular growth, with a dividend policy linked to capital needs; (iii) mobilize long-term debt and bonds for specific capital-use purposes and ensure that maturities match the payback period; (iv) organize working-capital financing in line with the raw-material price cycle, maintain cash flow and standby credit lines, and use exchange-rate hedging instruments. The lessons should be applied selectively: large enterprises can apply them fully, while small enterprises should focus on internal accumulation, leverage control and raw-material price risk management.

CHAPTER 2
CURRENT STATE OF CAPITAL MOBILIZATION FOR SUSTAINABLE GROWTH OF LISTED PLASTICS ENTERPRISES IN VIETNAM

2.1. OVERVIEW OF LISTED PLASTICS ENTERPRISES ON THE STOCK MARKET

2.1.1. Overview of Vietnam's plastics enterprises from 2019 to 2025

Industry-wide plastics revenue grew at an average of 13.4% per year over 2015-2024, about 5 percentage points higher than nominal GDP growth. Listed plastics enterprises have gone through several stages: the pre-reform period (1960-1990); the period from the reform to WTO accession (1990-2009), with a wave of listings in 2005-2009; stagnation after the global crisis and recovery from 2014; and the period from 2020 to the present, affected by COVID-19, with a clear recovery from 2024, when output reached 11.7 million tonnes (up 15.7%) and revenue about USD 31 billion. The Long Son petrochemical complex, in commercial operation since August 2025, has raised self-sufficiency in plastic resin to about 35%; consumption is forecast to grow by about 7% per year over 2025-2029.

2.1.2. Business characteristics of plastics enterprises

The industry's value chain comprises an upstream segment (petrochemicals, virgin plastic resin) and a downstream segment (packaging, construction, household and technical plastics). The domestic upstream segment lacks both volume and variety, while the downstream segment uses about 30 types of virgin resin, most of which must be imported. Raw-material costs accounted for about 76% of production and business costs in 2024, with plastic resin alone accounting for about 80% of raw-material costs, making the gross margin sensitive to oil prices and exchange rates. The industry has about 4,000 enterprises, nearly 90% of which are small and medium-sized; competition is fiercest in the packaging segment (with a gross margin about 5 percentage points below the average); about 70% of machinery is imported from China; and the industry is subject to green-transition requirements under Decree 08/2022/ND-CP.

2.1.3. Overview of the listed plastics enterprises in the research sample

The research sample comprises 28 joint-stock plastics companies continuously listed on HOSE, HNX and UPCOM over 2019-2025 (196 balanced-panel observations), excluding delisted enterprises such as RDP and DAG. By segment, the sample includes packaging, construction, household and technical plastics. By average total capital, there are 8 large enterprises with over VND 1,000 billion (28.6%,

averaging VND 6,490 billion), 16 medium-sized enterprises (57.1%) and 4 small enterprises with under VND 100 billion (14.3%). By listing venue, HNX has 15 enterprises (53.6%), HOSE 7 (25.0%) and UPCOM 6 (21.4%); listing venue is interpreted as a proxy for the degree of transparency and access to equity capital.

2.1.4. Overview of the financial situation of listed plastics companies

Over 2019-2025, net revenue rose from VND 40,591 billion to VND 64,555 billion (up 59.03%), with slight declines in 2020 and 2023; EBIT rose from VND 3,008 billion to VND 5,594 billion (up 85.96%); interest expense rose from VND 159 billion to a peak of VND 1,058 billion (2023) before falling to VND 777 billion (2025); pre-tax and after-tax profits rose by 69.08% and 60.18% respectively, despite declines in 2020-2021.

