

M&A performance in banking industry:
Evidence from non-bank financial institution and FinTech acquisitions

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Abstract

In the banking industry, mergers and acquisitions (M&A) are used as a growth strategy for value creation. However, existing research has presented mixed empirical evidence regarding the results of M&A performance. In fact, M&A performance can be impacted by many factors at the firm-level, industry-level and country-level. Based on the theories of industry relatedness and industry competition, this thesis aims to study the influence of M&A targets, industry competition in acquirers' home countries and time horizon on banks' M&A performance, to verify the value creation assertion. The thesis creates a set of panel data of over 200 banks worldwide, whose M&A targets include non-bank financial institutions and FinTech firms. Quantitative methods are used to test regression models and validate hypotheses built on the theories above. The results suggest that: firstly, when comparing non-bank financial institutions targets with FinTech targets, industry relatedness has a positive impact on bank acquirers' M&A performance, as performance indicators of profitability and efficiency both improved. Secondly, industry competition has a positive effect on M&A profitability, but no significant effect on efficiency. Thirdly, short-term M&A performance yields negative results for financial institution acquiring banks and positive results for FinTech firm acquiring banks; but in the long-term, both profitability and efficiency deteriorate in M&As of both industry targets, suggesting consistent value destruction effects for bank acquirers.

Key Words: M&A Performance, Banking, non-Bank Financial Institutions, FinTech, Industry Relatedness, Industry Competition

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1. Introduction

In the management literature, mergers and acquisitions (M&A) have been a widely researched topic for decades (DeYoung et al., 2009). According to research by scholars such as Salter and Weinhold (1980), M&A activities are completed in order to create additive value. This additive value creation effect of M&As, resulting from the existence of future synergies in the merged entities, can be defined financially as the positive changes in the expected future cash flows that accrue to the shareholders (Campa & Hernando, 2004). In strategic management, M&A value creation can be defined as “the increase in performance of the combined firms over what the two firms are already expected or required to accomplish as independent firms” (Sirower, 1997, p.20). Therefore, M&As could have a major impact on firms and, thereby, their performance, in particular (Bertrand & Zitouna, 2008).

The definition of performance in a M&A context, according to Zollo and Meier (2008), comprises two layers: first, at the transaction level, M&A performance can be defined as the changes in efficiency and revenue growth generated by the complete transaction process; and, second, at the firm level, M&A performance is defined more broadly as the degree to which synergy is realized and strategic gaps are reduced (for the combined entity) during the execution period, as well as the effects on other business processes (during the same period). In this regard, M&A performance is a multifaceted concept with both quantitative and qualitative features. Furthermore, M&A performance is linked to value creation on the premise of firm synergies. On one hand, the existence of future synergies is the pre-requisite of M&A events, which enable value creation as the firms combine, this value creation is then reflected in performance changes. On the other hand, the expected M&A value creation is measured over time by performance indicators, to confirm the actual synergies realized, or prove the non-existence of synergy between M&A participants.

In the financial literature, researchers have been observing and analyzing the banking industry, which has gone through waves of M&A, triggered either by events

such as financial deregulation in the 1980s and the dot-com bubble, or by global trends such as financial and technological innovations (Frame & White, 2004). Empirical analyses of banks' M&A performance often yield mixed results, due to various reasons, including (1) the industry relatedness between M&A target and the acquirer, (2) banking industry competition level in the acquirer's home country, and (3) the time horizon measuring M&A performance, discussed as follows.

First, regarding M&A targets and their industry attributes, studies have shown that industry relatedness, the degree to which two firms are active in related markets, is an important determinant in M&A activities (Ahuja & Katila, 2001). In fact, a positive relationship between industry relatedness and M&A performance has been confirmed by empirical studies of resource-based theory (e.g., Salter & Weinhold, 1980). This theory proposes that a firm is motivated to diversify when facing internal resource constraints and growth limits; obtaining resources externally through M&As instead of developing them internally allows the firm to generate greater profit and achieve sustainable competitive advantage (Rubin, 1973). In the seminal paper of Morck et al. (1990), it is discovered that, for acquirers, mergers in related industries create value in positive abnormal returns, whereas mergers in unrelated industries destroy value. In other words, the industry relatedness of the M&A target, defined by Morck et al. (1990) as the range of business in common with the acquirer, has a positive impact on the acquirer performance.

Applying the concept of industry relatedness to banking, as research of intra-industry acquisitions between banks is the mainstream, empirical studies on banks acquiring non-bank financial institutions are relatively uncommon (DeYoung et al., 2009). Some scholars have attempted to estimate banks' potential gains by studying hypothetical M&As of insurance companies or investment firms (Estrella, 2001; Lown et al., 2000). Although the results of these research works, such as reduced market risk or improved firm return, seem to justify banks' benefits, DeYoung et al. (2009) argue that studies of hypothetical deals are unable to capture the actual financial synergies. In

other words, actual deals between banks and non-bank financial institutions need to be analyzed to provide more evidence for related-industry M&A performance.

Target industry, as an important factor, should be put into the context of the time period being studied. For instance, according to DeYoung et al. (2009), banking literature in the early consolidation period of mid-1980s yields different M&A results from that of post-2000. These findings suggest that M&A studies of the banking industry are highly influenced by context, such as key events and global trends that reshape the industry dynamics. In this last decade, the FinTech industry has emerged as an important global trend that has had a direct impact on the banking industry. According to McKinsey & Company (2019), since its emergence, FinTech has become a M&A target of banks. Between 2010 and 2017, US banks' M&As averaged 20 deals per year, three of which were with FinTech firms. In 2018, the proportion more than doubled; in a total of 49 M&A targets, 16 were FinTech firms (McKinsey & Company, 2019). Despite the surge of FinTech acquisitions, the FinTech industry is rarely studied in existing banking literature. The few studies that cover banks' acquisitions of FinTech targets focus not on the deal outcomes, but rather on the "why" (Bömer & Maxin, 2018; Klus et al., 2019) and "how" (Oshodin et al., 2017) aspects of the deal; as such, there is a clear research gap on the evaluation of M&A performance outcomes related to FinTech acquisitions.

As FinTech firms' core competences derive from technological innovations and diffusion of know-how (Oshodin et al., 2017), their functional skills and resources are not easily transferable to banks or other types of financial institutions with whom they share few lines of business in common. Therefore, by the resource-based theory standards (Morck et al., 1990), FinTech is considered an unrelated industry to financial institutions. As such, using the industry-relatedness conceptual framework, FinTech and non-bank financial institution targets can be studied jointly. Doing so, real deals (i.e. not hypothetical ones) can be observed, contemporary FinTech M&A results can be verified, and the industry relatedness - M&A performance relationship proposed by the resource-based theory can be tested, filling multiple research gaps in one study.

The second relevant contributing factor to mixed research results concerns a bank's institutional environment in a given country or industry, such as industry competition. In existing banking literature, there are two opposing streams of theory concerning the impact of industry competition on bank performance. One theory is the Competition Fragility View. This theory, proposed by Keeley (1990), claims that, in a country, competition in the banking industry negatively affects bank performance, increases the likelihood of bankruptcies, and renders the entire banking system fragile. This theory gains its credibility by empirically validating the consequences of economic liberalization and banking deregulation after the 1980s, which included a surge of bank failures, a decline of bank franchise values and increasing regulatory costs (Hellmann et al., 2000; Keeley, 1990).

The opposing theory is the Competition Stability View. This theory disputes the traditional Competition Fragility View by claiming that: banking industry competition positively affects individual bank performance and contributes to the soundness of the banking system in a country; conversely, if the industry becomes more concentrated, lack of competition would lead banks towards risk-seeking behaviors that would detriment their profitability and cause instability in the system (Boyd & Nicolo, 2005).

In existing literature, these two opposing theories are tested mainly to verify the relationship between competition and bank performance, not between competition and bank M&A performance in particular (Kane, 2000). This suggests a research gap in theory application. If both theories were tested using M&A datasets of banks from different countries worldwide, the empirical results would provide more evidence to support either one of the theories, adding a new interpretation to the competition-performance relationship for future banking M&A performance studies.

