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# **Corporate Governance as a Moderator to the Relationship between Equity Betas and Financial Decisions: A Study on Share Repurchases and Equity Issuances**

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## **Abstract**

This paper examines the relationship between company equity betas and their propensity to repurchase shares and issue equity, considering the potential moderating effects of corporate governance. Using secondary company-level data from the Compustat North America database spanning from 2010 to 2022, the study replicates relationships studied in existing literature, while also further extending by adding moderating effect of corporate governance. The findings show a positive and statistically significant relationship between equity betas and the propensity to repurchase shares. The study also explores the moderating effect of corporate governance proxies and finds a weakening effect. However, it acknowledges the need for further investigation using additional variables to capture the multidimensional nature of corporate governance. The study did not find a significant relationship between equity betas and the propensity to issue equity, diverging from existing literature. The study contributes to existing research and provides insights into the mechanisms underlying corporate financial decision-making processes. Its practical implications lie in informing investors, enabling them to create more informed investment strategies and assess related risks more thoroughly.

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# 1. Introduction

On April 20, 2023, one of the largest American e-commerce companies Wish, announced a share repurchase program, buying back \$50 million worth of its shares from the marketplace. This announcement led to a 30% price increase in the company's stock in the following hours. Similarly, the \$2 Billion share buyback program announcement by one of the biggest multinational banks HSBC, led to a 5% stock price increase in the following day. Several studies found positive stock price reactions to open market share repurchase announcements. Rasbrant (2013) shows that open market share buyback announcements lead to a two-day abnormal return of around 2%. Alternatively, on April 20, 2023, the stock price of a company called Meta Materials plunged 43% after their equity offering, through which the company tried to raise \$25 million from investors. Korajczyk et al. (1990) show that there is an abnormal price drop of around 3%, two days after the equity offering announcement for the companies listed on the NYSE. These findings demonstrate that share repurchases and equity issuances get considerable attention upon their announcements. Understanding the drivers of those company decisions can provide serious insights into how investors can make more informed decisions upon their announcements.

Existing literature argues that overvaluation is the primary motive for equity issuance decisions. Graham and Harvey (2001) in their survey of corporate executives, found that most managers take into account the extent of overvaluation when making share issuance decisions. Conversely, undervaluation is cited as a primary reason for share repurchases. Baker et al. (2003) surveyed top executives and found the most commonly cited reason for share repurchases to be undervaluation. However, the findings of Dessaint et al. (2021) imply that those company decisions are not necessarily the result of undervaluation or overvaluation. Instead, the authors argue that the use of incorrect pricing models guides executives toward these decisions. According to the authors, corporate executives rely on the Capital Asset Pricing Model (CAPM) of Sharpe (1964) and Lintner (1965), for company valuation purposes (Graham and Harvey, 2001). However, the empirical literature, including Fama and French (2004) and Dessaint et al. (2021), suggests that CAPM lacks empirical validity, indicating discrepancies between CAPM-based valuations and market valuations. This discrepancy makes beta, one of the components of CAPM, the predictive measure for company managers' perceived over/undervaluation, and thus a predictive measure for financial decision-making concerning

share issuances and share repurchases. Authors find a positive and significant relationship between company betas and the propensity to issue equity. Conversely, a negative and significant relationship exists between company betas and the propensity to repurchase shares. Interestingly, beta, which theoretically shouldn't convey any information about a company's undervaluation or overvaluation, is observed to be related to these decision-making processes. Consequently, the results of the study suggest that share repurchases and share issuances should not necessarily be seen as indicators of undervaluation or overvaluation, but rather that the use of incorrect pricing models could misguide executives in making these decisions. Studying these relationships is relevant for several reasons. Share issuances are believed to convey information known to company managers but not to the public, as a result, these announcements get considerable attention and subsequent price changes in the several days after the announcement. However, interpreting these decisions as conveying private information could be misleading if company managers rely on inaccurate pricing models for their valuations.

This thesis builds upon the study by Dessaint et al. (2021) by examining how corporate governance acts as a potential moderator of the relationship between equity betas and the propensity to repurchase shares and issue equity. Corporate governance refers to the system and practices that ensure responsible and transparent management, maximizing value for shareholders. A possible rationale for why corporate governance may change the effect of equity betas on share issuance and repurchase activity was provided by Dessaint et al. (2021). The authors argue that using better valuation models than CAPM is costly for company managers and that they will only do so if they seek to gain some benefit from it. Therefore, if we assume that better corporate governance makes managers act in the interests of shareholders, companies with strong corporate governance will be more likely to use more accurate pricing models. Consequently, less reliance on CAPM for their valuations will possibly lead to more convergence of managers' beliefs with market valuations, weakening the relationships between betas and the propensity to issue equity and repurchase shares. In this context, corporate governance may influence how managers perceive the accuracy of CAPM and the extent to which they rely on it for their valuation decisions. As such, if the weakening effect of corporate governance on equity betas is found, it would have two important implications. Firstly, it will provide evidence in support of the reasoning that managers who use CAPM are misguided in their decision-making processes. Secondly, suggest that the

decisions of companies with strong corporate governance are not misguided by the use of inaccurate valuation models and could indeed serve the interests of shareholders.

To estimate the relationships in this study, ordinary least squares (OLS) regressions were used. The propensity to repurchase shares was proxied in two distinct ways. Firstly, a dummy approach was used where I distinguished between share repurchasing and non-repurchasing companies. Secondly, I used the share repurchase ratio, which is a ratio of the total amount spent on shares repurchased divided by the total market capitalization at the beginning of the corresponding year. Similarly, the propensity to issue equity was proxied using two measures as well. Firstly, the dummy approach was used. Additionally, the share issuance ratio was implemented, which is the total amount of equity capital raised through seasoned equity offerings during the year divided by the total market cap as of the beginning of the corresponding year. Data for both share repurchases and equity offerings was retrieved from the Compustat North America database. To proxy for corporate governance, two variables were used, both commonly used in existing literature (Dessaint et al, 2021). Corporate governance is a multidimensional concept; therefore, using only one proxy could be misleading. Firstly, I made use of institutional ownership, which measures the percentage of shares owned by institutional investors. Secondly board independence was used, which measures the percentage of independent directors on the board, as proxies for corporate governance. The unit of analysis is the company. Data was collected for US and Canadian exchange-listed public companies from 2010 to 2022. This paper incorporates three new dimensions in the analysis that have not been studied in the existing literature. The existing literature employs the dummy variable approach to study relationships. This paper, in addition to the dummy approach, employed different measures of propensity to issue shares and propensity to repurchase shares. Namely share issuance and share repurchase ratios, which will allow for a more comprehensive analysis of the studied relationships. Moreover, compared to the study of Dessaint et al. (2021), which studied the 1977-2015 time period, the data collected for this paper focuses on more recent periods. More particularly, this study focuses on the post-financial crisis era, which has brought significant changes that distinguish it from earlier periods. By studying this period, this paper will give insights into the current financial market environment and provide more relevant findings. Lastly, the paper will add a new dimension by analyzing the moderating effect of corporate governance on the propensity to issue equity and repurchase shares.

In summary, this thesis seeks to contribute to the existing literature by examining how corporate governance moderates the effect of equity betas on a company's propensity to repurchase shares and issue equity. Dessaint et al. (2021) found a negative and significant relationship between equity betas and the propensity to repurchase shares. In this study, I expect corporate governance to weaken the effect of equity betas on the propensity to repurchase shares. As such, I expect a positive and significant effect of the interaction term between equity beta and measures of corporate governance. Similarly, I expect corporate governance to weaken the effect of equity betas on the propensity to issue equity. However, the effect of the interaction term between equity beta and measures of corporate governance is expected to be negative, as Dessaint et al. (2021) found a positive and significant effect of equity betas on the propensity to issue equity.

The subsequent sections of the paper include the theoretical framework, Data and Methodology, Results, Discussions, and Conclusions. The theoretical Framework contains a discussion of the existing literature studying share issuance and share repurchase decisions. Moreover, the section provides the theory behind the relationships studied, and subsequent hypotheses are presented. The Data and Methodology section describes the data selection procedure as well as the statistical methods used to analyze the retrieved sample. The Results section presents and interprets the results obtained by analyzing the retrieved data. Next, the Discussion section explains the implications of the obtained results, and finally, the Conclusion section summarizes the entire paper.

## **2. Theoretical Framework:**

The purpose of this section is to provide an overview of existing literature studying equity issuance and share repurchase decisions by the companies. Furthermore, try to investigate the possible rationale for the relationship between those company decisions and equity betas. Lastly, this section will explore how corporate governance practices may be moderating the effects between these variables. Understanding how these variables might be related could provide some insights into the motivations behind share repurchase and share issuance decisions.

### **2.1 Equity Issuances:**

One of the main topics of this study is equity issues. Equity issuances refer to a process of raising capital by selling company shares to investors. Issuance of new equity can take various forms including, initial public offerings (IPO), seasoned equity offerings (SEO), or rights offerings. An IPO describes the process of initially issuing shares of a private company to the general public. On the other hand, if a company, listed on the stock exchange raises capital by issuing additional shares it will be a seasoned equity offering. The rights offering is a type of offer when existing shareholders are given the option to purchase additional shares in proportion to their existing holdings. There are various reasons for raising equity capital, such as financing growth opportunities, funding acquisitions, or improving the company's financial condition. In general, stock issuances are essential for allowing businesses to obtain outside financing and carry out their expansion plans.

