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The Investment Opportunity Set, Capital Structure, and Dividend Policies in Different Corporate Life Cycles: Evidence from Thailand

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ABSTRACT

The purpose of this paper is to investigate the relationship between the investment opportunity set (IOS), capital structure, and dividend policy in Thailand, which is one representative of emerging countries. The paper extends prior literature on the IOS by examining the impact of the corporate life cycle on the relationship between IOS and financial policies. The analysis is based on the annual data of firms listed in the Stock Exchange of Thailand between the years 2000 and 2019. The results show a positive relationship between IOS and the leverage ratio, which provides evidence in favor of the signaling theory. However, firms with high growth opportunities are likely to pay lower dividends since they have lower free cash flows. Moreover, the results reveal that corporate life cycle has positive moderating effects on the relationship between IOS and leverage ratio. This can be interpreted as firms in the growth and maturity stages tend to use more debt funding compared to firms in the earlier, shake-out, and decline stages of the life cycle. Adversely, the moderating effects of corporate life cycle on the relationship between IOS and divided policy is not significant.

Keywords: Investment Opportunities Set (IOS), Capital Structure, Dividend Policy, Corporate Life Cycle

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โอกาสในการลงทุน โครงสร้างเงินทุน และการจ่ายเงินปันผล ในวงจรชีวิตธุรกิจที่แตกต่างกัน: หลักฐานเชิงประจักษ์จากประเทศไทย

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บทคัดย่อ

บทความนี้มีวัตถุประสงค์เพื่อศึกษาความสัมพันธ์ระหว่างโอกาสในการลงทุน โครงสร้างเงินทุน และนโยบายการจ่ายเงินปันผลในวงจรชีวิตธุรกิจที่แตกต่างกันของบริษัทในประเทศไทยซึ่งเป็นตัวแทนของตลาดทุนเกิดใหม่ งานวิจัยนี้ขยายการศึกษาในอดีตโดยเพิ่มการตรวจสอบผลกระทบของวงจรชีวิตขององค์กรที่มีต่อความสัมพันธ์ระหว่างโอกาสในการลงทุนและนโยบายทางการเงิน โดยวิเคราะห์ข้อมูลประจำปีของบริษัทที่จดทะเบียนในตลาดหลักทรัพย์แห่งประเทศไทยระหว่างปี ค.ศ. 2000 - 2019 ผลการศึกษาแสดงความสัมพันธ์เชิงบวกระหว่างโอกาสในการลงทุนและอัตราส่วนหนี้สิน ซึ่งสอดคล้องกับทฤษฎีการส่งสัญญาณ นอกจากนี้บริษัทที่มีโอกาสในการลงทุนในระดับสูงมีแนวโน้มจะจ่ายเงินปันผลน้อยลงเนื่องจากมีกระแสเงินสดอิสระต่ำ ผลการศึกษายังพบว่าวงจรชีวิตขององค์กรมีอิทธิพลกำกับในเชิงบวกต่อความสัมพันธ์ระหว่างโอกาสในการลงทุนและอัตราส่วนหนี้สินโดยหากบริษัทมีโอกาสในการลงทุนที่ระดับเดียวกัน บริษัทที่อยู่ในช่วงเจริญเติบโตและช่วงอิ่มตัวมีแนวโน้มที่จะใช้เงินทุนจากการกู้ยืมมากกว่าบริษัทที่อยู่ในช่วงเริ่มต้นและช่วงถดถอยของวงจรชีวิตธุรกิจ อย่างไรก็ตามวงจรธุรกิจไม่มีอิทธิพลกำกับต่อความสัมพันธ์ระหว่างโอกาสในการลงทุนและอัตราการจ่ายเงินปันผล

คำสำคัญ: โอกาสในการลงทุน โครงสร้างเงินทุน นโยบายการจ่ายเงินปันผล วงจรชีวิตธุรกิจ

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Introduction

As the assets and profits of companies reveal potential growth in the future, they are expected to play an important role in corporate finance. The literature on the investment opportunity set (IOS) (Smith & Watts, 1992) has proposed that the IOS is one of many firm characteristics that represent corporate potential growth or growth opportunity. It governs the contracting relationships among parties and also determines corporate policies such as capital structure, maturity, and the covenant structure of debt contracts, dividends, and compensation policies (Baber, Janakiraman, & Kang, 1996; Billett, King, & Mauer, 2007; Gul, 1999a). The explanations for the significant relationship between the IOS and corporate policies are based on contracting theory and empirically tested by many scholars (e.g., Astami & Tower, 2006; Barclay & Smith, 2005; Kaplan & Strömberg, 2003; Smith & Watts, 1992). According to contracting theory, firms with more investment opportunities are expected to have lower debt and exhibit significantly lower dividend yields (Gaver & Gaver, 1993; Gul, 1999a).

Heterogeneity in corporate financing and dividend decisions are attributed to differences in contracting costs that arise from cross-sectional variation in a growth opportunity. The decision to become levered involves a tradeoff between the costs and the benefits of debt financing. One of the most important costs of debt financing is the potential for conflicts between stockholders and bondholders over the investment and financing policies of the firm. Decisions in both financing and dividend policies affect the agency relationships in two ways: (i) according to the agency explanation, leverage and dividends modify the interest conflict among the cash flow claim holders; (ii) according to the asymmetric information explanation, both decisions convey information to capital markets, mitigating adverse selection problems (Harris & Raviv, 1991).

Many empirical studies have been conducted to date, at both the industry and the firm level, to disentangle the relationship between the corporate growth opportunity and financial policies. At the industry level, Smith and Watts (1992) found that corporate financing, dividend, and compensation policies are significantly affected by a firm's growth. More specifically, they found that firms with more growth opportunities use less debt in their capital structures, pay fewer dividends and more executive compensation, and rely more on stock option plans. At the firm level, many scholars conducted analyses indicating that growth firms have lower debt to equity ratios, lower dividend yields, higher cash compensation for their executives, and higher incidence of stock option plans than non-growth firms (Gaver & Gaver, 1993). Gul (1999a) also extended the works of Smith and Watts (1992) to samples of firms from Japan and China. Although most of the past empirical results are consistent with the contracting cost arguments that suggest a negative association between growth opportunities and financing and dividend policies, the studies have been conducted primarily in the context of developed countries, especially the U.S.