A third reason for mixed M&A performance results relates to different time horizons. According the literature reviews of Thanos and Papadakis (2012) and Meglio and Risberg (2011), researchers have yet to reach a consensus regarding the proper time horizon to measure M&A performance. There is also a significant heterogeneity

with respect to the definitions of short-term, mid-term and long-term. In addition, Thanos and Papadakis (2012) and Meglio and Risberg (2011) observe that, in some of their literature samples (25% and 13% respectively), no time horizon has been explicitly disclosed, which is a serious limitation in M&A performance research. Another limitation is the lack of mixed time horizon studies; only 5% of the authors sampled attempted to combine short-term and long-term evaluations of M&A performance (Meglio & Risberg, 2011). This means that single dimensional (especially long-term) studies may suffer from data bias caused by other acquisitions or strategic alliances that occurred during the study period (Thanos & Papadakis, 2012). This problem can be fixed by mixing different time horizons into the same research, to overcome the limitation.

Given the firm-level, industry-level and country-level discussions above, this thesis aims to answer the following questions:

- 1. How does M&A target industry relatedness affect acquirers' M&A performance?**
- 2. How does acquirers' domestic industry competition affect their M&A performance?**
- 3. What's the impact of time horizon on M&A performance?**

Based on existing M&A theories, this thesis develops several hypotheses, and tests them in regression models using a global dataset of over two hundred banks who engaged in M&As of non-bank financial institutions and FinTech targets. The empirical findings suggest that the level of target industry relatedness positively affects acquirers' M&A performance - both profitability and efficiency. An acquirer's home country industry competition level has a positive impact on its M&A profitability, but no significant impact on efficiency. While M&A performance does not show clear pattern of improvement or deterioration in short-term, it worsens over the long-term regardless of target industry, resulting in more value destruction than value creation for acquirers.

This thesis contributes to existing management and banking literature in multiple ways. First, contrary to existing banking M&A research that mostly focuses on domestic

American banks or domestic European banks (Meglio & Risberg, 2011), this study includes over 200 banks worldwide, covering a variety of national and regional institutional environments. Second, it analyzes previously under-studied non-bank financial institutions and FinTech M&A targets, adding new evidence to the resource-based theoretical framework concerning industry relatedness. Third, it tests the debated Competition Fragility / Stability Views, supporting the latter with the latest dataset from this decade. Fourth, it compares M&A performance in mixed time horizons.

The thesis is structured as follows. Section two summarizes literature on M&As and M&A performance in banking and FinTech industries, then elaborates theories regarding the impacts of industry relatedness, industry competition and time horizon on acquirer M&A performance, followed by hypotheses development. Section three presents the chosen methodology, data collection process, variable measurements and analytical methods. Section four analyzes regression results, validates hypotheses and discusses results. Section five concludes by summarizing key contributions and avenues for further research.

2. Literature review

This section begins with an overview of the M&A performance literature, followed by a literature review on M&A performance in the banking and FinTech industries. Next, theories regarding the impact of industry relatedness, industry competition and time horizon on M&A performance are discussed in sequence, followed by hypotheses development.

2.1 M&A Performance Overview

In his book, Bower (2001) summarizes the five reasons why M&As occur:

1) to deal with overcapacity through consolidation in mature industries; 2) to roll up competitors in geographically fragmented industries; 3) to extend into new products and markets; 4) as a substitute for R&D; and 5) to exploit eroding industry boundaries by inventing a new industry. (p. 21)

M&A performance, therefore, reflects the outcomes of different strategic intents. According to Zollo and Meier (2008), although M&A performance is a widely researched subject in multiple disciplines such as management, finance, accounting, human resources and law, there is minimal consensus across the disciplines regarding its definition and measurement. As such, Zollo and Meier (2008) propose their definition of M&A performance, combining both transaction level and firm level constructs, as discussed earlier. The transaction level construct refers to quantitative changes in firm efficiency and revenue from M&A deal negotiation to deal completion. The firm level construct evaluates longer-term consolidation implications on merging firms' synergy realization, strategic fit, and other unrelated business processes throughout the M&A business plan execution phase.

Given the multifaceted characterization of M&A performance, its various constructs and the different ways that the construct can be operationalized, this section

aims to summarize the domains, measurements and settings of M&A performance in the management and finance literature.

According to Meglio and Risberg (2011), M&A performance is measured in both the non-financial and financial domains. In the non-financial domain, one of the two types of commonly used measurements is operational performance, whose indicators include marketing (e.g., market share), innovation (e.g., number of patents) and productivity (e.g., cost synergies). The other common type of measurement is overall performance, which uses qualitative indicators, such as success (achieve M&A goals) or failure (divestiture) (Meglio & Risberg, 2011).

In the financial domain, the two types of measurements are market performance and accounting performance. Market performance measures the valuation and stock pricing of publicly listed companies, with indicators such as risk factors (e.g., beta coefficient) and market value indexes (cumulative abnormal return). Accounting performance indicators include profitability (e.g., return on assets, return on equity, net income), growth (sales growth), efficiency (turnover ratios) and cash flow. These are indicators based on firms' accounting statements, to track historic M&A performance, and predict future performance (Meglio & Risberg, 2011).

The research settings of M&A performance include a wide range of geographies and industries. Geographic coverages of existing literature mostly include developed markets like the US, Europe, and cross-border (Meglio & Risberg, 2011). Post-2000, literature focusing on emerging markets like China (Zhou et al., 2015), India (Pillania & Bansal, 2008) and Brazil (Staub et al., 2010) analyzes institutional factors that impact domestic and international M&A performance. In terms of industry settings, the industries being studied the most include manufacturing (e.g., Schweiger & Denisi, 1991), high-tech (e.g., Puranam & Shrikanth, 2007), and services like media (Chan-Olmsted, 2003) and financial services (e.g., DeYoung et al., 2009).

As Bower (2001) claims, each M&A is unique, it should be analyzed in the context of specific industry, geography or time frame. As such, the sections below focus

on the banking and FinTech industries, reviewing existing literature on their M&A activities and performance.

2.2 Banking Industry M&A Performance

2.2.1 M&A performance of bank acquirers with bank targets

Researchers measure banking industry M&A performance using different indicators in financial and non-financial domains (Meglio & Risberg, 2011). According to Ayadi and Pujals (2005), the majority of banking studies focus on three aspects of M&A performance: the impact on bank profitability and shareholder value creation, the impact on efficiency, and the impact on market power.

Existing banking literature offers extensive discussions on the profit and value creation effects of bank M&As. To measure shareholder value creation, researchers usually calculate market-based stock returns; to measure profitability, accounting-based ratios are often used (Meglio & Risberg, 2011).

Using a sample of 80 US bank M&As, Knapp et al. (2006) find long-term profitability improvement for bank acquirers compared to industry mean five years after the M&A deal. This conclusion is aligned with Pilloff (1996), who found significant increases in post-merger returns in publicly listed US banks.

Studying US commercial bank M&As, Kim and Finkelstein (2008) discover that complementarity in product strategy and market choice between the acquirer and the target contributes to shareholder value gain, since positive abnormal stock returns are observed for the acquirers. Similar results are reported in M&A studies of European banks. In an EU-wide study of 262 bank M&As between 1992 and 2001, Altunbaş and Marqués (2004) find that strategic similarity of M&A partners is profitability enhancing, both for domestic and for cross-border M&As, while a lack of coherent strategic orientation has negative effects on profitability in both domestic and cross-border M&As.

In a research of M&A deals including Europe-wide bank acquirers and Eastern European bank targets, Fritsch (2007) discovered long-term profitability improvement for all acquirers, but failed to find any evidence that western European acquirers outperform domestic Eastern European bank acquirers in profitability.

Evaluating the impact of the 2008 financial crisis on the value creation of European banks' M&As, Beltratti and Paladino (2013) study deals carried out between 2007 to 2010, and discover that there are no significant abnormal returns around the deal announcement date, but there are positive abnormal returns at deal completion, suggesting that the reduction of uncertainty is rewarded by the market.

In other regions, in a study of bank M&As in Asia and Latin America, Goddard et al. (2012) find that acquirers' shareholder value is improved under four conditions: diversifying geographically, acquiring underperforming targets, settling the deal by cash rather than equity exchange, and engaging in government-instigated M&As. Their argument on geographical diversification is concurred by Bhagat et al. (2011) and Gubbi et al. (2010), presenting evidence of improved shareholder value in cross-border M&As for bank acquirers from emerging markets. However, Goddard et al. (2012)'s conclusion of deal payment method contradicts that of Yang et al. (2019), who report a short-term value destruction effect when using cash payment instead of stock payments to settle bank M&As in China.