#### **2.1.1 Capital Structure:**

Modern finance theory is founded on the Modigliani-Miller (MM) irrelevance theorem (1958). The authors challenge the established view that a company's capital structure choices, such as share issuances, affect its total value. The MM irrelevance theorem states that the value of a company is fully dependent on its underlying cash flows and the risk of its assets in a perfect capital market. In other words, the method of financing, whether through debt or equity, shouldn't impact a company's overall valuation. Despite its groundbreaking contribution towards understanding companies financing decisions, the presence of various market

imperfections such as taxes or information asymmetry makes its applicability to the real world questionable.

The MM irrelevance theorem serves as a solid foundation for the pecking order theory. It offers more nuanced insights into equity issuance decisions by taking into account the information asymmetry and signaling effects that affect firms' choice of financing. The Pecking Order Theory introduced by Myers and Majluf (1984) argues that firms prefer internal financing over external financing; however, if the need for external financing arises, companies prefer to be financed with debt rather than equity. This preference is derived from the idea that internal owners have access to superior information compared to external shareholders, thus increasing information asymmetry. As a result of this perceived risk brought on by the information asymmetry, external investors demand larger returns. Consequently, sources of financing conveying less information asymmetry will be preferred by managers as they tend to be less costly sources of financing. As such, the pecking order theory argues that equity financing will typically be utilized as a last resort by companies.

### **2.1.2 Overvaluation:**

The above discussion suggests that share issuances are typically the least preferred choice of financing for the firms; however, they are still widely used by the companies. Existing literature suggests that overvaluation is a key factor influencing equity issuance decisions. In a survey of 392 business executives, Graham and Harvey (2001) discovered that most managers take the extent of market overvaluation into account when considering whether to issue shares. According to their study, the majority of CFOs agreed with the following statement: "If our stock price has recently increased, the price at which we can sell is high (p.2016)." These results clearly show that overvaluation is the main driver behind share issuance decisions by the firms. Empirically, Marsh (1982) studied security issues faced by UK companies between 1959 and 1974. Findings show that companies are greatly influenced by market conditions and past security prices, with recent stock price increases tilting managers to choose equity financing over debt. Additionally, the studies by Spiess and Affleck-Graves (1995) and Ibbotson and Ritter (1995) show empirical proof of long-term underperformance following IPOs and seasoned equity offers (SEOs) made by companies. This pattern may be explained by overvaluation, as firms often issue shares when their stock values are at their peak, causing subsequent price decreases in the following years.



In conclusion, this section aimed to provide an overview of the topic of equity issuances. It discussed many forms of stock issuance, including IPOs, SEOs, and rights offerings. The Modigliani-Miller and pecking order theories provided insights into the financing decisions made by businesses when taking into account factors like information asymmetry. Empirical research further highlighted the importance of overvaluation in influencing stock issuance decisions. Overall, this section aimed to discuss various motivations and theories about equity issuance decisions in the existing literature.

## **2.2 Share Repurchases:**

Share repurchases are transactions in which a company buys back its securities from the current shareholders. By doing so, the firm purchases a portion of its shares, thus lowers the overall number of shares that are currently trading in the market. There are various methods for executing these transactions, including open market repurchases (OMR), tender offers, or even private negotiations. Most popular out of all are open market share repurchases, referred to as the transactions when companies repurchase shares through executing regular trades on stock exchanges. As an alternative, companies can offer a public bid to some or all of their shareholders to buy back their shares. The shareholders have the choice to sell their securities at a particular price and during a specific time period. This method is referred to as a tender offer. Lastly, companies can directly approach some of their biggest shareholders to privately negotiate share repurchases.

Share repurchases are an important topic of study in finance as they encompass many company decisions, ranging from payout and capital structure to investment decisions. With the growing significance of share repurchase activity, it is crucial to understand the motives behind the execution of these transactions. There is extensive literature studying share repurchase motives by firms. The most famous reasons include signaling, payout, agency costs of excess cash flow, earnings-per-share (EPS) manipulation, takeover defense mechanisms, capital structuring, and many more. Saxena and Sahoo (2022) in their recent review classify share repurchase motives into three broad categories: financial perspective, strategic perspective, and wealth maximization perspective, while acknowledging that these categories are not mutually exclusive.

### **2.2.1 Payout Policy:**

One of the most important and groundbreaking works on share repurchases was by Modigliani and Miller (1962), who revolutionized the understanding of corporate finance and payout policy. According to them, in perfect capital markets, the dividend policy of a firm is not relevant in determining a firm's value. They viewed share repurchases and dividend payments as perfect substitutes as opposed to complements to each other. Modigliani and Miller's dividend policy irrelevance theorem asserts that in perfect capital markets, investors are indifferent between receiving cash in the form of dividend payments or capital gains, as they could replicate their desired outcome through their own portfolio choices. Even though the MM theorem rests upon various assumptions and real-world imperfections limit its applicability, Modigliani and Miller's payout policy irrelevance theorem had a profound influence on academic research and understanding of the role of share repurchases.

According to Grullon and Michaely (2002) for decades, US corporations preferred payouts in the form of dividends instead of share repurchases, despite the tax advantages of share repurchases over dividends. The authors found that, starting in the 1980s, share repurchase activities became increasingly popular among US companies. The authors state that “share repurchases as a percentage of total dividends increased from 13.1 percent in 1980 to 113.1 percent in 2000 (p.1649).” By the year 2000, share repurchases had already overtaken cash dividends as the preferred choice of payout. Grullon and Michaely (2002) study the reasons for this change and attempt to determine why dividend payments were the preferred choice of payment in the past. The authors suggest that due to the feasibility for breaching the anti-manipulative standards established by the Securities Exchange Act of 1934, dividends may have been the primary method of cash distribution. As such, corporations were reluctant to engage in open market repurchases to avoid being involved in price manipulation. The Securities Exchange Commission (SEC) carried out Rule 10b-18 in 1982, providing repurchasing companies with a protection from the Securities Exchange Act's (SEA) of 1934's anti-manipulative requirements. Grullon and Michaely (2002) hypothesized that the introduction of safe harbor rules led to the increased popularity of share repurchases in the post-1980s era. To test their hypothesis, they compared the pre-Rule 10b-18 period to the post-Rule 10b-18 period and found evidence in favor of their hypothesis. The following study serves as an example against Modigliani and Miller's (1962) payout policy irrelevance theorem and

demonstrates that various factors could be influencing companies' decision-making concerning share repurchase activities, some of which will be discussed in the following subsections.

### **2.2.2 Undervaluation and Signaling:**

Undervaluation is cited as a primary reason for share repurchases, according to many studies. This is because company management possesses superior knowledge about the true value of the company compared to external shareholders. Since investors only have access to information that is publicly available, this information asymmetry may cause stock prices to inaccurately reflect the company's underlying value. To address this information asymmetry, companies may choose to repurchase their shares. By repurchasing shares, companies send a signal to the market that their stock prices are trading below their fair value.

Brav, Graham, Harvey, and Michaelly (2005) surveyed 384 company executives to determine the driving factors of share repurchase decisions. Most executives indicated that they are involved in share repurchase activities when stock prices are lower than the recent historical standard prices. "The most popular response for all repurchase questions on the entire survey is that firms repurchase when their stock is a good value, relative to its true value: 86.4% of all firms agree or strongly agree with this supposition" (Brav, Graham, Harvey and Michaelly, 2005, p.514). Similarly, Baker et al. (2003) surveyed 642 top executives to get insights about share repurchase decisions by the companies. The authors surveyed top executives at the companies that engaged in share repurchase activities between January 1998 and September 1999. Results indicated that undervaluation was the most frequently stated explanation for share repurchases. The authors of both of those studies (Brav et al. 2005 and Baker et al. 2003) made use of surveys and interviews to find the most commonly cited reasons for share repurchases. The results found indicate that undervaluation and signaling are the primary reasons for engaging in share repurchase activities.

Besides signaling the undervaluation of their shares, companies repurchase underpriced shares to improve shareholder value as well. Sloan and You (2015) argue that repurchasing underpriced shares results in a wealth transfer from transacting shareholders to ongoing shareholders. Results suggest that by repurchasing undervalued shares, existing shareholders benefit at the expense of selling shareholders once the stock price of the undervalued company converges to its fair value. In support of this reasoning, Chen et al. (2011) examined the wealth

effects of 948 share repurchase announcements in the Taiwanese market. The authors found positive and significant buy-and-hold abnormal returns for a 1-year timespan upon the announcement of open market share repurchases, citing the undervaluation as a primary reason explaining wealth transfer between shareholders.

To conclude, many studies have highlighted undervaluation as one of the main factors influencing share repurchases. Stock prices may diverge from a company's true value due to the informational asymmetry between management and external shareholders. Companies might signify that stock prices are now below their real worth and provide reassuring information about the firm's prospects by repurchasing their shares. Furthermore, as the stock price eventually converges to its fair value, repurchasing undervalued shares might lead to a wealth shift from trading shareholders to holding shareholders. The data from numerous studies supports the idea that undervaluation and signaling are crucial factors in determining the choices made while engaging in share repurchase operations, which ultimately aim to increase shareholder value.

