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DOES DIVIDEND TAXATION AFFECT INVESTMENT AND INVESTMENT EFFICIENCY IN EMERGING MARKETS? A Study of The Impact of Dividend Tax Rate on Latin American Companies

VITÓRIA

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Advisor: PhD. Prof. Felipe Storch Damasceno

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Approved on August 26th, 2025.

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ABSTRACT

Dividend taxation is a central topic in economic debate, as it can influence corporate investment decisions and the efficient allocation of capital. This study examines the impact of dividend taxation on corporate investment and investment efficiency, utilizing a dataset of 931 observations from 137 publicly traded companies in Brazil, Chile, Colombia, and Mexico, spanning the period from 2010 to 2022. We employ a rigorous econometric approach, including pooled OLS, fixed-effects, and random-effects panel regressions, to isolate the impact of dividend taxation on investment behavior. Additionally, we conduct subsample analyses for overinvesting and underinvesting firms. Our findings indicate that dividend taxation does not significantly affect investment levels or investment efficiency in the full sample or among underinvesting firms. However, for overinvesting firms, the results show that an increase in the dividend tax burden is associated with a modest decline in investment and a corresponding decline in investment efficiency. These results support the neutrality view of dividend taxation. This study makes a significant contribution to the body of knowledge by providing empirical evidence from emerging markets that internal corporate factors, financial constraints, and governance mechanisms are more important determinants of investment efficiency than dividend taxation per se. The findings have important policy implications, particularly for Latin American, where tax policy is frequently debated to promote economic growth and enhance investment efficiency.

Keywords: Dividend Taxation, Investment Efficiency, Investment Decision

SUMMARY

Chapter 1

1 INTRODUCTION

The question of how dividend taxation affects corporate investment and investment efficiency has gained prominence in recent years (Chetty & Saez, 2005; Becker et al., 2013; Alstadsæter et al., 2017; Chay, et al., 2023), particularly in the context of ongoing tax reforms and growing interest in understanding taxation's role in shaping corporate behavior. This topic assumes strategic importance in Latin America, where fiscal legislation is frequently revised and economies heavily rely on external capital flows (Lusting et al., 2014; OECD, 2018). Therefore, this study investigates the impact of dividend tax rate on corporate investment and investment efficiency in Latin America. More specifically, we compare publicly traded companies operating in Brazil, a country that has exempted dividends from personal income tax since 1996, with publicly traded companies from Latin American OECD member countries (Chile, Colombia, and Mexico) that tax dividends or began to tax them between 2010 and 2022, the period covered by this study.

The objective of this study is not only timely but also highly relevant to ongoing tax policy discussions in Brazil, particularly considering the current tax reform process and the country's aspirations for OECD membership (OECD, 2018). In this context, comparative analysis is essential for evaluating fiscal policies that integrate individual and corporate taxation without distorting capital allocation, thereby fostering sustainable economic growth.

Although the effects of dividend taxation on investment levels and investment efficiency, defined as the ability of companies to allocate resources to projects with positive net present value, have been extensively studied in developed countries

(Chetty & Saez, 2005; Becker et al., 2013; Alstadsæter et al., 2017; Chay, et al., 2023), empirical evidence from emerging economies remains limited. This gap has important implications for business executives, policymakers, and the academic community. The debate gains further relevance in developing economies, where financial constraints, weak institutional frameworks, and underdeveloped financial markets tend to amplify taxation's effects on firms' investment and payout decisions (Benevides et al., 2016; Glen et al., 1995; Lusting et al., 2014; OECD, 2018; Zeolla & Santarcángelo, 2024).

Dividend taxation plays a crucial role in corporate finance and public policy debates, as it directly affects corporate investment decisions and capital allocation among businesses and investors (Korinek & Stiglitz, 2009). Classical theories offer contrasting predictions about this impact: the "traditional view" suggests that higher dividend taxes increase the cost of capital, thereby discouraging corporate investment (Harberger, 1962; Feldstein, 1970), while the "new view" argues that firms primarily finance investment through retained earnings, rendering dividend taxation's effect on investment levels limited (King, 1977; Auerbach, 1979). More recent developments introduce agency-based models, emphasizing how dividend taxation may interact with managerial incentives and governance structures, potentially exacerbating inefficiencies in investment allocation. According to this perspective, dividend taxation has heterogeneous effects on capital allocation, since a dividend tax cut could potentially improve efficiency by mitigating overinvestment in firms with excess cash holdings while facilitating access to external financing for cash-constrained companies (Chetty & Saez, 2010).

The empirical literature presents mixed findings on this topic. Building on the agency-based framework, Chetty and Saez (2010) provide evidence that the effects of dividend taxation vary across firms depending on agency structure and cash

availability with lower dividend taxes reducing the incentives for managers to engage in unproductive investments in cash-rich firms, leading to a decline in overall investment, while facilitating equity issuance and fostering productive investment in cash-constrained firms. Becker et al. (2013) and Alstadsæter et al. (2017) support this view, demonstrating that dividend taxes significantly influence investment patterns across firms in developed countries, redirecting capital toward financially constrained companies. However, Yagan (2015) and Chay et al. (2023) found that the 2003 U.S. dividend tax cut did not significantly increase overall corporate investment levels, though Chay et al. (2023) reported improvements in allocative efficiency among firms facing agency problems. Latin America exhibits considerable heterogeneity in dividend tax regimes ranging from complete exemption in Brazil to varying degrees of taxation in Chile, Colombia, Costa Rica, and Mexico (OECD, 2018). These institutional variations provide a natural laboratory for exploring how different dividend tax regimes, within a shared regional and economic context, shape corporate investment behavior.

To address this question, this study pursues three main objectives: (i) to evaluate how dividend tax rates affect the aggregate level of corporate investment in in Latin America OECD members that tax dividends; (ii) to assess how dividend tax rates influence the efficiency of investment allocation among companies facing varying degrees of financial constraints; (iii) to determine the relationship between taxation and investment levels and efficiency under different levels of financial constraint.

To achieve these objectives, we conducted panel regressions using financial data from 137 publicly traded companies between 2010 and 2022, along with dividend tax rates from the four countries analyzed. This approach allows us to examine the impact of dividend taxation on corporate investment and investment efficiency within these diverse institutional contexts.

The results enable us to conclude that dividend tax rates have a significant impact on the level and efficiency of corporate investment in overinvesting firms but do not significantly affect underinvesting firms. These findings enrich the ongoing debate between the “traditional” and “neutrality” views on dividend taxation, offering evidence that aligns with the agency-based perspective on heterogeneous investment behaviors.

In addition to addressing the central question, this study makes four key contributions to the academic literature and the public policy debate. First, our findings contribute new empirical data analyzing the relationship between dividend tax rates and their impact on investment and investment efficiency in emerging markets firms, addressing a significant gap in the literature. Second, the study introduces established metrics of investment efficiency from accounting and finance research, adapted to Latin America’s institutional context. Third, it contributes to the theoretical debate between the “traditional view” and the “neutrality view” on dividend taxation by providing evidence from an understudied context. Finally, the research provides policy recommendations that aim to balance economic efficiency, productive development, and tax equity in emerging markets, particularly relevant to ongoing tax reform discussions in Brazil and throughout Latin America.

Thus, this research aims not only to enhance existing knowledge in taxation and corporate finance but also to assist policymakers in promoting sustainable and inclusive economic growth across Latin America and other emerging markets.

Chapter 2

2 THEORETICAL FRAMEWORK

2.1 DIVIDEND TAXATION AND ITS IMPLICATIONS FOR CORPORATE DECISIONS

This section examines how different dividend taxation systems impact corporate financial decisions, particularly in terms of profit distribution, investment, and capital structure. Corporate earnings are generally subject to taxation at the corporate level and then are distributed to shareholders as dividends, which may be subject to a new taxation as individual earnings at the shareholder's level (Harding & Marten, 2018). Dividend taxation follows different regimes across countries, with each system carrying distinct implications for corporate and investor behavior. Harding and Marten (2018) categorize dividend taxation policies into three principal forms: classical taxation, final withholding taxes, and imputation systems. Under classical taxation, dividends are taxed at both the corporate and personal levels, thereby resulting in double taxation (e.g., as observed in the United States). In the final withholding model, individual tax is collected at the source and may serve as a substitute for personal taxation (e.g., Germany). These systems create varying incentives for firms regarding dividend payout, capital structure, and profit retention strategies, and they may reduce the overall tax burden on personal income (Auerbach, 2002; Morck & Yeung, 2005). In the imputation system, investors receive a tax credit equivalent to the corporate taxes previously paid, effectively mitigating double taxation (e.g., Australia).

Although some countries attempt to coordinate corporate taxation with individual taxation, such efforts face limitations primarily because firms' financial choices are heavily influenced by the taxes paid by their owners and potential investors. This phenomenon is linked to the classical theory of double taxation and its impact on the

cost of capital, which can act as a barrier to corporate investment, potentially forcing firms to adjust their financial decisions (Mork et al., 2005). In classical taxation systems, there is a greater incentive for profit retention, an effect that is diminished in exemption regimes such as Brazil, where the pressure to distribute dividends is at its highest. Even in countries with partial integration, shareholders make investment decisions based on the differences between the taxation of retained earnings and dividends (Auerbach, 2002). Dividend taxation alters marginal incentives for firms and investors. Under classical systems, the double taxation effect increases the cost of equity, potentially discouraging dividend payments and encouraging earnings retention or debt financing (Feldstein, 1970; Poterba & Summers, 1984). Conversely, in imputation systems, firms may face reduced pressure to retain profits, altering their capital allocation behavior.