2.2. CURRENT STATE OF CAPITAL MOBILIZATION FOR SUSTAINABLE GROWTH OF LISTED PLASTICS ENTERPRISES

2.2.1. Current state of sustainable growth of listed plastics enterprises

Asset growth remained continuously positive (1.99%-23.60%); net-revenue growth fluctuated the most, from -8.99% (2023) to 47.25% (2021); after-tax profit growth was negative in 2020-2021 before recovering from 2022. The industry average SGR ranged from 1.48% (2024) to 5.56% (2020), averaging 4.11% over the whole period. By average SGR, the sample is divided into three groups: the negative-SGR group of 3 enterprises (DPC, SDG, TPC), with AGR of -2.39% and SGR of -3.17%; the group with positive SGR below the sample average, comprising 12 enterprises, with AGR of 6.69% and SGR of 1.72%; and the group with positive SGR above the sample average, comprising 13 enterprises, with AGR of 12.34% and SGR of 8.01%. The industry-wide correlation between net revenue and SGR is low (about 0.31); in the two positive-SGR groups, AGR mostly exceeds SGR, indicating that revenue is growing faster than the rate that could be sustained under unchanged financial policies.

2.2.2. Current state of capital mobilization for sustainable growth of listed plastics enterprises in Vietnam

In terms of scale, total capital rose continuously from VND 41,102 billion to VND 71,663 billion (up 74.3%, averaging 9.7% per year), but its growth rate fluctuated sharply, from 23.60% (2021) to 1.99% (2023). Equity rose from VND 18,169 billion to VND 31,522 billion (up 73.5%), with the equity ratio stable at 0.44-0.46; the share of equity in cost-bearing capital rose from 63.31% to 71.08%.

Liabilities rose from VND 22,932 billion to VND 40,140 billion, with the debt ratio stable at 0.54-0.56. Short-term debt accounted for 64.13%-72.05% of total debt

based on aggregate figures, and averaged 90.44% when calculated per enterprise. Corporate bonds rose from VND 2,216 billion (2019) to a peak of VND 5,138 billion (2022) before falling to VND 996 billion (2.48% of total debt) in 2025 following Decree 65/2022/ND-CP, with only 5 of 28 enterprises using them (AAA, APH, TDP, DNP, TPP); only 8 of 28 enterprises have accessed finance leases, which account for 0.67%-1.41% of total debt. In terms of the cost of capital, the industry-wide WACC ranged from 6.32% to 7.73%, averaging 6.83%, peaking in 2023 before easing to 6.48% in 2025 as the cost of debt fell from 6.70% to 4.96%; the WACC gap between the highest and lowest enterprises widened from 7.42 percentage points (2019) to 13.20 percentage points (2023).

2.2.3. Current state of capital mobilization by groups of listed plastics enterprises classified by average SGR over 2019-2025

Negative-SGR group: equity fell from VND 764 billion to VND 512 billion (about 33%); additional external equity was almost exhausted (from 20.61% to 3.10%); the share of bank debt fell from 76.94% to 57.40%, while trade credit rose from 8.27% to 27.03%, and the group had no access at all to bonds or finance leases. This group's WACC is the lowest (6.41%), but its rate of return does not cover the cost of capital.

Group with positive SGR below the sample average: equity rose from VND 5,741 billion to VND 10,506 billion, with the share of additional external equity rising from 17.21% to 40.89% while the share of retained earnings fell from 34.75% to 24.80%; liabilities rose by about 109%, bonds fell sharply after 2022, and bank debt returned to 58.09% in 2025. Most revenue growth was financed by external capital and has not been converted into self-financing capacity (an AGR-SGR gap of 4.97 percentage points).

Group with positive SGR above the sample average: equity rose from VND 11,665 billion to VND 20,504 billion, with initial contributed capital stable at 57-61%, additional equity at 20-23%, and retained earnings recovering to 20.53% in 2025; liabilities grew the least (about 62%), but other liabilities rose sharply to 33.10% of total debt, the nature of which needs to be clarified. The group bears the highest WACC (7.53%) yet still achieves SGR of 8.01% and AGR of 12.34%, demonstrating that its rate of return exceeds its cost of capital.