### **2.2.2 Other Motives:**

In addition to the previously discussed motives there are other significant reasons why companies engage in share repurchase activities. Excess cash flow, known as free cash flow, can lead to agency problems within a company. Jensen (1986) argues that companies may outgrow its optimal size, phenomenon known as empire building. To address this issue, distributing excess cash to shareholders through share repurchases can help reduce agency costs associated with managers making suboptimal investments, he argued. Grullon (2000) discovered that markets react positively to share repurchase announcements made by companies with limited investment opportunities.

Share repurchases by firms are frequently explained by the motivation of companies to alter earnings per share (EPS). EPS measures how much earnings the company generates for each share owned by its shareholders. Companies can increase EPS by lowering the number of outstanding shares through share repurchases. EPS is a crucial metric used for the assessment of a firm's financial performance; therefore, purposefully increasing EPS through share repurchases can influence investors' perceptions of the company's profitability and potentially increase its stock price. According to Rodriguez and Yue (2005), there is evidence suggesting

businesses that manipulate their EPS perform better on average than businesses that don't engage in such practices.

The literature analysis on share repurchases concludes by outlining reasons why businesses engage in this activity. These include undervaluation and signaling when corporations buy back shares when they think the price of their stocks is below what they are worth. A wealth transfer from selling shareholders to remaining shareholders may result from the repurchasing of undervalued shares. Additional reasons include manipulation of EPS, distribution of excess cash flows, and many more. In general, share repurchases have gained importance in the financial world, influencing a variety of corporate decisions such as payout policy, capital structure, investment decisions, and more.

### **2.3 Relationship between Equity Beta and Propensity to Issue Equity, and to Repurchase Shares:**

Existing literature widely argues that company managers can increase current shareholder value by issuing overpriced securities and repurchasing underpriced shares (Baker and Wurgler, 2013). When equity is issued at a price higher than its fair valuation, it is considered a positive net present value (NPV) transaction, assuming that security prices will eventually converge to their true value. Likewise, the repurchase of shares at a price lower than their fair value can also be considered a positive NPV transaction. As a result, perceived valuations of companies by company managers compared to market valuations significantly influence many financial decisions of those companies.

Graham and Harvey (2001) surveyed the majority of corporate executives and found that most of the CFOs use the Capital Asset Pricing Model (CAPM) for estimating firms' cost of capital and thus the valuations of their companies. The Capital Asset Pricing Model (CAPM) is the most widely used model to estimate an asset's expected return based on its systematic risk. The model incorporates the company's equity beta, which measures its sensitivity to market movements, as well as the risk-free rate and the expected market return, to determine the required return of a security. Essentially, CAPM offers a framework for valuing risky assets and helps investors evaluate the possible risks and benefits of their investments. As a result, widespread use of CAPM for cost of capital estimation purposes and, consequently, for valuations will have substantial effects on managers' financial decision-making.

Empirical evidence strongly challenges the validity of the Capital Asset Pricing Model (CAPM), indicating significant disparities between actual market returns and those predicted by CAPM (Fama and French, 2004). The Security Market Line, that describes the relationship between a company's equity beta and expected returns, is found to be less steep than implied by CAPM (Dessaint et al., 2021). Consequently, for companies with low betas, the CAPM implies a lower cost of capital compared to the actual realized returns, whereas high-beta companies experience a higher CAPM-implied cost of capital relative to realized returns. Such inconsistencies between CAPM-implied and realized returns are likely to result in disparities between CAPM-based valuations and market valuations of companies. Based on this line of reasoning, Dessaint et al. (2021) argue that the market valuations of low-beta securities will be lower than CAPM-based valuations since the cost of capital used in CAPM-based valuations is lower, leading to higher valuations. The opposite holds for high-beta companies. If we assume that managers indeed use CAPM for estimating the cost of capital, it follows that a company's equity beta becomes a significant determinant of managers' perceived potential over/undervaluations of their companies, consequently influencing their financial decision-making with equity issuances and share repurchases.

Dessaint et al. (2021) conducted a study where they examined the relationships between company betas and the propensity to issue equity and repurchase shares. The authors put forth two hypotheses: firstly, they hypothesized that managers of high-beta companies would perceive their companies as overvalued, leading to a positive relationship between company equity betas and the propensity to issue shares. Secondly, they hypothesized that managers of low-beta companies would perceive their companies as systematically undervalued, resulting in a negative relationship between company betas and the propensity to repurchase shares. To test their hypotheses, the authors utilized secondary data obtained from the Compustat database, covering the period from 1977 to 2015. They operationalized the propensity to repurchase shares by assigning a value of 1 to a company that repurchased shares in a given year, and 0 otherwise. Similarly, the propensity to issue shares was estimated by assigning a value of 1 to a company that issued shares in a specific year, and 0 otherwise. The authors estimated equity betas by regressing five-year monthly excess stock returns on the excess returns of the CRSP value-weighted portfolio. The authors discovered evidence supporting both of their hypotheses. Firstly, a positive relationship between equity betas and the propensity

to issue equity. Secondly, a negative relationship between equity betas and the propensity to repurchase shares.

Based on the aforementioned literature, this study aims to replicate the research conducted by Dessaint et al. (2021). Specifically, this paper will investigate two relationships. It will study the relationships between the propensity to issue shares and equity beta. The relationship between propensity to repurchase shares and equity beta will also be studied. However, unlike Dessaint et al.'s (2021) study, this paper will focus on a more recent period. The chosen timeframe deliberately centers around the post-financial crisis era, which is characterized by significant changes that distinguish it from earlier periods. By examining more recent data, this study seeks to determine whether the observed relationships between propensity to issue shares, propensity to repurchase shares, and equity beta still hold in the current context.

The first and second hypotheses of this study are presented below:

*H1: Equity beta is positively related to the propensity to issue equity.*

*H2: Equity beta is negatively related to the propensity to repurchase shares.*

## **2.4 Moderation:**

Furthermore, this paper aims to extend the study by exploring additional dimensions of the relationships mentioned above. It will introduce an interaction term to investigate whether corporate governance acts as a moderator in the relationships between company betas and the propensity to repurchase shares and issue equity. Corporate governance refers to the framework of rules and practices that guide company management in their decision making. The key objective of strong corporate governance is to protect the interests of shareholders.

The existing literature provides evidence supporting the relationship between corporate governance and the variables of interest, namely share repurchases and equity issuances. Jiraporn (2006) studied how the strength of shareholder rights influenced share repurchase activity. Results indicate that firms with stronger shareholder rights repurchase more stocks. Strong shareholder rights here can be regarded as an indicator of strong corporate governance, as they help to align shareholders' interests with management's decisions. Additionally, Chen

et al. (2009) found that corporate governance is negatively related to a firm's cost of equity. Their findings suggest that firms with high corporate governance on average have a low cost of equity, thus making equity issuances a less costly source of financing. Both studies provide supportive evidence of the relationship between corporate governance and outcome variables.

A possible rationale for why corporate governance may change the effect of equity betas on share issuance and repurchase activity was provided by Dessaint et al. (2021). The authors argue that for company managers to use better valuation models than CAPM is costly and they will only do so if they seek to gain some benefit from it. Therefore, if we assume that better corporate governance makes managers act in the interests of shareholders, companies with strong corporate governance will be likely to use more accurate models for company valuation purposes. Consequently, less reliance on CAPM for their valuations will possibly lead to more convergence of managers' beliefs with market valuations, thus expecting a weakening effect of corporate governance on betas.

Ultimately, this paper wants to study how corporate governance moderates the relationship between company equity betas, propensity to issue equity, and propensity to repurchase shares. Based on the above reasoning, the third and fourth hypotheses of the study are formulated as follows:

*H3: Corporate governance moderates the relationship between company equity betas and the propensity to issue equity. I expect corporate governance to have weakening, thus a negative effect on the relationship between equity betas and the propensity to issue shares.*

*H4: Corporate governance moderates the relationship between company equity betas and the propensity to repurchase shares. I expect corporate governance to have weakening, thus a positive effect on the relationship between equity betas and the propensity to repurchase shares.*



### **3. Data and Methodology:**

To study the hypothesis given in the previous section, I utilized secondary company-level data obtained from the Compustat North America database. Compustat North America is a comprehensive database consisting of Canadian and U.S. public companies and providing both fundamental and market data for the available companies. All public companies from Compustat, active as of June 2023, were included in the sample. Data is collected on a yearly basis and ranges from the year 2010 to 2022.

The dependent variable studied in the first relationship is the propensity to issue shares. Data on share issuances were retrieved from the Compustat North America database. The selected variable represents the proceeds from the issuance of common and preferred stock during the fiscal year. The propensity to issue shares was operationalized in two distinct ways. Firstly, it was measured using a dummy variable approach. A value of 100 was assigned to companies that issued shares at least once during a year, while companies that didn't were assigned a value of 0. This method allows one to differentiate between share-issuing and non-issuing companies. However, it does not distinguish between companies that have issued different amounts of shares during a year. For example, if a company issued \$10 billion worth of shares it will get assigned the same value of 100 as a company that issued \$10 million worth of shares. To address this limitation, an alternative method was employed as well. The propensity to issue shares was proxied with the share issuance ratio, which is the total amount of equity capital raised during the year, divided by the company market capitalization at the beginning of that year. This approach measures what fraction of the company's total market capitalization at the beginning of the year was issued throughout the corresponding year, providing a more nuanced measure of propensity to issue shares. Table 1 provides descriptive statistics of all the variables used in the analysis. The mean value of the share issuance ratio of 5.05 shows that on average value of shares issued throughout the fiscal year was 5.05 percent of the company's market capitalization as of the beginning of the corresponding fiscal year. In summary, the independent variable, propensity to issue shares, was operationalized using both a dummy variable approach and a fraction of market capitalization approach, allowing for a comprehensive analysis of share issuance behavior.