The empirical evidence supports the view that dividend taxation affects firms' investment behavior, though the nature and magnitude of these effects depend on firm-specific characteristics and financial constraints. In their analysis of the 2013 French tax reform, Boisel and Matray (2022) found that higher dividend taxes led to reduced payouts and increased capital investment. However, the authors note that these effects were heterogeneous and concentrated among firms with pre-existing investment opportunities and limited access to external financing. Examining the opposite scenario, a 23.5% reduction in the U.S. dividend tax rate in 2003, Chay et al. (2023) found that the tax cut improved capital allocation, particularly in financially constrained companies The empirical evidence substantiates the proposition that dividend taxation significantly impacts corporate behavior, serving as a key determinant in decisions related to capital expenditure and the earnings distribution. Consequently, this finding challenges the conventional understanding of fiscal neutrality and highlights the

importance of financial frictions in shaping the relationship between dividend taxation and investment patterns.

In sum, dividend taxation mechanisms shape firms' financial decisions by altering the relative attractiveness of payouts versus reinvestment. The following section builds on this foundation to explore the direct and indirect effects of dividend taxation on investment levels and capital allocation efficiency.

2.2 DIVIDEND TAXATION AND ITS EFFECTS ON THE LEVEL AND EFFICIENCY OF INVESTMENT

An analysis of the effects of dividend taxation on corporate capital allocation, along with its implications for investment efficiency, represents a central topic in corporate finance literature that has generated substantial theoretical and empirical debate. The academic literature presents three primary theoretical frameworks for understanding these relationships: the "traditional view," the "neutrality view," and the agency theory model.

While the "traditional view" posits that dividend taxation raises the cost of capital and thereby reduces investment (Harberger, 1962; Feldstein, 1970; Poterba & Summers, 1984), particularly in firms with limited access to the capital market that rely primarily on retained earnings as a funding mechanism, the "new view" or "neutrality hypothesis" assumes that marginal investment decisions remain unaffected by dividend taxes, especially in firms financed through retained earnings (King, 1977; Auerbach, 1979; Bradford, 1981). These models yield conflicting policy implications, particularly in environments where access to capital is limited, as is often the case in emerging markets.

Agency theory models (Chetty & Saez, 2010) add another dimension to this debate by incorporating agency conflicts between shareholders and managers. Building on Jensen and Meckling (1976), these models propose that dividends serve as a disciplinary tool, reducing managerial discretion and thereby minimizing managers' tendency to engage in opportunistic behaviors that can result in value-destroying projects. Therefore, the absence of dividend taxation may lead to excessive dividend payments that could have been allocated to more productive investment opportunities. In contrast, the presence of dividend taxation may encourage managers to retain excess cash, potentially leading to inefficient allocation (Chetty & Saez, 2005).

Empirical evidence presents a heterogeneous and complex picture of these mechanisms. Chetty & Saez (2005), using a difference-in-difference design, document a significant increase in dividend payouts following the 2003 U.S. tax cut. However, their findings are context-dependent, as they pertain to large U.S. firms with liquid capital markets and may not be applicable to emerging markets, which are characterized by lower financial development and weaker investor protections (Zeolla & Santarcángelo, 2024). Brown et al. (2007) note that this response was different depending on ownership structure and decision-making processes of executives and shareholders. For instance, companies with a high insider ownership or those with dominant external shareholders who were subject to dividend taxation adjusted their policies more quickly than other companies to increase dividend payments.

This behavior aligns with the notion that shifts in tax policy can prompt firms to engage in intertemporal tax arbitrage. Specifically, companies may strategically postpone dividend distributions from periods of higher taxation to those with lower tax rates, thereby aiming to optimize post-tax returns for their shareholders (Korinek & Stiglitz, 2009). However, as Korineck and Stiglitz (2009) pointed out, this practice can

lead to significant deviations in companies' cash balances and, in the case of capital-constrained firms, can result in suboptimal investment and production decisions that are detrimental to economic growth.

This relationship between taxes and investment – both investment level, which refers to the aggregate volume of capital deployed regardless of its productivity, and investment efficiency, defined as the firm's ability to allocate capital to projects with positive net present value (NPV), minimizing deviations from the optimal investment level predicted by fundamentals (Richardson, 2006; Biddle et al., 2009) – is also moderated by the level of financial constraints faced by companies. Becker et al. (2013), analyzing a cross-national sample of 25 countries that underwent multiple changes in dividend taxation between 1990 and 2008, found that dividend taxation affects market capitalization, benefiting large companies with retained earnings and harming firms that rely on external equity. This effect supports the "traditional view" that dividend taxation is distortionary and can reduce economic growth (Becker et al., 2013).

On the other hand, Yagan (2015) questions the strength of this relationship between investment and dividend taxes, reporting that the 2003 U.S. tax reform produced no significant changes in corporate investment or worker compensation in private firms. Similarly, Chay et al. (2023), analyzing the same tax reform, found no aggregate effect on investment levels. However, their analysis reveals important improvements in investment efficiency across different types of firms based on their financial conditions: cash-constrained firms increased their productive investments, benefiting from the reduced cost of external equity financing, which alleviated underinvestment problems and improved efficiency by 0.6%. Conversely, cash-rich firms raised their dividend payouts and reduced excessive investments in low-return

projects, addressing overinvestment issues and improving efficiency by 4.5%. These findings reaffirm that the effects of dividend taxation are heterogeneous and depend on firms' financial condition. In other words, the reform enhanced capital allocation efficiency by encouraging cash-rich firms to return idle resources to shareholders rather than investing in low-return projects, while allowing financially constrained firms to expand their investments by taking advantage of the reduced cost of external equity (Chay et al., 2023).

Overall, while the effects of dividend taxation on investment level and efficiency remain theoretically and empirically contested, emerging evidence suggests that firm-specific factors—such as financial constraints and governance quality—may condition these relationships. These dimensions will be empirically tested in subsequent chapters using data from Latin American markets with heterogeneous tax regimes.

2.3 DIVIDEND TAXATION AND INVESTMENT IN EMERGING ECONOMIES AND LATIN AMERICA

Research focusing on dividend taxation in emerging markets, particularly in Latin America, remains scarce, reflecting challenges related to data availability and the diverse tax and institutional structures across countries in the region (Benevides et al., 2016). Nevertheless, recent research has made progress in understanding divided policies and their connection to factors such as investor safeguards and corporate governance quality, offering insights into how taxation affects dividend distributions and, consequently, influences corporate investment and investment efficiency.

Benevides et al. (2016) examined the dividend policies of companies in six Latin American countries from 1995 to 2013 and found that these policies were strongly related to institutional and tax factors. Corporate governance and the level of investor

protection in each country significantly affect dividend distributions. In countries with stable and predictable environments, companies tend to adopt dividend policies that align with international practices. Conversely, in countries facing instability and frequent tax changes, firms tend to adopt more opportunistic dividend policies. This finding is crucial for understanding how dividend taxation affects capital allocation in Latin America, as tax laws are frequently adjusted in response to crises and short-term political demands (Benavides et al., 2016).

A central element of this debate relates to the impact of the financialization of Latin American companies. Financialization refers to the increasing dominance of financial motives, financial markets, and financial actors in the corporate decision-making processes (Epstein, 2005). In the Latin American context, as discussed by Zeolla and Santarcángelo (2024), this dynamic often manifests as a prioritization of short-term shareholder returns over productive reinvestment, particularly in contexts where dividend tax exemptions exist, such as Brazil. They demonstrated that between 1995 and 2015, large companies in the region significantly increased their holdings of financial assets, often at the expense of productive investments. This trend toward financialization is closely linked to factors such as the tax and regulatory environment, including the absence of or low taxation on dividends. In countries such as Brazil, where dividends are exempt from taxation, this may lead to a preference for profit distribution over reinvestment, reinforcing the hypothesis that the tax system significantly influences how companies allocate their capital (Zeolla & Santarcángelo, 2024).

Empirical evidence, such as that presented by Glen et al. (1995), provides insights into dividend practices in emerging market economies, including those in Latin America. The study highlights that companies operating in emerging markets,

especially those with restricted access to credit, tend to adopt more conservative payout policies, preferring to retain profits to finance future investment opportunities. Conversely, companies with privileged access to external financing sources, especially those with strong connections to governments or controlling entities, demonstrate a greater propensity to distribute high dividends, suggesting that the relationship between corporate governance and tax structure plays a significant role in corporate capital allocation (Glen et al., 1995).

Mitton (2004) reinforces this view by demonstrating that in emerging economies, the quality of corporate governance is directly linked to dividend policy. Firms with better governance structures generally distribute more dividends, particularly in countries where protections for minority investors are limited. This suggests that in fragile institutional environments, dividends can serve as a disciplinary mechanism, reducing agency conflicts by transferring resources directly to shareholders and limiting managers' and controlling shareholders ability to use retained earnings for low-quality investments or personal gains (Mitton, 2004).