The purpose of this paper is to investigate the relationship between investment opportunities, capital structure, and dividend policies in the emerging country of Thailand. Researchers found that country factors, taxes, and bankruptcy costs influence decisions in capital structure and dividend policies (Barclay, Smith, & Watts, 1995). In emerging economies, where bankruptcy laws are often weak, the capital market is imperfect, and debtors have greater bargaining power, high leverage and dividends could have important benefits for controlling a natural corporate tendency to overinvest (Aivazian, Booth, & Cleary, 2003; Fan, Huang, & Zhu, 2009). Therefore, this paper investigates how firms in Thailand, which is one of the fastest growing emerging economy in Southeast Asia (Vinayak, Thompson, & Tonby, 2014), determine the financial policy decision in response to future growth opportunities and whether it is different from that of the developed countries.

This paper also expands the literature on the IOS by examining the impact of the corporate life cycle on the relationship between the IOS and financial policies, namely financial leverage and dividends. Firms in different stages of life are expected to exhibit different financing behaviors and different dividend payout policies. Small and young firms generally finance their operations and investments through private equity and debt markets, while larger and more mature firms mainly rely on public markets (Bender & Ward, 1993; Berger & Udell, 1998). Profitable firms with higher free cash flow in the maturity stage are more likely to pay dividends than firms in the early stage (Bulan, Subramanian, & Tanlu, 2007; Coulton & Ruddock, 2011; DeAngelo, DeAngelo, & Stulz, 2006).

Private firms in European emerging economies also exhibit higher leverage ratios than public firms (Berk, 2007; Goyal, Nova, & Zanetti, 2011). However, access to credit for small and medium-sized enterprises in emerging economies is more limited and require a higher degree of collateralization to reduce credit risk and informational asymmetry from less developed legal and institutional environment (Bae & Goyal, 2009; Menkhoff, Neuberger, & Suwanaporn, 2006). Credit access among Thai SMEs is found to increase with firms' age, assets, and sales. The market for Alternative Investment (MAI) increases access to capital via equity financing for well-established Thai medium enterprises (Punyasavatsut, 2011).

The preceding discussion highlights the important roles of investment opportunity and the corporate life cycle in financial policies and points to the necessity of studying the effect of the IOS in different institutional environments. Unlike firms from developed markets where shareholders are more widely dispersed, firms listed on the Stock Exchange of Thailand are historically dominated by family firms (Swanpitak, Pan, & Suardi, 2020). Management literature has suggested that family and non-family businesses exhibit different financial policies i.e. capital structure and dividend payout rate (Gallo & Vilaseca, 1996). Additionally, the environment of unstable democracy, high economic and political uncertainty in Thailand could influence corporate financial policies (Apaitan, Luangaram, & Manopimoke, 2020).

This paper is organized as follows: Section 2 provides the theoretical framework for the IOS, corporate structure, dividend policy, and the corporate life cycle, including hypothesis development. The sample selection and variables measurements are presented in Section 3. Section 4 provides the empirical results. The discussion and the conclusion are presented in Section 5.

Literature Review

The Investment Opportunity Set

The investment opportunity set (IOS) is a function of growth options, firm size, and prospective investment opportunities that vary across firms (Jensen & Meckling, 1976; Myers, 1977). It is equivalent to capital assets that add value to a firm but cannot be collateralized and do not generate current taxable income (Long & Malitz, 1985; Titman & Wessels, 1988). Following the work of Myers (1977), growth opportunities are considered in terms of the proportion of the firm value accounted for by assets-in-place; the lower the fraction of the firm value represented by assets-in-places, the greater the firm's growth opportunities. Merton (1998) also pointed out that firms with growth options have relatively more capital expansion projects, new product lines, acquisitions of other firms, and maintenance and replacement of existing assets.

The IOS is one of the characteristics that indicate a specific firm's future growth opportunity and determine corporate policies and organizational behaviors. The IOS has been found to influence a firm's earnings management (Chen, Elder, & Hung, 2010), financial policies (Ho, Lam, & Sami, 2004; Smith & Watts, 1992), and the composition of the board of directors (Hossain, Cahan, & Adams, 2000). Firms have the option to exercise the future investment opportunity which leads to actual investment. Therefore, the firms value depends on the present value of options to make further investments on possibly favorable terms (Myers, 1977).

The IOS and Capital Structure

Firms' decisions to exercise the option of future investment and financing policy are mutually related. On the one hand, a firm with risky debt outstanding, a firm with risk-free debt, or a firm with no debt at all are expected to exhibit different decisions with regard to valuable investment opportunities. When capital markets are imperfect, the market value of a firm is reflected through financial decisions. Thus, stockholders of a leveraged firm may choose the investment policy that does not maximize the market value of the firm (Miller & Modigliani, 1961; Modigliani & Miller, 1958). On the other hand, firms with more growth options choose not to finance through risky debt to control the conflict between the shareholders and the debtholders as well as the agency cost of debts (Gaver & Gaver, 1993; Kallapur & Trombley, 1999; Myers, 1977; Smith & Watts, 1992). A negative relationship between growth opportunities

and debt financing is supported by Goyal, Lehn, and Racic's (2002) study of firms' behavior in the U.S. defense industry, in Japanese, Australian and UK firms (Gul, 1999a; Jones & Sharma, 2001; Ozkan, 2001).

The empirical studies in the context of emerging countries, are more limited and the findings are mixed. Hence, further investigation is necessary to shed further light on the issue. Empirical evidences from Thailand (Deesomsak, Paudyal, & Pescetto, 2004), Czech (Bauer, 2004), Malaysia (Ardestani, Rasid, & Mehri, 2013) and China (Gul, 1999b; Huang, 2006) indicated that IOS has significant negative impact on debt financing. However, using the data of Vietnamese firms, Vo (2017) found that when disaggregated leverage to short-term and long-term, growth opportunity is not a statistically significant determinant against either of them. Arsov and Naumoski (2016) found the significant positive impact of growth opportunity on leverage for companies in Balkan countries.