The dependent variable studied in the second relationship is the propensity to repurchase shares. Data on share repurchases was obtained from the Compustat North America database. Unlike share issuance data, no variable directly provided yearly share repurchase values for companies. Therefore, I utilized quarterly-level data and made some adjustments to transform it into yearly data. To calculate the value of shares repurchased throughout the fiscal quarter, the total shares repurchased throughout the quarter were multiplied by the average price the company paid to repurchase its shares. Moreover, the quarterly repurchase values were aggregated into yearly values using the following procedure: if a company had at least one missing value in any of the quarters within a year, the observation for that company was dropped for that specific year. However, if there was a repurchase value available for all four quarters, the quarterly values were summed to obtain the yearly repurchase value for that company. Similar to the approach used for share issuances, the propensity to repurchase shares was operationalized in two different ways. Firstly, a dummy variable approach was employed, where companies that repurchased shares at least once during any quarter in the corresponding fiscal year were assigned a value of 100, while companies that didn't repurchase shares in all four fiscal quarters during the year were assigned a value of 0. Alternatively, the propensity to repurchase shares was measured by dividing the value of shares repurchased throughout the fiscal year by the company market capitalization at the beginning of the corresponding year. The given ratio will be referred to as a repurchase ratio throughout the paper. This measure allows for a comparison of the repurchase activity relative to the company's overall market value. By utilizing these two different approaches, I aim to capture different aspects of the propensity to repurchase shares.

The main independent variable in both of my relationships is equity beta. To calculate the equity betas for the companies in my sample, I utilized the Beta Suite tool provided by WRDS (Wharton Research Data Services). Beta Suite is a web-based tool specifically designed for researchers to calculate equity betas using different study frequencies and risk models. The equity betas were calculated for all the companies in my sample as of the beginning of the corresponding year (December 31, Year-1) within the period from 2010 to 2022. The calculation of betas involved regressing the monthly company stock returns on the Fama French Excess Return on the Market. For the estimation of betas, I utilized a 60-month estimation window, with a minimum estimation window of 12 months. This means that the betas were estimated using a range of data spanning 60 months, with a minimum requirement

of 12 months of data available. After the estimation process, any companies that had negative beta values were removed from the analysis as suggested by Dessaint et al. (2021) in their analysis. As a result, I ended up with a total of 33,714 beta observations, with an average value of 1.23, for all the companies in my sample within the 2010-2022 time period. By utilizing the Beta Suite tool and following these procedures, I aimed to capture the changing value of betas over time for the companies in my study. These beta values will serve as the key independent variables in both of the relationships studied, allowing me to analyze their impact on the dependent variables of interest.

To capture the multidimensional nature of corporate governance, I utilized two commonly used variables as proxies, as recommended in the existing literature (Dessaint et al., 2021). Relying on a single proxy for corporate governance could lead to misleading results. Therefore, in my analysis, I incorporated institutional ownership and board independence as measures of corporate governance. To obtain data on institutional ownership, I utilized the WRDS TR Tool, which uses aggregated security-level data from the Thomson-Reuters Institutional Ownership S34 database. The variable retrieved provides information on the percentage of shares owned by institutional investors in each company. For data on independent board directors, I accessed the Refinitiv Eikon DataStream database. This database offers comprehensive information on corporate governance characteristics, including the composition of the board of directors. Both institutional ownership and board independence are continuous variables, measured in percentage points. Furthermore, I created an interaction term between equity betas and measures of corporate governance by multiplying those measures with the company's equity betas. This interaction term enabled me to examine how corporate governance moderates the relationship between equity betas and the propensity to issue shares and repurchase equity.

Control variables used in my analysis are the ones commonly used in share repurchase and share issuance literature (Dittmar, 2000; Dessaint, 2021). To account for company size, I incorporated a natural logarithmic transformation of company market capitalization. In addition to the logarithmic transformation of the market capitalization, several ratios were utilized as control variables. The market-to-book ratio was derived by dividing the firm's market value by the book value of shareholders' equity. This ratio offers insight into the valuation of the company in relation to its accounting value. Additionally, the Cash-to-assets ratio was used, which was obtained by dividing total cash and cash equivalents by the

company's total assets. The Return-on-Assets (ROA) ratio was also incorporated, which was calculated by dividing the income before extraordinary items by the total assets of the company. This ratio helps measure the company's profitability in relation to its total asset base. Debt-to-Assets ratio was included as well, which was obtained by dividing the sum of short- and long-term debt by the company's total assets. Additionally, the Cash Flow to Assets ratio was used, obtained by dividing the sum of income before extraordinary items and depreciation and amortization by the company's total assets. Lastly, I controlled for company industry differences by utilizing two-digit SIC codes, which categorize companies based on their industries. This control variable helps account for any potential industry-specific effects on the variables under investigation. All the control variables mentioned above were sourced from the Compustat North America database.

**Table 1: Descriptive Statistics:**

Variable	Mean	St.Dev.	Min	Max	N
<b>Dependent Variables:</b>					
Issuance Ratio	5.0503	16.9488	0	121.6156	32,660
Issued	71.6473	45.0717	0	100	32,660
Repurchase Ratio	2.3912	3.3901	0	17.1908	17,530
Repurchased	78.3270	41.2027	0	100	21,506
<b>Independent Variables:</b>					
Beta	1.2332	0.6890	0.0010	3.6230	33,714
Institutional Ownership	61.17806	31.1144	0.8117	100	28,860
Independent Board Members	77.4186	14.7788	23.0769	94.1177	20,044
<b>Controls:</b>					
Market Capitalization	$1.04 \cdot 10^{10}$	$4.52 \cdot 10^{10}$	878940	$2.32 \cdot 10^{12}$	33,714
Market to Book	3.2620	4.8409	-7.2583	25.3360	33,714
Cash to Assets	0.2086	0.2368	0.0025	0.9239	33,714
Debt to Assets	0.2338	0.2139	0	0.8296	33,714
Return on Assets	-0.0267	0.2046	-0.4768	0.2705	33,714
Cash Flow to Assets	0.0002	0.2366	-0.4801	0.2279	33,714

*Issuance Ratio* is the value of shares issued during the fiscal year as a percent of market capitalization at the beginning of the corresponding year. *Issuance Ratio* is shown in percentage points. Variable *Issued* is a binary variable having the value of 100 if the company issued shares throughout a year and zero otherwise. *Repurchase*

*Ratio* is the value of shares repurchased during the fiscal year divided by the company market capitalization at the beginning of corresponding year. *Repurchase Ratio* is shown in percentage points. Variable *Repurchased* is a binary variable having the value of 100 if the company repurchased shares throughout a year and zero otherwise. Variable *Beta* depicts company monthly equity betas as of the beginning of the corresponding year. Variable *Independent Board Members* measures the number of independent directors in the board of directors of the company. *Institutional Ownership* depicts the percentage of company stock held by institutional investors. Control variables are defined in appendix A. Continuous variables are winsorized at 2nd and 98th percentiles.

To analyze the collected data Ordinary Least Squares (OLS) models were used. OLS is a statistical method employed to estimate the coefficients of a linear regression, by finding the best-fitting line between the dependent and independent variables. OLS works by minimizing the sum of squared differences between the values of the dependent variable that are observed and those that are predicted by the linear regression equation. Consequently, by minimizing the sum squared errors, OLS penalizes a few large errors more than many small errors. OLS makes several assumptions, such as no endogeneity, no autocorrelation, no heteroskedasticity, and zero-mean and normality of errors. To ensure the reliability of statistical inferences of estimated parameters, it was crucial to check the validity of the abovementioned assumptions.

The most important assumption out of all is no endogeneity, or in other words, the exogeneity assumption. In fact, this is the only assumption needed to ensure unbiased coefficient estimates. The exogeneity assumption requires our independent variable not to be correlated with an error term of the regression. In other words, if there is any variable, not included in the regression, explaining the dependent variable and at the same time is correlated with independent variables then the exogeneity assumption is violated. To address this issue, I controlled for several variables in my analysis, however even after adding several such possible omitted variables in the regression, there is still no guarantee that all relevant variables are controlled for. Thus, making causal claims impossible and allowing us to interpret coefficient estimates only as partial associations.

Homoscedasticity and serial autocorrelation assumptions play an important role in ordinary least squares regressions. The homoskedasticity assumption requires constant variance across error terms. Violation of the following assumption doesn't affect the coefficient estimates but influences standard errors, leading to misleading interpretations of causal inference. If the homoskedasticity assumption is violated, the null hypothesis will often be rejected, implying significant results when in reality there could be none. The assumption of no serial correlation

requires error terms not to be correlated with each other. Like in the case of the homoskedasticity assumption, when this assumption is violated, it leads to incorrect standard errors, which in turn can result in misleading causal interpretations of the estimated coefficients. To address potential concerns regarding serial correlation, year-specific and industry-specific dummies were included in all the regressions conducted in the paper. These dummies help to control for any systematic patterns or time-specific effects within industries that could contribute to serial correlation. Furthermore, in order to account for potential clustering and heterogeneity within industries, the standard errors were clustered by two-digit SIC codes. By addressing the autocorrelation assumption, the issue of homoscedasticity is addressed as well. Clustering the standard errors by two-digit SIC codes essentially incorporates robust standard errors into the regression analysis.