In the Brazilian context, Sanvicente and Bortoluzzio (2017) examined the interrelationship between capital structure, financial constraints, and dividend strategies. They found that firms facing financial constraints retain profits to support future ventures, whereas firms with access to credit and strong cash flow tend to exhibit a high propensity to pay high dividends. Empirical evidence suggests that dividend exemptions in weak enforcement contexts may incentivize excessive profit distribution, particularly in firms that lack growth opportunities or are subject to weak governance oversight (Richardson, 2006; Mitton, 2004). In Brazil, where dividends have been exempted from taxation since 1996, this may help explain the prevalence of short-term oriented payout policies despite limited reinvestment in productive capacity.

In addition, OECD (2018) and BID reports (Reyes-Tagle et al., 2023) indicate that Latin America's tax systems tend to impose high tax burdens on consumption and labor income, while taxation on capital, including dividends, remains relatively low. This configuration creates an unbalanced incentive structure that penalizes productive investment in favor of capital allocation to profit-distributing financial assets. In Brazil specifically, this issue is particularly noticeable given the total exemption from dividend taxation, which encourages companies to prioritize profit distribution over reinvestment (OECD, 2018).

Finally, studies such as Lustig et al. (2014) emphasize that progressive taxation on income, including dividends, serves as a crucial redistributive mechanism in Latin American economies characterized by high inequality. However, the effectiveness of this approach is hampered by low tax progressivity and high informality, making dividend taxation reform an opportunity to promote greater equity without necessarily compromising economic dynamics.

This body of research provides evidence that dividend taxation occupies a strategic position in corporate investment, directly influencing the volume and efficiency of capital deployment. While the "traditional view" posits that taxing dividends elevates the cost of capital and reduces investment levels, the "neutrality view" contends that such taxations have minimal effects, as firms typically adjust their funding sources. Conversely, agency models underscore the disciplinary function of dividends, implying that taxation influences both distribution decisions and the effectiveness of capital allocation argues that taxing dividends has limited impacts, as firms tend to adapt their sources of financing. Agency models highlight the disciplinary role of dividends, suggesting that taxation affects both distribution choices and the efficiency of capital allocation.

The effectiveness of dividend taxation as an investment incentive mechanism depends critically on the institutional environment, including enforcement capacity, shareholder protection, and financial transparency (La Porta et al., 1998; Gordon & Li, 2009). In economies with well-established capital markets, taxation tends to have a minor impact on investment compared to emerging economies, where credit constraints and weak governance play more significant roles. In weak institutional settings, such as many Latin American economies, taxation effects are often distorted by informality, tax avoidance, and governance failures. Evidence from Latin America, although limited, suggests that the tax environment plays a significant role in shaping dividend policies and the efficient allocation of capital resources.

The case of Brazil is particularly relevant for this investigation, given its adoption of complete dividend tax exemption for nearly three decades – a departure from practices in other Latin American countries, which typically impose partial or complete taxes on dividends received by shareholders. This distinctive feature, coupled with concentrated share ownership, limited safeguards for minority shareholders, and relatively underdeveloped financial markets, provides an ideal setting for exploring whether the lack of dividend taxation has stimulated or hindered productive investment and efficient capital allocation.

In summary, the evidence reviewed suggests that dividend taxation in Latin America interacts strongly with institutional characteristics such as legal enforcement, shareholder protection, and financial transparency, modulating its effects on investment behavior. These interactions are crucial for understanding how dividend policy operates in the region and will be empirically examined in the comparative analysis of firms operating under distinct tax regimes in Chapter 3.

Guided by these objectives and grounded in the theoretical and empirical literature (Chetty & Saez, 2005; Becker et al., 2013; Alstadsæter et al., 2017; Chay et al., 2023), this study proposes the following hypotheses:

Hypothesis 1: Higher dividend tax rates are associated with lower levels of corporate investment in Latin American companies.

This hypothesis is grounded in the “traditional cost of capital view” (Harberger, 1962; Feldstein, 1970; Poterba & Summers, 1985), which suggests that higher dividend taxation, by making profit distribution more expensive, raises the cost of equity capital for companies.

Hypothesis 2: Higher dividend tax rates are associated with lower investment efficiency, particularly by increasing overinvestment problems.

This hypothesis is based on agency theory, suggesting that in the absence of dividend taxation, firms are more likely to distribute excess cash flows, thereby mitigating managerial overinvestment and improving capital allocation efficiency (Chetty & Saez, 2010; Chay et al., 2023).

Hypothesis 3: The relationship between dividend tax rates and investment levels and efficiency is moderated by firm financial constraints.

This hypothesis reflects the notion that the effects of dividend taxation on investment efficiency are not uniform across firms but depend on governance structures and the extent of financial constraints, as suggested by Becker et al. (2013) and Chay et al. (2023).

Chapter 3

3 EMPIRICAL FRAMEWORK

3.1 SAMPLE SELECTION

This study employs a quantitative comparative design to investigate the impact of dividend taxation on investment and investment efficiency. For this study, we consider publicly traded non-financial companies classified as active across five Latin American countries: Brazil, Chile, Colombia, Costa Rica, and Mexico. The study sample covers the period from 2008 to 2023, encompassing periods of fiscal stability and significant tax changes in certain countries, including Mexico and Colombia, which implemented dividend taxation in 2014 and 2017, respectively. These countries were selected because they fulfill at least one of the following criteria: (i) they are in the process of joining the OECD and do not tax dividends at the individual level, or (ii) they are OECD members that tax dividends or began to taxing them during the analysis period.

The initial sample comprises 9,175 observations from 633 firms, with data sourced from the Refinitiv database. Financial and insurance companies were excluded from the sample due to structural differences in their financial statements. After generating the variables, we applied the following database cleaning procedures: companies were excluded from a given period if their information was incomplete for all variables; companies with anomalous values, such as negative age (AGE<0), were excluded; and we winsorized continuous variables at 5% and 10% to minimize the effects of outliers. Following this process, we obtained a refined dataset with 931 observations from 137 companies spanning 2010-2022. Observations from Costa Rica

were excluded because they did not meet all the analytical criteria. Table 1 presents the distribution of sample observations by country:

Table 1: Country of Incorporation

Country of Incorporation	Freq.	Percent	Cum.
Brazil	511	54.89	54.89
Chile	203	21.80	76.69
Colombia	41	4.4	81.10
Mexico	176	18.90	100
Total	931	100	

Source: Author

All financial and accounting data were processed in US dollars (USD) as provided by the Refinitiv Database. To ensure comparability of company indicators over time, we employ an implicit deflator calculated as the ratio between current GDP in dollars and constant GDP in dollars for each country, both expressed in 2015 prices and obtained from the World Development Indicators Database. This procedure ensures that changes in investment and performance are compared over time and across countries with the effects of inflation and exchange rates fluctuations removed. Information on dividend taxation and the maximum net personal tax rate on dividend taxation and the maximum net personal tax rate on dividends at the shareholder level was obtained from the OECD database, as shown in Table 2:

Table 2: DIVIDENDS NET PERSONAL TAX RATE (OECD)

Country of Incorporation	**Chile %**	**Colombia %**	**Costa Rica %**	**Brazil %**	**Mexico %**
Year					
2008	27,71	0,00	15,00	0,00	0,00
2009	27,71	0,00	15,00	0,00	0,00
2010	27,71	0,00	15,00	0,00	0,00
2011	25,00	0,00	15,00	0,00	0,00
2012	25,00	0,00	15,00	0,00	0,00
2013	25,00	0,00	15,00	0,00	0,00
2014	24,05	0,00	15,00	0,00	17,14

2015	22,58	0,00	15,00	0,00	17,14
2016	21,05	0,00	15,00	0,00	17,14
2017	24,73	10,00	15,00	0,00	17,14
2018	23,90	10,00	15,00	0,00	17,14
2019	23,90	15,00	15,00	0,00	17,14
2020	23,90	10,00	15,00	0,00	17,14
2021	23,90	10,00	15,00	0,00	17,14
2022	23,90	10,00	15,00	0,00	17,14
2023	23,90	20,00	15,00	0,00	17,14

Legend: Net personal tax shows the net top statutory rate to be paid at the shareholder level, taking account of all types of reliefs and gross-up provisions at the shareholder level. For imputation systems this column is calculated as (PIT rate on (grossed-up) dividend/100)*MAX(Distributed profit, Grossed up dividend)-Imputation / dividend tax credit (OECD, 2025).The data from Brazil was adapted from author.

Fonte: Combined (corporate and shareholder) statutory tax rates on dividend income from OECD Data Explorer (OECD, 2025)

The maximum net personal tax rate on dividends at the shareholder level was captured by the continuous variable TAXRATE, which represents the final investment tax burden resulting from dividend taxation in each country.

It is essential to note that modifications to the magnitude and effectiveness of corporate investment decisions likely require a substantially longer time horizon than modifications on capital structure, cash reserves, or distributions to shareholders. Hence, a longer analytical period is more suitable for determining the effect of dividend taxation (or its absence) on firms' investment efficiency (Becker et al., 2013).

