CURRENCY AND VALUATION EFFECTS ON CROSS-BORDER MERGERS AND ACQUISITIONS

Bachelor Thesis

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Abstract

This thesis explores the impact of micro- and macroeconomic factors on cross-border merger and acquisition (M&A) decisions, focusing on the influence of currency movements and firm valuations. Employing a quantitative approach, it examines foreign investors' attitudes towards economies with depreciating currencies, hypothesizing that firms in financially stronger countries are more likely to acquire firms in weaker economies. The study controls for variables like GDP growth, corporate income tax, sales growth, and firm solvency, covering both public and private firms. Key findings reveal a positive impact of long-term firm valuation on cross-border M&A propensity and a complex role of solvency, especially for private firms. The thesis underscores the need for further research on the effects of currency differences and other macroeconomic factors on FDI, offering insights into the intricacies of cross-border M&As in diverse economic scenarios.

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1. Introduction

In this chapter, we will present the background, purpose, and contribution of our thesis.

1.1. Background

Many economies are currently experiencing high levels of inflation, with increasing prices and interest rates, a struggling real estate sector and the threat of a following banking crisis (IMF, 2023). In media, there is often a connection made between poor performing economies, exiting investors, and reductions in foreign capital inflow (Saleh, 2023). Considering the uncertain state of the global economy and whether it effects foreign investments, we are interested in studying how these major macro-economic factors influence merger and acquisition (M&A) decisions in the individual firm and in turn how these decisions aggregate and affect cross border M&A flows.

This thesis will quantitatively analyze the debate on foreign investors attitude towards declining economies by investigating cross border mergers and acquisition, between country pairs, to test if a depreciating currency discourages foreign investors from perusing M&A targets. Our hypotheses take a "predatory" stand in terms of M&A activity and they are based on the assumption that firms in countries with stronger financial positions are more likely to acquire firms in countries with less favorable conditions (although there are exceptions).

Reviewing literature on cross border M&As and foreign direct investment (FDI), we find that one of the major factors for determining cross border mergers and acquisitions is currency movements (Sharma, 2016). Firms situated in countries with depreciating currencies are more likely to be targets of acquisitions compared to firms in countries with an appreciating currency. Short-term movements between two countries' currencies will increase the likelihood that the firm with an appreciating currency will acquire a firm with a depreciating one (Froot & Stein, 1991). Valuations stand out as another important factor, where relative stock market valuations between two countries affect the propensity of the firms in these countries to merge. Countries with higher stock market valuations are more likely to acquire firms in countries with lower stock market valuations (Erel, Liao & Weisbach, 2012).

We will investigate if the proportion of cross-border M&A transactions is moving with the exchange rate, and the valuations of the firms. To test this, we construct our hypothesis' around two groups of independent variables: firm level and country level variables, to control for differences in macroeconomic and firm performance, between acquirer and target firms and their respective countries. On the macroeconomic level, we control for differences in tax rates, and GDP growth and on firm level we control for sales growth and the risk profile of the firms. Both GDP growth and sales growth are used as proxies for financial performance, while the risk profile is based on solvency (Net Debt-to-EBITDA). A firm's ability to pay its current interest expenses, to account for the risk associated with capital costs in times of increasing interest rates.

The macroeconomic variables will be constituted on the basis that a more favorable financial environment characterized by higher GDP growth, higher corporate income tax rate and an appreciating exchange rate will be rendering the firms in those countries more likely to acquire firms in countries with less favorable conditions (Erel, Liao & Weisbach, 2012). The firm operational variables will be constituted on the basis that firms with stronger sales growth, higher solvency, and higher valuations are more likely to acquire firms where these measures are comparatively lower. As we chose to include both public and private firms in our sample, the valuations rely on calculations based on enterprise values and multiples rather than stock price.

1.2. Purpose and Contribution

The research on M&As is mostly focused on domestic transactions, the US market and developed countries, and samples are primarily constituted of public firms (Erel, Liao & Weisbach, 2012; Veeramani, Shukla & Jamaleh, 2020). Blonigen (2005) and Saleh (2023) propose that more research is needed on the effects of currency differences and other macro-economic factors, such as GDP, on FDI.

In light of the literature pointing to currency movements as a significant determinant for cross-border M&As (Sharma, 2016), we explore if firms in countries with depreciating currencies become likelier acquisition targets for firms in countries with appreciating currencies. Similarly, we probe into how relative firm valuations affect cross-border M&A propensity, guided by findings

that suggest firms from higher-valued markets tend to acquire firms from lower-valued ones (Erel, Liao & Weisbach, 2012).

Our multifaceted approach evaluates these hypotheses through a robust multivariate framework that accounts for various firm-level and country-level variables, allowing us to control for performance disparities across macroeconomic and firm-specific dimensions. This comprehensive analysis, which includes both public and private firms, yields insights to existing theories.

The conclusion of our study, as discussed in Section 6, brings to light the nuanced roles currency and firm valuation play in cross-border M&A propensity. Contrary to our initial hypothesis (H1), regarding currency differences, we do not find the expected support. The negative effect displayed in currency differences suggest a more intricate interplay of financial factors than previously considered. However, our second hypothesis (H2) finds support, confirming that firm valuation differences do influence M&A propensity, underscoring the importance of financial health in cross-border transactions. These findings contribute to a deeper understanding of the financial drivers influencing cross-border M&A activity, highlighting the need for a nuanced interpretation of both firm valuation and currency dynamics in the context of international business strategy.

2. Literature and Theory

In the following chapter we present previous research and theories regarding cross-border mergers and acquisitions, currency differences and valuation. Relevant terminology will also be defined.

2.1. Literature Review

Mergers and acquisitions concern corporate takeovers, where one firm referred to as the target is procured by another usually referred to as the acquirer, bidder, or buyer. Through a purchase of shares the buyer gains control of the target. A *merger* is when two separate entities form a new organization together and an *acquisition* refers to when the acquirer takes control of the target who becomes a subsidiary. A *domestic* merger or acquisition takes place when both participants reside

in the same country, and a *cross-border* transaction is when the target and the acquirer reside in different countries (Whittington et. al., 2020).

2.1.1. Motives for Cross Border Mergers and Acquisitions

The motives for international mergers and acquisitions are the same as in domestic transactions (Erel, Liao & Weisbach, 2012), the acquirer's perception of increased value from combining the two entities. These gains include synergies from economies of scale or scope, decreased competition, financial growth, potential tax shields, and valuable intangible assets like brands, access to certain technology or expertise (Berk & DeMarzo, 2017; Baker, Foley & Wurgler, 2009). When a company wishes to expand to a new geographical market, they may consider either building a new business location, known as a *greenfield investment*, or acquiring an established operation. To merge with or acquire a foreign entity can provide benefits compared to greenfield investments, either because it may be relatively cheaper or because it facilitates access to the market in question or certain skills needed (Sharma, 2016). Other reasons to pursue foreign operations can be due to reductions in transaction costs including licensing and transportation expenses (Blonigen, 1997), as transfer costs can be lower within groups, compared to external suppliers.

Walter and Barney (1990) suggest the following five groups of goals that the managers of the acquiring firms try to achieve through the transaction:

1. Efficiency related goals, to achieve economies of scale and scope.
2. Interdependencies in the business environment, securing supply of critical resources, reducing transaction costs, and benefits from synergy effects.
3. Expansion of current market and product line, to increase market power and efficiencies.
4. Diversification beyond current operations, to enter new markets or launch new products.
5. Economic advantages through maximizing financial capabilities and utilizing capital assets to pursue financial synergies.

There are factors that can influence the appeal of cross border merger and acquisition decisions in both ways, primarily macroeconomic factors like currency fluctuations, trade balance, relative

wealth and stock market movements affecting valuations as well as market imperfections causing arbitrage opportunities (Erel, Liao & Weisbach, 2012; Sharma, 2016). Cross-border mergers and acquisitions are the most common form of foreign direct investments (FDI) according to Erel, Liao and Weisbach (2012) who points out that foreign transactions can also involve dealing with various obstacles including language barriers, cultural and governance differences when compared to domestic deals. These obstacles along with legislative and regulative differences between the two firms and their respective business environments can make it challenging to integrate an acquisition into the organization (Sharma, 2016).

2.1.2. Target or Acquirer

According to Erel, Liao and Weisbach (2012) there are patterns behind who acquirers whom. The acquirer is usually residing in a relatively wealthier and more developed economy, with a higher quality of accounting standards and higher levels of corporate taxes compared to the target firm, and as such profit from a less strictly regulated work environment in the target country. The target firm is expected to have a relatively lower valuation compared to the acquiring firm and reside in a country where the currency is depreciating relative to the currency of the acquiring firm's country. Stock market valuations are also expected to be higher for the acquirer country of domicile compared to the target country (Erel, Liao & Weisbach, 2012). In general, the acquiring firm is also expected to be more productive compared to the target (Makaew, 2010).

2.1.3. Valuations and Merger Flows

Economies in crisis have been associated with exiting investors and reductions in FDI inflows (Baker, Foley & Wurgler, 2009; Saleh, 2023). Saleh (2023) finds that most papers focus on *multinational enterprises* (MNEs) when referring to foreign investors and that they primarily react in three different ways in response to recession; escape, defensive or risky behavior. The *escape behavior* is characterized by closing business units, moving operations and liquidation of assets. Exiting a market can have adverse effects, cause losses or damage business relations, so an alternative may be to adapt to the crisis by adopting a *defensive behavior* e.g., cutting down on costs or shifting to export markets, to keep the investment. The third alternative is characterized by taking *risks*, e.g., making investments in crisis economies (Saleh, 2023).

The literature on whether countries in financial crisis experience an increased inflow or outflow of FDI is conflicted (Blonigen, 1997). As competitors within an industry usually have similar leverage levels, industry peers are likely to experience liquidity constraints at the same time. When distressed firms are forced to liquidate assets to cover costs for debt, industry peers are not able to pay full market value, so asset prices fall, causing a fire-sale (Shleifer & Vishny, 1992). Baker, Foley and Wurgler (2009) test two hypotheses behind foreign investment flows; "the cheap financial capital hypothesis, in which FDI flows are an opportunistic use of the relatively low-cost financial capital available to overvalued source -country firms" (Baker, Foley & Wurgler, 2009, p.2) and "The "cheap assets" or "fire-sale" hypothesis, under which FDI flows reflect the purchase of undervalued host-country assets (Baker, Foley & Wurgler, 2009, p.3). They find that access to relatively cheaper capital is a more important driver behind cross-border mergers and acquisitions, compared to underpriced assets. The notion that firms or countries in financial distress would sell off assets at an undervalued price to cover expenses may appear reasonable, but Makaew (2010) finds that most international merger and acquisition transactions take place when both participants home countries are in a state of financial growth. The ups and downs of mergers and acquisitions flows are referred to as *merger waves* and they are closely correlated to cycles in the economy and other macro-economic factors (Makaew, 2010; Vissa & Thenmozhi, 2022).

2.2. Theoretical Perspective

Veeramani, Shukla and Jamaleh (2020) find that historically most papers on FDI transactions assume the validity of the efficient market hypothesis (EMH), but more recently capital market imperfections have been studied to develop FDI theory. They propose that there are four categories of theories that are studied in relation to foreign investments: exchange rates, diversification, behavioral finance, and financial creativity of emerging multinationals.

2.2.1. Exchange rate

According to Froot and Stein (1991) a foreign investor, who holds their wealth in another currency, have a relative advantage and can outbid domestic bidders during times of depreciation. They find that depreciation of a currency attracts foreign bidders to acquire host country assets. The rate of exchange affects the likelihood of cross border mergers and acquisitions and the relative wealth of

both bidder and target, as the holder of an appreciating currency gains incentive to acquire targets in depreciating economies (Sharma, 2016). During the eighties the depreciation in the USD contributed to an increased inflow of foreign investments (Froot & Stein, 1991; Blonigen, 1997). Blonigen (1997) finds that exchange rate volatility contributes to potential exchange gains or losses, when procured assets generate returns in a foreign currency and that these exchange rate differences influence investment flows. Thus, the same way as the price of assets is affected, so are the expected returns. Studying mergers and acquisitions within and between countries in the Eurozone during 2004 - 2012, Ayton and Rao-Nicholson (2018) find that the European Monetary Union (EMU) decrease transaction costs and risks related to currency volatility. Transactions between EMU countries have reduced risks and arbitrage opportunities due to the integrated legal system and the common currency, eliminating the exchange rate's contribution to abnormal returns (Ayton & Rao-Nicholson, 2018; Campa & Hernando, 2004).