2.3. TESTING THE IMPACT OF CAPITAL MOBILIZATION ON SUSTAINABLE GROWTH OF LISTED PLASTICS ENTERPRISES

2.3.1. Research data and data sources

Data are taken from the audited consolidated (or separate) financial statements of 28 enterprises continuously listed over 2019-2025 (196 observations), with 2018 figures used as beginning-of-period values for 2019. WACC is calculated for each enterprise in each year: the cost of equity is estimated by CAPM using the 10-year government bond yield, each enterprise's beta and Damodaran's market risk premium for Vietnam; the cost of debt is derived from interest expense and average outstanding borrowings, adjusted for the tax shield.

2.3.2. Research results

Descriptive statistics show that average AGR (8.28%) is double average SGR (4.11%), and the standard deviation of AGR (0.2861) is much larger than that of SGR (0.0801). EQISS averages only 1.59%, and only 33 of 196 observations involve share issuance; BLG is highly dispersed (standard deviation of 1.1199). The model shows no serious multicollinearity (highest VIF of 1.65).

For SGR, the F test and the Breusch-Pagan test reject Pooled OLS; the Sargan-Hansen test (66.580; $p = 0.0000$) rejects REM, so FEM is selected; because the model exhibits heteroskedasticity and autocorrelation, it is estimated by FGLS (Wald chi2(11) = 69.55). For AGR, REM coincides with Pooled OLS and the F test selects FEM; the model also exhibits cross-sectional dependence (Pesaran CD = 3.043; $p = 0.0023$), so it is estimated by FEM with Driscoll-Kraay standard errors ($F(11,6) = 30.80$; within $R2 = 0.4944$).

Hypothesis-testing results: H1 is rejected (LEV is not significant in either model); H2 is accepted for AGR (STD: -0.4448, $p<0.01$), but STD is positive for SGR (0.0804, $p<0.01$); H3 is rejected (TCR is negative for SGR: -0.0516, $p<0.01$); H4 is accepted (EQISS: 0.0590 for SGR, $p<0.05$; 1.0961 for AGR, $p<0.01$); H5 is accepted for AGR (DEBTISS: 0.4367, $p<0.01$) and is not significant for SGR; H6 is accepted for SGR (BLG: -0.0028, $p<0.05$); H7 is accepted for AGR at the 10% level (WACC: -2.3714); H8 is accepted for both (ATO: 0.0257 and 0.4817, $p<0.01$); H9 and H10 are accepted only for SGR (SIZE: 0.0095; COGSR: -0.2474, both $p<0.01$); COVID is positive for AGR (0.1073, $p<0.05$).

2.3.3. Discussion of research results

First, new capital mobilization (EQISS, DEBTISS) is very strongly and positively associated with AGR but weakly or insignificantly with SGR: new capital mobilization is linked to revenue growth but does not guarantee sustainable growth;

since exogeneity could not be tested, this is a positive association rather than causal evidence. Second, STD has opposite effects on the two indicators: low-cost short-term debt financing working capital helps improve ROE at the current scale but limits the capacity for expansion; the constraint lies in loan maturity rather than in borrowing capacity. Third, TCR is negative for SGR, consistent with Tingbani et al. (2022), owing to the hidden cost of forgoing early-payment discounts in an industry where cost of goods sold accounts for 86.58% of net revenue; it may also be a signal of liquidity stress (reverse causality).

Fourth, WACC dampens only AGR (through the investment-decision channel) and has no effect on SGR, because the cost of equity is an opportunity cost that does not enter retained earnings; this conclusion should be understood as a tendency. Fifth, ATO is the only factor positively associated with both indicators, albeit partly mechanically, implying that the room for growth lies in using existing capital efficiently. Sixth, BLG is negative for SGR but does not boost AGR, suggesting that part of the additional outstanding debt is used to roll over debt or cover working-capital shortfalls. Seventh, COGSR and SIZE affect only SGR: controlling the cost of goods sold is a prerequisite, and the advantage of scale lies in the ability to grow more steadily rather than faster. Eighth, LEV is not significant and there is no evidence of a nonlinear relationship (Lind-Mehlum: $p = 0.186$), implying that what matters is through which channel, with what maturity and for what purpose an enterprise borrows.