Lastly, the zero mean and normality of errors are the assumptions of OLS. The error term captures the variation in the dependent variable unexplained by the independent variable. In order to get an unbiased model, it is crucial to have an error term with a mean of zero. A consequence of the violation of this assumption is that the average error will be absorbed by the constant, thus giving an incorrect constant. Given that constant is not relevant to any the hypotheses of the paper, deviations from this assumption won't affect the validity of the obtained results.

Given the above analysis, below is the full model of the paper:

Dependent variable =  $\beta_0 + \beta_1 \times \text{Equity Beta} + \beta_2 \times \text{Institutional Ownership} + \beta_3 \times \text{Equity Beta} \times \text{Institutional Ownership} + \beta_4 \times \text{Independent Board Members} + \beta_5 \times \text{Equity Beta} \times \text{Independent Board Members} + \beta_6 \times \text{Control Variables} + \text{Error Term}$

## 4. Results:

### 4.1 Propensity to Issue Equity:

**Table 2: Relationship Between Equity Beta and Issuance Ratio**

	(1)	(2)	(3)	(4)
Dependent variable:	Issuance ratio (in percentage points)			
Equity Beta <sub>d</sub>	0.83*** (0.28)	4.00*** (0.90)	2.17* (1.18)	2.56** (1.28)
Institutional Ownership <sub>d</sub>		-0.03*** (0.00)		-0.03*** (0.01)
Equity Beta <sub>d</sub> × Institutional Ownership		-0.06*** (0.01)		-0.03*** (0.01)
Independent Board Members <sub>d</sub>			-0.02* (0.01)	0.01 (0.01)
Equity Beta <sub>d</sub> × Independent Board Members			-0.03 (0.02)	0.00 (0.01)
SIC2 industry × Year	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Observations	32,660	28,860	19,432	18,243

Table 2 displays the OLS estimates of the responsiveness of propensity to issue shares to the companies' equity betas as well as equity betas interaction with corporate governance proxies such as *Institutional Ownership* and *Independent Board Members*. Dependent variable is *Issuance Ratio* which measures the value of shares issued throughout the year as a percentage of company market capitalization at the beginning of the respective year. Sample period is 2010 to 2022. *Equity Beta<sub>d</sub>* is the demeaned equity beta, where equity beta represents the company 5-year monthly beta as of the beginning of corresponding fiscal year. *Institutional Ownership<sub>d</sub>* is a demeaned value of *Institutional Ownership*, which is the percent of the company shares held by institutional investors (in percentage points). Variable *Independent Board Members<sub>d</sub>* is a demeaned value of *Independent Board Members*, which measures the percent of independent directors in the company board (in percentage points). *SIC2* dummies (2-digit standard industry classification), year dummies as well as interaction term between them are controlled for in all regressions. Additionally, control variables include: log (market capitalization), cash to asset, market to book, debt to asset, return on asset, and cash flow to asset ratios in all three regressions. In column 2, all the variables used in column 1 were used, with the addition of demeaned *Institutional Ownership* and interaction term between demeaned *Equity Beta* and *Institutional Ownership*. In column 3, all the variables used in column 1 were used with the addition of demeaned *Independent Board Members* variable and interaction term between demeaned *Equity Beta* and *Independent Board Members*. Column 4 presents the full model, which

incorporates all the variables from regressions 2 and 3. Standard errors are clustered based on 2-digit standard industry classification (SIC2). Standard errors are reported in parentheses. \*\*\*, \*\*, \* denote 1%, 5%, and 10% significance levels respectively.

Table 2 presents the results of ordinary least squares regression, where the propensity to issue shares was operationalized using the *Issuance Ratio*. There are three variables of interest in that table required to answer our hypotheses: *Equity Beta<sub>d</sub>*, an interaction term between equity beta and institutional ownership, and an interaction term between equity beta and the percentage of independent directors on the company board. The first column presents the results of regressing the *Issuance Ratio* only on *Equity Beta<sub>d</sub>* and other control variables. No interaction terms or corporate governance variables were added in the first regression. The coefficient estimate of *Equity Beta<sub>d</sub>* is positive and statistically significant at a 1% significance level. The point estimate of 0.83 implies that one unit increase in *Equity Beta* from its mean is associated with a 0.83 percentage point increase in the *Issuance Ratio*. In other words, high beta companies on average issue more shares as a percentage of their market capitalization compared to low beta companies. Column 2 shows the coefficient estimates of a regression where the interaction term between demeaned *Equity Betas* and *Institutional Ownership* was included. The coefficient of the interaction term in the second regression is negative and significant at a 1% significance level. The point estimate of -0.03 implies that a 1 percentage point increase in the company's institutional ownership, on average weakens the relationship between *Equity Beta<sub>d</sub>* and *Issuance Ratio* by 0.03 percentage points. Moreover, like in the first regression, the point estimate of *Equity Beta<sub>d</sub>* stays positive and highly significant in the second regression as well. Column 3 presents the results of the regression where the interaction between *Equity Betas* and *Independent Board Members* was studied. The point estimate of the interaction term is negative but insignificant. The insignificant coefficient of the interaction term implies that *Independent Board Members* doesn't moderate the relationship between *Equity Beta<sub>d</sub>* and *Issuance Ratio* for the variables in our sample. Lastly, in column 4, I estimated the full model where both interaction terms as well as Institutional Ownership and Independent Board Members were added to the regression. The point estimate of *Equity Beta<sub>d</sub>* is positive and statistically significant at a 10% significance level. The interaction term between demeaned *Equity Beta* and *Institutional Ownership* is negative and significant, suggesting the weakening effect of *Institutional Ownership* on the relationship between *Equity Beta<sub>d</sub>* and *Issuance Ratio*. Conversely, the interaction term between *Equity Beta<sub>d</sub>* and *Independent Board Members* was



found to be insignificant, finding no evidence in support of moderating the relationship between equity beta and propensity to issue equity.

To conclude, the results obtained in my first regression (column 1) are consistent with my first hypothesis, which shows the positive relationship between equity beta and propensity to issue equity. Column 1 results imply that conclusions made by Dessaint et al. (2021), about the positive relationship between equity betas and propensity to issue shares, hold in our sample as well when *Issuance Ratio* was used as a proxy for propensity to issue shares. Regression in column 4 has yielded mixed results. I hypothesized that companies with strong corporate governance would weaken the effect of equity betas on the propensity to issue shares. When *Institutional Ownership* was used as a proxy for corporate governance, I found results consistent with my third hypothesis, however using *Independent Board Members* as a proxy yielded no significant results.

**Table 3: Relationship Between Equity Beta and Binary Variable Capturing Share Issuances**

	(1)	(2)	(3)	(4)
Dependent variable:	Issued (in percentage points)			
Equity Beta <sub>d</sub>	-0.08 (1.16)	6.26*** (1.26)	11.91*** (3.47)	14.93*** (4.20)
Institutional Ownership <sub>d</sub>		0.23*** (0.03)		0.16*** (0.03)
Equity Beta <sub>d</sub> × Institutional Ownership		-0.14*** (0.03)		-0.13*** (0.03)
Independent Board Members <sub>d</sub>			0.41*** (0.05)	0.30*** (0.06)
Equity Beta <sub>d</sub> × Independent Board Members			-0.18*** (0.05)	-0.12** (0.05)
SIC2 industry × Year	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Observations	32,660	28,860	19,432	18,243

Table 3 displays the OLS estimates of the responsiveness of propensity to issue shares to the companies' *Equity Beta<sub>d</sub>* and as well as interaction of *Equity Beta<sub>d</sub>* with corporate governance proxies such as *Institutional Ownership* and *Independent Board Members*. Dependent variable is a binary variable and measures whether a company has issued shares throughout the fiscal year. Dependent variable is in percentage points form (0 or 100),

allowing us to interpret its value as a percent probability that the company will issue the shares throughout the fiscal year. Sample period is 2010 to 2022. *Equity Beta<sub>d</sub>* is the demeaned equity beta, where equity beta represents the company's 5-year monthly beta as of the beginning of corresponding fiscal year0. *Institutional Ownership<sub>d</sub>* is a demeaned value of *Institutional Ownership*, which is the percent of the company shares held by institutional investors (in percentage points). Variable *Independent Board Members<sub>d</sub>* is a demeaned value of *Independent Board Members*, which measures the percent of independent directors in the company board (in percentage points). *SIC2* dummies (2-digit standard industry classification), year dummies as well as interaction term between them are controlled for in all regressions. Additionally, control variables include: log (market capitalization), cash to asset, market to book, debt to asset, return on asset, and cash flow to asset ratios. In column 2, all the variables used in column 1 were used, with the addition of *Institutional Ownership* and its interaction with the *Equity Beta<sub>d</sub>*. In column 2, all the variables used in column 1 were used, with the addition of demeaned *Institutional Ownership<sub>d</sub>* and interaction term between demeaned *Equity Beta* and *Institutional Ownership*. In column 3, all the variables used in column 1 were used with the addition of demeaned *Independent Board Members* variable and interaction term between demeaned *Equity Beta* and *Independent Board Members*. Column 4 presents the full model, which incorporates all the variables from regressions 2 and 3. Standard errors are clustered based on 2-digit standard industry classification (*SIC2*). Standard errors are reported in parentheses. \*\*\*, \*\*, \* denote 1%, 5%, and 10% significance levels respectively.