Multinational corporations can adapt to movements in exchange rates by entering or exiting certain markets and by flexible use of assets, through adjustments of production volumes and trade flows e.g., to export goods to foreign country can be more profitable despite transaction costs, if the exchange rate motivates it (Goldberg, 1993). This can be compared with Saleh's (2023) behavioral explanation of how MNEs react to recession: to escape, defend or taking risks when it come to their investments. In conclusion, exchange rates can influence merger and acquisition decisions as well as operational decisions by MNEs.

2.2.2. Diversification

Diversification can occur through a merger or acquisition, and it can occur vertically or horizontally in the value chain (Berk & DeMarzo, 2017). *Vertical* M&As are a way to integrate additional levels of the value chain into the core business operations by procuring a customer or supplier, which can reduce transaction costs and improve profit margins. *Horizontal* mergers and acquisitions concerns procuring a competitor that offers similar or identical products to increase market share, achieve growth or reap benefits from increased efficiencies. *Concentric* business expansions include procuring firms within a similar business field, so called related diversification.

To expand a business beyond the current industry is referred to as *conglomerate* or unrelated diversification (Berk & DeMarzo, 2017; Whittington et. al., 2020; Walter & Barney, 1990).

During the 1980-ties and 1990-ties many economies experienced reductions in trade barriers and an increased openness in capital markets, facilitating international transactions (Veeramani, Shukla & Jamaleh, 2020). As international diversification is not easily available to the individual investor, they can turn to multinationals to get a well-diversified portfolio. Portfolio theory states that multinationals have reduced overall risks, due to diversification benefits (Berk & DeMarzo, 2017). Veeramani, Shukla and Jamaleh (2020) point out that reducing risks is not a motive for multinationals to diversify and it may even increase risk, depending on the host country and industry and how these relate to current operations. In many cases diversification itself is the actual motive according to the authors.

2.2.3. Behavioral Finance

In this subgroup of FDI research Veeramani, Shukla and Jamaleh (2020) present how financial market inefficiencies and irrational behavior can affect valuations and transaction flows, challenging the traditional assumptions of efficient markets and managers rational behavior.

Agency theory concerns the separation of ownership and control, where the agent is hired to work for the principal, and the contract between them. Agency costs and conflicts stem from three main sources, information asymmetry, limited control, and different incentives (Whittington et. al., 2020). Corporate governance is used to direct and reward behavior that aligns the interests of the shareholders and managers e.g., stock options, to maximize return though goal congruence (Hartmann et. al., 2020). Behavioral biases can occur both amongst investors and managers as they try to find ways to simplify decisions in the complex and uncertain process of international transactions. Individual biases influence e.g., choices of location or size of deal, and these biases aggregate to influence overall merger and acquisition flows (Smith, Coy & Spieler, 2018).

The efficient market hypothesis (EMH) states that arbitrage opportunities should not exist as security prices adjust immediately when new information, e.g., concerning dividends, is made

public (Berk & DeMarzo, 2017). Contradictory to the EMH, Baker, Foley & Wurgler (2009) argue that multinational corporations experience arbitrage opportunities following their access to several different capital markets, since the risk-free interest rate may vary between countries and differences in regulations can cause additional imperfections. Schleifer and Vishny (2003) present a model where managers are expected to behave rationally and take advantage of misevaluations caused by market imperfections. When a firm's stocks are overvalued, managers take advantage by selling stocks to raise capital and engage in cross border investments, and when stocks are undervalued, equity is repurchased and investments withheld (Baker, 2009). Following this logic, inflows and outflows are found to increase and decrease with stock market valuation (Baker, Foley & Wurgler, 2009). However, this gives managers incentives to manipulate earnings to drive up the value of equity, as overvalued firms may acquire others and grow, while undervalued counterparts become targets (Schleifer & Vishny, 2003). They also find that there is a pattern of paying with stocks when valuations are high, and cash when these valuations are low.

2.2.4. Financial Creativity and Emerging Multinationals

Access to and the cost of capital varies between countries and firms from developing economies are found to be financially disadvantaged compared to their counterparts from developed economies (Veeramani, Shukla & Jamaleh, 2020). Emerging markets may experience a scarcity of capital, while legislations and institutions of these markets are not as well developed, resulting in an increased risk for potential lenders. This is reflected in the cost of capital. Following certain proactive strategies to raise funds, increase firm value and decrease the cost of capital can help emerging MNEs to compete when it comes to cross border investments, according to Veeramani, Shukla and Jamaleh (2020).

The authors conclude by proposing that different circumstances require different theories, as there may not be a one size fits all when it comes to international transactions, as conditions vary between markets, and in times of financial growth or crisis (Veeramani, Shukla & Jamaleh, 2020).

2.3. Hypotheses

Our main research question is how cross-border merger and acquisition flows are affected by currency and in firm valuation differences between the acquirer and target country, regarding both volume and direction.

Having reviewed the literature on cross-border M&As and foreign direct investment (FDI), we find that the empirical evidence suggests that countries with an appreciating exchange rate are more likely to acquire targets in countries with depreciating exchange rate (Erel, Liao & Weisbach, 2012; Froot & Stein, 1991; Blonigen, 1997; Goldberg, 1993). This will give the acquirer a relative wealth advantage compared to domestic firms (Froot & Stein, 1991). Given these previous findings, we expect a difference in exchange rate to increase cross-border transaction volume and that the acquirer will reside in the country with an appreciating currency relative to that of the target country. Consequently, our first hypothesis is:

H1: *A positive difference in exchange rate appreciation / depreciation (i − j) will have a positive effect on cross-border merger and acquisition propensity.*

Acquiring firms are found to have higher valuations compared to their targets (Erel, Liao & Weisbach, 2012). These valuation differences are enhanced by changes in macro-economic factors, such as the exchange rate and it influences the attractiveness of cross border transactions in both directions (Erel, Liao & Weisbach, 2012; Veeramani, Shukla & Jamaleh, 2020). Previous research also finds that M&A flows increase and decrease with stock market valuations (Makaew, 2010; Baker, Foley & Wurgler, 2009). As we include private firms in our sample, the valuations are based on enterprise value and multiples, not stock price. Hence, our second hypothesis is:

H2: *A positive difference in valuation (i − j) will have a positive effect on cross-border merger and acquisition propensity.*

Where *i* represents the acquiring firm and *j* is the target in the transaction, of each country pair.

3. Method

In this chapter we present our research design, data collection, explanations and calculations of variables, and our sample in more detail.

3.1. Research Design and Data Collection

Our sample of mergers and acquisitions are gathered from Merger Market (2023) and includes announced transactions for the period 2009 - 2022. To calculate growth and averages for our independent- and control variables, we use data items for each variable 12-, 24-, and 36-months prior to the transaction. Hence, our model spans the period 2012 - 2022.

The data includes acquirer and target firms with their domicile of operations in the following countries: Denmark, Finland, France, Germany, Norway, Sweden, United Kingdom, and USA. We collect several data items from Merger Market, including announcement date, the target and acquirers' name, country of domicile and public status of each transaction. We further collect revenue and EBITDA in EUR m based on the last fiscal year of the announcement date. Other data items include deal value, enterprise value, net debt, and implied equity value, which is based on the individual valuation of each firm at the announcement date.

The sample for the model duration contains data on 8,332 number of mergers and acquisitions with a combined deal value of EUR 4.6 tn, of which 4,498 number of mergers and acquisitions are cross-border with a deal value of EUR 3.1 tn.

We collect monthly average exchange rates form *Riksbanken* (2023) for the period 2009 - 2022, to be able to calculate the appreciation / deprecation prior to the announcement. The exchange rates are based on the value of SEK in the respective currencies: EUR, USD, GBP, NOK, DKK. We convert these to match the exchange rates of the individual transaction. Finally, we end up with a sample of 4,920 monthly average exchange rate observations.

We acquire data for annual GDP growth from the *World Bank Indicators* (2023) to extend our macroeconomic analysis. The sample contains 350 annual country specific GDP growth rates for the period 2010 - 2022 to calculate average growth in GDP prior to the announcement date. To extend our analysis we have also acquired a data set for the country and time specific corporate income tax rates from the *OECD* (2023) for the period 2010 - 2022.

3.2. Variables

To examine which factors that affect the propensity of cross-border transactions, we construct three firm level variables and three country level variables. On firm level, we measure the difference in valuation, sales growth, and solvency between target and acquirer firm. On country level we measure the difference in exchange rate, GDP growth and corporate income tax rate between the acquirer and target countries (see Table 1, Panel A, for a description).

The three firm-level variables are constructed to capture the performance of the countries in question through the value and growth assessed on individual firms, and the investments' level of associated financial risk, through solvency. To capture the effect of these firm-performance related variables on the propensity of mergers and acquisitions, each variable is constructed to measure the differences ($i - j$) between the acquirer i and target firm j.

We include the macroeconomic variables to further extend our understanding of large-scale factors affecting the propensity of cross-border mergers and acquisitions. Including the difference in acquirer and target country ($i - j$) GDP growth rate, corporate income tax rate and exchange rates. The difference in GDP growth between the acquirer country i and the target country j captures the performance of firms not involved in mergers and acquisitions. All in all, we attempt to capture if arbitrage opportunities between countries could have and effect on cross border M&A.

Dependent Variable

We begin by constructing our dependent variable as the proportion of cross-border deals in each country, by taking the number of cross border deals over the sum of cross border and domestic

deals each year. By including domestic deals in the denominator, we can control for the flow of both domestic and cross-border mergers and acquisitions simultaneously.

Independent Variables

Valuation is based on average enterprise value prior to the announcement date and used instead of stock price, as privately held firms are included in our sample. Valuation can also be seen as a proxy for firm size. Previous studies have found that higher valued firms tend to purchase firms with lower valuations (Erel, Liao & Welsbach, 2012).

Currency effect, measures how exchange rate affects the relative wealth between firms in different countries and the propensity of cross border transactions (Froot & Stein, 1991; Blonigen, 1997).

Control Variables

Solvency is used as a proxy for capital cost and leverage. Target firms are found to have relatively higher leverage in relation to their buyers (Baker, Foley & Wurgler, 2009; Shleifer & Vishny, 1992). *Sales growth* is used as a proxy for financial performance. Previous literature find that more productive firms tend to buy comparatively less productive firms (Makaew, 2010). *GDP Growth* is used as a measure of country level financial performance. Mergers tend to take place when both economies are experiencing growth (Makaew, 2010; Vissa & Thenmozhi, 2022). *Corporate income tax rate* differences can both increase and decrease the probability of a transaction. Regulations differ between countries and can cause double taxation in some cases and tax shields in others. Research shows that firms in higher tax rate countries buy firms in countries with lower tax rates (Erel, Liao & Weisbach, 2012; Blonigen, 2005)

3.2.1. Variable Construction

We represent historic development for the variables in each country, which could influence the acquirer's decision whether to invest in a target country or not, by calculating the 12-, 24-, and 36-months average of each variable prior to the transaction. For corporate income tax rate, we use the rate at 12 months prior to the transaction, as it is generally not subject to fluctuations in the short term. In addition, we subset the variables into two categories: Public and private mergers and

acquisitions to see if the factors affecting the propensity of cross-border mergers and acquisitions differ depending on the firm's public status (see Table 1, Panel B).

Our data set is constituted of precedent transactions and as such all firm-related variables are related to each specific transaction. We calculate the prior averages pertaining to that specific country, time period, and public status (e.g., average multiple of country c, period t with public status ps). Once we have calculated the specific averages for each transaction, we compute the differences between acquirer i and target j for our variables for all individual transactions. For the macroeconomic variables we calculate the country and year specific averages, as these are not bound by the public status of the firm, these variables pertain to each individual transaction computing the cross-sectional data set.

Table 1: Panel A and B defining regression variables.