Nevertheless, as argued by Chay et al. (2023), when analyzing a longer time series, corporate investment may be affected by unmeasurable factors such as structural trends (Yagan, 2015) and business cycle (Poterba & Summers, 1984). Companies operating in different countries face different macroeconomic environments. However, Becker et al. (2013) demonstrate that taxation exhibits low correlation with short-run GDP growth and is unrelated to other macroeconomic variables that may affect investment, including inflation and the regulatory environment (Djankov et al., 2010).

3.2 RESEARCH DESIGN

We begin our estimation by computing investment efficiency, captured by $INVEFF_{i,t}$ variable, which is calculated based on the deviation between actual investment and predicted investment for each industry-country-year combination, as suggested by Biddle et al. (2009) and subsequently employed by Chay et al. (2023).

To determine the optimal investment level of firm i in year t, we establish a relationship between the firm's growth prospects and sales growth in the preceding year, following the approach of Biddle et al. (2009) and Chay et al. (2023). Here $INV_{i,t}$ represents the sum of capital expenditures, acquisitions, and research and development (R&D) expenditures, minus sales of property, plant, and equipment (PPE) of firm i in year t, divided by lagged total accounting assets; and $SG_{i,t-1}$denotes the sales growth rate of firm i in year t-1, as shown in Equation (1).

$$INV_{i,t} = \alpha + bSG_{i,t-1} + e_{i,t}, \quad (1)$$

The regressions were conducted for each sector-year-country combination based on the TRBC classification provided by the Refinitiv database.

After obtaining the residuals from Equation (1), and following Biddle et al. (2009) and Chay et al. (2023), the investment efficiency metric $INVEFF_{i,t}$ was calculated as:

$$INVEFF_{i,t} = -\left|\widehat{e_{i,t}}\right| \quad (2)$$

That is, we multiply the absolute value of the residual by -1 so that higher values indicate greater efficiency. Thus, smaller deviations between actual investment and estimated optimal investment represent greater efficiency. Conversely, larger deviations indicate lower efficiency, suggesting that the company is investing sub-optimally. The fundamental premise of this model is that, in perfect and frictionless

markets, a company's optimal investment is positively related to its growth prospects (Chay et al., 2023).

Furthermore, following Biddle et al. (2009), firm-year observations with positive residuals ($\widehat{e_{i,t}} > 0$), which occur when actual investment exceeds expected investment, thereby promoting excessive investment and allocating resources to low-profitability projects, are classified as overinvesting firms. Observations with negative residuals ($\widehat{e_{i,t}} < 0$), where actual investment falls below expected investment, are designated as underinvesting firms. This classification is essential for analyzing whether dividend taxation influences overinvesting and underinvesting firms differently.

To study the impact of dividend tax rates on firms' aggregated investment, we estimate a regression as presented in Equation, following Chay et al(2023) (3):

$$INV_{i,t} = \alpha_{i,t} + \beta TAX\_RATE_{i,t} + X\Gamma + \eta_i + \varepsilon_{i,t}, \text{ (3)}$$

where $INV_{i,t}$ is the sum of capital expenditures, acquisitions, and research and development (R&D) expenses, minus sales of property, plant, and equipment (PPE) of company i in year t, divided by lagged total assets, as described earlier; $\beta TAX\_RATE_{i,t}$ is the tax burden of the country where firm i is domiciled in year t; $\mathbf{X} = (x_1, x_2, \dots, x_k)$ is a vector of control covariates; and $\Gamma = (\gamma_1, \gamma_2, \dots, \gamma_k)'$ is a vector of coefficients of the control covariates. The relationship between investment level and dividend taxation is analyzed for all observations in the sample and subsequently for subgroups of overinvestment and underinvestment firms.

In addition, to evaluate the impact of dividend tax rates on investment efficiency, we estimate a regression with the same control variables using $INVEFF_{i,t}$ as dependent variable, as specified in Equation (4):

$$INVEFF_{i,t} = \alpha_{i,t} + \beta TAX\_RATE_{i,t} + X\Gamma + \eta_i + \varepsilon_{i,t}, \text{ (4)}$$

Following Biddle et al. (2009) and Chay et al. (2023), we include a comprehensive set of control variables to address firm- and industry-specific heterogeneity that may influence corporate investment behavior or investment efficiency. These controls include firm size (proxied by natural logarithm of total assets), growth opportunities (Tobin´s Q), and measures of cash flow, sales and investment volatility, capturing uncertainty in firm operations and financing.

Additionally, following Chay et al. (2023), we include Altman´s Z-score to account for financial health, asset tangibility, market leverage, and industry-average leverage to reflect capital structure considerations. Cash flow from operations relative to sales and financial slack (measured as the ratio of cash property, plant, and equipment) capture liquidity and internal financing capacity. We also control for whether the firm pays dividends, its age, operating cycle, and whether it reported a financial loss in the period. The cash ratio (cash plus short-term investments over total assets) is included to further capture liquidity.

In line with Chay et al. (2023), we additionally include analyst coverage and a governance index from Refinitiv in the investment regressions, though these variables were excluded from the investment efficiency models.

A relevant methodological innovation of this research is the evaluation of corporate governance, measured directly from the governance score assigned to each company in the Refinitiv database. This score, which integrates data on disclosure practices, board structure, shareholder rights, and control mechanisms, is used as a proxy for governance quality. Companies with higher scores are considered to have high corporate governance, while those with lower scores were classified as having weak governance. The inclusion of this variable allows us to assess whether

governance quality moderates the effects of dividend taxation on capital allocation efficiency. Figure 1 describes the variables used in this research:

Figure 1: Variable Definition Table

Variable	Description	Data Source	Justification
Dependent Variables			
$INV_{i,t}$	Total investment rate, measured as the sum of capital expenditures, acquisitions, and R&D expenditures (net of the sale of property, plant, and equipment, "PPE"), divided by lagged total assets (Biddle et al., 2009;Chay et al., 2023)	Generated in research	
$INVEFF_{i,t}$	Investment efficiency, calculated as minus one times the absolute value of the deviation from the expected or optimal level of INV (Biddle et al., 2009; Chay et al., 2023)	Generated in research	
Independent Variable			
$TAXRATE_i$	Final tax burden of dividend taxation	OECD	
Control Variables			
$LOGASSET_{i,t}$	Natural logarithm of total assets (Biddle et al., 2009; Chay et al., 2023)	Refinitiv	Larger companies may have different investment patterns than smaller companies (Chay et al., 2023).
$Q_{i,t}$	Tobin's Q is calculated as the sum of the firm's market value and total liabilities divided by total assets (Chay et al., 2023)	Generated in research	A measure of a company's market value relative to its replacement cost. A high Tobin's Q suggests growth opportunities, which can influence investment decisions (Chay et al., 2023).
$SD\_CFO_{i,t}$	Standard deviation of operating cash flow deflated by average assets, calculated using data from years t-5 through t-1 (Biddle et al., 2009; Chay et al., 2023)	Generated in research	Cash flow volatility can make it difficult to plan and execute investments (Chay et al., 2023).
$SD\_SALES_{i,t}$	Standard deviation of operating revenues deflated by average assets,	Generated in research	Similar to cash flow volatility, unpredictable sales can affect

	calculated using data from years t-5 through t-1 (Biddle et al., 2009; Chay et al., 2023)		investment decisions (Chay et al., 2023).
$SD\_INV_{i,t}$	Standard deviation of the sum of capital expenditures, acquisitions, and R&D expenditures, deflated by average assets, calculated using data from years t-5 through t-1 (Biddle et al., 2009; Chay et al., 2023)	Generated in research	The variability of a company's investment over time (Chay et al., 2023).
$Z_{i,t}$	Altman's Z-score, calculated as 1.2 x (working capital to total assets) + 1.4 x (retained earnings to total assets) + 3.3 x (earnings before interest and taxes to total assets) + 0.6 x (market value of equity to liabilities of the firm) + 1.0 x (asset turnover) (Biddle et al., 2009; Chay et al., 2023)	Generated in research	A measure of the probability of bankruptcy. Companies in financial distress may have limited investment capacity (Chay et al., 2023).
$TANG_{i,t}$	Ratio of PPE to total assets (Biddle et al., 2009; Chay et al., 2023)	Generated in research	The proportion of a company's tangible assets (e.g., property, plant, and equipment). Tangible assets can serve as collateral, potentially affecting access to investment finance (Chay et al., 2023).
$LEV_{i,t}$	Ratio of long-term debt to the sum of long-term debt and market value of assets (Leverage) (Biddle et al., 2009; Chay et al., 2023)	Generated in research	The proportion of a company's financing that comes from debt. High leverage can restrict future borrowing and, therefore, investment (Chay et al., 2023).
$IND\_LEV_{i,t}$	Average leverage for companies in the same sector according to TRBC adapted by Biddle et al., (2009) and Chay et al. (2023)	Generated in research	Controls sector-specific financing standards (Chay et al., 2023).
$CFO\_SALLES_{i,t}$	Ratio of cash flows from operations to sales adapted by (Biddle et al., 2009; Chay et al., 2023) adapted	Generated in research	A measure of a company's ability to generate cash from its core operations (Chay et al., 2023).
$SLACK_{i,t}$	Cash to PPE ratio (Biddle et al., 2009; Chay et al., 2023)	Generated in research	The availability of readily accessible