2.3.4. Robustness tests of the model

Endogeneity tests show that STD and TCR have strong instruments (Kleibergen-Paap of 27.29 and 157.78) and no evidence of endogeneity; LEV shows marginal signs of endogeneity but is insignificant in all specifications, so it does not affect the conclusions; exogeneity of WACC is not rejected, but its instruments are weak; EQISS, DEBTISS and BLG lack sufficiently strong instruments, so no conclusion can be drawn on their exogeneity. There is no evidence of lagged reverse causality. After winsorizing EQISS and DEBTISS at the 1st and 99th percentiles, the signs and significance levels of the variables remain unchanged, except that WACC in the AGR model rises to the 5% significance level. Therefore, the coefficients of STD and TCR are more reliable, while those of EQISS, DEBTISS, BLG and WACC are interpreted as statistical associations.

2.4. ASSESSMENT OF CAPITAL MOBILIZATION FOR SUSTAINABLE GROWTH OF LISTED PLASTICS ENTERPRISES IN VIETNAM

2.4.1. Achievements

(i) Total capital grew continuously, with no year of decline, even in the difficult year of 2023. (ii) The capital structure shifted toward greater safety: the share of equity in cost-bearing capital rose from 63.31% to 71.08%; retained earnings recovered (up 11.70% in 2024 and 17.20% in 2025). (iii) Liabilities were kept stable (debt ratio of 0.54-0.56), and long-term bank debt rose from VND 2,693 billion to VND 5,915 billion in 2024; LEV has no significant effect on growth. (iv) The cost of capital was kept within a narrow range of 6.32%-7.73% even as interest rates rose in 2022-2023. (v) Asset-use efficiency (average ATO of 1.3926 times) is the highest-quality growth driver. (vi) There are clear differences in the scale, structure and cost of capital mobilization across groups; the group with positive SGR above the sample average, despite the highest WACC, still generates a surplus owing to its good profitability.

2.4.2. Limitations and causes

2.4.2.1. Limitations

(i) Actual growth exceeds SGR (AGR of 8.28% versus SGR of 4.11%), implying a risk of dependence on external capital; new capital mobilization is linked to revenue growth but has not been converted into sustainable growth capacity. (ii) The growth rate of capital fluctuates sharply (from 23.60% to 1.99%); in the negative-SGR group, average total capital per enterprise fell from VND 457.7 billion to VND 419.0 billion. (iii) The debt structure depends heavily on short-term debt (90.44% on a per-enterprise average), constraining the capacity to expand, although this limitation truly exists only in enterprises whose regular capital is insufficient to finance long-term assets. (iv) Internal accumulation capacity is limited by thin profit margins: the share of retained earnings in equity fell from 27.08% to 19.35% (2023) before recovering to 21.91% (2025), and the gross margin is only about 13.42%.

(v) Capital-mobilization channels are not diversified and depend on bank credit: only 5 of 28 enterprises use bonds and 8 of 28 use finance leases, while the negative-SGR group has access to neither; BLG is negatively associated with SGR. (vi) The cost of capital is not commensurate with capital-use efficiency: the negative-SGR group has a low WACC (6.41%) yet its SGR remains negative; the below-average group has the lowest WACC (6.17%) but an SGR of only 1.72%. (vii) Divergence is large and widening: the average total capital of the above-average group was 4.56 times that of the negative-SGR group in 2019, rising to 8.37 times in 2025; average equity is 9.24 times higher, with signs of a financial trap in the weak group.

2.4.2.2. Causes of the limitations

Subjective causes: (i) the product structure is skewed toward low value-added segments (19 of 28 enterprises are in packaging), sales contracts lack price-adjustment clauses, and enterprises do not use derivatives to hedge price and exchange-rate risks; (ii) financing decisions and profit-distribution policies are not placed within a financial plan linked to growth objectives; (iii) financial governance and information transparency do not yet meet capital-market requirements; (iv) most enterprises are not yet large enough for market-based capital channels to be cost-effective (20 of 28 enterprises have average total capital below VND 1,000 billion); (v) bargaining power with raw-material suppliers is weak owing to small, fragmented purchases and a lack of linkages.