Given these mixed results on profitability and value creation, DeLong and DeYoung (2007) provide an alternative perspective. They hypothesize that bank managers can learn how to better plan and execute M&A strategies by observing information spillovers from other recent bank M&As, and convert such learnings of mistakes and successes into long-term value creation in their own M&A deals (DeLong & DeYoung, 2007). This hypothesis is supported by empirical evidence that US commercial bank mergers in the 1990s created more value than commercial bank mergers of the 1980s (DeLong & DeYoung, 2007).

In addition to profitability and shareholder value, an additional expected outcome of M&As is efficiency gain, which, according to Bertrand and Zitouna (2008), can be realized through production rationalization, economies of scale and scope, or technological progress. To measure efficiency in banking research, some scholars use accounting-based efficiency ratios, while others measure two types of specific efficiencies: cost efficiency - the degree of cost-effectiveness optimizing the banking channels and reducing operating expenses, and profit efficiency - an econometric financial performance measure of how well actual profitability is generated compared to a best-practice frontier (Akhigbe & McNulty, 2005). Based on these different measurements, banking researchers have provided empirical evidence regarding the efficiency effects of M&As.

In US bank M&A studies, Pilloff (1996) discovered that the abnormal returns are highest for mergers with the greatest opportunities for expense reduction, therefore supporting the argument that M&As increase efficiency. This conclusion is concurred by Kwan and Wilcox (1999), who find substantial improvement in cost efficiency based on 1154 American bank mergers between 1985 and 1997. More recent studies after the 2008 global financial crisis also provide evidence of the efficiency gains in US bank M&As (e.g., Hannan & Pilloff, 2009; Kowalik et al., 2015).

In Europe however, the research results are mixed. Studying 62 cross-border bank M&As within the EU from 1990 to 2001, Vander Venet and Gropp (2003) find no significant cost efficiency change, and partial profit efficiency enhancement only in the short period after M&A; the study does not address long-term efficiency consequences. This empirical result contradicts the conclusions of Beccalli and Frantz (2009), who report a slight deterioration in profit efficiency and a marked improvement in cost efficiency, based on 714 M&A deals involving EU bank acquirers and worldwide target banks between 1991–2005. The opposite results between these two studies could be attributed to the sample selection of target banks, one being entirely European-based and the other including M&A targets worldwide.

In studies of European domestic M&As, Koetter (2008) assesses efficiency gains of merging commercial and savings banks in Germany over a 11-year period, and finds that at least half of the merging banks' cost efficiency and profit efficiency levels improve above the mean of non-merging banks, suggesting that mergers, in general, are a useful tool to improve banks' long-term efficiency in Germany. Similar results are reported in the UK. Ashton and Pham (2007), for example, evaluate the efficiency changes of merging British retail banks, and discover that significant efficiency gains are realized in the long-term, on average five years after M&A deal completion, which supports the argument of Haynes and Thompson (1999) on the efficiency improvement of UK building society M&As.

Apart from profitability and efficiency, the third aspect to evaluate M&A performance is market power. Having market power means that banks, as a financial intermediary (both a supplier and a client), can manipulate the level of supply and demand of credits and financial products, in order to fix market prices and benefit (Ayadi & Pujals, 2005). This market power in the banking industry often translates to externality, exerting influence on different banking clients. Scholars, therefore, evaluate the M&A impact on market power by measuring the degree of externality on banking clients, especially individuals and small businesses (Ayadi & Pujals, 2005; DeYoung et al., 2009).

In their seminal paper, Berger et al. (1998) study the effects of bank M&As on small business lending using a dataset of over 6000 US banks. The authors find that a bank's market power post-M&A is highly correlated with the bank size: when M&A deals are conducted between small and medium-sized banks, the impact on the availability of small business lending in the market is positive; when medium and large-sized banks merge, the impact on small business lending is negative, meaning a supply reduction or even shortage of small business loans (i.e. M&As increase the market power of large banks, potentially at the expense of small business clients) (Berger et al., 1998). The results of this study are supported by other scholars, such as the research of Sapienza (2002), on the effect of bank mergers on loan contracts, DeLong (2001), on focusing and

diversifying bank mergers, and Francis et al. (2002), on entrepreneurship and new business formation.

Although there is considerable evidence that greater market power gained from M&As have adverse external effects on bank clients, especially small business owners, some researchers argue differently. The study of Carbo-Valverde et al. (2009) presents debatable results. When using two sets of indexes to measure market power, the authors reach opposite conclusions: one index suggests that higher market power leads to higher financing constraints for firms, while the second index suggests that higher market power leads to lower financing constraints (Carbo-Valverde et al., 2009). Therefore, the authors emphasize the sensitivity of measurements, and the fact that mainstream views in banking literature regarding M&A and market power influences can be reconciled (Carbo-Valverde et al., 2009).

To summarize the existing literature on intra-bank M&A performance studies, depending on the methodology, measurements, geographic coverage and time period chosen, banking industry M&As can yield very different performance outcomes.

2.2.2 M&A performance of bank acquirers with non-bank targets

In existing literature, only a limited amount of research covers banks' M&As outside the banking sector, partly due to the country-level regulatory hurdles that restrict banks from engaging in non-bank business activities, such as issuing insurance policies or underwriting securities (Lown et al., 2000). However, there are instances where banks can diversify into other industries. For example, in some countries, such as Germany and Switzerland, the established universal banking system creates financial conglomerates that hold operating licenses in multiple sectors, such as banking, insurance, brokerage and real estate, which enables banks to engage in cross-industry diversification (Slijberman et al., 2005). Alternatively, in countries that implement deregulation rules on occasion, banks are allowed to enter non-bank sectors, through strategic alliances or M&As (Lown et al., 2000).

For the research that studies bank M&As of non-bank targets, the majority of studies discuss non-bank financial institutions targets such as insurance, security brokerage and investment firms, often using hypothetical deals to measure the M&A performance outcomes; very few analyze actual deals and their outcomes (DeYoung et al., 2009). Some notable studies are discussed below.

Aiming to identify the internal and external factors driving banks' decisions to engage in M&As of non-bank targets, Harjoto and Chotigeat (2012) claim that, internally, banks face the pressure of revenue enhancement across different lines of businesses, and, externally, they need to fulfill capital adequacy and other regulatory requirements. Banks, therefore, diversify into non-bank business lines and seek additional sources of revenue and capital. However, when measuring banks' M&A performance ex-post, the authors fail to find evidence of lower risk exposure, or improved profit, or higher market value, or positive abnormal stock returns; instead, they discover that the choice to acquire non-bank financial institutions significantly increases the salary, bonus, and incentive compensation of top executives in bank acquirers, suggesting that managerial motivation is another key factor of non-bank M&A decisions (Harjoto & Chotigeat, 2012).

Some researchers use hypothetical deals to analyze non-bank M&A performance results. Lown et al. (2000) conduct a comparative study, simulating cross-industry M&As between banks and security underwriters or insurance companies based on data in the 1990s, and compare the risks and returns of these bank acquirers against the risk-return profiles of actual banks in the 1980s. The simulation results suggest that, by conducting M&A with insurance companies, banks benefit from substantially lower risk despite a slight profitability drop, while M&As with security underwriters increase banks' probability of bankruptcy and lower banks' returns (Lown et al., 2000). These research findings support the diversification benefit claims of Boyd and Graham (1988) and Boyd et al. (1993), that mergers between banks and insurance firms would likely decrease the bankruptcy risk of bank acquirers, therefore should be encouraged by regulators, whereas mergers with all other types of financial firms would increase the bankruptcy

risk for banks, especially if securities and real estate firms are the targets. The two studies of Boyd and Graham (1988) and Boyd et al. (1993), however, do not discuss any impact on other M&A performance measurements, such as bank profitability, stock market returns or efficiency.

In another study on insurance company targets, Estrella (2001) conducts a proforma merger analysis based on arbitrage pricing theory, and argues that banks and insurance companies are likely to experience diversification gains on both sides. However, insurance is an industry as diversified as banking; sub-sector targets such as life insurance, property and casualty insurance need to be analyzed separately to evaluate factors impacting financial gains for the bank acquirers (Estrella, 2001).

By creating synthetic universal banks that each includes a Bank Holding Company (BHCs), an insurance company and a securities brokerage firm in the same legal entity, Allen and Jagtiani (2000) examine different risk exposures facing the universal banks. They find that, while diversification reduces each bank's own risk exposure, a group of synthetic universal banks collectively increase the systematic market risk substantially. Therefore, for potential bank acquirers, the expected synergy gain of diversification must be sufficiently large to overcome the cost incurred managing systematic market risk, to justify non-bank M&As (Allen & Jagtiani, 2000).