Table 3 presents the results of OLS regressions where the propensity to issue shares was operationalized using a binary variable, where companies that issued shares throughout the year were assigned a value of 100 and zero otherwise. This way of operationalization of the dependent variable allows us to interpret it as a percentage probability of issuing shares throughout the fiscal year. The first column presents the regression results where only *Equity Beta<sub>d</sub>* and control variables were used. No interaction term was added in the first regression. The point estimate of *Equity Beta<sub>d</sub>* is insignificant, suggesting that there is not enough evidence to conclude that equity beta has predictive power for determining the likelihood of share issuance throughout the year. Column 2 presents the coefficient estimates of a regression where the interaction term between demeaned *Equity Beta* and *Institutional Ownership* was added to the regression. The coefficient estimate of the interaction term is negative and highly significant. The point estimate of the interaction term implies that one percentage point increase in the percent of shares held by the institutional investors, on average decreases the association between *Equity Beta<sub>d</sub>* and the propensity to issue shares by 0.14 percentage points. In Column 3 I present the results of a regression where I added an interaction term between demeaned *Equity Beta* and *Independent Board Members*. The coefficient estimate is negative and significant at a 1% significance level. A negative point estimate for the interaction term implies that an increase in the percentage of independent directors on the company board is weakening

the association between equity betas and the propensity to issue shares. Column 4 presents the full model. The point estimate of *Equity Beta<sub>a</sub>* is positive and statistically significant at a 1% significance level, which shows that a positive relationship between equity betas and propensity to issue shares, holds in our sample. Additionally, both *Institutional Ownership* and *Independent Board Members* are found to be weakening the positive association between equity betas and the propensity to issue shares. Given the above findings, evidence in support of the first and third hypotheses was found.

To check the robustness of the estimated model, the probit regression was estimated for the full model in column 4, where the binary variable was used as a dependent variable. The probit model is a statistical model used when a dependent variable can take only two values. Unlike OLS regression, the interpretation of coefficient estimates of probit models is not straightforward, however, it allows for a comprehensive interpretation of the sign and significance of estimated coefficients. The results from the probit regression reinforce the results obtained in Table 3. The coefficient estimate of the *Equity Beta<sub>a</sub>* variable is positive and statistically significant at a 1% significance level, while coefficient estimates of both interaction terms are negative and highly significant. Results of the probit regression are provided in Appendix D.

## **4.2 Propensity to Repurchase Shares:**

Table 4 presents OLS estimates of the regressions where the *Repurchase Ratio* was used to operationalize the propensity to repurchase shares. Column 1 shows the regression results when *Equity Beta<sub>a</sub>* was used as an explanatory variable in addition to control variables. Point estimates of *Equity Beta<sub>a</sub>* indicate no significant results, meaning that there is not enough evidence to suggest that there is a statistically significant relationship between equity betas and *Repurchase Ratio*. In columns 2 and 3, corporate governance proxies, as well as their interaction terms with demeaned *Equity Beta<sub>a</sub>*, were added to the regression. Neither of the variables of interest shows any significant relationship in our analysis. In column 4, the full model was estimated. Based on the regression results obtained from our sample, no evidence in support of hypotheses 2 and 4 was found, as neither *Equity Beta<sub>a</sub>* is negatively associated with propensity to repurchase shares nor corporate governance proxies moderate the effect of *Equity Beta<sub>a</sub>* on propensity to repurchase shares.

**Table 4: Relationship Between Equity Beta and Repurchase Ratio**

	(1)	(2)	(3)	(4)
Dependent variable:	Repurchase Ratio (in percentage points)			
Equity Beta <sub>d</sub>	0.15 (0.09)	0.07 (0.18)	0.24 (0.45)	0.26 (0.50)
Institutional Ownership		0.01*** (0.00)		0.01*** (0.00)
Equity Beta <sub>d</sub> × Institutional Ownership		0.00 (0.00)		-0.00 (0.00)
Independent Board Members			0.02*** (0.00)	0.02*** (0.00)
Equity Beta <sub>d</sub> × Independent Board Members			0.00 (0.01)	0.00 (0.01)
SIC2 industry × Year	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Observations	17,530	15,719	12,176	11,226

Table 4 displays OLS estimates of the responsiveness of propensity to repurchase shares to the companies' *Equity Beta<sub>d</sub>* as well as *Equity Beta<sub>d</sub>*'s interaction with corporate governance proxies such as *Institutional Ownership* and *Independent Board Members*. Dependent variable is *Repurchase Ratio* which measures the value of shares repurchased throughout the year as a percentage of company market capitalization at the beginning of the respective year. Sample period is 2010 to 2022. *Equity Beta<sub>d</sub>* is the demeaned equity beta, where equity beta represents the company 5-year monthly beta as of the beginning of corresponding fiscal year. *Institutional Ownership<sub>d</sub>* is a demeaned value of *Institutional Ownership*, which is the percent of the company shares held by institutional investors (in percentage points). Variable *Independent Board Members<sub>d</sub>* is a demeaned value of *Independent Board Members*, which measures the percent of independent directors in the company board (in percentage points). *SIC2* dummies (2-digit standard industry classification), year dummies as well as interaction term between them are controlled for in all regressions. Additionally, control variables include: log (market capitalization), cash to asset, market to book, debt to asset, return on asset, and cash flow to asset ratios. In column 2, all the variables used in column 1 were used, with the addition of demeaned *Institutional Ownership<sub>d</sub>* and interaction term between demeaned *Equity Beta* and *Institutional Ownership*. In column 3, all the variables used in column 1 were used with the addition of demeaned *Independent Board Members* variable and interaction term between demeaned *Equity Beta* and *Independent Board Members*. Column 4 presents the full model, which incorporates all the variables from regressions 2 and 3. Standard errors are clustered based on 2-digit standard industry classification (*SIC2*). Standard errors are reported in parentheses. \*\*\*, \*\*, \* denote 1%, 5%, and 10% significance levels respectively.

Table 5 presents the OLS estimates for the regressions where a binary variable indicating whether a company has repurchased shares throughout the fiscal year was used as a dependent variable. Similar to the previous case, when the propensity to issue shares was measured using the share repurchase ratio, the coefficient estimates for the variables of interest were mostly insignificant. The results don't provide any supportive evidence for the negative relationship between equity beta and the propensity to repurchase shares. Moreover, insignificant coefficient estimates of interaction terms suggest the absence of a moderating effect of corporate governance proxies. The only notable result was the positive coefficient estimate for *Equity Beta<sub>d</sub>* at a 10% significance level, in column 4. To evaluate the robustness of the estimated regression in column 4, I employed probit regression as well. In Probit regression, the *Equity Beta<sub>d</sub>* coefficient estimate is no longer significant. These ambiguous results prevent us from drawing definite conclusions, opening room for further investigation. Results of probit regressions are provided in Appendix D.

**Table 5: Relationship between Equity Beta and Binary Variable Capturing Share Repurchases**

	(1)	(2)	(3)	(4)
Dependent variable:	Repurchased (in percentage points)			
Equity Beta <sub>d</sub>	1.30 (0.79)	2.09 (1.29)	6.53 (4.56)	8.95* (4.81)
Institutional Ownership		0.07** (0.03)		0.01 (0.03)
Equity Beta <sub>d</sub> × Institutional Ownership		-0.01 (0.02)		-0.06* (0.03)
Independent Board Members			0.10** (0.05)	0.11** (0.05)
Equity Beta <sub>d</sub> × Independent Board Members			-0.07 (0.06)	-0.04 (0.05)
SIC2 industry × Year	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Observations	21,506	19,109	14,553	13,329

Table 5 displays the OLS estimates of the responsiveness of propensity to repurchase shares to the companies' *Equity Beta<sub>d</sub>* as well as interaction of *Equity Beta<sub>d</sub>* with corporate governance measures such as *Institutional Ownership* and *Independent Board Members*. Dependent variable is a binary variable and measures whether a

company has repurchased shares throughout the fiscal year. Dependent variable is in percentage points form (0 or 100), allowing us to interpret its value as a percent probability that the company will repurchase the shares throughout the fiscal year. Sample period is 2010 to 2022. *Equity Beta*<sub>d</sub> is the demeaned equity beta, where equity beta is the company 5-year monthly beta as of the beginning of corresponding fiscal year. *Institutional Ownership*<sub>d</sub> is a demeaned value of *Institutional Ownership*, which is the percent of the company shares held by institutional investors (in percentage points). Variable *Independent Board Members*<sub>d</sub> is a demeaned value of *Independent Board Members*, which measures the percent of independent directors in the company board (in percentage points). SIC2 dummies (2-digit standard industry classification), year dummies as well as interaction term between them are controlled for in all regressions. Additionally, control variables include: log (market capitalization), cash to asset, market to book, debt to asset, return on asset, and cash flow to asset ratios. In column 2, all the variables used in column 1 were used, with the addition of demeaned *Institutional Ownership*<sub>d</sub> and interaction term between demeaned *Equity Beta* and *Institutional Ownership*. In column 3, all the variables used in column 1 were used with the addition of demeaned *Independent Board Members* variable and interaction term between demeaned *Equity Beta* and *Independent Board Members*. Column 4 presents the full model, which incorporates all the variables from regressions 2 and 3. Standard errors are clustered based on 2-digit standard industry classification (SIC2). Standard errors are reported in parentheses. \*\*\*, \*\*, \* denote 1%, 5%, and 10% significance levels respectively.