			funds for investment (Chay et al., 2023)
$DIV\_P_{i,t}$	A dummy variable that takes on the value of one if the company paid a dividend and zero otherwise (Biddle et al., 2009; Chay et al., 2023)	Generated in research	Dividend policies may affect the retained earnings available for investment (Chay et al., 2023).
$L\_AGE_{i,t}$	Natural logarithm of the firm's age defined as the time between the analyzed statement and the company's opening date adapted from Biddle et al. (2009) and Chay et al.(2023)	Generated in research	Older companies may have different investment strategies from younger companies (Chay et al., 2023).
$OPERATINGCYCLE_{i,t}$	Operating cycle, defined as the natural logarithm of the sum of the ratio of accounts receivable to sales and the ratio of inventory to cost of goods sold, multiplied by 360 (Biddle et al., 2009; Chay et al., 2023)	Generated in research	The time it takes for a company to convert its raw materials into cash from sales (Chay et al., 2023).
$LOSS_{i,t}$	A dummy variable that assumes the value one if net income before special items is negative and zero otherwise (Biddle et al., 2009; Chay et al., 2023)	Generated in research	Shows if the company suffered a financial loss (Chay et al., 2023).
$CASH\_ASSETS_{i,t}$	The ratio between cash and total accounting assets (Chay et al., 2023)	Generated in research	A measure of a company's liquidity (Chay et al., 2023).
$ANALYSTS_{i,t}$	Analyst coverage, defined as the number of analysts covering the company, as provided by I/B/E/S (Biddle et al., 2009; Chay et al., 2023)	Generated in research	The extent to which analysts follow a company. More coverage can lead to better information flow and influence investment decisions (Chay et al., 2023).
$L\_G_{i,t}$	Natural logarithm of the Governance Pillar score adapted from Biddle et al. (2009) and Chay et al. (2023)	Refinitv	Measures a company's systems and processes that ensure its board members and executives act in the best interests of its long-term shareholders. It reflects a company's ability, through the use of best management practices, to direct and control its rights and responsibilities by creating incentives as

			well as checks and balances, thereby generating long-term shareholder value provided by Refinitiv (2025).

Source: Author

The econometric strategy comprises two main components. First, panel models are estimated by firm and year, capturing the effects of the dividend tax rate on the overall sample. This approach provides a robust baseline for estimating the association between dividend taxation and the variables of interest (Wooldriedge, 2010).

Subsequently, separate panel models are estimated for overinvestment and underinvestment companies, allowing us to analyze whether firms with distinct financial characteristics are affected differently by dividend tax rate. This approach is motivated by previous research demonstrating that firms experience heterogeneous effects depending on their ability to raise external capital or generate internal funds.

To choose between the pooled OLS and random effects estimator, we apply the Breusch-Pagan Lagrange Multiplier test (Breusch & Pagan, 1979). To decide between the fixed and the random effects estimators, we employ the Hausman test to verify the consistency of the estimates (Greene, 2008). The robustness of the results is assessed using a set of additional diagnostic tests, including multicollinearity tests (VIF and Pearson correlation), heteroscedasticity tests (Shaw, Breusch-Pagan, and White), and the Hausman test to verify the consistency of the estimators. For models estimated using pooled OLS, we also conducted the Shapiro–Francia test to assess the normality of residuals and the Durbin–Watson test to evaluate residual independence.

The sample description, additional procedures performed, and results are presented in Chapter 4, along with a discussion of the results. Final considerations, limitations, and recommendations for future research are presented in Chapter 5.

Chapter 4

4 RESULTS

4.1 DESCRIPTIVE STATISTICS

Table 3 presents descriptive statistics for the full sample (N=931) and for the subgroups of firms classified as (A) Underinvesting (N = 604) and (B) Overinvesting (N=327). The last column displays the mean difference test between groups A and B. Overall, the mean difference tests indicate that many of the variables exhibit statistically significant differences between the groups, suggesting structural differences between underinvesting and overinvesting firms.

Upon a thorough analysis, we observe that, on average, the investment level (INV) is positive in both categories and is higher among overinvesting firms (0.05) than underinvesting firms (0.01), with statistical significance at 1% level. However, investment efficiency exhibits an opposite pattern and is negative for both types of firms, though it is higher among overinvesting firms (-0.03) than underinvesting firms (-0.02), with a statistical significance at 1% level. These results for emerging markets are consistent with those reported by Biddle et al. (2009), Chetty and Saez (2005), Becker et al. (2013), and Chay et al. (2023) for developed countries, which shows that firms with low investment levels exhibit low investment efficiency because they cannot easily raise funds to support growth strategies in either developed or emerging markets. Furthermore, based on evidence from Richardson (2006) and Chetty and Saez (2005), it can be noted that firms from group B typically invest in low-return projects due to agency problems, which may explain the higher investment level observed in group B.

The effective dividend tax rate (TAXRATE) and firm size (LOGASSET) do not differ significantly between groups, suggesting that dividend taxation may not be a key factor in the resource allocation between these groups. This finding is inconsistent with studies such as Becker et al. (2013), which established a clear relationship between taxation and investment under overinvesting and underinvesting firms.

The Tobin Q index, a proxy for growth opportunities, is slightly higher among overinvesting firms than underinvesting; however, the difference is not statistically significant. This suggests that investment intensity is not necessarily driven by perceived market growth potential. Regarding volatility measures, overinvesting firms exhibit a significantly higher standard deviation of investment (SD INV), indicating greater variability in their capital allocation decisions. Conversely, the standard deviation of sales (SD_SALES) is marginally higher in underinvesting firms, although the difference is not statistically significant. These findings consistent with Chay et al. (2023), who argue that overinvesting companies make riskier investments and pursue more volatile investment strategies.

Regarding capital structure and debt levels, we observe that underinvesting firms possess more tangible assets than overinvesting firms (0.35), with a statistically significant difference at the 1% level. Sector leverage (IND LEV) is slightly higher for overinvesting companies, as found by Richardson (2006) and Mitton (2004), who argued that firms with more tangible assets are more likely to raise funds from external sources. There is no statistically significant difference in total leverage between the groups, suggesting that the main constraint on investment may not be access to credit but rather the availability of investment opportunities.

Firms in the underinvesting group are older (AGE = 3.56, t = 0.12***), have longer operating cycles (OPERATING CYCLE = 9.69, t = 0.31***). The natural

logarithm of governance index (LOG G) is somewhat lower in overinvesting firms (4.00, with a difference of 0.11***), in line with Mitton (2004), who posited that firms with better governance tend to retain more profits and distribute fewer dividends. The weaker governance of overinvesting companies supports this hypothesis, as it implies that these firms are channeling their capital into low-quality investments.

The results suggest that the impact of dividend taxation may be less important than institutional factors in determining firms' investment decisions. This finding supports the need to consider the impact of corporate governance and investor protection on investment effectiveness, especially in emerging markets.

Table 3: Summary Statistics

Full Sample (N=931)								Underinvestment Firms: A (N=604)			Overinvestment Firms: B (N=327)			Test of difference in means: A - B
	Mean	SD	p25	p50	p75	Min	Max	Mean	p50	SD	Mean	p50	SD	Difference
INV	0.021	0.027	0.00	0.01	0.03	0.00	0.081	0.008	0.003	0.014	0.05	0.041	0.03	-0.037***
INVEFF	-0.021	0.019	-0.03	-0.01	-0.01	-0.06	-0.002	-0.02	-0.012	0.016	-0.03	-0.02	0.02	0.0101***
TAXRATE	7.618	10.51	0.00	0.00	17.14	0.00	27.71	7.74	0.00	10.53	7.34	0.00	10.48	0.3420
LOGASSET	22.542	1.070	21.72	22.55	23.36	19.12	26.21	22.53	22.52	1.09	22.56	22.66	1.3	-0.0242
Q	1.375	1.615	0.83	1.05	1.44	0.35	32.49	1.32	1.04	1.34	1.47	1.11	2.02	-0.1456
SD CFO	0.035	0.032	0.02	0.03	0.04	0.00	0.25	0.04	0.03	0.03	0.04	0.03	0.03	0.0005
SD SALES	0.092	0.100	0.03	0.06	0.11	0.00	0.93	0.10	0.07	0.10	0.09	0.06	0.11	0.0086
SD INV	0.018	0.023	0.00	0.01	0.03	0.00	0.13	0.02	0.01	0.02	0.02	0.01	0.02	-0.0055***
Z	2.436	4.792	1.21	1.78	2.63	-8.09	96.05	2.31	1.78	3.53	2.68	1.79	6.51	-0.3705
TANG	0.335	0.219	0.17	0.32	0.50	-0.19	0.88	0.35	0.33	0.22	0.31	0.30	0.21	0.0442***
LEV	0.383	0.257	0.18	0.36	0.54	0.00	1.00	0.39	0.38	0.25	0.38	0.32	0.27	0.0055
IND LEV	0.351	0.076	0.31	0.35	0.40	0.05	0.59	0.35	0.35	0.08	0.36	0.36	0.08	-0.0091*
CFO SALLES	0.155	0.494	0.07	0.13	0.24	-9.34	9.97	0.15	0.13	0.59	0.17	0.15	0.22	-0.0171
SLACK	1.778	9.738	0.09	0.23	0.52	-0.52	198.92	1.55	0.22	7.29	2.21	0.26	13.11	-0.660
DIV P	0.876	0.329	1.00	1.00	1.00	0.00	1.00	0.88	1.00	0.32	0.87	1.00	0.34	0.0123
AGE	3.514	0.733	2.94	3.64	4.11	1.10	4.78	3.56	3.69	0.72	3.44	3.58	0.76	0.1203***
OPERATING CYCLE	9.587	1.289	8.8	9.82	10.37	4.05	14.39	9.69	9.85	1.27	9.39	9.75	1.31	0.3055***
LOSS	0.127	0.333	0.00	0.00	0.00	0.00	1.00	0.12	0.00	0.33	0.13	0.00	0.34	-0.0073
CASH ASSETS	0.08	0.066	0.03	0.06	0.11	-0.04	0.44	0.08	0.06	0.07	0.08	0.06	0.06	-0.0019
ANALYSTS	8.562	4.704	5.00	9.00	12.00	0.00	19.00	8.74	9.00	4.66	8.24	9.00	4.78	0.5029
G	3.945	0.430	3.69	4.04	4.28	2.19	4.57	3.91	4.00	0.44	4.02	4.14	0.41	-0.1109***