In a rare hypothetical study combining banks and non-financial industry targets, Wall et al. (2008a) identify several theoretical benefits of bank M&As with commerce from different industries, such as manufacturing, wholesale, retail or construction. These benefits include portfolio diversification, the creation of internal capital markets, and economies of scale and scope (Wall et al., 2008a). In addition, by creating hypothetical M&A portfolios, the authors discover that, compared to no diversification or diversifying into other industries, banks' acquisitions of construction firms and of retail firms yield higher returns and lower risks for the acquirers (Wall et al., 2008b).

One limitation of these hypothetical studies is that the research results and academic implications rely heavily on the selection of sample data and the chosen

historical time period; once data selection and time period change, the result validity could potentially be challenged (Wall et al., 2008b). Alternatively, some scholars study actual non-bank M&A deals, mainly in the US and Europe.

In his empirical study series of American Bank Holding Companies (BHCs) acquiring mortgage firms, Swary (1981) discovers that the stockholders of BHCs do not benefit from abnormal stock returns after deal announcements, because it is captured by the stockholders of the target, suggesting that wealth transfer in M&As exists and that deal value creation should be measured for separate and combined entities. In his follow-up study, Swary (1983) finds that regulatory decisions also influence BHCs' M&A performance. The M&A deal proposals that obtain regulatory approvals generate positive abnormal stock returns for the BHC acquirers, suggesting synergy effects with mortgage firm targets; the M&A proposals that are rejected by regulators generate negative abnormal stock returns for five weeks following the regulatory refusal, which can be interpreted as the price paid for forgoing the synergy effects (Swary, 1983).

Using a panel data of 181 European bank M&As between 1993 and 2000, Díaz et al. (2004) discover that European banks' acquisitions of bank targets outperform acquisitions of non-bank financial institution targets, resulting in significantly positive profitability gains. However, if bank acquirers are classified into sub-categories, the profitability impact of non-bank acquisitions is negative for commercial banks and positive for savings banks and cooperatives (Díaz et al., 2004).

In another European banking study, Cybo-Ottone and Murgia (2000) find positive abnormal stock returns for banks' acquisitions of insurance companies, and no significant abnormal returns for bank acquisitions of securities firms. Similarly, based on 72 M&A deals between banks and insurance companies from 1989 to 2004, Chen and Tan (2011) find positive wealth effects for bank acquirers, but acquirers' total risk remains constant compared to the market average and compared to pre-M&A levels.

Interestingly, the conclusions of these two European studies on banks' acquisitions of insurance companies contradict the lower profitability conclusion of

Lown et al. (2000), and the lower risk verdicts of Boyd and Graham (1988), Boyd et al. (1993) and Lown et al. (2000), despite all authors using the same set of measurements for risk and profitability. This is possibly due to: 1) analysis based on actual M&A data vs. hypothetical simulations; and 2) different financial market structures and different banking or insurance regulatory frameworks between Europe and the US.

To summarize the limited existing literature on banks' M&A performance of non-bank targets: (1) in terms of deal type, there is a lack of analysis based on actual deals; (2) in terms of target industry, studies on non-financial industry targets are rare; and (3) in terms of regional coverage, there exists a research gap of M&A deals outside the US or Europe.

2.3 FinTech Industry and M&A Performance

2.3.1 FinTech industry overview

FinTech, drawn from the words "Financial" and "Technology", has been defined in various dimensions both in the industry and in academia. The Oxford dictionary defines FinTech as "computer programs and other technology used to provide banking and financial services" ("Fintech," n.d.). The World Bank quotes the definition of the US Federal Reserve, who defines Fintech as "an industry composed of companies that use technology to make financial systems and the delivery of financial services more efficient" (Ancrì, 2016, p.3). The most quoted definition is that of the Financial Stability Board (FSB), who defines FinTech as "technologically enabled innovation in financial services that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services" (FSB, 2017, p.7). This definition has been hitherto applied by researchers and financial regulators, because it emphasizes both the innovative and disruptive nature of this new industry (e.g., BCBS, 2017; Kavuri & Milne, 2019; Klus et al., 2019).

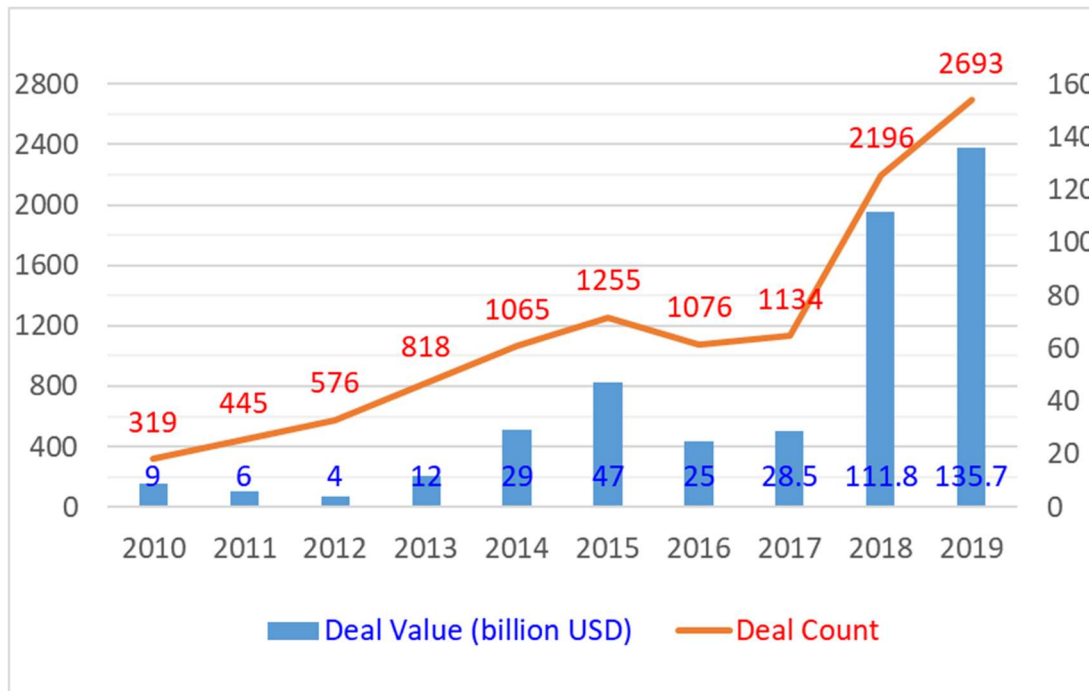
According to the World Economic Forum (2017), the FinTech industry spectrum includes the following business areas: digital banking, payments, lending, equity crowdfunding, investment management, insurance and market infrastructure. To summarize the scope of FinTech activities, the Basel Committee on Banking Supervision (BCBS) presents different lines of FinTech businesses in a matrix (BCBS, 2017, p.9). Sectoral innovations emulate the core products and services offered by a bank, while Market support services are technology functions (see Figure 1). The matrix structure well illustrates the FSB (2017) definition of FinTech, in that it emphasizes the important role of technological innovation as the foundation upon which the provision of financial products and services can be achieved. It also outlines the potential approaches for competition or collaboration between banks and FinTech firms, either through the underlying technology infrastructure, or through innovative products and services.

Sectoral innovations				
Market support services	Credit, deposit, and capital-raising services	Payments, clearing and settlement services		Investment management services
	Crowdfunding	Retail	Wholesale	High-frequency trading
	Lending marketplaces	Mobile wallets	Value transfer networks	Copy-trading
	Mobile banks	Peer-to-peer transfers	Fx wholesale	E-trading
	Credit-scoring	Digital currencies	Digital exchange platforms	Robo-advice
	Portal and data aggregators			
	Ecosystems (infrastructure, open source, APIs)			
	Data applications (big data analysis, machine learning, predictive modelling)			
	Distributed ledger technology (blockchain, smart contracts)			
	Security (customer identification and authentication)			
	Cloud computing			
	Internet of things / mobile technology			
Artificial intelligence (bots, automation in finance, algorithms)				

Figure 1: Sectors of FinTech innovative services, Source: BCBS, 2017, p.9

In the last decade, the FinTech industry has experienced exponential growth year-over-year. In 2015, globally there were 29 FinTech start-ups with valuations of over US\$1 billion each (“unicorns”). In 2017 this number doubled to 61, and further tripled in 2019 to 186 unicorns worldwide (CB Insights, 2020) (see Table 1). Along with growing firm sizes, global investment in the FinTech industry also steadily increased in the last decade. According to KPMG reports, in 2019 global Private Equity (PE), Venture Capital (VC) and M&A investment in FinTech reached US\$ 135.7 billion, an increase of 400% from the \$25 billion invested in 2016. The total number of investment deals worldwide also multiplied (KPMG, 2017a, 2019).