## 5. Discussion:

*Hypothesis 1: Equity beta is positively related to propensity to issue shares.*

One of the primary goals of the paper was to replicate the findings of Dessaint et al. (2021) by studying the relationship between the propensity to issue shares and equity betas. Dessaint et al. (2021) studied this relationship using a sample period ranging from 1975 to 2015. In this study, the same relationship was examined, but with a more recent time period to assess its validity in the current economic context. Firstly, I adopted the same operationalization of the propensity to issue shares as Dessaint et al. (2021) by utilizing a dummy variable approach. The findings were consistent with the existing literature, as the equity beta coefficient was both positive and statistically significant. Furthermore, an alternative method for measuring the propensity to issue shares was incorporated, using the share Issuance Ratio. This way of operationalizing the propensity to issue shares still yielded results consistent with Dessaint et al. (2021). Hence, we can conclude that the positive relationship between the propensity to issue shares and equity betas holds in our recent sample as well. However, due to potential concerns of violating exogeneity assumption, obtained results cannot be interpreted as causal. Therefore, we can only interpret them as partial associations.

The findings are consistent with the literature on share issuance, where overvaluation is cited as a possible motive for share issuance decisions. However, it's important to consider a significant detail. Beta cannot be interpreted as a proxy for the over/undervaluation of companies, but rather as a perceived over/undervaluation of company managers who use CAPM for their companies' valuation purposes. Therefore, the implications of these results depend on whether we consider CAPM to be a valid model for estimating risk and return. If we assume CAPM to be true, then beta can indeed serve as a determinant of the overvaluation or undervaluation of companies. As such, on average, managers of high-beta companies are increasing shareholder value by issuing securities. On the other hand, if we assume CAPM to be invalid and company managers are mistaken in using it, beta can no longer be seen as a proxy for overvaluation but rather as a measure that misguides managers in their decision-making, potentially reducing shareholder value. Thus, when interpreting companies' decisions to issue shares, it should not necessarily imply that the shares are overvalued, but rather it may be influenced by managers' use of the wrong pricing models.

*Hypothesis 3: Corporate governance moderates the relationship between company equity betas and the propensity to issue equity. I expect corporate governance to have weakening, thus a negative effect on the relationship between equity betas and propensity to issue shares.*

In addition to studying the relationship between equity betas and the propensity to issue shares, the paper further extended the relationship and tried to investigate the effect of corporate governance on the above relationship. I hypothesized that corporate governance would have a weakening and thus negative effect on the relationship between equity betas and the propensity to issue shares. The rationale behind this reasoning was put forward by Dessaint et al. (2021). The authors argued that managers will use better valuation models if they seek to gain some benefit from it. To test the moderation effect, I used the percentage of institutional ownership and the percentage of independent board members in the company board as proxies for corporate governance. Consistent with the hypothesis, institutional ownership was found to be weakening the relationship between company equity beta and its propensity to issue equity. On the other hand, the percentage of independent board members yielded mixed results. Depending on the operationalization of the propensity to issue equity, the moderating effect was either found to be negative or insignificant. What could have led to those inconsistent results when using independent board members as a corporate governance proxy? It's important to note that even though having an independent board is a positive attribute of strong corporate governance, it's not the only determinant of it. The term "corporate governance" refers to a variety of elements, including board diversity, expertise, and experience. Although board independence is important, a good governance structure should also have directors with the necessary expertise, industry experience, and many more. Solely emphasizing independence may neglect other essential aspects of board effectiveness. To conclude, the results show no evidence against our hypothesis. While evidence in support of my hypothesis was found in most of the cases, it didn't hold true in all of the cases, making definitive conclusions impossible. To further study the moderating effect of corporate governance on the relationship between equity betas and the propensity to issue shares, I recommend incorporating additional dimensions of corporate governance into the analysis not accounted for in my study.



*Hypothesis 2: Equity beta is negatively related to propensity to repurchase shares.*

Additionally, the relationship between equity beta and the propensity to repurchase shares was also studied. Based on the findings of Dessaint et al. (2021), it was hypothesized that a negative relationship would be observed between the two variables. Contrary to their findings, no significant negative relationship was found in this study. All the regressions conducted yielded insignificant beta coefficients. As such, it can be concluded that the results were inconsistent with hypothesis 2 as well as the findings of Dessaint et al. (2021). The different sample periods used in the two studies could be one of the explanations for these outcomes. The authors utilized a sample period from 1977 to 2015 to estimate their relationships, whereas this paper focused on a more recent time period, specifically from 2010 to 2022. How might this difference have influenced the relationships? According to Grullon and Michaely (2002), share repurchases only became the preferred choice of payout by the end of the 20th century. The Securities Exchange Act of 1934's anti-manipulative provisions were formerly a source of concern for businesses, which made them hesitant to engage in share repurchases as regularly as they do today. Because of these concerns, businesses only repurchased shares when they could benefit considerably from doing so, such as during periods of major underpricing. Share repurchases have increased in popularity over time as a regular form of payout, which may have a diminishing impact on the correlation between equity beta and the propensity to buy back shares. The above explanation is just a possible theoretical hypothesis put forward to explain the differences between the two studies; however, it will need future research to prove its validity.

*H4: Corporate governance moderates the relationship between company equity betas and the propensity to issue equity. I expect corporate governance to have weakening, thus a positive effect on the relationship between equity betas and propensity to repurchase shares.*

Hypothesis 4 proposes to find the weakening moderating effect of corporate governance proxies on the relationship between equity betas and the propensity to issue equity. However, it is important to mention that the relationship between equity betas and the propensity to repurchase equity was found to be insignificant, so the concept of the weakening effect of corporate governance proxies becomes irrelevant.

## **6. Conclusion:**

The primary objective of this study was to examine the relationship between company equity betas and their propensity to repurchase shares and issue equity while considering the potential moderating effects of corporate governance. To study the relationships, the study made use of secondary company-level data. The data was retrieved from the Compustat North America database and ranged from 2010 to 2022. The study initially replicated the relationships already studied in existing literature, particularly those between equity betas and the propensity to issue equity and repurchase shares. However, the paper focused on a more recent time period to observe if the relationships still hold in today's financial environment. While studying share issuance decisions by the firms, a positive and statistically significant relationship was found between equity betas and the propensity to repurchase shares. The results were consistent with the existing literature. Additionally, the paper further explored the moderating effect of corporate governance proxies on the abovementioned relationship and found a weakening effect of corporate governance proxies. However, it's important to acknowledge that the proxies used in the analysis are not able to capture the whole multidimensional nature of corporate governance; therefore, further investigation with other variables is necessary. Furthermore, I studied the relationship between equity betas and the propensity to repurchase shares. Contrary to existing literature, no significant relationship was found. Those discrepancies suggest a need for further investigation of what could have caused the changes in those relationships.

The importance of this study lies in its development of knowledge on the factors influencing corporate financial decision-making processes. This paper contributes to the current research and offers new perspectives on the mechanisms underlying companies' decisions by exploring the relationships between equity betas, share repurchases, equity issuances, and the moderating impact of corporate governance. The practical implication of this study lies in its potential benefits for investors. The study's potential advantages for investors include its practical use. Investors can use this knowledge to create more informed investment strategies and perform more thorough assessments of the related risks by providing a deeper understanding of the elements that affect these financial decisions.

In conclusion, the goal of this study was to investigate how equity betas, share repurchases, equity issuances, and the moderating impact of corporate governance are related. By doing so, it delivers useful implications for future investors and significant insights into the variables influencing financial decision-making.

## Appendix:

### Appendix A: Variable definitions

Appendix A contains definitions of all the variables used in the analysis.

<b>Variable:</b>	<b>Definition:</b>
Issuance Ratio	$\text{Sale of common and preferred stock (SSTP)} / \text{Market Capitalization } ((\text{csho} \times \text{prcc\_f}))$
Issued	Binary variable measuring if a company has issued common or preferred stock during a fiscal year
Repurchase Ratio	$\text{Value of shares repurchased during a fiscal year} / \text{Market Capitalization } (\text{csho} \times \text{prcc\_f})$
Repurchased	Binary variable measuring if a company repurchased shares during a fiscal year
Equity Beta	Estimated by regressing the monthly company stock returns on the Fama French Excess Return on the Market. Minimum estimation period 12 months, with preferred estimation window of 60 months
Institutional Ownership	Percentage of shares owned by the institutional investors
Independent Board Members	Percentage of independent board members in the company board
Log (Market Capitalization)	Natural logarithm of market capitalization ( $\text{csho} \times \text{prcc\_f}$ )
Market to Book	$\text{Market capitalization } (\text{csho} \times \text{prcc\_f}) / \text{shareholders equity (ceq)}$
Cash to Assets	$\text{Cash and cash equivalents (che)} / \text{total assets (at)}$
Debt to Assets	$\text{Total debt (dlc + dlft)} / \text{total assets (at)}$
Cash flow to Assets	$\text{Net income (ib)} + \text{D\&A (dp)} / \text{total assets (at)}$
Return on Assets	$\text{Net income (ib)} / \text{total assets (at)}$
SIC2	Two-digit standard industry classification

## Appendix B: Descriptive statistics

**Table 6: Comparison of high and low beta companies**

Variable	High Beta	Low Beta	Difference
<b>Dependent Variables:</b>			
Issuance Ratio	6.3645	3.7298	2.6346***
Issued	72.3746	70.9165	1.4581***
Repurchase Ratio	2.5645	2.2371	0.3274***
Repurchased	78.9397	77.7679	1.1718*
<b>Independent Variables:</b>			
Equity Beta	1.7562	0.7101	1.0461***
Institutional Ownership	65.2661	57.2869	7.9791***
Independent Board Members	77.6694	77.1638	0.5056*

Table 6 contains descriptive statistics for high and low beta companies. Above are presented the mean values of selected variables for high and low beta companies, as well as difference between them. Company is high classified as high beta company if it has an equity beta value above the median of all the companies in the sample. \*\*\*, \*\*, \* denote 1%, 5%, and 10% significance levels respectively.