Source: Author

4.2 REGRESSION RESULTS

To test our research hypothesis, we performed estimations using pooled OLS, fixed-effects, and a random-effects panel models using the dependent variables Investment (INV) and Investment Efficiency (INVEFF). The key independent variable, TAXRATE, serves as a proxy for the effective dividend tax burden in Latin American countries, aiming to capture the extent to which taxation influences both the level and the efficiency of corporate investment.

We conducted regressions for the full sample as well as for underinvesting and overinvesting firms separately. To choose among the pooled, fixed effects, and random effects model, we performed the F-test for individual effects, the Breusch-Pagan Test, and the Hausman test. The results are presented in Tables 4 and 5.

To test hypotheses 1 and 3 concerning corporate investment, estimations were performed using three econometric approaches: pooled OLS regression, panel regression with fixed effects, and panel regression with random effects. The analysis was initially conducted for the entire sample and subsequently for samples segmented into overinvesting and underinvesting firms. This segmentation aims to ascertain whether the relationship between dividend taxation and firms' aggregate investment is moderated by corporate financial constraints.

The analysis began with an examination of the assumptions underlying the pooled regression model through a series of diagnostic tests. The Breusch-Pagan test for heteroscedasticity rejected the null hypothesis of constant variance ($\chi^2(1)=85.58$; $p=0.001$), indicating the presence of heteroscedasticity in the residuals and necessitating the use of robust standard errors. The Shapiro-Francia normality test

also rejected the hypothesis of residual normality (W′ = 0.92520; p = 0.002), suggesting a significant deviation from a normal distribution, although the large sample size (N=931) mitigates this concern. Conversely, the Durbin-Watson Statistic (d=1.2690) did not indicate severe autocorrelation, corroborating the assumption of residual independence. These results underscore the need for robust estimators and require caution in interpreting the pooled model's findings.

To determine the most appropriate specification, we conducted specification tests to guide the choice among alternative models. First, the F-test rejected the null hypothesis of no fixed effects (p<0.0001), indicating that fixed effects are statistically significant. The Breusch-Pagan test (p<0.0001) rejected the null hypothesis of no random effects, suggesting that the random effects (RE) model is preferable to the pooled model. The Hausman test (p < 0.0001) rejected the null hypothesis that random effects estimators are consistent and efficient, indicating a correlation between individual effects (u_i) and the covariates. Consequently, the fixed effects (FE) model emerged as the preferred specification for the full sample.

For firms classified as underinvesting, a pooled OLS model was estimated to investigate the determinants of investment. The coefficient for the L_TAXRATE variable was negative and statistically significant (β=−0.0001272; p = 0.022), indicating that increases in the effective tax rate are associated with reductions in the investment rate for these firms. Additionally, variables related to operational instability, such as the standard deviation of sales (L_SD_SALES) and the standard deviation of investment (L_SD_INV), were statistically significant, suggesting that greater volatility in financial performance is associated with distinct investment levels. Asset tangibility (L_TANG) and operating cycle (L_OPERATINGCYCLE) also exhibited significant negative

effects, corroborating the hypothesis that firms with less liquid assets or longer operating cycles tend to invest less.

However, diagnostic tests revealed violations of the model's assumptions. The Breusch-Pagan/Cook-Weisberg test rejected the hypothesis of homoscedastic residual ($\chi^2(1)=368.19$; $p<0.001$), the Shapiro-Francia normality test indicated that residuals do not follow a normal distribution ($W' = 0.7562$; $p < 0.001$), and the Durbin-Watson statistic ($d=1.33$) suggested the presence of positive autocorrelation. These findings emphasize the necessity of using robust standard errors and require caution in interpreting the pooled model's results.

Regarding model specification for this subsample, the Breusch-Pagan LM test ($p < 0.0001$) rejected the null hypothesis, indicating that the random effects (RE) model is preferable to pooled OLS. The Hausman test encountered computational issues with a non-positive definite matrix, precluding reliance on traditional test results. Following Wooldridge's (2010) recommendations, the fixed effects (FE) model was adopted as a precautionary measure. The F-test (pooled vs. FE) confirmed this choice ($p<0.0001$), concluding that the FE model is preferable to pooled OLS.

For firms classified as overinvesting, the Breusch-Pagan (LM test) yielded a p-value of 0.4237, failing to reject the null hypothesis that the variance of individual effects equals zero. Thus, the pooled model proved sufficient and preferable to the random effects model. The Hausman test ($p=0.2497$) did not reject the null hypothesis that the random effects model is consistent and efficient, suggesting that this specification would be preferable to the fixed effects model. However, the F-test for pooled versus fixed effects ($p=0.0022$) rejected the null hypothesis of no fixed effects, indicating the presence of significant fixed effects. Given this ambiguity in test results, the fixed effects model was chosen as the preferred specification.

Table 4: Panel regression of the relationship between investment and the taxation of dividends

	Full Sample (N=931)			Underinvestment Firms: A (N=604)			Overinvestment Firms: B (N=327)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	POOLED	FIXED EFFECT	RANDOM EFFECT	POOLED UNDER	FIXED EFFECT UNDER	RANDOM EFFECT UNDER	POOLED OVER	FIXED EFFECT OVER	RANDOM EFFECT OVER
L_TAXRATE	-0.000***	-0.000	-0.000**	-0.000**	-0.000	-0.000	-0.001***	-0.000	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
L_LOGASSET	-0.001	-0.008*	-0.001	0.000	-0.007*	-0.000	-0.002	-0.015*	-0.001
	(0.001)	(0.004)	(0.002)	(0.001)	(0.003)	(0.001)	(0.002)	(0.007)	(0.002)
L_Q	0.003	0.001	0.005	0.001	-0.001	0.001	-0.002	0.006	0.003
	(0.003)	(0.004)	(0.004)	(0.002)	(0.004)	(0.003)	(0.005)	(0.007)	(0.005)
L_SD_CFO	-0.077	0.062	-0.019	-0.017	0.011	-0.003	-0.169*	-0.052	-0.140
	(0.052)	(0.065)	(0.062)	(0.032)	(0.031)	(0.030)	(0.096)	(0.182)	(0.122)
L_SD_SALES	-0.078***	-0.032	-0.055***	-0.043***	-0.032***	-0.040***	-0.047	0.006	-0.042
	(0.015)	(0.021)	(0.018)	(0.011)	(0.012)	(0.012)	(0.034)	(0.060)	(0.038)
L_SD_INV	0.349***	-0.130*	0.044	0.164***	0.108***	0.116**	0.178*	0.003	0.057
	(0.055)	(0.078)	(0.071)	(0.048)	(0.041)	(0.047)	(0.093)	(0.132)	(0.100)
L_Z	0.004***	0.002	0.002	0.002*	0.002	0.002*	0.004	0.006	0.003
	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.003)	(0.004)	(0.003)
L_TANG	-0.026***	-0.004	-0.019***	-0.013***	0.007	-0.005	-0.018*	-0.022	-0.014
	(0.005)	(0.011)	(0.007)	(0.003)	(0.006)	(0.004)	(0.010)	(0.031)	(0.012)
L_LEV	0.006	-0.020***	-0.004	0.003	0.006	0.005	-0.005	-0.028	-0.009
	(0.005)	(0.006)	(0.007)	(0.003)	(0.006)	(0.005)	(0.008)	(0.017)	(0.010)
L_IND_LEV	-0.001	0.035	0.014	0.015	0.026	0.023	-0.032	0.003	-0.021
	(0.013)	(0.031)	(0.023)	(0.010)	(0.027)	(0.020)	(0.028)	(0.080)	(0.042)
L_CFO_SALLES	0.014**	0.012	0.018**	-0.004	0.011**	0.010**	0.025*	0.009	0.021
	(0.007)	(0.009)	(0.008)	(0.006)	(0.005)	(0.005)	(0.013)	(0.024)	(0.015)
L_SLACK	-0.000	0.000	-0.000	-0.001	0.002	0.001	0.000	-0.002	0.001
	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.004)	(0.003)
L_DIV_P	-0.000	0.002	-0.001	-0.000	0.003	0.000	-0.000	-0.000	0.001
	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.004)	(0.008)	(0.005)
L_AGE	-0.002*	-0.005	-0.004	0.000	0.002	-0.000	-0.004*	-0.025	-0.005*