Table 1: Total Global Investment in FinTech Companies 2010 – 2019



Source: KPMG International, The Pulse of Fintech: Global Analysis of Investment in Fintech, Q4 2016, Q1-Q4 2017, H1-H2 2018, H1-H2 2019 (data provided by PitchBook), February 2020.

With its rapid growth, the FinTech industry also experienced consolidation activities, both internally amongst FinTech peers, and externally with banks as well as other types of financial institutions. According to CurrencyCloud (2016), in 2016, 17 banks across the world (12 European-based, four US-based and one Asia-based) engaged in strategic deals with FinTech firms. Of these deals, 43% established start-up programs to incubate FinTech companies, 20% set up venture funds designated for FinTech firms, 20% partnered with FinTech firms in bank projects, 10% acquired FinTech firms, and 7% launched their own FinTech subsidiaries. Such deal composition details have not been updated for the past three years; nevertheless, the connection and interaction between the banking industry and the FinTech industry remains strong (Kavuri & Milne, 2019). Under these circumstances, national, regional and global banking regulators have issued specific guidelines, protocols and policy briefings for FinTech, in order to incorporate FinTech firms into the banking regulatory frameworks (e.g., Bank of Canada, 2018; BCBS, 2017; FSB, 2017; US Department of Treasury, 2018).

A large proportion of the FinTech literature is represented by industry reports produced by service firms such as accounting, consultancy and market research. In academia, FinTech is still a relatively new and under-studied research topic, especially in the management and finance domains. Existing academic literature shows that FinTech is more often studied at the industry level than at firm level, in research areas that include: financial or technological business domains within the FinTech industry spectrum, regulatory implications, country-level FinTech overviews, and cross-industry dynamics. Notable research works are presented as follows.

Across the FinTech business spectrum, some researchers emphasize the financial attributes of the FinTech industry. For example, Gomber et al. (2017) propose conceptual frameworks to help FinTech firms' business adaptation in Digital Finance. Jagtiani and Lemieux (2017) evaluate FinTech's role in credit accessibility and financial inclusion for the under-privileged population. Others entail technology topic discussions such as blockchains (MacDonald et al., 2016), artificial intelligence and machine learning (Van Liebergen, 2017).

Concerning regulatory implications, apart from the aforementioned regulatory guidelines and protocols issued by national and global regulators, Yermack (2018) presents empirical evidence of disparity in the FinTech service provisions in common law countries compared to civil law countries in sub-Saharan Africa, suggesting that the payoff of a hands-off regulatory posture depends on the legal system.

At country level, Chen (2016) attributes China's FinTech success to a virtuous circle connecting technology, financial products, and people's daily needs. Providing an overview of the entire German FinTech market, Dorfleitner et al. (2017) consider Brexit as a driver for FinTech growth in Germany, especially in financial centers like Frankfurt and Munich.

Studying cross-industry dynamics with financial institutions, Milne (2016) argues that open banking platforms proposed under European Payments Services Directive 2 (PSD2) is an essential pre-requisite for Fintech to truly compete effectively with incumbent banks. In a Canadian market context, Wilamowicz (2019) claims that the FinTech revolution will be significantly more disruptive in the insurance sector than in any other financial services sub-set, due to lower-than-average customer satisfaction and retention in the insurance industry.

By categorizing existing descriptive papers on FinTech, Kavuri and Milne (2019) argue for the need of a coherent research agenda regarding the FinTech industry, because there remains significant research gaps in: 1) changing industrial structure and organization of financial services; 2) new forms of financial intermediation; 3) changing payments mechanisms; 4) financial inclusion; 5) artificial intelligence and large-scale data processing in finance; 6) the relationship between the new financial technologies and financial regulation; and 7) identity, security and data privacy in financial regulations.

Finally, another research gap, as observed from industry trends and existing literature, is the limited number of studies on individual FinTech firms and firm behaviors. For instance, the interactions between FinTech firms, or between FinTech

and financial institutions, can be analyzed qualitatively and quantitatively, using theories from both the management and finance fields. Specifically, as FinTech firms are undergoing intra-industry and cross-industry consolidations, researchers could and should examine M&A activities involving FinTech firms, and measure the M&A outcomes. The following section reviews existing literature on FinTech M&As and explores potential areas for further research.

2.3.2 FinTech M&A activities and M&A performance

Since FinTech is an emerging industry that has only recently started to consolidate in the last decade, it has received limited coverage in the academic literature, specifically with regards to firm-level M&A activities. Nevertheless, some notable research topics and findings have been published, discussed as follows.

To explore why FinTech firms collaborate (through strategic alliance or M&A) with banks in Germany, Bömer and Maxin (2018) conducted a case study. According to the authors, the German banking industry features stable long-term business-to-customer relationship and high market entry barriers (Bömer & Maxin, 2018). As a result, FinTech firms rely on the established relationships and reputation spillover effects of banks to fully access potential clientele, and use product co-branding or white labelling to overcome the market entry hurdles in cases of strategic alliances (Bömer & Maxin, 2018)

Through in-depth analysis of press releases and online search for news sources and databases, Klus et al. (2019) examine banks' motivations in FinTech acquisitions. They find that M&As allow banks to outsource projects to stand-alone FinTech units for resource and cost savings; the acquisitions enable bank acquirers to reinvent their business models, to access proprietary technical expertise and accelerate innovation processes, and to create a more innovative image for stakeholders (Klus et al., 2019). FinTech firms, on the contrary, seek a guarantor, who can not only handle regulatory licenses to operate, but also "lend" their name and reputation in sales pitches to

customers. The second reason is especially important for FinTechs, because finance is a sensitive issue for customers who are unwilling to entrust their assets and investments to small and unknown providers (Klus et al., 2019).

By analyzing more than 3000 news articles, webpages, reports, and press releases covering the period 2008-2017 related to four Australian Banks, Oshodin et al. (2017) claim that, by M&A, FinTech firms can join the banking ecosystem via innovation labs and profit from banks' venture funding. Banks benefit by attracting external knowledge, crowdsourcing FinTech ideas, scanning and testing emerging technologies and deepening engagement with customers (Oshodin et al., 2017).

Despite evidence supporting FinTech M&As, some scholars object to the idea. Hornuf et al. (2020), for example, argue that if technology outsourcing is the main purpose, banks are more likely to form an alliance with a FinTech firm, because acquiring a FinTech is risky: it's uncertain if a FinTech vendor can develop software solutions efficiently and deliver on time, alternatively, having the option to choose and change outsourcing vendors is the ideal risk minimizing strategy for banks (Hornuf et al., 2020). If acquiring innovation capabilities from external sources is the main purpose for banks, FinTech acquisition is also risky because early stage FinTech firms have a high probability of failure, which may incur financial losses for bank acquirers. Setting up alliances, on the other hand, allows banks to access innovation capability without taking too much risk (Hornuf et al., 2020).

In sum, the literature discusses "why" (or why not) and "how" FinTech firms engage in M&A activities, but does not investigate M&A outcomes, with some small exceptions, discussed as follows.

In a quantitative study by Dranev et al. (2019), the authors empirically test the impact of FinTech M&As on stock returns and find evidence of positive abnormal stock returns for FinTech acquirers from developed countries in comparison to acquirers from emerging countries (Dranev et al., 2019). In addition, they discover that effective tax rate has a positive influence on acquirer stock returns, because FinTech takeover allows

the acquirer to enjoy preferential tax rates of the technology industry, therefore the acquisition is positively received by financial market investors (Dranev et al., 2019).

Al-Halawani (2020) measures the post-acquisition abnormal stock returns of financial institutions from USA, Canada, Europe, China and India that acquired a FinTech target between 1998 and 2015, and discovers that the M&A announcements trigger no significant initial market reaction within a 20-day event window, but the abnormal stock return improves after three years (Al-Halawani, 2020). Furthermore, acquirers from emerging markets achieve significantly higher abnormal stock returns compared to those in developed markets, contradicting the results of Dranev et al. (2019), but due to a small sample size, the validity of this conclusion is weakened (Al-Halawani, 2020).