The contradicting effect of IOS on capital structure could be explained by two mainstream theories: signaling and contracting arguments (Smith & Watts, 1992). The signaling theory is based on the impact of information asymmetries. Firms with high growth opportunities face greater information disparities and, accordingly, managers who have better information than investors are expected to communicate their confidence in the firm's prospects through a credible signaling mechanism i.e. increasing debt level (Barclay & Smith, 2005). Therefore, this signaling effect predicts a positive association between IOS and debt financing.

The negative effect of growth opportunities on debt financing could be explained by contracting theory, which is used to develop our hypothesis in this study. Contracting theory suggests that a firm uses short-term debt and restrictive covenants in debt contracts to mitigate stockholder–bondholder conflicts. Otherwise, rational bondholders anticipate conflicts and will require a higher cost of debt financing. Firms, therefore, attempt to mitigate potential conflicts over the exercise of future growth options by using less debt financing. Drawing upon the arguments above, many past studies predicted that firms with significant growth opportunities would be expected to have lower debt because the potential underinvestment was controlled in less-leveraged firms (e.g., Billett et al., 2007; Gaver & Gaver, 1993; Gul, 1999a).

According to the contracting perspective, firms with more growth opportunities are less likely to issue debt for two reasons. First, managers of firms with higher growth opportunities reduce debt value to transfer future wealth to the shareholders. Otherwise, managers of leveraged firms, who act on behalf of the shareholders, may decide not to undertake positive net present value investments to avoid the possibility of the payoffs going to debtholders. This opportunity loss of wealth caused by the impact of debt on investment decisions is also called the agency costs of debt.

The agency cost of debt occurs in the presence of risky debt outstanding. As corporate growth is associated with potential investment opportunities, holding debt may increase financial distress and create potential conflicts of interest between managers, stockholders, and debtholders (Mao, 2003). Such conflicts

could encourage inefficient managerial decisions and induce suboptimal investments that generally lead to the problems of underinvestment and overinvestment. Suboptimal investment decisions may cause firms to lose value, which constitutes a significant component of the agency cost of debt (Jensen & Meckling, 1976; Myers, 1977). Additionally, the agency cost of debt is sometimes high enough to compromise tax benefits of the debt, which explains why many firms, despite their high profits, prefer using equity as a source of financing even though it is more expensive (Harris & Raviv, 1996; La Rocca, La Rocca, & Cariola, 2007).

Second, the managers of firms with higher growth opportunities reduce debt finance to mitigate the asset substitution problem. Given that debt has been issued, the asset-substitution problem occurs when managers acting on behalf of shareholders opportunistically undertake new investment projects that are riskier than the firm's average project. If the debt was issued and priced based on of existing investments, undertaking riskier projects would end up causing a devaluation of the debt. Thus, the debt's market value would decrease, and wealth would be transferred to the shareholders at the cost of debtholders (Jensen & Meckling, 1976).

Firms with greater growth opportunities may face potentially more severe asset substitution problems because it is likely easier to increase the risk of new investments than assets in place. Moreover, the monitoring costs of outside debt are increasing in the IOS or growth opportunities. Unlike tangible assets, which can serve as collateral, creditors would need to do more monitoring to control the asset substitution problem for growth opportunities, which are considered intangible assets (Jensen & Meckling, 1976). Since shareholders bear all of the monitoring costs of outside debt, firms with high growth opportunities are expected to minimize their total contracting costs by minimizing their reliance on outside debt (Guay, 2008). Firms have options to replace the long maturity debt by short-term debt (Johnson, 2003) or equity (Lewis, Rogalski, & Seward, 2003). In light of the above theoretical and empirical discussions, other things being equal, firms with more growth opportunities are less likely to issue debt, which leads to the following hypothesis:

H1: The IOS has a negative relationship with the leverage ratio.

Investment Opportunity Set and Dividend Policy

A review of the literature suggests two explanations for the association between growth opportunities and dividend policy. The first explanation, which relies on the signaling hypothesis, suggests that firms with a high growth option may promise larger dividends in order to signal to the market their higher quality. This explanation is consistent with the views of prior studies, such as Bhattacharya's (1979), who revealed that high growth firms are likely to pay higher dividends to decrease information asymmetry between the management and the investors. Therefore, high dividend payment is expected to be related to high investment opportunities.

The second explanation is the contracting costs perspective. According to this perspective, dividend payments reduce resources from the firm and thus aid in easing the agency costs of free cash flows. Then, dividends may serve as incentive roles (Jensen, 1986; Milgrom & Roberts, 1992). Prior empirical also supports the argument that firms with more growth options (i.e., greater access to positive net present value projects) pay lower dividend yields (Gul, 1999a, 1999b; Rozeff, 1982; Smith & Watts, 1992). This assumes that, on the one hand, firms with high growth opportunities pay lower dividends because they have lower free cash flows and less flexibility in their dividend policy (Smith & Warner, 1979). On the other hand, firms without potential investment opportunities have more free cash flow and thus prefer to pay higher dividends to reduce the agency costs associated with the high free cash flow (Jensen, 1986). Without potential investment, firms may prefer to pay higher dividends rather than committing to negative net present value projects (Gaver & Gaver, 1993; Smith & Warner, 1979). Most of the recent empirical studies in emerging countries, such as China, Brazil, Chile, Greece, and Indonesia, draw upon contracting costs arguments to explain the significant negative relationship between the investment opportunity set and dividend payout policy (Abor & Bokpin, 2010; Gul, 1999b; Ho, Lam, & Sami, 2004). Thus, we expect a negative association between growth opportunities and dividends in the context of Thailand and propose the following hypothesis:

H2: The IOS has a negative relationship with the rate of dividend payout.