	Panel A: Country-Level-Variables	
DV	**Proportion of cross border**	The proportion of deals per country and year that are cross border. To calculate our dependent variable, we use the number of cross border deals (CB) per year (t) and country (c) over the sum of cross border and domestic deals (D) per year and country and public status (ps). Data period: Year 2009 – 2022. Source: Merger Market. *Proportion of cross-border deals = Prop.CB. = $CB_{t, c, ps}$ / ($D_{t, c, ps}$ + $CB_{t, c, ps}$)*
Firm based variable	**Valuation (I.D.)**	Valuation is the prior 12-, 24- and 36-months average enterprise value ($A.EV$) over revenue LFY[1] (Rev) multiple of the mergers and acquisitions per year (t) and country (c) and public status (ps) of the acquirer (i) minus the target (j). Data period: Year 2009 – 2022. Source: Merger Market. *Valuation$_{cross sectional}$ = ($A.EV_{t, c, ps, i}$ / $Rev_{t, c, ps, i}$) − ($A.EV_{t, c, ps, j}$ / $Rev_{t, c, ps, j}$)* *Valuation$_{panel data}$ = Val. = AVERAGE ($V1_{t, c, ps}$)*
	Solvency	Solvency is defined as net debt-to-EBITDA: average net debt (ND) of the prior 12-, 24- and 36-months over average EBITDA (P) of the prior 12-, 24- and 36-months of the mergers and acquisitions per year (t) and country (c) and public status (ps) of the acquirer (i) minus the target (j). Data period: Year 2009 - 2022. Source: Merger Market. *Solvency$_{cross sectional}$ = SD = ($ND_{t, c, ps, i}$ / $P_{t, c, ps, i}$) − ($ND_{t, c, ps, j}$ / $P_{t, c, ps, j}$)* *Solvency$_{panel data}$ = Solv. = AVERAGE ($SD_{t, c, ps}$)*

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[1] Last fiscal year (LFY)

Macro variables	**Sales Growth**	Sale growth (*SG*) prior 12-, 24- and 36-months average of the mergers and acquisitions per year (*t*) and country (*c*) and public status (*ps*) of the acquirer (*i*) minus the target (*j*). Data period: Year 2009 - 2022. Source: Merger Market. *Sales growth*$_{cross\ sectional}$ = *SG* = $SG_{t,\ c,\ ps,\ i}$ − $SG_{t,\ c,\ ps,\ j,}$ *Sales growth*$_{panel\ data}$ = *Sal.G.* = *AVERAGE* ($SG_{t,\ c,\ ps}$)
	Currency (I.D.)	The exchange rate development (*R*) is the prior 12-, 24- and 36-months (*m*) appreciation / depreciation of the exchange rate of the mergers and acquisitions per year (*t*) and country (*c*) of the acquirer (*i*) minus the target (*j*). Data period: Year 2009 - 2022, monthly average exchange rates. Source: Riksbanken *Currency*$_{cross\ sectional}$ = *R* = ΔR_i - ΔR_j = ($R_{t,\ c,\ i}$ / $R_{t-m,\ c,\ i}$) − ($R_{t,\ c,\ j}$ / $R_{t-m,\ c,\ j,}$) *Currency*$_{panel\ data}$ = *Curr.* = *AVERAGE* ($R_{t,\ c}$)
	GDP growth	GDP growth is the prior year's growth in GDP (*GDPg*) of the mergers and acquisitions per year (*t*) and country (*c*) of the acquirer (*i*) minus the target (*j*). Data period: Year 2010-2022, annualized data. Source: The World Bank Indicators. *GDP growth*$_{cross\ sectional}$ = *R* = $GDPg_{t,\ c,\ i}$ − $GDPg_{t,\ c,\ j,}$ *GDP growth*$_{panel\ data}$ = *GDP* = *AVERAGE* ($GDPg_{t,\ c}$)
	Tax	Corporate income tax rate (*Tax*) 12-months prior to the transactions, per year (*t*) and country (*c*) of the acquirer (*i*) minus the target (*j*). Data period: Year 2012 - 2022. Source: OECD. *Corporate Income Tax rate*$_{cross\ sectional}$ = *R* = $Tax_{t,\ c,\ i}$ − $Tax_{t,\ c,\ j,}$ *Corporate Income Tax rate*$_{panel\ data}$ = *Tax* = *AVERAGE* ($Tax_{t,\ c}$)

Panel B: Data Level Variables

Cross border	A deal is Cross border if the *Acquirer country* = *i* and the *target country* = *j* is not the same *i* ‡ *j*. Source: Merger market.
Public / Private	An acquirer (target) is public, its public status is "Public". Source: Merger market.
Deal value	Deal value is defined as the acquired equity stake *x*, times the deal value of equity (*E*). *E* * *x* = *Deal Value EUR m*. Source: Merger market.

From the cross-sectional data set we construct three panel data sets, by computing the proportion of cross border transactions per year constituting our dependent variable. For our two sets of independent variables, valuation and currency differences, and the control variables we calculate

the averages of each variable and period pertaining to that specific country and year, as well as the individual data sets requirements for public status.

3.3. Sample Selection

From the independent variables we construct a cross-sectional data set including the proportion of cross-border mergers and acquisitions. After having computed the individual transaction values for these 8,332 mergers and acquisitions into our panel data set, as for the dependent variable, we gather the mergers and acquisitions of each country and year per category: cross-border and domestic, to calculate the proportion of cross-border mergers and acquisitions. To further our analysis, we isolate the firm and macroeconomic independent and control variables into two separate regressions and investigate their effects in isolation. Later, we subset the panel data set into the categories public and private to investigate if there is any difference in the variables affecting merger and acquisition propensity. The distinction of public status also extends to the individual effects of firm and macroeconomic independent- and control variables. With the variables of interest, we expect to experience some degree of cross-sectional dependencies in our data sets as the variables are in some way contributing to each other.

The sample for the model duration contains data on 8,332 public- and private mergers and acquisitions with a combined deal value of EUR 4.6 tn, of which 4,498 are cross border with a deal value of EUR 3.1 tn. To fit the panel data, we restrict our sample data, to only include samples that have a minimum of one cross-border transaction per year. This limits our sample to 6,728 transactions with a combined deal value of EUR 3.5 tn, out of which 2,894 are cross-border with a deal value of EUR 1.9 tn. With these restrictions imposed, we exclude Denmark, Finland, Germany, and Norway in our public data set (see Table 9 in the appendix).

3.3.1. Fixed Effect Model

In our analysis of cross-border mergers and acquisitions (M&A), we employ the fixed effect model to address specific methodological challenges, namely cross-sectional dependencies, and unobserved heterogeneity. The fixed effect model enables us to isolate the effects of time-varying

variables within the context of country pairs, a crucial aspect given the nature of our data and research objectives.

Due to the interconnected nature of global financial markets, where economic events in one country can significantly influence the market dynamics in another, we expect the presence of cross-sectional dependencies in our dataset. The fixed effect model helps mitigate these dependencies by focusing on within-country pair variations over time, thereby providing a more accurate representation of the factors influencing cross-border M&A decisions.

Unobserved heterogeneity represents the variance caused by underlying variables not explicitly included in our model. This can include unique cultural, political, or economic factors inherent to specific country pairs that could skew our analysis. By incorporating country pair fixed effects, we control for these unobservable characteristics, thus enabling a more focused analysis of the impact of our chosen variables on M&A activity.

Our approach also emphasizes the exploitation of variations within the time-series data. By doing this, we can examine how changes over time within the same country pair affect M&A activity, as opposed to merely comparing differences across various country pairs. This methodological choice is particularly pertinent for understanding the dynamics of cross-border M&As under shifting economic conditions.

This section lays the groundwork for our later examinations, where we delve into specific diagnostic tests such as the Breusch-Pagan LM, Breusch-Godfrey/Wooldridge, and studentized Breusch-Pagan tests. These tests, discussed in detail in later sections, are critical for evaluating the presence of heteroskedasticity and serial correlation in the panel data. They serve as a comprehensive assessment of our model's robustness, complementing the adjustments made through the Driscoll and Kraay estimator. The inclusion of this estimator is particularly relevant given the nature of our data, which spans multiple countries and years. It ensures that our estimates are not only consistent but also reliable for inference in the presence of such complex data

characteristics (for a more detailed discussion of the implementation about the Driscoll-Kraay standard robust error see 4.2. Fixed Effect Models).

4. Findings and Analysis

In this chapter we present the results from our regression, including descriptive statistics, correlation, and variance inflation factor analysis. The chapter is concluded with a summary.

4.1. Description of Data

4.1.1. Descriptive Statistics

Table 2, 3 and 4 represent the descriptive statistics of our three data sets showcasing mean, median, min, max and the 1ST and 99TH percentile.

Table 2: Summary statistics, all targets and acquirers' data set

	MEAN	MEDIAN	MIN	MAX	STDEV.S	K 1%	K 99%
Prop.CB	0.4159	0.3981	0.0667	0.8216	0.1989	0.1131	0.8210
(Val. t-12m)	0.0103	0.0024	-0.0598	0.1477	0.0448	-0.0593	0.1446
(Val. t-24m)	0.0149	0.0071	-0.0956	0.2003	0.0603	-0.0944	0.1781
(Val. t-36m)	0.0256	0.0182	-0.1268	0.2026	0.0675	-0.1178	0.1839
(Solv. t-12m)	-1.3282	-2.5596	-162.8400	112.7721	29.7589	-77.3951	91.8372
(Solv. t-24m)	0.6208	-2.5417	-78.7125	108.2346	22.1488	-39.1042	80.6076
(Solv. t-36m)	4.2943	-2.1517	-57.1067	148.1621	28.7334	-31.3173	137.9392
(Sal.G. t-12m)	6.5589	1.1060	-422.2911	705.9216	90.9319	-98.7744	266.5465
(Sal.G. t-24m)	42.6249	1.2637	-76.8573	2797.1082	314.8621	-57.5258	1212.3433
(Sal.G. t-36m)	1.0206	1.0470	-83.4169	66.0329	11.6363	-17.2767	17.7584
(Curr. t-12m)	0.0815	0.0409	-0.4426	1.7820	0.2850	-0.4204	1.2134
(Curr. t-24m)	0.0395	0.0571	-2.6921	0.9000	0.3272	-0.5161	0.6274
(Curr. t-36m)	0.0667	0.0571	-0.2107	0.7071	0.1297	-0.1490	0.6009
(GDP t-12m)	-0.0022	-0.0016	-0.0721	0.0485	0.0157	-0.0394	0.0335
(GDP t-24m)	-0.0012	-0.0018	-0.0662	0.0435	0.0155	-0.0406	0.0369
(GDP t-36m)	-0.0025	-0.0029	-0.0413	0.0340	0.0137	-0.0403	0.0273
(Tax t-12m)	1.0422	1.0167	0.5545	1.8558	0.2892	0.5692	1.7123

Our analysis of Table 2 reveals that the mean and median values of the prior 12-, 24-, and 36-month valuation and GDP growth variables are closely aligned, indicating a relatively symmetrical distribution. In contrast, significant differences between the mean and median values in solvency, sales growth, and currency variables suggest a skewed distribution. This skewness is further evidenced by the substantial gap between the maximum and minimum values compared to the 1st and 99th percentiles, especially in the solvency and sales growth variables. To mitigate the influence of outliers and ensure a more robust analysis, we have adjusted the values towards the 1st and 99th percentiles.