## Appendix C: Full Tables

Appendix C contains full tables of the tables presented in results section:

**Table 7: Corresponds to Table 2 from results section**

	(1)	(2)	(3)	(4)
Dependent Variable	Issuance Ratio (in percentage points)			
Equity Beta <sub>d</sub>	0.83*** (0.28)	4.00*** (0.90)	2.17* (1.18)	2.56** (1.28)
Institutional Ownership <sub>d</sub>		-0.03*** (0.00)		-0.03*** (0.01)
Equity Beta <sub>d</sub> × Institutional Ownership		-0.06*** (0.01)		-0.03*** (0.01)
Independent Board Members <sub>d</sub>			-0.02* (0.01)	0.01 (0.01)
Equity Beta <sub>d</sub> × Independent Board Members			-0.03 (0.02)	0.00 (0.01)
Log (Market Capitalization)	-2.35*** (0.56)	-1.47*** (0.35)	-1.83** (0.68)	-1.43** (0.54)
Market to book	-0.08* (0.04)	-0.06 (0.05)	-0.02 (0.04)	-0.01 (0.04)
Cash to assets	-0.34 (1.63)	0.04 (0.55)	0.79 (0.69)	1.48 (0.95)
Debt to assets	2.57 (1.86)	2.66* (1.46)	2.21** (1.07)	1.658 (0.96)
Cash flow to assets	-16.92** (7.31)	-15.30** (7.47)	-17.58** (8.24)	-18.19*** (6.58)
Return on assets	-14.6 (8.81)	-13.26 (7.99)	-7.48 (9.28)	-5.08 (7.23)
SIC2 industry × Year	Yes	Yes	Yes	Yes
Observations	32,660	28,860	19,432	18,243

**Table 8: Corresponds to Table 3 from results section**

	(1)	(2)	(3)	(4)
Dependent Variable	Issued (in percentage points)			
Equity Beta <sub>d</sub>	-0.08 (1.16)	6.26*** (1.26)	11.91*** (3.47)	14.93*** (4.20)
Institutional Ownership <sub>d</sub>		0.23*** (0.03)		0.16*** (0.03)
Equity Beta <sub>d</sub> × Institutional Ownership		-0.14*** (0.03)		-0.13*** (0.03)
Independent Board Members <sub>d</sub>			0.41*** (0.05)	0.30*** (0.06)
Equity Beta <sub>d</sub> × Independent Board Members			-0.18*** (0.05)	-0.12** (0.05)
Log (Market Capitalization)	7.93*** (0.87)	4.02*** (0.96)	3.91*** (1.33)	3.57** (1.40)
Market to book	0.40*** (0.13)	0.38*** (0.13)	0.42*** (0.12)	0.39*** (0.14)
Cash to assets	7.20* (4.19)	8.00** (3.58)	18.62*** (4.60)	18.45*** (4.73)
Debt to assets	-4.67 (3.03)	-6.28** (2.85)	-6.19* (3.35)	-6.99* (3.59)
Cash flow to assets	-77.06** (29.79)	-79.79** (31.33)	-74.52*** (27.34)	-67.23** (30.36)
Return on assets	50.31* (29.02)	49.98 (30.74)	52.67* (26.64)	42.63 (29.74)
SIC2 industry × Year	Yes	Yes	Yes	Yes
Observations	32,660	28,860	19,432	18,243

**Table 9: Corresponds to Table 4 from results section**

	(1)	(2)	(3)	(4)
Dependent Variable	Repurchase Ratio (in percentage points)			
Equity Beta <sub>d</sub>	0.15 (0.09)	0.07 (0.18)	0.24 (0.45)	0.26 (0.50)
Institutional Ownership <sub>d</sub>		0.01*** (0.00)		0.01*** (0.00)
Equity Beta <sub>d</sub> × Institutional Ownership		0.00 (0.00)		-0.00 (0.00)
Independent Board Members <sub>d</sub>			0.02*** (0.00)	0.02*** (0.00)
Equity Beta <sub>d</sub> × Independent Board Members			0.00 (0.01)	0.00 (0.01)
Log (Market Capitalization)	0.60*** (0.08)	0.44*** (0.08)	0.41*** (0.11)	0.32*** (0.10)
Market to book	-0.05*** (0.01)	-0.05*** (0.01)	-0.05*** (0.01)	-0.05*** (0.01)
Cash to assets	1.00*** (0.36)	1.03** (0.40)	0.99** (0.49)	0.90* (0.47)
Debt to assets	0.56 (0.34)	0.43 (0.39)	0.74* (0.38)	0.62 (0.41)
Cash flow to assets	4.73 (3.29)	4.59 (3.53)	5.46 (3.90)	4.34 (3.82)
Return on assets	-1.93 (3.39)	-1.62 (3.60)	-1.67 (4.00)	-0.44 (3.94)
SIC2 industry × Year	Yes	Yes	Yes	Yes
Observations	17,530	15,719	12,176	11,226

**Table 10: Corresponds to Table 5 from results section**

	(1)	(2)	(3)	(4)
Dependent Variable	Repurchased (in percentage points)			
Equity Beta <sub>d</sub>	1.30 (0.79)	2.09 (1.29)	6.53 (4.56)	8.95* (4.81)
Institutional Ownership <sub>d</sub>		0.07** (0.03)		0.01 (0.03)
Equity Beta <sub>d</sub> × Institutional Ownership		-0.01 (0.02)		-0.06* (0.03)
Independent Board Members <sub>d</sub>			0.10** (0.05)	0.11** (0.05)
Equity Beta <sub>d</sub> × Independent Board Members			-0.07 (0.06)	-0.04 (0.05)
Log (Market Capitalization)	10.09*** (1.27)	8.63*** (0.98)	7.21*** (1.19)	6.76*** (0.99)
Market to book	-0.38** (0.17)	-0.30*** (0.10)	-0.22** (0.10)	-0.21* (0.11)
Cash to assets	-11.53*** (3.88)	-11.96*** (4.47)	-16.37*** (5.05)	-17.13*** (5.24)
Debt to assets	1.29 (2.56)	0.88 (2.90)	-1.01 (2.63)	1.43 (2.60)
Cash flow to assets	37.18 (30.58)	53.34 (34.05)	73.49** (32.05)	67.80** (33.17)
Return on assets	3.58 (30.27)	-3.52 (34.02)	-19.03 (34.36)	-11.09 (35.11)
SIC2 industry × Year	Yes	Yes	Yes	Yes
Observations	21,506	19,109	14,553	13,329



## Appendix D:

**Table 11: Probit regressions for the models estimated in table 3 column 4 and table 5 column 4**

	(1)	(2)
Dependent Variable	Issued (in percentage points)	Repurchased (in percentage points)
Equity Beta <sub>d</sub>	0.411*** (0.131)	0.315 (0.198)
Institutional Ownership	0.005*** (0.001)	-0.001 (0.001)
Equity Beta <sub>d</sub> × Institutional Ownership	-0.004*** (0.001)	-0.002* (0.001)
Independent Board Members	0.009*** (0.002)	0.006*** (0.002)
Equity Beta <sub>d</sub> × Independent Board Members	-0.004** (0.002)	-0.002 (0.002)
Controls	Yes	Yes
SIC2 industry × Year	Yes	Yes
Observations	18,221	13,210

Table 11 presents Probit estimates for the models estimated in table 3 column 4 and table 5 column 4. Dependent variable is *Issued* is a binary variable which measures whether the company has issued shares in the corresponding fiscal year. Dependent variable *Repurchased* is a binary variable which measures whether the company has repurchased shares throughout the corresponding fiscal year. Sample period is 2010 to 2022. *Equity Beta<sub>d</sub>* is the demeaned equity beta, where equity beta represents the company 5-year monthly beta as of beginning of corresponding fiscal year. *Institutional Ownership* in the percent of the company shares held by institutional investors (in percentage points). Variable *Independent Board Members* measures the percent of independent directors in the company board (in percentage points). *SIC2* dummies (2-digit standard industry classification) and year dummies are controlled for in both regressions. Additionally, control variables include: log (market capitalization), cash to asset, market to book, debt to asset, return on asset, and cash flow to asset ratios in all three regressions. Standard errors are clustered based on 2-digit standard industry classification (SIC2). Standard errors are reported in parentheses. \*\*\*, \*\*, \* denote 1%, 5%, and 10% significance levels respectively

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