In a similar stock market event study, Brambilla (2020) explores if M&As generate positive abnormal returns for bank acquirers of FinTech targets, compared to a control group of banks that do not engage in any M&A. The author finds that technological M&As yield negative returns for banks in the long-term, but in the short-term 20-day event window, no significant abnormal return is observed, which contradicts the long-term event study results of Al-Halawani (2020); in addition, banks' prior M&A experience contributes to positive abnormal returns (Brambilla, 2020).

To summarize the literature studying FinTech M&As, given the small number of research works and mixed results, there is an obvious need to continue analyzing the various aspects of FinTech M&As, to collect more diverse sample data and introduce new performance measurements, to keep exploring the factors influencing FinTech M&A performance in different research settings and contexts.

2.4 Industry Relatedness and M&A Performance

In the management literature, M&A target industry relatedness is a widely researched topic. The notion of related diversification is regarded as a key factor in a

firm's M&A performance (Mahoney & Pandian, 1992). This relatedness - performance relationship can be explained by the resource-based theory in strategic management.

As summarized by Mahoney and Pandian (1992), resource-based theory is a managerial framework to identify and exploit firms' unique bundles of resources, in order to develop distinctive competencies and achieve sustainable competitive advantage. As firms are heterogeneous, when facing resource constraints and growth limits, they have a motivation to diversify through expansion such as M&A, to strike a balance between exploiting existing resources and obtaining new resources externally (Mahoney & Pandian, 1992).

To study the linkage between resource and firm expansion, Rubin (1973) develops an input-output production model, which explains the mechanism of profit generation and the role of resource in firm expansion decisions. In this model, profit is calculated as the difference between the sales value of a firm's own resource outputs, and the cost of obtaining new resource inputs (through either external acquisition or internal development). According to Rubin (1973), if the total expected profit with combined firms and combined resources is greater than the total profit with either internal resource development or without the activity, the firm will proceed with expansion; otherwise it will not (Rubin, 1973).

Aiming to identify factors influencing diversification, MacDonald (1985) finds that firms are more likely to enter industries that are related to their primary activities, and less likely to exit those industries. Industry relatedness in this context refers to similarities in supply-demand relationships, marketing approaches, and research and development orientations. This finding is aligned with Penrose (1959), who emphasizes the importance for firms to stay close to their existing resources and capabilities when expanding into new markets.

Given resource-based theory's proposition of heterogeneity, there are different definitions of relatedness for firms and industries. For instance, Rumelt (1974) presents three criteria: 1) serve similar markets using similar distribution channels; 2) use similar

production technologies, and 3) exploit similar scientific research. Likewise, Salter and Weinhold (1980) define relatedness as a combination of skills and resources. Skill-wise, relatedness is the transferable functional skills between businesses, such as product development, marketing, and distribution. Resource-wise, it is either supplementary relatedness (having the same resources as you have), or complementary relatedness (having the resources you don't possess but would combine effectively with those you already have) (Salter & Weinhold, 1980). Based on this definition, Salter and Weinhold (1980) then make a connection between relatedness and M&A performance, asserting that an optimal M&A strategy is to seek targets with the above combination of skill and resource relatedness; doing so, the combined business would create value for the acquirer, boosting firm stock prices and raising prospects of future profit earnings. This assertion is concurred by Porter (1980) and Lubatkin (1983), who both predict a positive relationship between relatedness of merging firms and value creation. These scholars have expanded the research scope from verifying the hypothesis that related diversification outperforms firm internal growth, to testing the hypothesis that related diversification outperforms unrelated diversification; their research findings are supported by more empirical evidences as follows.

Using stock marker return calculations, Singh and Montgomery (1987) confirm that related-industry acquisitions outperform unrelated-industry acquisitions, thanks to the acquirer-target synergies through a combination of supplementary and complementary resources. Montgomery and Wernerfelt (1988) also conclude that the resource-based theory is helpful in explaining superior performance of related-industry diversifiers relative to unrelated-industry diversifiers, as reflected in their sample of 167 multi-industry US firms.

In the seminal paper of Morck et al. (1990), it is discovered that, for acquirers, mergers in related industries where the target and the acquirer have a range of business in common (measured by sharing a 4-digit Standard Industrial Classification (SIC) code) create value by generating positive abnormal returns for the acquirer, whereas mergers

in unrelated industries (firms with limited range of business in common and use different SIC codes) destroy value.

Similar conclusions are found in more recent research. Based on a sample of 101 US and European horizontal acquisitions in multiple industries, Capron and Pistre (2002) discover that target industry relatedness and resource transfer from M&A acquirer to the target jointly contribute to the acquirer's positive abnormal returns that outperform the market. Using a dataset of 2500 acquisitions from 1975 to 1999 where the target was 100 percent acquired, Oler et al. (2008) find evidence that horizontal (same industry) acquisitions increase market power, economies of scale and, ultimately, shareholder value.

In the banking literature, according to the review of Liu et al. (2010), researchers started adopting resource-based theory frameworks in the mid-1990s, to investigate the link between banking resources and bank performance; the results generally suggest a positive relationship between resource and performance, validating the resource-based theory. By searching keywords such as "resource-based" and "banking", Liu et al. (2010) identified 15 relevant empirical studies that appeared in the strategic management literature between 1995 to 2009. By re-conducting the keywords search of "resource-based" and "banking" in year 2020, a few more relevant works were uncovered. Nevertheless, the number of articles remains small, with only 20 studies found to date, suggesting an underrepresentation in the literature. Notable research findings are discussed as follows.

In a qualitative study of US banks, Mehra (1996) uses data from expert panel and industry groups to examine the impact of ten key resources on bank performance. The results show a strong overall association between bank resource endowments and superior performance, which empirically validates the resource-based theory (Mehra, 1996).

Using a resource-based framework, the qualitative study of Richard (2000) investigates the joint effects of racial diversity and business strategy (measured by asset

growth percentage) on the performance of 547 US banks. The results confirm the joint positive impact on bank performance, as the three performance indicators – employee productivity, profitability and market performance are all significantly improved (Richard, 2000).

To study the relationship between competitive behaviors and performance of international banks located in Hong Kong, Chan and Wong (1999) present a qualitative analysis of interview and survey results, showing that well-resourced international banks are capable of combining incompatible value creating activities in a synergistic way, to attain a sustainable multi-strategic position (namely target differentiation and cost leadership). In addition, these banks achieve improvement in both profitability and market power (Chan & Wong, 1999).

Using a survey of 17 top bank executives and annual data from 15 Tanzanian banks, the research of Liu et al. (2011) compares the influence of tangible and intangible resources on bank profitability. Their results reveal that tangible assets positively impact bank profitability, whereas no impact of intangible assets on profitability is found. These results contradict the proposition of resource-based theory that only intangible resources can provide sustainable economic benefit for the firm (Liu et al., 2011).

In a rare quantitative study of 36 listed banks in Indonesia, Wibowo and Handika (2017) find that a bank's strategic deviation has a positive impact on its performance, suggesting that differentiation in resource allocation is more profitable than conformity to institutional norms.

To summarize the current state of the banking literature, two conclusions can be drawn: first, although the majority of studies support the validity of resource-based theory in banking industry by verifying the impact of resources on bank performance, neither M&A as a resource diversification strategy nor the role of industry relatedness on bank performance is discussed. Second, there is a dominance of qualitative methods and obvious lack of quantitative methods. To address these issues and contribute to existing literature, this thesis proposes to study bank M&As involving different industry

targets, to test the relationship between industry-relatedness and M&A performance using quantitative methods, and expand the applicability of resource-based theory in a banking industry context.

When examining banks and other financial institutions under the framework of the resource-based theory, there is a high level of relatedness between banks and non-bank financial institutions such as insurance, brokerage, investment firms, private equity or pension funds. They offer a wide range of business in common, they serve similar customers and markets, they share each other's distribution channels, and they apply similar technologies in products, services and operational systems. Personnel in both industries are mobile on the job market, because their skillsets are highly transferable.

Conversely, FinTech firms' core competences derive from technological innovations and diffusion of know-how (Oshodin et al., 2017). More specifically, FinTech firms' functional skills and resources are built on innovations in fields like artificial intelligence, machine learning, big data application, cloud computing, internet of things, and infrastructure ecosystems (BCBS, 2017). These technology-centric skills and resources are not easily transferable to banks or other types of financial institutions, whose core skills and resources are built upon financial expertise, business-customer relationship, marketing and sales capabilities, and shared product distribution channels. Even with completed acquisitions and established partnerships between FinTech and financial industries, FinTech firms, in general, share limited lines of business in common with financial institutions, which mostly involve support services in technology territory, equivalent to the back office of financial institutions (BCBS, 2017). Therefore, to banks and other types of financial institutions, FinTech is considered an unrelated industry by resource-based theory standards.