Table 3: Summary statistics, public data set

	MEAN	MEDIAN	MIN	MAX	STDEV.S	K 1%	K 99%
Prop.CB	0.4484	0.4308	0.0909	0.8529	0.2206	0.0963	0.8335
(Val. t-12m)	0.0162	0.0063	-0.0778	0.1437	0.0572	-0.0741	0.1413
(Val. t-24m)	0.0206	0.0062	-0.1051	0.1888	0.0744	-0.0999	0.1849
(Val. t-36m)	0.0372	0.0262	-0.1832	0.2255	0.0822	-0.1500	0.2133
(Solv. t-12m)	-4.9720	-0.8004	-624.2117	454.2388	143.1179	-511.8421	417.2899
(Solv. t-24m)	4.6878	-3.6542	-360.7203	511.0468	110.0430	-268.5467	387.7712
(Solv. t-36m)	15.4145	-4.4199	-195.9239	408.9183	101.9836	-149.5733	381.1365
(Sal.G. t-12m)	-9.7401	0.9210	-249.3023	10.6940	52.2445	-246.5242	8.8281
(Sal.G. t-24m)	1.3779	0.7696	-3.5603	14.9663	2.6213	-2.3502	12.0585
(Sal.G. t-36m)	1.2098	0.9045	-1.0211	9.9086	1.6177	-0.8815	6.8766
(Curr. t-12m)	-0.0666	-0.0345	-0.6907	0.2471	0.1812	-0.5860	0.2201
(Curr. t-24m)	-0.1883	-0.0295	-5.8511	0.1576	0.8830	-3.5903	0.1526
(Curr. t-36m)	-0.0500	-0.0287	-0.3981	0.1935	0.1180	-0.3736	0.1656
(GDP t-12m)	-0.0001	0.0003	-0.0754	0.0590	0.0187	-0.0595	0.0457
(GDP t-24m)	0.0002	0.0001	-0.0650	0.0501	0.0175	-0.0468	0.0442
(GDP t-36m)	0.0014	-0.0007	-0.0179	0.0289	0.0105	-0.0175	0.0288
(Tax t-12m)	1.1704	1.0690	0.6077	1.7424	0.3188	0.6269	1.7230

A similar pattern is observed in Table 3. Here, the solvency and sales growth variables, particularly in the 12-, 24-, and 36-month periods, display a notable divergence between mean and median values. This divergence, coupled with the wide range between the extreme values and the corresponding 1st and 99th percentiles, suggests a high level of variability and potential outliers

in these data points. Such findings necessitate careful consideration of these variables in our regression analysis to avoid skewed interpretations.

Table 4: Summary statistics, private data set

	MEAN	MEDIAN	MIN	MAX	STDEV.S	K 1%	K 99%
Prop.CB	0.4301	0.3793	0.0702	0.8462	0.2136	0.09569	0.83794
(Val. t-12m)	0.0071	0.0043	-0.0548	0.1519	0.0437	-0.0544	0.13472
(Val. t-24m)	0.0112	0.0004	-0.0961	0.2035	0.0629	-0.0932	0.18821
(Val. t-36m)	0.0215	0.0094	-0.1222	0.2030	0.0703	-0.1192	0.18655
(Solv. t-12m)	-0.6726	-1.7169	-38.9908	66.9236	13.7156	-25.105	51.5276
(Solv. t-24m)	-1.2913	-2.5460	-26.3536	49.5818	11.4105	-26.119	36.4545
(Solv. t-36m)	-1.4667	-2.0180	-22.0194	33.7919	9.9704	-21.402	32.9272
(Sal.G. t-12m)	8.5184	1.0631	-603.3325	845.2607	123.7440	-172.74	392.915
(Sal.G. t-24m)	59.5378	1.2390	-61.3691	3296.4573	400.7928	-25.492	1694.88
(Sal.G. t-36m)	0.1210	1.0557	-96.1566	12.2973	11.4857	-29.848	8.66536
(Curr. t-12m)	0.1223	0.0577	-0.4829	2.5032	0.3746	-0.4588	1.60744
(Curr. t-24m)	0.1072	0.0945	-0.1801	1.4064	0.1904	-0.1135	0.69275
(Curr. t-36m)	0.0978	0.0818	-0.2132	1.1120	0.1675	-0.1812	0.57298
(GDP t-12m)	-0.0011	-0.0014	-0.0713	0.0452	0.0150	-0.0397	0.02978
(GDP t-24m)	-0.0001	-0.0014	-0.0672	0.0532	0.0157	-0.0336	0.04337
(GDP t-36m)	-0.0010	-0.0019	-0.0320	0.0350	0.0125	-0.0268	0.02867
(Tax t-12m)	1.0596	1.0153	0.5752	1.8919	0.2971	0.587	1.75999

In Table 4, we note pronounced disparities in the solvency and sales growth variables, similar to the previous tables. Additionally, the currency variable for the 12-month period shows a significant difference between the maximum value and the 99th percentile. This pattern points to the presence of outliers and a skewed distribution in these variables. The adjustment towards the 1st and 99th percentiles is thus critical in ensuring the reliability of our regression results by minimizing the influence of these extreme values.

Across all three datasets, the adjustments made to account for the 1st and 99th percentiles are essential in refining our data for more accurate and reliable analysis. This decision is particularly pertinent given the skewed nature of certain variables, which could otherwise distort the outcomes

of our regression models. By making these adjustments, we aim to present a more balanced and representative analysis of the underlying trends and patterns in our data.

4.1.2. Correlation Analysis

Following our initial expectations, our variables exhibit a degree of homogeneity, reflecting the interconnected nature of corporate activities and broader economic indicators. This interdependence mirrors the intricate linkages in real-world economic systems, as mergers and acquisitions are not isolated events but are deeply woven into the fabric of the economy. Each individual deal, while unique, collectively impacts and is influenced by broader economic activities. For example, an increase in firm valuation or a successful merger or acquisition often leads to heightened economic activities. These include not only direct factors like advisor fees and transaction costs but also ripple effects such as increased consumer spending, investment in infrastructure, and employment opportunities. These activities, in turn, contribute to the GDP, highlighting a cyclical relationship where firm-level actions both influence and are influenced by the macroeconomic environment.

Moreover, these interdependencies underscore the presence of unobserved homogeneity characteristics within our data. Such characteristics are crucial to acknowledge, as they signify underlying economic principles driving the observed statistical relationships. The correlation between firm-specific variables and GDP, reveal the multidimensional nature of economic interactions. As we develop the correlation analysis, it is important to keep in mind these inherent connections that shape the data's landscape, offering a more nuanced understanding of the interplay between micro-level corporate decisions and macroeconomic outcomes.

4.1.3. Correlation Matrix Analysis.

In our analysis of Tables 10, 11, and 12 (see appendix), a noteworthy pattern emerges in relation to the conventional threshold, where a correlation coefficient of 0.7 or higher is often considered a potential indicator of multicollinearity. For clarity, a correlation coefficient measures the strength and direction of a linear relationship between two variables, with values close to 1 or -1 indicating a strong relationship. Our observation reveals that correlations surpassing this 0.7 benchmark tend

to be concentrated around each variable's prior periods, which is not unexpected given the overlapping nature of input data in these variables.

Diverse cluster orientations are evident across the data sets. All three data sets (see Table 10,11, & 12 in appendix) demonstrate significant correlations in the realms of solvency and valuation. Interestingly, the data sets for all targets and acquirers, as well as the private dataset, display similar correlation patterns in the currency variable group. In contrast, the dataset encompassing all targets, acquirers, and public entities shows a comparable trend in the sales growth variable group.

Given our research objectives, discarding variables solely due to high correlation could be counterproductive and limit our investigative scope. Therefore, we choose to retain these variables, acknowledging the potential for bias as per the established rule of thumb. This decision underscores the complex trade-offs inherent in empirical research, where theoretical idealism often meets practical constraints.

4.1.4. Variance Inflation Factor Analysis

Following the insights gained from our correlation matrix analysis, we proceeded with a variance inflation factor (VIF) analysis for the data sets encompassing all targets and acquirers, public, and private entities (see Table 5). The VIF analysis is instrumental in quantifying the extent of multicollinearity among the predictors in our regression models. VIF values exceeding a certain threshold suggest that a predictor has a strong linear relationship with other predictors, thereby potentially distorting our regression results and weakening the statistical power of our analysis. The VIF value is then determined as the reciprocal of 1 minus the R-squared value from this regression. Mathematically, VIF i for the ith variable is determined by $VIF_i = 1/(1-R^2_i)$. Where R^2_i is the coefficient of determination of a regression of variable i on all other variables.

Upon reviewing Table 5, it becomes apparent that the variables which previously raised concerns in the correlation matrix analysis, particularly solvency and sales growth for the 12- and 24-month periods, also exhibit the highest VIF scores. This observation aligns with our expectations and indicates a significant degree of multicollinearity for these variables. Notably, the VIF values for

these variables, while on the higher end, still conform to the commonly accepted rule of thumb for multicollinearity concerns in VIF analysis. This typically conservative threshold suggests that VIF values below 10 are acceptable.

Table 5: VIF analysis

Model:	All target and acquirers	Public	Private
Variable	VIF	VIF	VIF
(Valuation t-12m)	2.0065	2.0065	2.0065
(Valuation t-24m)	3.4595	3.4595	3.4595
(Valuation t-36m)	2.6231	2.6231	2.6231
(Solvency t-12m)	5.5253	5.5253	5.5253
(Solvency t-24m)	7.3025	7.3025	7.3025
(Solvency t-36m)	1.9429	1.9429	1.9429
(Sales Growth t-12m)	6.7983	6.7983	6.7983
(Sales Growth t-24m)	6.2055	6.2055	6.2055
(Sales Growth t-36m)	1.3241	1.3241	1.3241
(Currency t-12m)	1.8070	1.8070	1.8070
(Currency t-24m)	3.7987	3.7987	3.7987
(Currency t-36m)	3.6783	3.6783	3.6783
(GDP Growth t-12m)	1.2352	1.2352	1.2352
(GDP Growth t-24m)	1.2969	1.2969	1.2969
(GDP Growth t-36m)	1.2673	1.2673	1.2673
(Corporate Tax)	1.3345	1.3345	1.3345

However, it is essential to interpret these VIF results cautiously. While the values fall within acceptable limits, the higher scores for certain variables suggest that they share substantial information. This is particularly evident in the case of solvency and sales growth, where their respective VIF values indicate a notable degree of linear dependency with other variables in the model. We must account for the potential impact of multicollinearity on our coefficients' estimates and standard errors, in our subsequent regression analysis. This consideration is particularly crucial when interpreting the significance of the variables in our models.

In light of these VIF results, we reaffirm the importance of a nuanced interpretation of our regression outcomes. The presence of multicollinearity, as indicated by our VIF analysis,

underscores the complex and interrelated nature of financial variables in mergers and acquisitions. As we progress in our analysis, these insights will guide us in drawing more accurate and meaningful conclusions from our empirical findings.

4.1.5. Insights from Underlying Data on Cross-Border M&A Dynamics

Table 6 Number of mergers by country pair from 2012 to 2022. The table is structured with acquiring countries in columns and target countries in rows. Diagonal matrix entries show domestic mergers per country, while off-diagonal entries indicate cross-border mergers between specific countries. The rightmost column totals cross-border mergers, excluding domestic ones, and the bottom row sums up all transactions, both domestic and cross-border, for each column's country. 'Total All' reflects the overall cross-border mergers and acquisitions for the period.

Disregarding public and private	*Acquirer*								
Target	**DE**	**FI**	**FR**	**GE**	**NO**	**SE**	**UK**	**US**	**Total**
Denmark (DE)	115	5	3	15	23	53	27	48	*174*
Finland (FI)	7	115	3	3	9	54	12	24	*112*
France (FR)	5	3	556	20	3	15	77	135	*258*
Germany (GE)	9	10	43	248	11	59	83	185	*400*
Norway (NO)	16	10	3	7	259	70	38	37	*181*
Sweden (SE)	18	35	5	20	51	391	33	64	*226*
United Kingdom (UK)	13	8	62	53	10	67	1,734	676	*889*
USA (US)	17	8	90	81	10	96	352	416	*654*
Total all: 6,728	**289**	**227**	**814**	**648**	**440**	**617**	**2,623**	**1,070**	*2,894*