Corporate Life Cycle

Corporate life cycle models have been studied in the business strategy literature since the 1960s. The theory of organizational life cycle is based on the notion that organizational growth and increasing environmental complexity causes firms in each stage of life to exhibit certain significantly different characteristics from the other stages (Dodge, Fullerton, & Robbins, 1994; Dodge & Robbins, 1992).

While most of the literature in the early years was conceptually based that firms inevitably evolve and transit in a linear progression from birth to decline (e.g., Adizes, 1979; Greiner, 1989), Miller and Friesen (1984) used a longitudinal study of 36 firms to provide evidence that the organizational life cycle has significant effects on organizational behavior—firms in each stage have distinct characteristics and different sets of organizational structures, strategies, and activities. Several studies later on provided empirical evidence from several contexts to confirm that firms in different life cycle stages exhibit different decision making in M&A activity (Owen & Yawson, 2010), stakeholder's policy (Jawahar & McLaughlin, 2001), capital structure (Hasan, Hossain, & Habib, 2015; Pinková & Kamínková, 2013), and corporate governance (O'Connor & Byrne, 2015).

Because firms in different life cycle stage are found to be different in size, characteristics in terms of structure, strategies and decision-making, they, therefore, are expected to exhibit different financial policies (Faff, Kwok, Podolski, & Wong, 2016). Bender and Ward (1993) report that the financial structure of

firms changes over the life cycle. Small and young firms generally raise funds through private equity and debt markets, while larger and more mature firms tend to rely more on public markets (Berger & Udell, 1998; Brav, 2009). Due to an improvement in debt servicing ability, a firm will gradually increase its debt issuance as it moves from its introduction phase to the mature phase and issue less debt when it evolves toward shake-out/decline phase (DeAngelo et al. 2006). Moreover, according to the resource-based view, mature firms are large, diverse, and rich, while young and declining firms are small, concentrated, and limited. Having superior competitive advantages and capacities, mature firms tend to be in a better position to raise adequate capital at a lower cost. Empirical evidence also indicates that mature and profitable firms are more likely to pay dividends, while young firms with higher growth options are less likely to do so (Coulton & Ruddock, 2011; DeAngelo et al., 2006; Fama & French, 2001; Grullon, Michaely, & Swaminathan, 2002).

The association between life cycle and financial policies could be further explained by cash flow patterns in each stage. Cash flows are equally valuable in measuring firm performance and are more reliable than accruals in predicting dividend changes. A firm's decision to reduce or increase dividends partly reflects its liquidity position. Since cash flows are a more direct measurement of liquidity, it is likely to be a significant determinant of the dividend payout rate (Charitou & Vafeas, 1998). Free cash flow is found to positively related to cash dividend (Mirza & Azfa, 2010) and firms with excess cash flow signal their performance with higher leverage (Crutchley & Jensen, 1996; Shenoy & Koch, 1996; Wu, 2004). Although cash flow could be generated from investment, financing and operating activities, most of researchers use operating cash flow as the measurement of free cash flow because operating cash flow have better predictive ability for firms' value than earnings (Barth, Cram, & Nelson, 2001). Business organizations cannot survive in the long-run without generating cash flows from operations (Fatma & Chichti, 2011; Mirza & Azfa, 2010; Richardson, 2006).

In this study, we adopt the model developed by Dickinson (2011) to investigate the effects of the corporate life cycle on corporate financial decisions, including the decision on capital structure and dividend policy. According to the study, firms are classified into 5 corporate life cycle stages based on the cash flow patterns. While other stages have either negative or mixed operating cash flows, firms in growth and maturity stage have positive operating cash flow. We, therefore, expect that firms in growth and maturity stages are more likely to have higher debt and pay more dividend in response to specific level of IOS. Based on the above discussion and literature review, the hypotheses are:

H3a: Corporate life cycle stages moderate the relationship between the IOS and the leverage ratio: Firms in the growth stage and the maturity stage, which have positive operating cash flow, are more likely to have higher debt in response to the specific rate of IOS.

H3b: Corporate life cycle stages moderate the relationship between the IOS and the rate of dividend payout: Firms in the growth stage and the maturity stage, which have positive operating cash flow, are more likely to pay higher dividend in response to the specific rate of IOS.

Research Methodology

Sample and Data

This study examines the effects of the IOS and the corporate life cycle on the corporate finance and the dividend payout policies of public companies in Thailand. Our dataset was composed of financial data for publicly traded firms in the Stock Exchange of Thailand (SET), excluding financial institution, trust, and funds, for the 2000–2019 period. This yielded a panel data set of 7,420 firm-year observations. Additionally, we exclude from the regressions all firm years with negative book equity (99 firm-year observations). In addition, to reduce the effect of any outliers, we trimmed the top and bottom of the sample for variables that have distribution problem (253 firm-year observations). Data collection resulted in the final sample of 7,068 firm-year observations.

The industry classification was based on the Global Industry Classification Standard (GICS) codes. The major industries in the sample were consumer discretionary (16.19%), industrial goods and services (16.04%), and materials (15.05%).

Empirical Model

We estimated the panel data regression model to test hypotheses 1, 2, 3a, and 3b. We conducted the Hausman specification test (Hausman, 1978) to compare the fixed-effect and the random-effect models. The null hypothesis was rejected at the 1% significance level, which suggested that the fixed-effect model was more appropriate. A one-year lag for the independent variables is applied to minimize problems of endogeneity. Therefore, four fixed-effect models were estimated.