Given different levels of industry relatedness, FinTech and non-bank financial institution targets can be studied together, to address the research topic of bank M&A performance. Thus, the following theoretically driven hypothesis regarding the impact of industry relatedness on M&A acquirer's performance is proposed.

Hypothesis 1: Compared to M&As of related-industry targets, M&A of unrelated-industry targets have more negative impact on the acquirer's performance

2.5 Industry Competition and M&A Performance

In the banking literature, when analyzing the behaviors and performance of individual banks within their industry context, there are two opposing streams of theory: the Competition Fragility View and the Competition Stability View. The Competition Fragility View was first proposed by Keeley (1990), who claims that the banking industry deregulation and high degrees of competition worsens bank performance and increases bank default risk, which expose the entire banking industry to potential systemic volatility. Aimed to explain the dramatic increase of bank and thrift failures in the 1980s compared to earlier decades, Keeley (1990) develops a two-period two-state model and validates the hypothesis that competition destroys bank value and creates industry fragility. In his argument, before 1980s, various anti-competitive restrictions such as entry barriers endow those banks with market power with monopoly rents, increasing the value their banking charter (i.e. business license); the potential of losing banking charter has effectively created a regulatory bankruptcy cost for those banks, preventing them from value destruction attempts such as excessive risk taking (Keeley, 1990). After industry-wide deregulation in early 1980s, increases in competition cause bank charter values to decline, incentivizing banks with market power to act less prudently, therefore leading to more frequent bank and thrift failures in the late 1980s (Keeley, 1990).

Hellmann et al. (2000) concur with Keeley's (1990) assertion. Using a dynamic model of moral hazard, the authors argue that financial liberalization increases the intensity of competition between banks, giving them greater motivation to gamble - allocating assets or determining interest rates at will, as a result undermining bank franchise value and increasing regulatory costs substantially. In such a highly competitive industry environment, only prudential regulatory instruments, such as

capital requirements combined with deposit rate controls, can limit banks' growth and help combat the moral hazard problem (Hellmann et al., 2000).

The Competition Fragility View is also supported by applications of theoretical models outside the banking domain. One example is the Structure-Conduct-Performance (SCP) paradigm, a model developed in the 1930s in Industrial Organization Economics, which explains the working of imperfectly competitive markets. SCP argues that industry structure (concentration and competition) affects the firm's conduct (pricing behavior), which in turn influences its performance (profit) (Faccarello & Kurz, 2016). Specifically, SCP proposes that high market concentration, which inversely translates to a low degree of competition, lowers the cost of collusion between firms, resulting in higher-than-normal profits for all market participants (Evanoff & Fortier, 1988).

Applying the SCP model in the context of banking industry competition, the study of Evanoff and Fortier (1988) employs the financial and market demographic information of more than 6300 banks located in 30 US states in 1984. Using econometrics modeling, the authors claim that, in markets with significant entry barriers, lack of market competition positively influences bank profits (Evanoff & Fortier, 1988). Likewise, studies of US banks in the 1990s find that, in more concentrated local markets, banks charge higher rates on small business loans and pay lower rates on retail deposits, such that bank profitability in these markets exhibits a weakly positive relationship with market concentration (Berger & Hannan, 1989; Hannan, 1991).

In more recent literature, based on analyzing a set of panel data collected from European Central Bank, Weill (2013) confirms that, between 2000 and 2010, despite the economic and banking integration in the European Union, no general trend of enhanced bank competition has been observed among EU banks. In fact, competition has weakened particularly in old EU member countries, which leads to less competitive bank conduct, such as rising pricing power and, eventually, greater profitability (Weill, 2013).

In summary, the SCP paradigm is aligned with the Competition Fragility View in that they both expect a positive correlation between a firm's market power and its financial soundness; while they both predict a negative correlation between industry competition and firm performance.

The Competition Stability View was first proposed by Boyd and Nicolo (2005), who argue against the traditional Competition Fragility View, claiming that there exists a risk-incentive mechanism for banks to become riskier as the industry becomes more concentrated. Boyd and Nicolo (2005) explain as follows:

This mechanism exists on the asset side of the balance sheet and has been unmodeled in widely cited studies that focus on deposit market competition. As competition declines banks earn more rents in their loan markets by charging higher loan rates. In themselves, higher loan rates would imply (weakly) higher bankruptcy risk for bank borrowers. This effect is further reinforced by moral hazard on the part of borrowers who, when confronted with higher interest costs, optimally increase their own risk of failure. (pp. 1-2)

In other words, lack of competition leads banks towards adverse selection behaviors, detriments their profit earning prospects, and causes instability concerns; conversely, a positive relationship exists between competition and stability (Boyd & Nicolo, 2005).

The work of Fiordelisi and Mare (2014) directly supports the Competition Stability View. Using data of European cooperative banks from 1998 to 2009, the authors verify a positive relationship between competition and stability, which can be observed both in the short-term and long-term, a fundamental relationship that does not change even during the 2008 - 2009 financial crisis (Fiordelisi & Mare, 2014).

Some scholars interpret the Competition Stability View from different angles. For example, Berger and Hannan (1998) measure the efficiency of over 5000 banks against

their local market concentration, finding strong evidence that banks exhibit lower efficiency in more concentrated and less competitive markets. The authors reason that a bank with market power in a concentrated industry environment is under no pressure to compete, despite its lack of efficiency, due to 1) incompetent managers who fail their duties; 2) the pursuit of objectives other than profit maximization; 3) the extra profits generated by exercising market power; and 4) political or other activities to defend or gain market power (Berger & Hannan, 1998).

In alignment with the Competition Stability View, some scholars advocate the too-big-to-fail theory, to reveal the consequences of low market competition and high banking industry concentration. According to the testimony of previous US Federal Reserve Chair Ben Bernanke (2010, para. 41), "A too-big-to-fail firm is one whose size, complexity, interconnectedness, and critical functions are such that, should the firm go unexpectedly into liquidation, the rest of the financial system and the economy would face severe adverse consequences". Despite the popularity of this theory post-2008 global financial crisis, too-big-to-fail has been discussed by researchers and government regulators since the 1980s (Dash, 2009). In his paper addressing to M&A regulators, Kane (2000) argues against a few giant banks dominating the industry, saying that,

With increased market share come increased market power and political clout. Increased market power engenders monopoly rents, and increased market share enhances an institution's significance to members of the congressional delegations of the states in which it operates. Increased political clout intensifies incentive conflicts facing top regulators. With increased size, once a bank is deemed by market as [Too Big to Fail] or [Too Big to Discipline Adequately], that entity's financing costs lowers. Funding costs fall because the institution's increased size enhances its access to unpriced de facto taxpayer guarantees of its uninsured debt. (p. 4)

By presenting event study evidence based on banking mergers of 1991-98, Kane (2000) supports the value destruction hypothesis of small in-state banks, and calls for stricter regulations to curtail megamergers in the US, to minimize the incentives for too-big-to-fail and restore a competitive banking industry.

Evidence in Europe also supports the too-big-to-fail theory. After investigating the relationship between bank size and government debt prior to 2008 financial crisis, Demirgüç-Kunt and Huizinga (2013) conclude that too-big-to-fail banks are too costly to save. According to their research, shortly after the financial crisis, banking industry competition in EU countries was so disturbed by public finance safety nets that, in 2009, the European Commission ordered the downsizing of some largest European banks that have received government bail-out funds, to remove unfair competitive advantage and ensure an equitable market environment for all European banks (Demirgüç-Kunt & Huizinga, 2013).

In developing countries, scholars also present evidence in support of the Competition Stability View, some of the works include Fu et al. (2014), on bank failure in 14 Asia-Pacific countries, and Čihák and Hesse (2010), on Islamic Banking in 19 countries.

To summarize the ongoing debate in academia regarding the Competition Fragility / Stability Views, research mainly uses these two opposing theories to evaluate the impact of banking industry concentration and competition on overall bank performance and the potential implications to the soundness of banking system. However, aside from Kane's (2000) study, these two views are seldom tested on strategic events such as bank M&As, where competition is a contributing factor to M&A performance outcomes. More research of such events would provide new evidence to support either one of these two opposing theories. Findings would be even more impactful if such M&A research is carried out on a global basis, involving non-bank targets in multiple industries, as the empirical results would take into account variance

between not only industry but also country and region, key components of the Competition Fragility / Stability Views.