Objective causes: (i) macroeconomic volatility over 2020-2023 (COVID-19, inflation, interest rates, raw-material prices) created a double adverse impact; (ii) the legal framework for the capital market is incomplete and changed abruptly (Decree 65/2022/ND-CP); (iii) the roadmap for reducing the ratio of short-term funds used for medium- and long-term lending under Circular 22/2019/TT-NHNN has limited the supply of long-term capital; (iv) conditions for access to credit are unequal across groups of enterprises; (v) the long-term capital market is underdeveloped and the market risk premium remains high.

CHAPTER 3
SOLUTIONS FOR CAPITAL MOBILIZATION TO ENSURE SUSTAINABLE GROWTH OF LISTED PLASTICS ENTERPRISES IN VIETNAM

3.1. CONTEXT, ORIENTATIONS AND VIEWPOINTS ON CAPITAL MOBILIZATION FOR SUSTAINABLE GROWTH OF LISTED PLASTICS ENTERPRISES THROUGH 2030, WITH A VISION TO 2035

3.1.1. Domestic and international socio-economic context through 2030, with a vision to 2035

Domestically, the target of average economic growth of 10% or more per year over 2026-2030 and an urbanization rate above 50% create strong demand for construction, packaging and technical plastics; Decree 08/2022/ND-CP and Decree 05/2025/ND-CP tighten the roadmap for restricting single-use plastics and the mandatory recycling rates; the Long Son complex raises self-sufficiency in plastic resin to about 35%; the stock market is upgraded by FTSE Russell from 21 September 2026; and the green taxonomy under Decision 21/2025/QD-TTg provides a basis for green capital. Internationally, five major trends are the circular economy, the recycled-content requirements of import markets (Regulation (EU) 2025/40), petrochemical oversupply, the relocation of production chains and the shift of value toward high-end segments. These trends require long-term capital for the transition, a stronger profit base and a sound financial balance.

3.1.2. Development orientation of Vietnam's plastics industry through 2030, with a vision to 2035

The orientations are synthesized from four sources: (a) state policies (the roadmap for restricting single-use plastics, recycling rates, the Green Growth Strategy, the green taxonomy, import duties on plastic resin); (b) the Vietnam Plastics Association (a shift toward construction and technical plastics, more recycled raw materials, stronger linkages); (c) market forecasts (consumption growing by about 7-8.4% per year through 2030); and (d) the capital-mobilization orientations proposed by the dissertation: shifting the focus from expanding the scale of capital to improving capital-use efficiency and strengthening internal capital; increasing the share of long-term capital; diversifying mobilization channels, with green capital becoming an important channel; and differentiating the roadmap by enterprise group.

3.1.3. Viewpoints on capital mobilization for sustainable growth of listed plastics enterprises

Six viewpoints should be observed: (i) capital mobilization serves the sustainable-growth objective, with the scale and pace of mobilization determined on the basis of each enterprise's SGR; (ii) priority is given to strengthening the internal foundation, improving profit margins and asset-use efficiency before expanding capital mobilization; (iii) maturities of capital sources and investment assets must be matched; (iv) diversification of mobilization channels goes hand in hand with control of the cost of capital; (v) solutions are applied differentially across the three enterprise groups; (vi) they are combined with supporting solutions on financial governance, information transparency and supply-chain linkages.

3.2. SOLUTIONS FOR CAPITAL MOBILIZATION TO ENSURE SUSTAINABLE GROWTH OF LISTED PLASTICS ENTERPRISES IN VIETNAM

3.2.1. Basis for proposing the solutions

The system of solutions rests on three grounds: the limitations and causes identified in the assessment of the current situation; the context, orientations and viewpoints on capital mobilization; and international experience. The regression results are a supplementary basis, reinforcing the analysis where they point in the same direction as the assessment of the current situation. The solutions are divided into four groups by mode of impact; each solution comprises general content and specific application to the three enterprise groups; the order of priority for each enterprise should also take into account its interest-coverage capacity, the balance between regular capital and long-term assets, its operating cash flow and its production segment.