According to Table 6, the United Kingdom, followed closely by the USA and Germany, leads the tally for cross-border M&A transactions within the sampled period. Interestingly, certain countries, including Denmark, Germany, and the USA, have a higher propensity for international M&A activities compared to domestic ones. In contrast, the UK stands out with the highest absolute number of transactions yet shows a lower proportion of cross-border engagements.
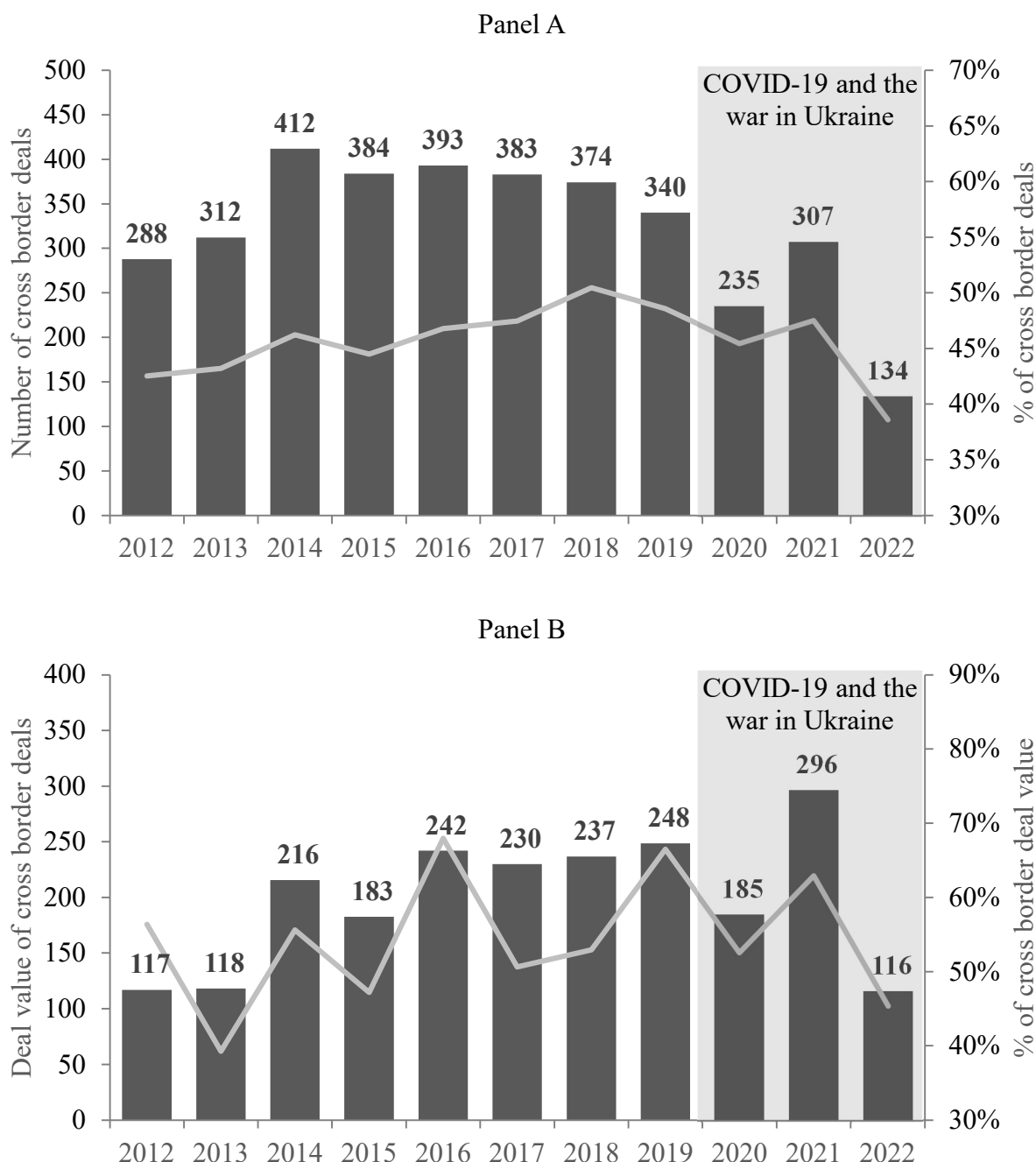
Panel A

Panel B

Figure 1: Cross border deal and deal value of mergers and acquisitions. This figure plots the number (% of cross border and domestic deals, Panel A) and the total deal value (% of cross border and domestic deals, Panel B) of cross-border deals with the period 2012-2022. Bars make up the number of transactions and deal values while the line represents the relative proportion of cross-border deals.

The landscape of cross-border mergers and acquisitions (M&As) holds a significant stake in global merger activities, both in frequency and monetary magnitude, as depicted in Figures 1's Panel A and Panel B. A noticeable uptrend in cross-border deals peaked around 2014, sustaining a plateau around 400 for M&As until 2018. This trend, reflective of the intrinsic market dynamics, underscores the interplay of international business strategies and economic policies.
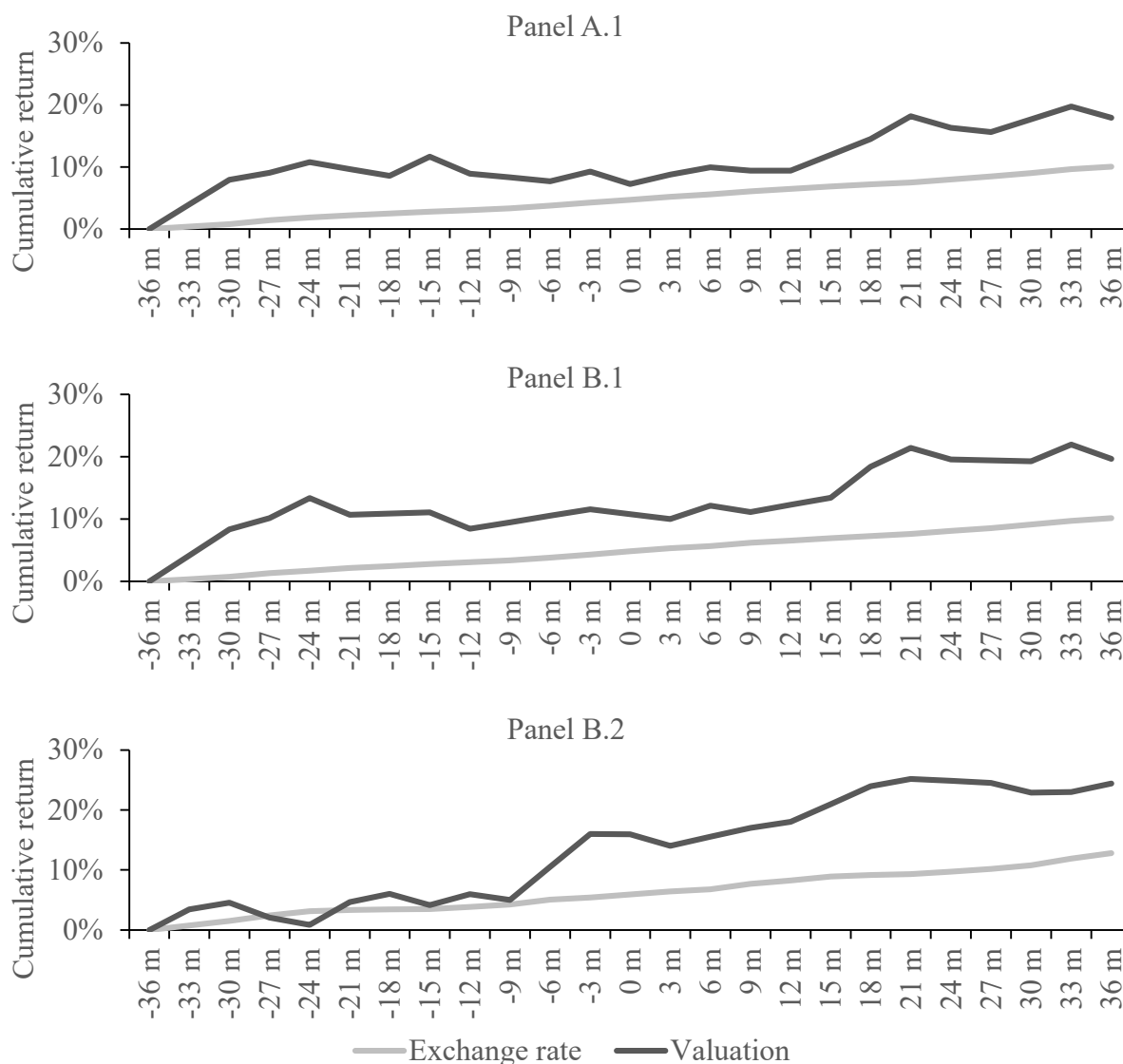
Figure 2: Cumulative differences in the valuation multiple and currency return between the target and the acquirers. The horizontal axis denotes the months relative to the acquisition month (month 0). Panel A uses acquirers and targets with both private and public mergers and acquisitions, Panel B.1 uses the sample of private targets and acquirers, Panel B.2 uses the sample of public target and acquirers.

Figure 1 encapsulates the oscillating nature of cross-border M&A deal values, with an initial surge leading up to 2014 followed by a period of deceleration towards 2016 and a resurgence towards 2019. The onset of the COVID-19 pandemic in 2020 marked a decline in M&A activities, to later rebound in 2021. Yet, tightening monetary policies of 2022, characterized by rising interest rates, dampened the M&A fervor together with the war in Ukraine. The conflict has had a pronounced, albeit slightly stronger, impact on the deal values compared to the sheer number of transactions. It is apparent from both panels that while the proportion of cross-border deals and their value generally mirrors the overall deal count and value, cross-border deal values (Panel B) exhibit greater volatility.

As evidenced in Figure 2, the cumulative returns on valuation differences and exchange rates exhibit a sustained increase throughout and beyond the 36-month transaction window. Notably, the public firm data subset (Panel B.2) reveals more pronounced volatility and heightened cumulative return growth for valuation differences. This distinction is critical, as it highlights the differential responses of private versus public entities to valuation dynamics, which is particularly pronounced when comparing the variance in the dataset's subsamples.

4.2. Fixed Effect Models

Our regression analysis detailed in Table 7 has elucidated several key findings pertinent to the determinants influencing cross-border deal propensity. Notwithstanding, our analysis was not without its challenges; multicollinearity was a persistent issue, as indicated by the correlation matrix. Despite attempts to alleviate this by excluding certain variables, multicollinearity remained. Therefore, we maintained the original set of variables, resorting to a fixed effect regression model. This model accounts for unobserved heterogeneity by employing country-specific intercepts, which in turn emphasizes within-group variation.

Table 7: Estimates and t coefficients and significance level (Regression formulas see Table 13 in appendix.)

Models:	All target, acquirers		Public		Private		Macro only		Firm only (all)	Firm only (Publ.)		Firm only (Private)
(Valuation t-12m)$_{i\text{-}j}$	0.0006		0.0003	**	0.0004				0.0004	0.0004	*	0.0008
(Valuation t-24m)$_{i\text{-}j}$	-0.0015		-0.0010	***	0.0008				-0.0012	-0.0009	***	0.0000
(Valuation t-36m)$_{i\text{-}j}$	0.0004	*	0.0006	**	-0.0009				0.0004	0.0006	***	-0.0004
(Solvency t-12m)$_{i\text{-}j}$	-0.0008		0.0008	***	-0.0001				-0.0010	0.0006	*	-0.0001
(Solvency t-24m)$_{i\text{-}j}$	0.0002		0.0237	*	-0.0005				0.0003	0.0195	.	-0.0014
(Solvency t-36m)$_{i\text{-}j}$	0.0010		-0.0447	*	-0.0063	**			-0.0006	-0.0308	*	-0.0054 **
(Sales Growth t-12m)$_{i\text{-}j}$	-0.0711	*	-0.0745		-0.0502				-0.0573 *	-0.0930		-0.0269
(Sales Growth t-24m)$_{i\text{-}j}$	-0.0700		-0.0021		-0.3929	*			0.0079	0.1560	*	-0.2835
(Sales Growth t-36m)$_{i\text{-}j}$	-0.1352		0.1399		0.1935	**			-0.2572	0.0210		0.0193
(Currency t-12m)$_{i\text{-}j}$	-0.6609	*	-0.5650	.	-0.3178	.	-0.6004	*				
(Currency t-24m)$_{i\text{-}j}$	0.2673		0.3528		0.0358		0.3855	.				
(Currency t-36m)$_{i\text{-}j}$	-0.1103		-0.3378	.	0.0247		-0.3460	**				
(GDP Growth t-12m)$_{i\text{-}j}$	-0.4590		-3.2135	***	-1.1900	***	-0.0530					
(GDP Growth t-24m)$_{i\text{-}j}$	-0.5494		-0.0455		-0.9366		-0.4156					
(GDP Growth t-36m)$_{i\text{-}j}$	1.0771		-1.2681		1.6581	.	1.0171					
(Corporate Tax)$_{i\text{-}j}$	0.0722		-0.1314	.	0.0000		0.0915	*				
R-Squared:	0.3127		0.5162		0.3108		0.3108		0.2089	0.2811		0.2122

Signif. codes: 0 ' *** ' 0.001 ' ** ' 0.01 ' * ' 0.05 ' . ' 0.1 ' ' 1

Each regression model was rigorously tested for autocorrelation and heteroskedasticity using the Breusch-Pagan LM, Breusch-Godfrey/Wooldridge, and studentized Breusch-Pagan tests, respectively. These tests suggested the presence of serial correlation in the idiosyncratic errors within the Public, Private, and Firm only (Publ.) models, alongside heteroskedasticity within the Macro only model (see Table 8 in appendix). To address these diagnostic concerns, we applied Driscoll-Kraay standard robust errors, with the significance codes for the adjusted t-statistics presented alongside the coefficients in Table 7.