The following models (1) and (2) are estimated to examine the effect of IOS on leverage ratio and the rate of dividend payout.

$$\mathrm{DEBT}_{i,t} = \beta_0 + \beta_1 \mathrm{IOS}_{i,t-1} + \beta_2 \mathrm{SIZE}_{i,t-1} + \beta_3 \mathrm{ROA}_{i,t-1} + \beta_4 \mathrm{RETA}_{i,t-1} + \beta_5 \mathrm{GROW}_{i,t-1} + \eta_i + \upsilon_t + \varepsilon_{i,t} \quad (1)$$

$$\mathrm{DIVYLD}_{i,t} = \beta_0 + \beta_1 \mathrm{IOS}_{i,t-1} + \beta_2 \mathrm{SIZE}_{i,t-1} + \beta_3 \mathrm{ROA}_{i,t-1} + \beta_4 \mathrm{RETA}_{i,t-1} + \beta_5 \mathrm{GROW}_{i,t-1} + \eta_i + \upsilon_t + \varepsilon_{i,t} \quad (2)$$

$\mathrm{DEBT}_{j,t}$ was a proxy for the corporate level of total debt for firm *i* at time *t*, $\mathrm{DIVYLD}_{j,t-1}$ measured as the percentage of dividend yield, and $\mathrm{IOS}_{i,t-1}$ referred to an investment opportunity set. As control variables, $\mathrm{SIZE}_{i,t-1}$, $\mathrm{ROA}_{j,t-1}$, $\mathrm{RETA}_{i,t-1}$, $\mathrm{GROW}_{i,t-1}$ were proxies for size, profitability, retained earnings ratio, and

sales growth rate. η_i was company-fixed effects, ν_t was period-fixed effects, and $\varepsilon_{i,t}$ was the zero-mean disturbance term.

Model (3) and (4) are estimated to examine the moderating effect of corporate life cycle on the relationship between IOS, leverage ratio and the rate of dividend payout. The dummy variable of the growth and maturity stages (GM_DUMMY) is multiplied with IOS to create the interaction terms and added to model (1) and (2). The following equations are estimated to test hypotheses 3a and 3b:

$$\mathrm{DEBT}_{i,t} = \beta_0 + \beta_1 \mathrm{IOS}_{i,t-1} + \beta_2 \mathrm{GM\_DUMMY}_{i,t-1} + \beta_3 \mathrm{IOS}_{i,t-1} * \mathrm{GM}_{\mathrm{DUMMY}_{i,t-1}} + \beta_4 \mathrm{SIZE}_{i,t-1} + \beta_5 \mathrm{ROA}_{i,t-1} + \beta_6 \mathrm{RETA}_{i,t-1} + \beta_7 \mathrm{GROW}_{i,t-1} + \eta_i + \upsilon_t + \varepsilon_{i,t} \quad (3)$$

$$\mathrm{DIVYLD}_{i,t} = \beta_0 + \beta_1 \mathrm{IOS}_{i,t-1} + \beta_2 \mathrm{GM\_DUMMY}_{i,t-1} + \beta_3 \mathrm{IOS}_{i,t-1} * \mathrm{GM}_{\mathrm{DUMMY}_{i,t-1}} + \beta_4 \mathrm{SIZE}_{i,t-1} + \beta_5 \mathrm{ROA}_{i,t-1} + \beta_6 \mathrm{RETA}_{i,t-1} + \beta_7 \mathrm{GROW}_{i,t-1} + \eta_i + \upsilon_t + \varepsilon_{i,t} \quad (4)$$

Variables and Measurements

Dependent Variables

In this study, we adopted the following proxies to measure financing and dividend policy: *leverage ratio* (DEBT) was measured by total liabilities to total book equity ratio, and *dividend yield* (DIVYLD*)* was defined as the percentage of cash dividend paid over a calendar year per share to calendar year-end market price per share. These proxies are widely used in the empirical studies of corporate financing policy (e.g., Aivaziana, Ge, & Qiu, 2005; Gul, 1999a; Johnson, 2003; Lang, Ofek, & Stulz, 1996).

Independent Variables

The investment opportunity set (IOS) is measured by the ratio of the market value of an asset to the book value of assets. This ratio is related to the proportion of the firm value accounted for by assets in place and hence directly related to the proportion of the firm value accounted for by its investment opportunities. A number of recent studies have used this proxy to examine the relationship between growth opportunities and several financial policies (Barclay & Smith, 1995; Barclay, Smith, & Morellec, 2006; Goyal et al., 2002).

Importantly, Adam and Goyal (2008) provided evidence that the market-to-book asset ratio is the best proxy for growth opportunities, demonstrating that it has the highest correlation with a firm's actual investment opportunities, reflects the information in other proxies, and is least affected by confounding factors. Following the standard convention in the literature, an index of a firm’s investment opportunities was operationalized as follows:

IOS = [(shares outstanding x share closing price) + debt book value] / assets book value

The Corporate Life Cycle

To examine the effect of the corporate life cycle, the empirical model was estimated for firms in each specific life cycle. The corporate life cycle was classified into 5 stages. Although there are many methodologies to classify the phases of the corporate life cycle—for example, by using a firm's age or the level of retained earnings—life cycle of each firm in this study was proxied by the cash flow patterns method by Dickinson (2011).

Dickinson (2011) identifies the corporate life cycle stage using a firm's cash flow statement. The author argues that cash flow captures differences in a firm's profitability, growth, and risk. Therefore, different balances of cash flow from operating (CFO), investing (CFI), and financing (CFF) can be used to classify the corporate life cycle into 5 stages: introduction, growth, maturity, shake-out (or revival), and decline. A firm falls into a specified stage of the life cycle when the combination of positive or negative signs of cash flows from operating (CFO), investing (CFI), and financing (CFF) are as shown in Table 1. The corporate life cycle (GM_DUMMY) is a dummy variable coded 1 if the firms are classified into the growth or maturity stages, and 0 otherwise.

Table 1. The Five Stages in a Firm's Life Cycle

Predicted Signs	Introduction	Growth	Maturity	Shake-out			Decline	
Cash flows from operating activities	-	+	+	-	+	+	-	-
Cash flows from investment activities	-	-	-	-	+	+	+	+
Cash flows from financing activities	+	+	-	-	+	-	+	-

Control Variable

In this study, the several important factors that could affect decision making in corporate policies were controlled. Firm size (SIZE) as measured by the natural logarithm of total assets was controlled because it was expected to be associated with capital structure and dividend payments (Berger & Udell, 1995; Coulton & Ruddock, 2011). We also controlled for performance that was expected to influence a firm's capital structure and capability to pay dividends (Pruitt & Gitman, 1991; Wald, 1999). The firm's performance was measured by the rate of return on total assets (ROA). Return on assets (ROA) is calculated by taking a company's net operating profit after tax (NOPAT) divided by the company's total assets. Because dividend payout ratio and capital structure are found to be the function of retained earnings and sales growth (Gill, Biger, & Tibrewala, 2010), the retained earnings as a proportion of total assets (RETA) and sales growth (GROW) as current sales over previous sales are also controlled.