	(0.001)	(0.008)	(0.002)	(0.001)	(0.005)	(0.001)	(0.002)	(0.023)	(0.003)
L_OPERATINGCYCLE	-0.004***	0.006***	-0.002*	-0.003***	0.004	-0.002	-0.004**	0.011***	-0.001
	(0.001)	(0.002)	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.003)	(0.002)
L_LOSS	0.002	0.002	0.001	0.002	-0.000	-0.000	0.004	0.012	0.005
	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.006)	(0.009)	(0.008)
L_CASH_ASSETS	-0.004	0.006	-0.006	0.001	-0.013	-0.011	-0.022	0.026	-0.036
	(0.017)	(0.026)	(0.020)	(0.011)	(0.017)	(0.016)	(0.032)	(0.049)	(0.033)
L_ANALYSTS	-0.000*	-0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.001*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
L_G	0.005**	0.001	0.003	0.001	0.002	0.001	0.001	0.009	-0.000
	(0.002)	(0.003)	(0.002)	(0.001)	(0.002)	(0.002)	(0.004)	(0.007)	(0.005)
Constant	0.063***	0.141	0.060	0.023	0.091	0.019	0.161***	0.317*	0.114**
	(0.024)	(0.088)	(0.038)	(0.017)	(0.067)	(0.030)	(0.042)	(0.184)	(0.052)
Observations	931	931	931	604	604	604	327	327	327
R-squared	0.256	0.078		0.205	0.117		0.346	0.185	
Number of firm_id		124	124		112	112		92	92

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: Author

The results obtained corroborate the findings of Chay et al. (2023), in that there are no significant effects of dividend taxation on firms' aggregate investment, even when considering differences in financial constraints. This evidence suggests that factors other than dividend tax policy may be more deterministic in corporate investment decisions, especially when considering the heterogeneity of firms in terms of their financial constraints.

To test hypotheses 2 and 3 regarding corporate investment efficiency, we used the same three econometric approaches used previously: pooled regression, fixed-effects panel regression, and random-effects panel regression. The analysis was initially conducted for the entire sample and subsequently for the sample segmented into overinvested and underinvested firms, as previously performed, to determine whether the relationship between dividend taxation and corporate investment efficiency is moderated by corporate financial constraints. As mentioned previously, since they are used as economic aggregates, the analyst and governance variables were excluded from this analysis.

The analysis began with an examination of the assumptions underlying the pooled regression model through a series of diagnostic tests for all sample. The Breusch-Pagan/Cook-Weisberg test for heteroscedasticity rejected the null hypothesis of constant variance ($\chi^2(1)=68.66;p=0.0000$), indicating the presence of heteroscedasticity in the residuals and necessitating the use of robust standard errors. The Shapiro-Francia normality test also rejected the hypothesis of residual normality ($W' = 0.9436$; $p = 0.0001$), suggesting a significant deviation from a normal distribution. Conversely, the Durbin-Watson Statistic ($d=1.6361$) did not indicate severe autocorrelation, corroborating the assumption of residual independence. These results

underscore the need for robust estimators and demand caution in interpreting the pooled model's findings as the model for aggregated investment above.

To determine the most appropriate specification for all sample, we done specification tests to choice among alternative models. The F-test rejected the null hypothesis of no fixed effects ($p<0.0001$), indicating that fixed effects are statistically significant. The Breusch-Pagan test ($p<0.0001$) rejected the null hypothesis of no random effects, suggesting that the random effects (RE) model is preferable to the pooled model. The Hausman test ($p < 0.0001$) rejected the null hypothesis that random effects estimators are consistent and efficient, indicating a correlation between individual effects (u_i) and the covariates. Consequently, the fixed effects (FE) model emerged as the preferred specification for the full sample for investment efficiency analyses.

For firms classified as underinvesting, a pooled OLS model was estimated to investigate the determinants of investment. The Breusch-Pagan/Cook-Weisberg test for heteroscedasticity rejected the null hypothesis of constant variance ($\chi^2(1)=93.59$; $p=0.0000$), indicating the presence of heteroscedasticity in the residuals and necessitating the use of robust standard errors. The Shapiro-Francia normality test also rejected the hypothesis of residual normality ($W' = 0.9397$; $p = 0.0001$), suggesting a significant deviation from a normal distribution. Conversely, the Durbin-Watson Statistic ($d=1.7623$) did not indicate severe autocorrelation, corroborating the assumption of residual independence. To address potential heteroskedasticity and autocorrelation in the residuals, we apply robust standard errors clustered at the firm level.

Regarding model specification for this subsample, the Breusch-Pagan LM test ($p < 0.0001$) rejected the null hypothesis, indicating that the random effects (RE) model

is preferable to pooled OLS. The Hausman test encountered issues with a non-positive definite matrix, precluding reliance on traditional test results. Following Wooldridge's (2010) recommendations, the fixed effects (FE) model was adopted as a precaution. The F-test (pooled vs. FE) confirmed this choice ($p<0.0001$), concluding that the FE model is preferable to pooled OLS.

For firms classified as overinvesting, the Breusch-Pagan (LM test) for heteroskedasticity indicated a rejection of the null hypothesis of constant variance ($X^2(1)=4,27$, $p=0.038$), suggesting the presence of heteroskedasticity in the residuals. To address this issue, robust standard errors clustered at firm level were employed to ensure consistent inference. The F test did not reject the null hypothesis of absence of fixed effects ($p=0.0798$), at a significance level of 5%, suggesting that the pooled model may be adequate. The Breusch-Pagan test ($p=0.1181$) did not reject the null hypothesis of no random effects, suggesting that the pooled is enough. The Hausman test ($p=0.9765$) did not reject the null hypothesis that random effects estimators are consistent and efficient, indicating that random effects is better than fixed effects in this case.

Table 5: Panel regression of the relationship between investment efficiency and the taxation of dividends

	Full Sample (N=931)			Underinvestment Firms: A (N=604)			Overinvestment Firms: B (N=327)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	POOLED	FIXED EFFECT	RANDOM EFFECT	POOLED UNDER	FIXED EFFECT UNDER	RANDOM EFFECT UNDER	POOLED OVER	FIXED EFFECT OVER	RANDOM EFFECT OVER
L_TAXRATE	0.001***	-0.000	0.000***	0.000***	-0.000	0.000***	0.001***	0.001	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
L_LOGASSET	0.000	-0.000	0.000	-0.001	0.002	-0.000	0.001	0.007	0.001
	(0.001)	(0.003)	(0.001)	(0.001)	(0.004)	(0.001)	(0.001)	(0.007)	(0.002)
L_Q	-0.000	-0.007**	-0.003	-0.001	-0.011***	-0.004	0.004	0.001	0.002
	(0.002)	(0.003)	(0.002)	(0.002)	(0.004)	(0.003)	(0.004)	(0.006)	(0.004)
L_SD_CFO	0.106***	0.026	0.085*	0.064*	0.016	0.061	0.184**	0.089	0.129
	(0.040)	(0.053)	(0.047)	(0.039)	(0.050)	(0.041)	(0.083)	(0.168)	(0.098)
L_SD_SALES	0.041***	0.024	0.039***	0.035***	0.012	0.026**	0.014	-0.024	0.013
	(0.011)	(0.016)	(0.012)	(0.011)	(0.015)	(0.012)	(0.026)	(0.052)	(0.029)
L_SD_INV	-0.123***	0.103**	-0.050	-0.007	0.032	0.003	-0.180**	0.063	-0.063
	(0.038)	(0.043)	(0.046)	(0.041)	(0.044)	(0.045)	(0.077)	(0.106)	(0.085)
L_Z	-0.003***	-0.001	-0.001	-0.000	0.003	0.001	-0.006***	-0.005	-0.005**
	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.003)	(0.002)
L_TANG	0.011***	0.005	0.008*	0.008*	0.002	0.006	0.001	0.009	-0.000
	(0.004)	(0.007)	(0.005)	(0.005)	(0.009)	(0.006)	(0.008)	(0.027)	(0.009)
L_LEV	0.004	0.010*	0.005	0.010**	0.005	0.007*	0.001	0.009	0.004
	(0.004)	(0.006)	(0.005)	(0.004)	(0.006)	(0.004)	(0.006)	(0.014)	(0.007)
L_IND_LEV	-0.013	0.039*	0.001	-0.025**	0.040	-0.015	0.022	0.061	0.041
	(0.010)	(0.023)	(0.015)	(0.010)	(0.027)	(0.014)	(0.020)	(0.064)	(0.028)
L_CFO_SALLES	-0.011**	-0.001	-0.007	-0.003	0.000	-0.000	-0.020**	-0.014	-0.018*
	(0.005)	(0.007)	(0.007)	(0.006)	(0.007)	(0.008)	(0.010)	(0.018)	(0.010)
L_SLACK	0.001	0.001	0.000	0.000	-0.000	-0.000	0.001	0.001	-0.001
	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.003)	(0.002)
L_DIV_P	0.000	-0.003	-0.000	-0.001	-0.005**	-0.002	0.004	0.001	0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.006)	(0.004)
L_AGE	0.003***	0.014**	0.003***	0.002**	0.016**	0.002	0.004**	0.012	0.005**