Given the potential for multicollinearity, as suggested by the correlation matrix where some variables exceed the recommended correlation threshold of 0.7, we acknowledge this as a limitation of the current analysis. This necessitates a careful interpretation of the coefficients.
Technical terms such as fixed effect regression, multicollinearity, Breusch-Pagan LM test, and Driscoll-Kraay standard errors are used throughout the analysis. Fixed effect regression refers to a model that controls for time-invariant differences between groups, multicollinearity describes a situation where predictor variables are highly correlated, and the Breusch-Pagan and Driscoll-Kraay tests are statistical procedures used to detect specific issues within panel data regressions.

The mathematical definition for all the fixed effect robust standard error model regressions is defined as follows $Y_{ct} = \beta_0 + \Sigma \beta_n X_{nct} + \phi_c + \alpha_t + \varepsilon_{ct}$. Where Y_{ct} is the dependent variable, X_{nct} are the independent and control variables, β_n are the coefficients for each independent variable, ϕ_c is the firm-specific fixed effect, α_t is the time-specific fixed effect, and $\varepsilon_{t,c}$ is the error term. The letter n indexes the variables named in Table 7 for each model, while c refers to the specific country and t to the specific time period. For a more detailed description of the model formulas for the regression models in Table 7 see appendix Table 13.

4.3. Hypotheses Testing

Analysis of the regression for all targets and acquirers reveals that the variable valuation t-36m is positively associated with the likelihood of cross-border deals, with a coefficient of 0.0004 and significant at the 5% level. Conversely, sales growth t-12m shows a negative association, with a coefficient of -0.0711, significant at the 5% level. It is essential to approach these results cautiously

due to potential multicollinearity, as some variables exceed the correlation threshold of 0.7. Currency t-12m also displays a significant negative association with a coefficient of -0.6609.

For the Public subset, valuation t-12m and valuation t-36m exhibit positive and statistically significant associations with cross-border deals. In contrast, valuation t-24m has a negative coefficient of -0.0010, highly significant at the 0.1% level. The solvency variables for t-12m and t-24m periods show positive and statistically significant effects, while solvency t-36m has a negative impact. GDP growth t-12m displays a strong negative association, suggesting a substantial impact on the likelihood of cross-border deals.

The private model highlights the significance of solvency t-36m with a negative effect on cross-border deals, significant at the 1% level. The sales growth variables for t-24m and t-36m periods present a mixed picture, with sales growth t-24m negatively associated and sales growth t-36m positively associated with cross-border deals, both at varying levels of significance. Once more, we urge caution in interpreting these variables due to the aforementioned multicollinearity concerns.

In isolating macroeconomic factors, we observe a different pattern of significance. Currency t-36m negatively influences cross-border deal propensity, while currency t-24m exhibits a positive effect, although less significant. Corporate tax also emerges as a significant predictor with a positive association.

When examining only firm-level variables, sales growth t-12m stands out with a negative effect on cross-border deals, significant at the 5% level. This observation aligns with the public model results, where valuation and solvency variables exhibit significant effects, albeit with different directions.

As such we find support the second hypothesis (H2) but reject the first hypothesis (H1). It is important to interpret these findings within the context of our regression model's limitations due to multicollinearity. While we have taken measures to address this through robust standard errors,

the inherent correlation among some variables necessitates a cautious approach when drawing conclusions from these results.

4.4. Summary of Results

Regarding our first hypothesis of the currency effect on M&A propensity, we find no support for the sample of all firms. Additionally, there is no significant support of the currency effect in either subsamples of public or private firms only, but when we exclude firm specific variables, we find that the currency differences influence the propensity of cross border M&A transactions at 12 and 36 months prior to the deal.

Our second hypothesis regards the valuation effect on the propensity of cross-border M&As. We find that valuation (t -36m) influences cross-border M&A decisions in the sample of all firms, and in public firms at all prior points in time (t -12, t -24 and t -36 m).

Another intriguing aspect is the impact of sales growth and macroeconomic factors. We noted a negative association between sales growth t-12m and cross-border M&As, hinting at the complexities and potential risks involved in aggressive growth strategies. Macroeconomic elements, such as currency fluctuations and corporate tax rates, also emerge as significant predictors of M&A activity. For instance, currency t-36m and corporate tax significantly influence the propensity for these transactions, indicating the broad economic landscape's critical role.

Our study navigates the challenges of multicollinearity, a notable limitation in our analysis. Despite the interconnectedness among variables, as indicated by the correlation and VIF analyses, we chose to retain all variables to capture the full scope of the study. To address the effects of multicollinearity and enhance the robustness of our findings, we employed Driscoll-Kraay robust standard errors. This approach, while addressing statistical concerns, necessitates a cautious interpretation of our results.

5. Discussion

In this chapter we discuss our interpretations and the implications of our results, in relation to previously presented literature and theory.

5.1. Analyzing the Dynamics of Cross-Border M&As

The findings of 4.1.5 underline the broader themes identified in the literature on cross-border M&As, emphasize the critical role of firm valuations, currency strength, and market performance in driving M&A activities.

In Panel A.1, we observe a parallel progression of valuation and exchange rate returns, underscoring the interlinked nature of these financial metrics. The steadiness in their trajectory suggests a market sentiment that tracks consistently with currency performance, highlighting the importance of currency differences as a potential indicator of valuation trends and investor confidence.

Diving into the subsets, Panel B.1 and Panel B.2 differentiate the patterns between private and public mergers and acquisitions. In Panel B.1, which captures private targets and acquirers, the cumulative returns remain relatively stable, indicating less volatility and possibly a more measured approach to valuation in transactions among private entities. This steadiness may reflect the private market's lesser susceptibility to rapid speculative shifts, offering a more controlled environment for value assessment and deal-making.

Conversely, Panel B.2, which depicts public mergers and acquisitions, reveals a more pronounced volatility in valuation returns. This heightened fluctuation could be attributed to the larger public market space, where information is more readily accessible and reactions to news and market shifts are more immediate and pronounced. Such volatility might reflect the broader economic narratives and investor sentiments that public companies, being more visible and exposed to market forces, have to navigate.

The cumulative trends seen in these panels align with broader market observations that public firms typically face greater scrutiny and react more sensitively to market conditions, while private firms can operate under the radar, with valuations that might be less prone to sudden market shifts.

In the context of cross-border M&A transactions, these visualizations serve as a testament to the complex financial landscape navigated by firms. They highlight the criticality of considering both the type of firm and the timing of the transaction when deciphering the strategic financial underpinnings of M&A activity. The cumulative differences in valuation multiples and exchange rate returns are not merely abstract financial indicators but are reflective of the multifaceted strategies and decisions that shape the global M&A narrative.

5.2. Determinants of Cross-Border M&A Dynamics

Our analysis underlines the heterogeneity in M&A activity, reflecting the diverse motivations and strategies behind these transactions. As Erel, Liao, & Weisbach (2012) noted, most cross-border M&As involve private firms, each driven by a unique set of financial and strategic objectives. This finding adds depth to the understanding of M&A activities beyond the public firm spectrum. Walter & Barney (1990) categorized M&A goals, suggesting that the rationale varies greatly depending on firm-specific traits and market conditions. Our study supports this view by showing that different types of firms (public vs. private) may have different motivations and strategies when engaging in cross-border M&As. This highlights the importance of considering the specific characteristics and market dynamics of firms in analyzing M&A strategies.

The positive influence of long-term firm valuation t-36m on cross-border M&A propensity aligns with Berk & DeMarzo's (2017) insights on the impact of firm valuation on corporate decisions. This finding underscores the idea that firms with sustained financial health are more likely to engage in cross-border acquisitions, supporting our second hypothesis (H2). This concept resonates with Baker, Foley, & Wurgler (2009), who highlighted how market valuation plays a critical role in driving investment decisions, suggesting that firms with higher valuations are more inclined to pursue acquisitions. It implies that in the context of cross-border M&A, a firm's market

value and overall financial health are crucial factors influencing its strategic decision-making process.

The negative association we observed between sales growth t-12m and cross-border M&A activity suggests that aggressive growth strategies may not always align with successful M&A outcomes. This finding provides a nuanced perspective on growth strategies, echoing Whittington et. al. (2020) who noted that such strategies could have varied implications in the M&A context. Our study suggests that in the realm of cross-border M&A, growth strategies should be carefully balanced against other strategic and financial considerations.

The negative effect of currency t-12m on cross-border M&A propensity challenges conventional beliefs about the role of currency appreciation in facilitating these transactions. This finding suggests a more complex role for exchange rates, potentially influenced by broader economic factors or sector-specific conditions. This complexity aligns with Ayton & Rao-Nicholson (2018), who highlighted the nuanced impact of currency fluctuations in the Eurozone, suggesting that the effects of exchange rates on M&A are multifaceted and context-dependent. This result does not support our first hypothesis (H1), indicating a need for further investigation into the relationship between currency rates and cross-border M&A activities, given that our construction of the regression differs from that of other research articles and the possibility that multicollinearity may bias the results.

5.3. Private vs. Public Firms in M&A Transactions

Our work sheds light on the distinctive role of financial stability in transactions involving private firms. This finding resonates with Erel, Liao, & Weisbach's (2012) insights into the differing characteristics of acquirers and targets in M&As, where they emphasized the importance of financial conditions. Makaew (2010) observed that financial performance is a key determinant in M&A decisions, suggesting that financial health is more critical in private transactions, which typically face higher information asymmetry and lesser market scrutiny compared to public firms.

By addressing the challenge of multicollinearity and employing Driscoll-Kraay robust standard errors, our study acknowledges the complexities of the M&A market. This approach, drawing on the financial creativity theories of Veeramani, Shukla, & Jamaleh (2020), aims for a nuanced interpretation of our findings, recognizing the imperfections and intricacies of financial markets. This methodological decision resonates with Baker, Foley, & Wurgler's (2009) advocacy for advanced financial strategies in navigating the global M&A landscape.

6. Conclusions

In this chapter we conclude, discuss our delimitations, and make suggestions for future research.

6.1. Conclusions and Reflections on Hypotheses

Central to our study are two hypotheses, referred to as H1 and H2. In H1, we address how currency differences affect M&A propensity, finding no support for our initial expectations. This underlines the fact that the effect of currency appreciation or depreciation on cross-border M&A propensity is not straightforward. This is in line with previous research perspectives and suggests a more complex interplay of currency dynamics in M&A decisions, indicating that factors other than just relative wealth advantage play a role. In H2, we examine valuation differences, where our research supports the hypothesis that valuation differences positively influence cross-border M&A propensity. This finding aligns with the view that firms with robust market valuations are more inclined to engage in acquisitions, highlighting the importance of firm financial health in these decisions. Our thesis contributes to the literature on cross-border M&As by providing a detailed analysis of the financial drivers influencing these transactions. Our research supports the hypothesis on firm valuation differences (H2) but presents a more complex scenario for the hypothesis on exchange rate effects (H1), inviting further research to unravel these complexities.

6.2. Contribution of the Thesis

Our thesis contributes to the field of cross-border mergers and acquisitions (M&A) by offering a comprehensive analysis of the financial drivers that influence these complex transactions. We weave together diverse theoretical perspectives, which enriches the understanding of the multifaceted nature of cross-border M&A. A key aspect of our work is the inclusion of both public

and private firms in our sample. This is particularly noteworthy as most of the existing research focuses predominantly on public firms. By incorporating private firms, we provide insights into how these entities, which often operate under different regulatory and financial environments, engage in M&A activities.

Our thesis delves into the strategic considerations like firm valuation and growth strategies and the dynamics of cross border M&A determinants. For instance, we draw on Erel, Liao, and Weisbach's (2012) work to understand how firm valuation affects M&A decisions, providing a nuanced perspective on the financial health of firms engaging in these transactions. The analysis underscores the heterogeneity in M&A activity, reflecting diverse motivations and strategies. This aligns with and supports our second hypothesis (H2) on the positive influence of long-term firm valuation on cross-border M&A propensity. Our findings suggest that firms with sustained financial health are more likely to engage in cross-border acquisitions. This resonates with the insights from Baker, Foley, & Wurgler (2009), who emphasize the critical role of market valuation in driving investment decisions.