Research Finding

Panel A of Table 2 presents the mean, the median maximum, the minimum, and the standard deviation and based on pooled data. The mean (median) value of leverage ratio (DEBT) was 1.2072 (0.7142) times total assets. It found that the companies paid dividends (DIVYLD) ranging from zero to 32.9670 percent with an average of 4.0659 percent. The mean (median) value of investment opportunities (IOS) was 1.3393 (1.0854) times book values of assets. Panel B of Table 2 presents the Pearson pairwise correlation among all variables. The IOS was negatively related to DEBT and DIVDYLD ($p > 0.005$ and $p > 0.001$ respectively).

Table 2. Descriptive Statistics of All Variables (n = 7,068)

Panel A. Descriptive Statistics

	DEBT	DIVDYLD	IOS	SIZE	ROA	RETA	GROW
Mean	1.2072	4.0659	1.3393	8.3913	0.0612	0.1694	1.1090
Median	0.7142	3.4483	1.0854	8.1750	0.0617	0.1845	1.0558
Maximum	43.1863	32.9670	6.9631	14.7256	0.5069	0.9449	5.3956
Minimum	0.0002	0.0000	0.1318	4.6454	-0.5075	-14.9112	0.2099
Std. Dev.	2.2922	3.6368	0.8375	1.5008	0.0781	0.4623	0.3875

Panel B. The Pearson Correlation Matrix

	1	2	3	4	5	6
1) DEBT						
2) DIVDYLD	-0.1402***					
3) IOS	-0.0273**	-0.1522***				
4) SIZE	0.1225***	-0.0793***	0.0929***			
5) ROA	-0.1132***	0.1062***	0.3496***	0.0938***		
6) RETA	-0.2381***	0.1367***	-0.0088	0.1053***	0.3099***	
7) GROW	0.0174	-0.1005***	0.0596***	0.0487***	0.1274***	-0.0741***

Note: 1) ***, **, and * denote 1%, 5%, and 10% significance, respectively. 2) Variable definitions are as follows: *DEBT* is measured by the total debt-to-book equity ratio; *DIVYLD* is defined as the percentage of dividend per share to market price per share; *IOS* is measured by the ratio of the market value of an asset to the book value of assets; SIZE is the natural logarithm of total assets; *ROA* is measured by the ratio of net operating profit after tax on total assets; *RETA* is the retained earnings as a proportion of total assets; *GROW* is the sales growth measured by current year sales over prior year sales.

Table 3. Descriptive Statistics for the Leverage Ratio, Dividend Yield, and Investment Opportunity Set Classify by Life Cycle Stages

Panel A. Leverage Ratio Classify by Corporate Life Cycle

Stage	Introduction	Growth	Maturity	Shake-out	Decline
(N)	904	1,664	3,541	672	287
Mean	1.8664	1.3458	1.0294	1.3174	1.5623
Median	1.3100	1.0226	0.5694	0.5596	0.9178
Maximum	40.4701	27.6968	42.5009	43.1863	21.0569
Minimum	0.0117	0.0206	0.0041	0.0039	0.0069
Std. Dev.	2.9185	1.6515	2.1127	3.3994	2.4339

Panel B. Dividend Yield Classify by Corporate Life Cycle

Stage	Introduction	Growth	Maturity	Shake-out	Decline
(N)	904	1,664	3,541	672	287
Mean	3.8246	3.3116	4.3464	4.1634	3.4136
Median	2.8198	2.4194	3.8037	3.4965	1.8657
Maximum	26.2570	28.2474	32.9670	31.7073	20.9424
Minimum	0.0000	0.0000	0.0000	0.0000	0.0000
Std. Dev.	4.0494	3.3794	3.4737	4.1440	4.2370

Panel C. Investment Opportunities Set Classify by Corporate Life Cycle

Stage	Introduction	Growth	Maturity	Shake-out	Decline
(N)	904	1,664	3,541	672	287
Mean	1.2061	1.4357	1.3942	1.2497	1.2520
Median	1.0351	1.1788	1.1004	1.0085	1.0408
Maximum	5.8094	6.8902	6.9631	6.7156	5.5068
Minimum	0.2540	0.2153	0.1318	0.2412	0.3348
Std. Dev.	0.6118	0.8307	0.9158	0.8184	0.7289

Table 3, Panels A, B, and C show that, among the five corporate life cycle, firms in the introduction and the decline have higher debt than during the growth, maturity, and the shake-out stage. Also, firms in the growth stage pay the fewest dividends among the five cycles. Furthermore, firms in the growth and the maturity have higher IOS value.

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Table 4. Coefficient Estimates and Standard Errors (in Italics) from the Regression of the Investment Opportunity Set on the Leverage Ratio and Dividend Yield

Variable	Expected sign	Dependent Variable	
		DEBT	DIVYLD
Intercept		-2.8055***	2.8148***
		0.49	*0.73*
IOS	-	0.1328***	-0.2997***
		0.05	*0.07*
SIZE	+	0.5337***	0.1995**
		0.06	*0.09*
ROA	- /+	-3.4906***	6.7599***
		0.39	*0.58*
RETA	- /+	-2.1848***	0.3125***
		0.12	*0.10*
GROW		-0.0240	-0.3588***
		0.06	*0.09*
F-value		7.05***	9.36***
Adj-R^2		0.39	0.46

Note: 1) ***, **, and * denote 1%, 5%, and 10% significance, respectively. 2) Variable definitions are as follows: *DEBT* is measured by the total debt-to-book equity ratio; *DIVYLD* is defined as the percentage of dividend per share to market price per share; *IOS* is measured by the ratio of the market value of an asset to the book value of assets; *SIZE* is the natural logarithm of total assets; *ROA* is measured by the ratio of net operating profit after tax on total assets; *RETA* is the retained earnings as a proportion of total assets; *GROW* is the sales growth measured by current sales over prior year sales.