3.2.2. Group of solutions for new capital mobilization

3.2.2.1. Diversifying long-term capital mobilization channels

Selectively reviving the corporate-bond channel among sufficiently large enterprises (backed by collateral, with 3-5-year maturities and disclosure beyond the minimum requirements), starting with enterprises that have issued before, such as AAA, APH, TDP, TPP and DNP; expanding finance leases for equipment (3.5-10-year terms, matching the depreciation cycle of extruders, film-blowing machines and injection-molding machines); applying sale-and-leaseback arrangements when the proceeds are used for purposes whose return exceeds the leasing cost; and accessing capital from international development finance institutions (7-12-year maturities), with medium-sized enterprises doing so through industry projects coordinated by the

association. The group with positive SGR above the sample average should pioneer the revival of bonds; the below-average group should prioritize finance leases and sale-and-leaseback; the negative-SGR group should use finance leases only for individual pieces of equipment, with bonds and international institutions considered only after at least two consecutive profitable years.

3.2.2.2. Linking new equity mobilization to specific investment projects

The growth rate of external equity mobilization fluctuated widely (peaking at 48.73% in 2021 and falling to -2.75% in 2025), reflecting issuance driven by market conditions rather than project needs. Each issuance should specify the project, cash flows and payback period, with an expected rate of return exceeding the enterprise's WACC; the issuance size should equal the gap between planned growth and SGR; when the AGR-SGR gap exceeds 5 percentage points for two consecutive years, the Board of Directors should review the capital-mobilization plan. Priority should be given to rights issues to existing shareholders, with convertible bonds and foreign strategic shareholders also considered; the below-average group should issue only after its cost-of-goods-sold ratio has improved, and the negative-SGR group should only make private placements tied to a restructuring plan.

3.2.2.3. Accessing green capital in line with the industry's transition roadmap

The prerequisite is to measure and disclose environmental data (emissions, electricity and water consumption, scrap recycling rate, share of recycled raw materials) for at least two years to establish a baseline, with independent review. On this basis, enterprises can tap green bonds for recycling projects, rooftop solar power and energy-saving equipment (suited to the group with positive SGR above the sample average), and sustainability-linked loans and domestic green credit (suited to the below-average group); in the immediate term, the negative-SGR group should build its environmental data baseline.

3.2.3. Group of solutions for adjusting the financing structure and maturity

3.2.3.1. Restructuring the maturity of mobilized capital toward a higher share of long-term debt

This solution targets only the portion of short-term debt that is financing long-term assets. For enterprises with expansion investment plans, the target is to reduce short-term debt to below 60% of total liabilities and raise the share of long-term debt in bank borrowings to at least 35% by 2030. Enterprises should take advantage of low interest rates (average cost of debt of 4.96%) to convert part of their short-term credit lines into 3-7-year fixed-rate loans or syndicated loans, and establish relationships with 3-5 banks; they should monitor EBIT/interest expense of at least 2.0 times and

net financial debt/EBITDA below 3.5 times. The group with positive SGR above the sample average should implement this fastest (target of below 60% by 2028); the below-average group should switch to fixed-term loans of 18-24 months; and the negative-SGR group should focus on rescheduling principal repayments.

3.2.3.2. Controlling the growth rate of outstanding bank loans and the quality of loan use

In 2024, debt owed to commercial banks and credit institutions rose by 23.70%, while net revenue rose by only 5.07%. The solutions include: establishing a mechanism to track the use of each loan until assets are formed; setting a ceiling on the growth rate of outstanding bank loans of no more than 1.5 times the net-revenue growth rate (1.2 times for the below-average group), except for separately approved projects; and addressing the practice of new borrowing to repay old debt by restructuring debt maturities and scaling borrowing down to a level that operating cash flow can service. The negative-SGR group should not increase outstanding debt until operating cash flow is stably positive.