Our analysis of growth strategies is informed by Berk & DeMarzo (2017) and Walter and Barney (1990), who discusses the varied implications of these strategies in M&A scenarios and Whittington et. al. (2020) cautioning about the potential risks associated with rapid expansion. Suggesting that in the realm of cross-border M&A, growth strategies should be carefully balanced against other strategic and financial considerations.

However, we find no support for the first hypothesis (H1). The negative effect of currency t-12m on cross-border M&A propensity challenges conventional beliefs about the role of currency appreciation in facilitating these transactions, as initially suggested by Froot & Stein (1991) and Blonigen (1997). This necessitates a more nuanced understanding of the relationship between exchange rates and cross-border M&A activities, highlighting the need for further investigation. This complexity aligns with Ayton & Rao-Nicholson (2018), who noted the multifaceted impact of currency fluctuations in the Eurozone on M&A activities.

Finally, the distinctive role of financial stability in transactions involving private firms. This finding resonates with the observations of Erel, Liao, & Weisbach (2012), emphasizing the importance of considering the unique financial conditions of private firms in cross-border M&A transactions, an area less explored in the literature. This perspective is crucial as it adds depth to our understanding of M&A activities beyond the public firm spectrum, a gap noted by Walter & Barney (1990) in their categorization of M&A goals, suggesting that the rationale varies greatly depending on firm-specific traits and market conditions.

In summary, our study contributes to a deeper understanding of the strategic financial underpinnings of M&A activity, highlighting the criticality of considering both firm valuation and currency dynamics in the context of cross-border transactions.

6.3. Limitations of the Thesis

Despite its contributions, our study is not without limitations. A primary limitation is the selection of variables. Owing to the scope of a bachelor's thesis, we excluded factors such as firm size, industry specifics, inflation, interest rates, and stock market indices. This limitation is significant as these factors can play a crucial role in shaping M&A activities. For example, industry specifics can determine the strategic fit between merging firms, and inflation or interest rates can influence the financial attractiveness of cross-border investments.

Another limitation is the geographical scope of our study, which focuses solely on developed economies. This approach excludes emerging economies, which are increasingly important players in the global M&A landscape. The absence of developing economies could mean that our findings are less representative of global M&A trends and behaviors. Furthermore, the inclusion of private firms, while adding depth, introduced challenges due to limited data availability. This limitation is critical because private firms often lack the transparency of public companies, making it more challenging to obtain comprehensive data for analysis.

Lastly, our methodology, which focuses on specific country pairs, limits the generalizability of our conclusions. This approach provides insights into cross-border interactions between specific

countries but might not capture the broader nuances of global M&A activities as effectively as studies with a more extensive geographic scope.

6.4. Suggestions for Future Research

Based on previous limitations, we propose several avenues for future research. Expanding the range of variables to include factors such as firm size and industry-specific impacts could provide a more comprehensive understanding of M&A dynamics. Including emerging economies in future studies would offer a broader perspective on global M&A trends. Examining the influence of different payment methods in M&A transactions, as discussed by Shleifer and Vishny (2003), could reveal strategic considerations unique to different modes of payment.

Longitudinal studies covering extended time periods would also be beneficial. Such studies could uncover evolving trends in M&A activities, contributing to a dynamic understanding of these transactions. This suggestion aligns with the findings of Makaew (2010), who observed that M&A activities are often correlated with economic cycles, suggesting that a longer-term perspective could provide valuable insights.

In conclusion, while our thesis contributes to the understanding of cross-border M&A, it also opens avenues for further exploration and research. Future studies can build on our findings to explore the intricate world of global mergers and acquisitions in a more inclusive and comprehensive manner, thereby enhancing our understanding of this aspect of the global economy.

Finally, our thesis contributes to the literature on cross-border M&As by providing a detailed analysis of the financial drivers influencing these transactions. Our research supports the hypothesis on firm valuation differences (H2) but presents a more complex scenario for the hypothesis on exchange rate effects (H1), inviting further research to unravel these complexities.

7. Appendix

Table 8. Breusch-Pagan LM test for cross-sectional dependence in panels, Breusch-Godfrey/Wooldridge test for serial correlation in panel model, Studentized Breusch-Pagan test for heteroscedasticity in the error terms.

Model:	Breusch-Pagan LM test	Breusch-Godfrey / Wooldridge test	Studentized Breusch-Pagan test
Firm only (Private)	0.1416	0.1638	0.0972
Firm only (Publ.)	0.4474	0.0276	0.9570
Firm only (all)	0.0503	0.0353	0.3795
Macro only	0.0908	0.1148	0.0091
Private	0.4101	0.2670	0.2670
Public	0.7064	0.1196	0.7617
All target, acquirers	0.0857	0.0406	0.7461
Alternative hypothesis:	cross-sectional dependence	serial correlation in idiosyncratic errors	heteroscedasticity in the error terms

Table 9: Number of Mergers by Country Pair for subset groups Public and Private. (For definitions, please see Table 9)

Private	*Acquirer*								
Target	DE	FI	FR	GE	NO	SE	UK	US	*Total*
Denmark (DE)	98	5	1	13	22	50	25	42	*158*
Finland (FI)	6	98	2	3	5	47	11	15	*89*
France (FR)	4	2	452	19	3	14	68	112	*222*
Germany (GE)	9	7	34	190	11	52	72	163	*348*
Norway (NO)	16	7	2	5	208	65	31	33	*159*
Sweden (SE)	14	26	4	14	40	298	27	50	*175*
United Kingdom (UK)	12	8	48	43	7	56	1,481	570	*744*
USA (US)	13	7	59	51	10	82	273	343	*495*
Total All: 5,558	**256**	**187**	**674**	**538**	**367**	**473**	**2,225**	**838**	*2,390*
Public	*Acquirer*								
Target						FR	SE	UK	US	*Total*
France (FR)						104	1	9	23	*33*
Sweden (SE)						1	93	6	14	*21*
United Kingdom (UK)						14	11	253	106	*131*
USA (US)						31	14	79	73	*124*
Total All: 832						**137**	**114**	**384**	**197**	*309*

Table 10: Correlation matrix All targets and acquirers

	Prop.CB	(Val. t-12m)	(Val. t-24m)	(Val. t-36m)	(Solv. t-12m)	(Solv. t-24m)	(Solv. t-36m)	(Sal.G. t-12m)	(Sal.G. t-24m)	(Sal.G. t-36m)	(Curr. t-12m)	(Curr. t-24m)	(Curr. t-36m)	(GDP t-12m)	(GDP t-24m)	(GDP t-36m)	(Tax t-12m)
Prop.CB	1.0	-0.1	0.0	0.0	0.0	0.0	-0.1	0.1	0.1	-0.1	-0.2	-0.3	-0.3	0.3	0.3	0.3	0.2
(Val. t-12m)	-0.1	1.0	0.6	0.5	0.1	0.0	-0.1	0.1	0.1	0.1	0.0	-0.1	0.0	0.1	-0.1	0.1	0.1
(Val. t-24m)	0.0	0.6	1.0	0.7	0.3	0.2	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.1
(Val. t-36m)	0.0	0.5	0.7	1.0	0.3	0.3	0.1	0.0	-0.1	0.0	0.1	0.1	0.1	0.0	-0.2	0.0	0.1
(Solv. t-12m)	0.0	0.1	0.3	0.3	1.0	0.9	0.5	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.3
(Solv. t-24m)	0.0	0.0	0.2	0.3	0.9	1.0	0.6	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	-0.1	0.4
(Solv. t-36m)	-0.1	-0.1	0.0	0.1	0.5	0.6	1.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-0.1	0.4
(Sal.G. t-12m)	0.1	0.1	0.0	0.0	0.1	0.1	0.0	1.0	0.9	0.2	-0.1	-0.1	0.0	0.1	0.2	0.2	0.1
(Sal.G. t-24m)	0.1	0.1	-0.1	-0.1	0.1	0.1	0.0	0.9	1.0	0.2	-0.1	0.0	0.0	0.1	0.1	0.2	0.1
(Sal.G. t-36m)	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.2	1.0	0.0	0.0	0.0	0.2	-0.1	-0.3	0.0
(Curr. t-12m)	-0.2	0.0	0.0	0.1	0.0	0.0	0.0	-0.1	-0.1	0.0	1.0	0.6	0.6	-0.1	-0.2	0.0	-0.1
(Curr. t-24m)	-0.3	-0.1	0.0	0.1	0.1	0.1	0.1	-0.1	0.0	0.0	0.6	1.0	0.8	-0.2	0.0	0.1	-0.1
(Curr. t-36m)	-0.3	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.6	0.8	1.0	-0.1	-0.2	0.0	-0.2
(GDP t-12m)	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	-0.1	-0.2	-0.1	1.0	0.1	0.0	0.1
(GDP t-24m)	0.3	-0.1	-0.1	-0.2	0.0	0.0	0.0	0.2	0.1	-0.1	-0.2	0.0	-0.2	0.1	1.0	0.2	0.1
(GDP t-36m)	0.3	0.1	0.1	0.0	0.0	-0.1	-0.1	0.2	0.2	-0.3	0.0	0.1	0.0	0.0	0.2	1.0	0.0
(Tax t-12m)	0.2	0.1	0.1	0.1	0.3	0.4	0.4	0.1	0.1	0.0	-0.1	-0.1	-0.2	0.1	0.1	0.0	1.0

Correlation > 0.7 ☐

Table 11: Correlation matrix Public

	Prop.CB	(Val. t-12m)	(Val. t-24m)	(Val. t-36m)	(Solv. t-12m)	(Solv. t-24m)	(Solv. t-36m)	(Sal.G. t-12m)	(Sal.G. t-24m)	(Sal.G. t-36m)	(Curr. t-12m)	(Curr. t-24m)	(Curr. t-36m)	(GDP t-12m)	(GDP t-24m)	(GDP t-36m)	(Tax t-12m)
Prop.CB	1.0	-0.1	-0.1	-0.1	0.0	-0.1	-0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.1	0.3	0.1	0.1
(Val. t-12m)	-0.1	1.0	0.7	0.5	0.1	-0.1	-0.2	0.2	-0.1	0.0	-0.2	-0.2	0.0	0.1	-0.1	0.3	0.1
(Val. t-24m)	-0.1	0.7	1.0	0.8	0.3	0.2	-0.1	0.1	-0.2	0.0	-0.1	-0.1	-0.1	0.0	-0.1	0.1	0.0
(Val. t-36m)	-0.1	0.5	0.8	1.0	0.2	0.2	-0.1	0.0	-0.2	-0.1	0.1	0.0	0.0	0.0	-0.3	0.1	0.0
(Solv. t-12m)	0.0	0.1	0.3	0.2	1.0	0.8	0.6	0.3	0.0	0.0	-0.2	0.0	-0.1	-0.2	-0.1	-0.3	0.1
(Solv. t-24m)	-0.1	-0.1	0.2	0.2	0.8	1.0	0.8	0.2	0.0	0.0	-0.1	0.0	-0.1	-0.2	-0.2	-0.3	0.2
(Solv. t-36m)	-0.1	-0.2	-0.1	-0.1	0.6	0.8	1.0	0.1	-0.1	-0.1	0.0	0.1	-0.1	-0.2	-0.2	-0.5	0.3
(Sal.G. t-12m)	0.1	0.2	0.1	0.0	0.3	0.2	0.1	1.0	0.0	-0.1	-0.1	-0.1	0.0	-0.1	-0.1	0.1	0.1
(Sal.G. t-24m)	0.2	-0.1	-0.2	-0.2	0.0	0.0	-0.1	0.0	1.0	0.8	-0.2	-0.1	-0.2	0.2	0.4	0.2	-0.1
(Sal.G. t-36m)	0.1	0.0	0.0	-0.1	0.0	0.0	-0.1	-0.1	0.8	1.0	-0.3	-0.1	-0.3	0.0	0.4	0.2	-0.3
(Curr. t-12m)	0.2	-0.2	-0.1	0.1	-0.2	-0.1	0.0	-0.1	-0.2	-0.3	1.0	0.4	0.4	0.0	-0.2	0.0	0.0
(Curr. t-24m)	0.2	-0.2	-0.1	0.0	0.0	0.0	0.1	-0.1	-0.1	-0.1	0.4	1.0	0.7	-0.1	0.2	0.0	0.2
(Curr. t-36m)	0.2	0.0	-0.1	0.0	-0.1	-0.1	-0.1	0.0	-0.2	-0.3	0.4	0.7	1.0	0.1	0.1	-0.1	0.0
(GDP t-12m)	0.1	0.1	0.0	0.0	-0.2	-0.2	-0.2	-0.1	0.2	0.0	0.0	-0.1	0.1	1.0	0.1	0.2	-0.1
(GDP t-24m)	0.3	-0.1	-0.1	-0.3	-0.1	-0.2	-0.2	-0.1	0.4	0.4	-0.2	0.2	0.1	0.1	1.0	0.3	0.0
(GDP t-36m)	0.1	0.3	0.1	0.1	-0.3	-0.3	-0.5	0.1	0.2	0.2	0.0	0.0	-0.1	0.2	0.3	1.0	-0.2
(Tax t-12m)	0.1	0.1	0.0	0.0	0.1	0.2	0.3	0.1	-0.1	-0.3	0.0	0.2	0.0	-0.1	0.0	-0.2	1.0