We conduct the Hausman specification test (Hausman, 1978) to compare the fixed effect and random effect models. The null hypothesis was rejected at the 1% significance level. The result suggested that fixed effect model is most appropriate in estimating growth opportunity equation. Table 4 shows the results for the two regression models. Using DEBT as a dependent variable, the coefficient of the IOS was positively significant. Therefore, hypothesis 1 was not supported. With respect to SIZE, we found the coefficient was positively significant. For other control variables, the coefficient of ROA and RETA were negatively significant. In other words, firms with high leverage ratios are large firms with low performance. Even though the results do not support hypothesis 1, the results are consistent with Tongkong (2012) and Komera and Lukose (2015), who documented that firms with high growth opportunities tend to have greater leverage.

Alternatively, as predicted, the coefficient of the IOS was negative and significant related to dividend yield. For control variables, the coefficient of SIZE, ROA and RETA were positively significant, whereas GROW was negatively significant. Therefore, hypothesis 2 was strongly supported. Consistent with the prior studies (Gul, 1999a) that firms with a high level of investment opportunities have lower dividends.

Table 5. Coefficient Estimates and Standard Errors (in Italics) from the Regression of the Investment Opportunity Set on the Leverage Ratio and Dividend Yield with Moderating Roles of the Growth and Maturity Stages

Variable	Expected Sign	(1) DEBT	(2) DIVYIELD
Intercept		-1.8343***	2.7574***
		0.51	*0.74*
IOS	-	0.0029	-0.3319***
		0.08	*0.11*
SIZE	+	0.4135***	0.1972**
		0.06	*0.09*
ROA	- /+	-4.6617***	6.6376***
		0.39	*0.58*
RETA	- /+	-0.4069***	0.3070***
		0.07	*0.10*
GROW		-0.0038	-0.3557***
		0.06	*0.09*
GM_DUMMY		-0.2798**	0.1133
		0.12	*0.17*
GM_DUMMY* IOS		0.1361*	0.0468
		0.08	*0.11*
F-value		6.26***	9.34***
Adj-R^2		0.36	0.46

Note: 1) ***, **, and * denote 1%, 5%, and 10% significance, respectively. 2) Variable definitions are as follows: *DEBT* is measured by the total debt-to-book equity ratio; *DIVYLD* is defined as the percentage of dividend per share to market price per share; *IOS* is measured by the ratio of the market value of an asset to the book value of assets; *GM_DUMMY* is a dummy variable for growth and maturity cycle stages; *SIZE* is the natural logarithm of total assets; *ROA* is measured by the ratio of net operating profit after tax on total assets; *RETA* is the retained earnings as a proportion of total assets; *GROW* is the sales growth measured by current sales over prior year sales.

Table 5 column (1) present the results of the estimation of hypothesis H3a, which predicted that firms in growth and maturity stages would show different financing behaviors in response to the specific rate of IOS. The results showed that the interaction term was positively significant at 10%. We found that business in growth and maturity stages has the effect of IOS on debts. The effect of IOS on debt was higher for firms in growth and maturity stages. Therefore, the results support hypothesis H3a. Consistent with the findings of Zhang and Xu (2020) who revealed that firms adopt debt at a higher level in the growth stage and reduce the debt level during the decline stage. For control variables, the coefficient of ROA and RETA were negatively significant, whereas SIZE was positively significant.

Table 5 column (2) presents the results of the estimation of hypotheses H3b, which predicted that firms in growth and maturity stages would have different dividend policies in response to the IOS. The estimated coefficient IOS was negatively significant at 1%. However, the results do not support H3b. Corporate life cycle stages do not moderate the relationship between IOS and dividend payout. The result is consistent with the findings of Botoc and Pirtea (2014) which suggest that business cycle appears to be insignificant in explaining the dividend payout. Dividend policy is more related to determinants such as profitability, debt, and market-to-book ratio. For control variables, SIZE, ROA and RETA were positively significant.

Robustness Check

In the main study, we focused on the effect of IOS on aggregate ratio of leverage which assume that all debt financing is the same. However, debt may differ in several important respects, including maturity, priority, convertibility, call provisions, covenant restrictions, and whether the debt is privately placed or held by public investors. Therefore, to check the robustness of the result, whether debt at different maturity shows different sensitivity against IOS, we ran another series of tests using a different proxy for leverage based on its maturity and characteristic.

In this section, we disaggregated debt measurements into current liability (CL), non-current liability (NCL), short term borrowing (STBOR), and long-term borrowing (LTBOR). Table 6 presents descriptive statistics. Table 7 shows that the coefficient of the IOS was positively significant at 5% for current liability (CL) and short-term borrowing (STBOR). For control variables, the coefficient of SIZE, ROA and RETA were significant. Consistent prior studies (Barclay & Smith, 1995; Myers, 1977) suggest that firms use debt of shorter maturity to minimize agency cost. Short-term debt is an instrument to discipline management reducing agency conflicts between managers and shareholders (Brockman, Martin, & Unlu, 2010).

Table 6. Descriptive Statistics of Disaggregated Debt Measurements

	CL	STBOR	NCL	LTBOR
Mean	0.8165	0.5039	0.4791	0.4928
Median	0.4446	0.2130	0.1752	0.2097
Maximum	37.3124	35.5910	23.4097	30.2269
Minimum	0.0010	0.0001	0.0001	0.0001
Std. Dev.	1.6625	1.4104	1.1849	1.2957

Note: Variable definitions are as follows: *CL* is measured by the current liability-to-equity ratio; *NCL* is measured by the non-current liability-to-equity ratio; *STBOR* is measured by the short-term borrowing-to- equity ratio; *LTBOR* is measured by the long-term borrowing-to- equity ratio.