3.2.3.3. Restructuring the use of trade credit

The opportunity cost of forgoing 2/10, net 30 discounts is equivalent to an interest rate of about 36% per year, more than five times the average WACC of 6.83%. Enterprises should establish a rule comparing the opportunity cost of forgoing discounts with WACC when deciding on early payment; apply supply-chain finance models (reverse factoring); and develop sales-credit policies based on customer classification, together with framework contracts committing to volumes for 12-24 months or participation in joint purchasing, to improve their bargaining position.

3.2.4. Group of solutions for improving capital-use efficiency

3.2.4.1. Managing the cost of capital in relation to capital-use efficiency

Enterprises should calculate WACC annually as the minimum discount rate for investment appraisal and accept only projects whose rate of return exceeds WACC by a safety margin of at least 2 percentage points (based on a WACC standard deviation of about 2.32 percentage points). The group with positive SGR above the sample average should exploit the tax shield by moderately increasing long-term debt and reduce beta by stabilizing business results and strengthening investor relations; the below-average group should focus on raising its rate of return above the cost of capital; and the negative-SGR group should monitor the spread between its rate of return and its cost of capital rather than the absolute level of its cost of capital.

3.2.4.2. Improving asset-use efficiency

The target is to raise average ATO from 1.3926 to about 1.55 times by 2030 (about 2% per year), mainly through management measures: reviewing, disposing of, or selling and leasing back unprofitable assets; managing inventory with integrated ERP and streamlining the product portfolio; and raising the capacity of existing production lines through automation, predictive maintenance and continuous improvement (BMP's experience: an investment of VND 91 billion saving VND 35 billion per year). The group with positive SGR above the sample average should invest in automation; the below-average group should prioritize reducing inventory and streamlining its product portfolio; and the negative-SGR group should dispose of unprofitable assets and lease out excess capacity.

3.2.4.3. Improving profit margins to strengthen internal capital

The target is to reduce average COGSR from 86.58% to about 84% by 2030 (raising the gross margin to about 16%). Measures include: adding price-adjustment clauses linked to raw-material price indices to sales contracts; diversifying supply sources, combining long-term contracts with spot purchases, and using price-hedging instruments and foreign-currency forward contracts; partially substituting recycled plastic for virgin plastic (NTP raised its share of recycled plastic from 10% to 49.5%); and shifting toward high-margin segments. This is the top-priority solution for the below-average group; for the negative-SGR group, it means restructuring operations and divesting from persistently loss-making business lines.

3.2.5. Group of supporting solutions

Improving the quality of financial governance and information transparency through four components: an internal management accounting system; internal control over financial reporting; adoption of international financial reporting standards according to a roadmap; and an investor-relations function, with the aim of narrowing the gap in the cost of capital among enterprises. Strengthening supply-chain and intra-industry linkages: forming joint raw-material purchasing groups within the framework of the Vietnam Plastics Association (in compliance with the 2018 Law on Competition); sharing collection and recycling infrastructure under a closed-loop model; and jointly accessing international funding programs through industry projects.

3.2.6. Roadmap and order of priority for implementing the solutions by enterprise group

The general principle is that solutions to improve capital-use efficiency and adjust the financing structure come first, followed by new capital mobilization; the

weaker the enterprise, the more its roadmap leans toward strengthening its foundation. Negative-SGR group (TPC, DPC, SDG): through 2027, restructure operations, reschedule debt and not increase outstanding debt; over 2028-2030, access finance leases and joint purchasing only after two consecutive profitable years; share, bond and green-capital channels are considered within the 2035 vision. Group with positive SGR below the sample average: prioritize profit margins and asset efficiency, then control outstanding debt and apply the discount rule, followed by finance leases and project-linked issuance; enterprises such as BMP and DNP should adjust their profit-distribution policies and may access long-term capital channels early. Group with positive SGR above the sample average: prioritize restructuring debt maturities, clarifying other liabilities, diversifying long-term capital and issuing shares linked to recycling projects. The expected outcome by 2030 is to narrow the AGR-SGR gap (about 4.2 percentage points) by raising SGR rather than by curbing revenue growth.