Correlation > 0.7 ☐

Table 12: Correlation matrix Private

	Prop.CB	(Val. t-12m)	(Val. t-24m)	(Val. t-36m)	(Solv. t-12m)	(Solv. t-24m)	(Solv. t-36m)	(Sal.G. t-12m)	(Sal.G. t-24m)	(Sal.G. t-36m)	(Curr. t-12m)	(Curr. t-24m)	(Curr. t-36m)	(GDP t-12m)	(GDP t-24m)	(GDP t-36m)	(Tax t-12m)
Prop.CB	1.0	0.1	0.1	0.1	0.3	0.4	0.4	0.1	0.0	-0.2	-0.3	-0.4	-0.4	0.3	0.3	0.4	0.1
(Val. t-12m)	0.1	1.0	0.6	0.4	0.1	0.1	0.1	0.1	0.0	0.1	-0.1	-0.1	0.0	0.1	0.0	0.2	0.1
(Val. t-24m)	0.1	0.6	1.0	0.7	0.1	0.0	0.1	0.0	-0.1	0.0	0.0	-0.1	0.0	0.0	-0.1	0.2	0.2
(Val. t-36m)	0.1	0.4	0.7	1.0	0.2	0.1	0.2	0.1	-0.1	0.1	0.1	0.0	0.1	0.0	-0.1	0.1	0.1
(Solv. t-12m)	0.3	0.1	0.1	0.2	1.0	0.8	0.7	0.1	0.2	0.0	0.0	-0.1	-0.1	0.0	0.2	0.1	0.1
(Solv. t-24m)	0.4	0.1	0.0	0.1	0.8	1.0	0.9	0.1	0.0	0.0	0.0	-0.1	-0.2	0.0	0.2	0.1	0.2
(Solv. t-36m)	0.4	0.1	0.1	0.2	0.7	0.9	1.0	0.1	0.0	-0.1	0.0	-0.1	-0.2	0.0	0.2	0.1	0.3
(Sal.G. t-12m)	0.1	0.1	0.0	0.1	0.1	0.1	0.1	1.0	0.2	0.1	-0.1	0.0	0.1	0.2	0.3	0.2	0.1
(Sal.G. t-24m)	0.0	0.0	-0.1	-0.1	0.2	0.0	0.0	0.2	1.0	0.2	0.2	0.1	0.3	0.1	0.1	0.0	-0.1
(Sal.G. t-36m)	-0.2	0.1	0.0	0.1	0.0	0.0	-0.1	0.1	0.2	1.0	-0.1	0.1	0.0	0.0	-0.3	0.0	-0.1
(Curr. t-12m)	-0.3	-0.1	0.0	0.1	0.0	0.0	0.0	-0.1	0.2	-0.1	1.0	0.6	0.5	-0.2	-0.2	0.0	-0.1
(Curr. t-24m)	-0.4	-0.1	-0.1	0.0	-0.1	-0.1	-0.1	0.0	0.1	0.1	0.6	1.0	0.8	-0.1	-0.2	0.0	-0.1
(Curr. t-36m)	-0.4	0.0	0.0	0.1	-0.1	-0.2	-0.2	0.1	0.3	0.0	0.5	0.8	1.0	0.0	-0.1	-0.1	-0.1
(GDP t-12m)	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	-0.2	-0.1	0.0	1.0	0.0	0.1	-0.1
(GDP t-24m)	0.3	0.0	-0.1	-0.1	0.2	0.2	0.2	0.3	0.1	-0.3	-0.2	-0.2	-0.1	0.0	1.0	0.2	0.0
(GDP t-36m)	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.0	-0.1	0.1	0.2	1.0	0.0
(Tax t-12m)	0.1	0.1	0.2	0.1	0.1	0.2	0.3	0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.0	1.0

Correlation > 0.7 ▢

Table 13: Model formulas for each of the individual data sets. The models: *All target, acquirers; Macro only* and *Firm only (all)* regressions are performed with the same data set does not distinguish between public and private status. The models *Public* and *Firm only (Publ.)* regressions are performed with the same data set of only public firms. The models *Private* and *Firm only (Private)* regressions are performed with the same data set of only private firms.

All target, acquirers	Proportion of Cross border $_{ct}$ = β_0 + β_1 (Valuation t-12m)$_{i\text{-}j, ct}$ + β_2(Valuation t-24m)$_{i\text{-}j, ct}$ + β_3(Valuation t-36m)$_{i\text{-}j, ct}$ + β_4(Solvency t-12m)$_{i\text{-}j, ct}$ + β_5(Solvency t-24m)$_{i\text{-}j, ct}$ + β_6(Solvency t-36m)$_{i\text{-}j, ct}$ + β_7(Sales Growth t-12m)$_{i\text{-}j, ct}$ + β_8(Sales Growth t-24m))$_{i\text{-}j\, ct}$ + β_9(Sales Growth t-36m))$_{i\text{-}j, ct}$ + β_{10}(Currency t-12m)$_{i\text{-}j, ct}$ + β_{11}(Currency t-24m)$_{i\text{-}j, ct}$ + β_{12}(Currency t-36m)$_{i\text{-}j, ct}$ + β_{13}(GDP Growth t-12m)$_{i\text{-}j, ct}$ + β_{14}(GDP Growth t-24m)$_{i\text{-}j, ct}$ + β_{15}(GDP Growth t-36m)$_{i\text{-}j, ct}$ + β_{16}(Corporate Tax))$_{i\text{-}j, ct}$ + ϕ_c + α_t + ε_{ct}
Public	Proportion of Cross border $_{ct}$ = β_0 + β_1 (Valuation t-12m)$_{i\text{-}j, ct}$ + β_2(Valuation t-24m)$_{i\text{-}j, ct}$ + β_3(Valuation t-36m)$_{i\text{-}j, ct}$ + β_4(Solvency t-12m)$_{i\text{-}j, ct}$ + β_5(Solvency t-24m)$_{i\text{-}j, ct}$ + β_6(Solvency t-36m)$_{i\text{-}j, ct}$ + β_7(Sales Growth t-12m)$_{i\text{-}j, ct}$ + β_8(Sales Growth t-24m))$_{i\text{-}j\, ct}$ + β_9(Sales Growth t-36m))$_{i\text{-}j, ct}$ + β_{10}(Currency t-12m)$_{i\text{-}j, ct}$ + β_{11}(Currency t-24m)$_{i\text{-}j, ct}$ + β_{12}(Currency t-36m)$_{i\text{-}j, ct}$ + β_{13}(GDP Growth t-12m)$_{i\text{-}j, ct}$ + β_{14}(GDP Growth t-24m)$_{i\text{-}j, ct}$ + β_{15}(GDP Growth t-36m)$_{i\text{-}j, ct}$ + β_{16}(Corporate Tax))$_{i\text{-}j, ct}$ + ϕ_c + α_t + ε_{ct}
Private	Proportion of Cross border $_{ct}$ = β_0 + β_1 (Valuation t-12m)$_{i\text{-}j, ct}$ + β_2(Valuation t-24m)$_{i\text{-}j, ct}$ + β_3(Valuation t-36m)$_{i\text{-}j, ct}$ + β_4(Solvency t-12m)$_{i\text{-}j, ct}$ + β_5(Solvency t-24m)$_{i\text{-}j, ct}$ + β_6(Solvency t-36m)$_{i\text{-}j, ct}$ + β_7(Sales Growth t-12m)$_{i\text{-}j, ct}$ + β_8(Sales Growth t-24m))$_{i\text{-}j\, ct}$ + β_9(Sales Growth t-36m))$_{i\text{-}j, ct}$ + β_{10}(Currency t-12m)$_{i\text{-}j, ct}$ + β_{11}(Currency t-24m)$_{i\text{-}j, ct}$ + β_{12}(Currency t-36m)$_{i\text{-}j, ct}$ + β_{13}(GDP Growth t-12m)$_{i\text{-}j, ct}$ + β_{14}(GDP Growth t-24m)$_{i\text{-}j, ct}$ + β_{15}(GDP Growth t-36m)$_{i\text{-}j, ct}$ + β_{16}(Corporate Tax))$_{i\text{-}j, ct}$ + ϕ_c + α_t + ε_{ct}
Macro only	Proportion of Cross border $_{ct}$ = β_0 + β_1(Currency t-12m)$_{i\text{-}j, ct}$ + β_2(Currency t-24m)$_{i\text{-}j, ct}$ + β_3(Currency t-36m)$_{i\text{-}j, ct}$ + β_4(GDP Growth t-12m)$_{i\text{-}j, ct}$ + β_5(GDP Growth t-24m)$_{i\text{-}j, ct}$ + β_6(GDP Growth t-36m)$_{i\text{-}j, ct}$ + β_7(Corporate Tax))$_{i\text{-}j, ct}$ + α_t + ε_{ct}
Firm only (all)	Proportion of Cross border $_{ct}$ = β_0 + β_1 (Valuation t-12m)$_{i\text{-}j, ct}$ + β_2(Valuation t-24m)$_{i\text{-}j, ct}$ + β_3(Valuation t-36m)$_{i\text{-}j, ct}$ + β_4(Solvency t-12m)$_{i\text{-}j, ct}$ + β_5(Solvency t-24m)$_{i\text{-}j, ct}$ + β_6(Solvency t-36m)$_{i\text{-}j, ct}$ + β_7(Sales Growth t-12m)$_{i\text{-}j, ct}$ + β_8(Sales Growth t-24m))$_{i\text{-}j\, ct}$ + β_9(Sales Growth t-36m))$_{i\text{-}j, ct}$ + ϕ_c + α_t + ε_{ct}
Firm only (Publ.)	Proportion of Cross border $_{ct}$ = β_0 + β_1 (Valuation t-12m)$_{i\text{-}j, ct}$ + β_2(Valuation t-24m)$_{i\text{-}j, ct}$ + β_3(Valuation t-36m)$_{i\text{-}j, ct}$ + β_4(Solvency t-12m)$_{i\text{-}j, ct}$ + β_5(Solvency t-24m)$_{i\text{-}j, ct}$ + β_6(Solvency t-36m)$_{i\text{-}j, ct}$ + β_7(Sales Growth t-12m)$_{i\text{-}j, ct}$ + β_8(Sales Growth t-24m))$_{i\text{-}j\, ct}$ + β_9(Sales Growth t-36m))$_{i\text{-}j, ct}$ + ϕ_c + α_t + ε_{ct}
Firm only (Private)	Proportion of Cross border $_{ct}$ = β_0 + β_1 (Valuation t-12m)$_{i\text{-}j, ct}$ + β_2(Valuation t-24m)$_{i\text{-}j, ct}$ + β_3(Valuation t-36m)$_{i\text{-}j, ct}$ + β_4(Solvency t-12m)$_{i\text{-}j, ct}$ + β_5(Solvency t-24m)$_{i\text{-}j, ct}$ + β_6(Solvency t-36m)$_{i\text{-}j, ct}$ + β_7(Sales Growth t-12m)$_{i\text{-}j, ct}$ + β_8(Sales Growth t-24m))$_{i\text{-}j\, ct}$ + β_9(Sales Growth t-36m))$_{i\text{-}j, ct}$ + ϕ_c + α_t + ε_{ct}

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