Table 7. Coefficient Estimates and Standard Errors (in Italics) from the Regression of The Investment Opportunity Set on The Leverage Ratio Using Different Measurement of Debt

Variable	Dependent Variable			
	CL	NCL	STBOR	LTBOR
Intercept	-1.0613***	-1.6818***	-1.3923***	-1.1168***
	-1.06	*0.25*	*0.35*	*0.35*
IOS	0.0965***	0.0235	0.0761**	0.0154
	0.10	*0.02*	*0.03*	*0.03*
SIZE	0.2685***	0.2716***	0.2535***	0.2009***
	0.27	*0.03*	*0.04*	*0.04*
ROA	-2.9552***	-0.4961**	-2.1285***	-0.1701
	-2.96	*0.20*	*0.28*	*0.26*
RETA	-1.3323***	-0.8693***	-0.9712***	-0.7762***
	-1.33	*0.06*	*0.09*	*0.08*
GROW	-0.0696	-0.0012	-0.0822*	-0.0361
	-0.07	*0.03*	*0.04*	*0.04*
F-value	5.81***	8.35***	3.77***	5.33***
Adj-R^2	0.27	0.38	0.20	0.29

Note: 1) ***, **, and * denote 1%, 5%, and 10% significance, respectively. 2) Variable definitions are as follows: *CL* is measured by the current liability-to-equity ratio; *NCL* is measured by the non-current liability-to-equity ratio; *STBOR* is measured by the short-term borrowing-to- equity ratio; *LTBOR* is measured by the long-term borrowing-to- equity ratio *;IOS* is measured by the ratio of the market value of an asset to the book value of assets; *SIZE* is the natural logarithm of total assets; *ROA* is measured by the ratio of net operating profit after tax on total assets; *RETA* is the retained earnings as a proportion of total assets; *GROW* is the sales growth measured by current sales over prior year sales.

Discussion and Conclusion

This paper has empirically explored the relationship between the IOS, capital structure, and dividend policy in the different corporate life cycles using the listed companies in Thailand from 2000 to 2019. The empirical results did not support H1. The results showed a positive relationship between the leverage ratio and the IOS, which provide evidence in favor of signaling theory rather than contracting theory. The signaling perspective is based on the influence of information asymmetries on debt strategies. For example, firms with high growth opportunities face greater information disparities and thus are expected to have higher debt levels to signal higher quality (Krishnaswami, Paul, & Venkat 1999). Therefore, this signaling effect predicts a positive association between the IOS and debt. This finding is similar to the results of prior studies, such as Komera and Lukose (2014), La Rocca, La Rocca, and Cariola, (2011), and Tongkong (2012). Firm size and performance that proxy by a log of total assets, ROA and retained earnings are also related to the leverage ratio. Firms with a high level of assets and performance are associated with a higher level of debts, which is consistent with prior studies (Gul, 1999a; Komera & Lukose, 2014; La Rocca, La Rocca, & Cariola, 2011).

In addition, the data showed that the negative relationship between growth and dividend policy variables was significant. This was consistent with H2. As predicted by contracting theory, firms with high growth opportunities pay lower dividends because they have lower free cash flows and less flexibility in their dividend policy (Smith & Warner, 1979). Thus, high growth opportunities are associated with low dividends. The results consistent with evidence from Japan, China, and Korea, indicates the negative relationship between growth opportunities and dividends (Gul, 1999a, 1999b; Gul & Kealey, 1999).

We investigated the moderating effects of the firm life cycle on corporate finance decisions such as capital structure (H3a) and dividend policy (H3b). Firms in the growth and the maturity stage showed different financing behaviors in response to the IOS. The results showed that the interaction term between IOS and GM_DUMMY was positively significant at 10%. It implies that firms in the growth and the maturity stage with potential investment opportunity are generally inclined to use debt funding. The results consistency with the signaling theory that for firms are in the period of rapid growth and maturity in meeting the needs of development funds or maintaining the company's position externally, especially firms that are in the growth stage of their life cycle (DeAngelo et al., 2006; Zhang & Xu, 2020). Firms that are already in the maturity stage tend to use internal funding sources or debt as a signal to investors about the future growth opportunities. Therefore, corporate life cycle stages moderate the relationship between the IOS and the leverage ratio.

The results also show that dividend policy was not related to the life cycle characteristics, which is proxied by the cash flow pattern method. As operating cash flows are generated in each business cycle stage, firms have to choose between reinvesting and returning these assets to shareholders. Ideally, firms

allocate available resources to invest in all positive net present value projects and pay the remaining cash flows to shareholders as dividends. In practice, the amount of money invested depends mainly on each firm's growth opportunities (Charitou & Vafeas, 1998; Gaver & Gaver, 1993). Therefore, compared to growth opportunity, corporate life cycle appears to be insignificant in explaining the divided policy.

The empirical results of this paper add to the growing literature that examines financial strategy; i.e. capital structure and dividends policy. We show how the IOS shapes firms' capital structure in the different corporate life cycle, in an emerging economic market like Thailand. Also, the results support prior literature (Apaitan, Luangaram, & Manopimoke, 2020; Gallo & Vilaseca, 1996) explaining that different institutional environments among countries demonstrate different financial strategies. Furthermore, the study findings will have implications for investors and management. Investors can apply the results of this study in their investment choices. Besides, understanding financing behavior helps management select a suitable financial strategy to signal the capital market.

Although this study provides supporting evidence for the relationship between the IOS, capital structure, and dividend policy in the emerging country, there are some limitations. First, there are dominating corporate life cycles in the sample. The sample is characterized by the maturity phase (50.1%). Consequently, the results may be dominated by this stage. Second, the results of the study are based on publicly trade in Thailand, with most firms being family-owned businesses like in the other emerging markets. Therefore, results may not be generalizable to other develop countries that have different firm characteristics. Future studies should consider other firm characteristics that affect capital structure and dividend policy, such as ownership or corporate governance.

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