	(0.001)	(0.006)	(0.001)	(0.001)	(0.007)	(0.001)	(0.002)	(0.019)	(0.002)
L_OPERATINGCYCLE	0.001**	-0.006***	0.001	0.003***	-0.005**	0.002***	-0.000	-0.006**	-0.001
	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.003)	(0.001)
L_LOSS	-0.003	-0.005**	-0.003	-0.002	-0.001	-0.001	-0.007	-0.013*	-0.008
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.005)	(0.007)	(0.005)
L_CASH_ASSETS	0.020*	0.023	0.023*	0.017	0.024	0.017	0.024	0.026	0.046*
	(0.012)	(0.021)	(0.013)	(0.011)	(0.022)	(0.012)	(0.026)	(0.042)	(0.027)
Constant	-0.049***	-0.014	-0.049**	-0.043**	-0.069	-0.037**	-0.069**	-0.184	-0.067*
	(0.017)	(0.066)	(0.022)	(0.017)	(0.073)	(0.019)	(0.034)	(0.161)	(0.041)
Observations	931	931	931	604	604	604	327	327	327
R-squared	0.220	0.089		0.235	0.122		0.255	0.117	
Number of firm_id		124	124		112	112		92	92

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: Author

Based on the regression analyses presented in Tables 4 and 5, dividend taxation has a significant effect only on overinvested companies, with no significant impact on investment or investment efficiency in the total sample or among underinvesting firms. For overinvesting firms, we observe that an increase in tax burden (TAXDIV) is associated with a slight decrease (- 0.001***) in investment ($INV_{i,t}$), which supports the research by Becker et al. (2013), who suggest that taxing dividends may discourage firms from retaining profits and thereby decrease the likelihood of investments in companies with substantial available funds.

In addition, consistent with the investment level results, we find that an increase of dividend taxation is associated with a slight increase (INVEFF = 0.001***) in the ability of overinvesting companies to invest in projects with positive NPVs, suggesting once again that taxation can act as a disciplinary mechanism, restricting excessive investments in low-return projects. These findings are aligned with the literature on agency conflicts, as highlighted by Jensen (1986), Chetty and Saez (2010), and Richardson (2006), who argue that companies with excess cash tend to allocate resources inefficiently and may benefit from restrictions that encourage better investment management.

However, for the full sample and for underinvesting companies, where coefficients were estimated using fixed effects to control for time-invariant unobservable factors for each firm, dividend taxation did not show a statistically significant effect on investment or investment efficiency. This indicates that, for underinvesting firms, the main factors limiting investment or efficient resource allocation are unrelated to tax policy but rather to their difficulties in accessing credit or generating cash to finance new projects, reinforcing the conclusions of Chay et al.

(2023) conclusions, who identify that underinvesting firms respond more to liquidity shocks than to changes in tax burden.

Another key factor identified in the analysis is the relationship between investment efficiency and investment volume. Firms that allocate capital more efficiently tend to invest more, as demonstrated by the positive and significant coefficient of investment volatility (SD_INV) for both underinvesting (0.098**) and overinvesting firms (0.302***) in table 5. This finding is consistent with Biddle et al. (2009), who argue that capital allocation efficiency is a central determinant of investment decisions. Furthermore, Biddle et al. (2009) indicate that an inconsistent investment policy can harm efficient capital allocation, as shown by the negative and statistically significant relationship in investment volatility (SD_INV) and investment efficiency in the full sample (-.0130**) and among overinvesting companies (-0.273***) in Table 5.

Another important finding involves sales volatility (SD_SALLES) in Table 4, which is negatively associated with investment in the full sample (-0.077***) and among underinvesting firms (-0.031***), suggesting that firms facing greater uncertainty about future revenues adopt a more conservative capital allocation strategies. These findings align with those of Chay et al. (2023), who also emphasized that the level of uncertainty surrounding cash generation plays a crucial role in influencing firms' investment strategies. These findings further indicate that firm´s capital structure significantly influences its investment choices. More leveraged companies invest less (-0.020***), supporting Richardson’s (2006) argument that indebtedness can limit growth opportunities due to constraints imposed by creditors. In contrast, firms in more leveraged sectors (IND_LEV) tend to invest more (0.038***), suggesting that the sector's financial structure can positively influence the company's investment.

Regarding firm size, Table 4 results indicate that among overinvesting firms, larger firms invest less (-0.007***), a trend previously noted in Richardson (2006), who argues that larger and more established firms have fewer incentives to expand their productive capabilities. Furthermore, the Q-Tobin variable, used as a proxy for growth opportunities, did not show statistical significance, suggesting that the relationship between expected growth and investment may be less direct in emerging markets, where institutional challenges can distort this mechanism.

Finally, the results show that corporate governance factors and external monitoring also impact investment levels, corroborating the findings of Chay et al. (2023). Firms with greater analyst coverage tend to invest less, as evidenced by the negative and significant coefficient for the full sample (-0.000*) in Table 4, suggesting that greater market scrutiny can reduce the propensity for speculative or low-quality investment, consistent with Biddle et al.'s (2009) findings. Regarding firms that overinvest, larger firms tend to invest less (0.007***), as noted in table 4, a trend previously documented by Richardson (2006), suggesting that larger and more established firms may have led motivation to expand their production capacity Further analysis using the Tobin's Q variable to gauge growth opportunities did not yield significant results in table 4, indicating that the link, between anticipated growth and investment might not be as straightforward in developing markets, where institutional challenges can hinder this process.

Dividend taxation does not directly influence investment in the full sample or among underinvesting firms. The impact of dividend taxation on investment efficiency also did not demonstrate a statistical significance for these groups, once again indicating that for underinvesting firms, barriers to optimal resource allocation do not stem from tax regulations but rather from financial limitations such as restricted credit

availability and insufficient cash flow generation, supporting the conclusions drawn by Chay et al. (2023).

Chapter 5

5 CONCLUSION

This study analyzed the effects of dividend taxation on investment and corporate investment efficiency in Latin America, using data from the Refinitiv database for publicly traded companies in Brazil, Chile, Colombia, and Mexico, between 2008 and 2023. The initial sample comprised 9,175 observations from 633 companies across these countries and Costa Rica. However, due to the lack of complete information for all variables, particularly at the corporate governance level, the final sample was reduced to 931 observations from 137 companies, excluding data from Costa Rica, and the period covered was 2010–2022. This restriction should be taken into consideration when interpreting the results.

We find that dividend taxation does not have a statistically significant impact on investment or investment efficiency among underinvesting firms or the full sample, which supports the “neutrality view” of dividend taxation. However, reducing credit barriers and expanding financial opportunities for firms facing investment challenges may constitute a more effective strategy to enhance investment efficiency.

Furthermore, we observe that an increase in dividend tax burden is associated with a slight decline in investment and a modest reduction in the ability of overinvesting firms to allocate resources to value-generating projects that benefit the firms and its shareholders. These results suggest that dividend taxation can act as a disciplinary mechanism, limiting excessive investments in low-return projects and encouraging more prudent capital allocation.

In the context of emerging markets, these findings align with the agency conflicts literature, as discussed by Jensen (1986), Chetty and Saez (2010), and Richardson

(2006). They also reinforce the hypothesis that firms with surplus cash flows tend to direct resources toward low-productivity projects, harming investment efficiency. The fact that this effect is statistically significant and evident in emerging economies suggests that dividend taxation can play a significant role in the governance of these firms, restricting excess liquidity and reducing overinvestment.

This conclusion is particularly relevant for Latin America, where corporate governance and access to credit vary significantly across countries and sectors. In less developed markets, where institutional mechanisms for controlling managers may be weak, dividend taxation can function as a complementary instrument to discipline companies. Furthermore, Zeolla and Santarcángelo (2024) note that the financialization process has led to a reduction in productive investment in the region, underscoring the need for policies that encourage the efficient use of capital.

Despite these contributions, several limitations should be taken into consideration. The major limitation of this study is the lack of detailed information on all companies in the sample, which reduced the number of observations. A study that extends to more Latin American countries, covers a longer period, and has a more comprehensive database could yield more precise results.

Thus, the results of this study suggest that policies aimed at enhancing investment efficiency should consider the interaction between dividend taxation and agency costs, particularly for firms with a history of overinvestment. Although dividend taxation may not be decisive for aggregate investment, its role as a disciplinary mechanism for overinvesting firms cannot be ignored and should be considered by policymakers.

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