3.3. CONDITIONS FOR IMPLEMENTING THE SOLUTIONS

For state management agencies: ensuring the stability and predictability of the capital-market legal framework (roadmaps announced 12-18 months in advance, with consultation of enterprises and associations); building mechanisms to support long-term capital for medium-sized manufacturing enterprises (credit guarantees, 7-10-year credit packages through the Vietnam Development Bank, tax incentives and accelerated depreciation for recycling projects); supporting reduced dependence on imported raw materials (attracting investment in raw materials, standards for recycled plastic resin, completing the EPR mechanism); and leveraging the stock-market upgrade and developing independent credit-rating services.

For financial institutions: developing investment credit products with 5-7-year maturities suited to the industry's investment cycle; adding growth-potential criteria, especially SGR, to credit appraisal; broadly rolling out supply-chain finance; and expanding specialized finance-leasing products for plastics-industry equipment. For the Vietnam Plastics Association: organizing and coordinating joint raw-material purchasing groups; developing and publishing an annual set of industry benchmark indicators (COGSR, ATO, debt maturity structure, WACC, SGR); and serving as a focal point for accessing international funding programs and training member enterprises in financial management.

CONCLUSION

With the objective of clarifying capital mobilization for the financially sustainable growth of listed plastics enterprises in Vietnam, the dissertation has combined an analysis of the current situation over 2019-2025 with quantitative testing on 28 enterprises and has achieved the following main results.

First, in terms of theory: the dissertation establishes the concept of an enterprise's sustainable growth from a financial perspective, measured by SGR under Higgins's model and compared with AGR; it clarifies what SGR can reflect and what requires supplementary indicators such as solvency, maturity balance and debt obligations; it identifies the AGR-SGR gap as a signal of financing pressure rather than a measure of the capital shortfall; and it analyzes the mechanism through which each capital-mobilization channel exerts its effect under the specific conditions of the plastics industry.

Second, in terms of the current situation: total capital rose from VND 41,102 billion to VND 71,663 billion, the debt ratio remained stable at around 0.55, and WACC ranged from 6.32% to 7.73%; however, average AGR of 8.28% is double SGR of 4.11%, short-term debt accounts for 64%-72% of total debt, the gross margin is only about 13.4%, and bonds and finance leases are used by only 5 and 8 of the 28 enterprises respectively; the divergence among the three SGR groups is deepening, with the gap in average total capital between the above-average group and the negative-SGR group widening from 4.56 times to 8.37 times.

Third, in terms of testing results: share-issuance capital and new borrowing are clearly positively associated with AGR but weakly or insignificantly with SGR; the short-term debt ratio is positive for SGR but negative for AGR; trade credit and the growth rate of outstanding bank loans are negative for SGR; the cost of capital is negative for AGR; and total asset turnover is the only variable positively associated with both indicators. The results are robust to the treatment of extreme values, and there is no evidence of lagged reverse causality.

Fourth, in terms of solutions: the dissertation proposes four groups of solutions through 2030, with a vision to 2035, namely new capital mobilization; adjustment of the financing structure and maturity; improvement of capital-use efficiency; and supporting solutions. Each solution is linked to a specific limitation, its quantitative thresholds are justified, and its roadmap is differentiated by enterprise group, accompanied by recommendations to the State, financial institutions and the Vietnam Plastics Association.

The dissertation still has certain limitations: the sample of 28 listed enterprises does not fully represent the roughly 4,000 enterprises in the industry and is skewed toward the packaging segment; with 28 enterprises and 7 years, sufficiently strong instruments could not be found for the new capital-mobilization variables, so their coefficients reflect only statistical associations, and the model does not include macroeconomic variables; SGR and AGR do not fully capture environmental, social and governance aspects; and the causes are mainly inferred from financial statements and have not been verified by surveys. Directions for future research: extending the sample to unlisted enterprises and estimating by segment; using longer data series or policy shocks as instruments; developing a set of sustainable-growth indicators integrating ESG; and combining surveys and interviews with managers.