As discussed, banking research is highly influenced by context. Global trends, such as financial and technological innovation, can reshape the banking industry and, over time, produce contradictory research results (DeYoung et al., 2009; Frame & White, 2004), as in the case for Competition Fragility / Stability Views. Since scholars have recently presented more evidence in support of the Competition Stability View, for this thesis, hypotheses are developed based on the theoretical framework of Competition Stability View, to evaluate the home-country impact of banking industry competition on bank acquirers and their M&A performance.

Hypothesis 2: An acquirer's home country industry competition level positively affects its M&A performance

2.6 Time horizon and M&A performance

In existing management and banking literature, empirical evidence has suggested that time horizon influences M&A performance (Thanos & Papadakis, 2012). However, scholars define different time horizons (e.g. short-term, medium-term and long-term) arbitrarily in their measurement of M&A performance, or don't even provide a time indicator (Meglio & Risberg, 2011; Thanos & Papadakis, 2012). As Angwin (2004) points out, the time factor of M&A performance has not been accorded the importance it is due.

As the time factor in M&A performance studies varies substantially, by conducting a literature review of over 40 years' M&A research works in top-tier journals, Meglio and Risberg (2011) propose categories to define time horizons between ex-ante and ex-post: short-term (less than 1 year); medium-term (between 1 and 3 years); and long-term (over 3 years). This thesis uses these three categories to review existing literature and propose hypotheses. Notably, when measuring M&A performance, there is a clear distinction between acquirer performance, target

performance, and combined entity performance (Akhavain, 1997). This thesis focuses on acquirer performance pre- and post-M&A.

In the short-term and medium-term M&A performance studies, there is an over-reliance on stock market-based event study methods, which measures the acquirer's positive or negative abnormal stock returns generated in event windows ranging from a few days after deal announcement up to one year post-M&A (Bild 1998; Ismail & Annis 2011). The empirical results are mixed. Some researchers observe positive abnormal returns, including studies by Cornett and De (1991), on US inter-state bank mergers, Choi and Russell (2004), on construction firm M&As in the US, Yuce and Ng (2005), on both private and public firm M&As in Canada, and Capron and Pistre (2002), on over 100 US and European multi-industry horizontal acquirers. Some other scholars observe marginally or significantly negative returns for the acquirers, both in developed and emerging markets (e.g., Holl & Kyriazis 1997; Jarrell & Poulsen, 1989; Williams & Liao, 2008).

These mixed results for short-term M&A performance could be attributed to many factors, two of which are M&A payment methods and target choice, discussed as follows. First, based on the opportunity cost of holding cash, Yang et al. (2019) assert that, in emerging countries like China, M&A acquirers using cash payment generate worse short-term abnormal returns compared to acquirers using stock payments, and suffer significant drop in operating performance. This argument is contrasted by the empirical evidence in developed countries, where cash acquisitions outperform stock acquisitions because the former signal positive information while the latter signal asymmetric information (Andrade et al., 2001; Travlos, 1987; Yang et al., 2019). Second, Capron and Shen (2007) present evidence that acquirers of private targets outperform acquirers of public targets with stronger positive returns after merger announcement, due to less information available on the private target and lacking market expectation. On the other hand, early access to public target information before deal announcements activates the market's information-processing and asset valuation mechanism, therefore reducing positive abnormal returns for public target acquirers

(Capron & Shen, 2007). This assertion is aligned with the strategic factor market theory (Barney, 1986) and the information acquisition strategy (Makadok et al., 2001), both of which consider information asymmetry as a source of value creation for firms with superior information-processing capabilities (Capron & Shen, 2007).

In the long-term studies, existing literature is based on a combination of stock market-based event study methods and financial statement-based accounting methods, both providing evidence that M&A acquirers experience performance decrease (versus improvement). For example, Meeks (1977) studies American firm M&As in late 1950s and 1960s, and reveals that there is substantial evidence to support the negative effects of M&As on the profitability of the acquiring firms. In the 1980s, researchers find no evidence of superior financial performance ex-post in developed countries like the US and Japan (e.g., Odagiri & Hase, 1989; Porter, 1989; Ravenscraft & Scherer, 1987).

Later studies from the 1990s and early-2000s also support the long-term value destruction claim. To explain the reason for value destruction, Rau and Vermaelen (1998) propose the Performance Extrapolation Hypothesis. Based on a dataset from 1980 to 1994 that include acquirers listed in New York Stock Exchange, Rau and Vermaelen (1998) discover that the long-term underperformance of M&A acquirers is predominantly caused by the poor post-acquisition performance of low book to-market “glamour” acquirers, who were viewed favorably as undervalued in stock market prior to the deal, but perform much worse than market average three years after the M&A deal, earning significantly negative abnormal returns. The authors therefore propose the Performance Extrapolation Hypothesis, which claims that the market over extrapolates the past performance of acquirers when it assesses the benefits of an acquisition decision; since glamour acquirers were undervalued and had satisfactory market performance ex-ante, the market, the board of directors and large shareholders overestimate the ability of those acquirers to manage other companies (Rau & Vermaelen, 1998). This hypothesis is supported by Andre et al. (2004), who measure the post-M&A stock performance of 267 Canadian firms between 1980 and 2000, and find that the acquirers significantly underperform after three years of deal completion,

especially the “glamour” acquirers. More recently, stock market-based research in emerging countries also supports the long-term performance decline, for instance studies by Kumar (2009) (India), Ismail et al. (2010) (Egypt) and Yang et al. (2019) (China).

Some researchers use accounting methods and draw similar conclusions regarding long-term acquirer value destruction. By analyzing a large panel data of UK firm M&As for 30 years, Dickerson et al. (1997) claim that M&As have a detrimental impact on firms’ performance comparing to their pre-M&A levels and comparing to the performance of non-acquiring firms, the authors also find that acquisitions yield a lower rate of return than growth through internal investment. Yeh and Hoshino (2002) examine 86 Japanese corporate mergers between 1970 to 1994, and find that M&As fail to improve firm efficiency and cause declines in profitability and sales growth, supporting the hypothesis that, in Japan, M&A is not an effective way of improving firm financial performance. Analyzing the shipping industry mergers in the Philippines, Cabanda and Pajara (2007) conclude that mergers do not lead to improved corporate performance, as reduced profitability and cost efficiency are observed within seven years post-M&A.

Realizing the limitation of single-dimensional time horizon studies (Meglio & Risberg, 2011), some researchers mix different time horizons in their research, providing empirical evidence on the dynamic convergence or divergence of M&A financial performance. Although the body of literature is limited, some of the studies apply multiple methods and measurements, with notable insights, discussed as follows.

Oler et al. (2008) analyze a sample of domestic horizontal acquisitions to discover that the positive initial short-term market response to an acquisition announcement is contradicted by negative long-term post-acquisition returns. This conclusion is supported by international M&A evidences such as the study of Malhotra and Zhu (2006) on cross-border acquisitions between Indian and American firms, which reveals that, while the international acquisition announcements create significant

increase in short-term shareholder wealth, in the long-term, cross-border acquisitions have a negative impact on the acquirer's shareholder wealth.

Angwin (2004) mixes time horizons in a mixed-methods study, measuring short-term and long-term M&A performance changes using financial measures (cost and profitability) and top executive perceptions of post-acquisition overall success. The results suggest that in the short-term and long-term, both overall success and financial measures are consistent in their downward path, but perceptions of success in integration improve substantially after three to four years (Angwin, 2004).

By mixing time horizons and different performance measurements, DeLong and DeYoung (2007) study the M&A performance of 216 publicly traded US commercial banks between 1987 and 1999, and discover short-term positive abnormal stock returns, but, in the long-term, profitability decreases to slightly lower than pre-M&A level, which is consistent with the conclusions of other mixed time horizon studies of bank mergers (e.g., DeLong, 2003). However, if taking into account banks' learnings of previous M&As, post-deal financial performance improve in the long-term, suggesting that M&As generate spillover knowledge that is exploitable in later M&As (DeLong & DeYoung, 2007).

Given the M&A performance variations across different time horizons, some researchers have studied the industry relatedness of the target firm, as a potential influencing factor. Hoskisson and Hitt (1994) propose a theoretical framework of corporate control to explain the relationship between the degree of M&A diversification and acquirer's short-term or long-term performance. According to the authors, large firms implement two types of corporate controls: 1) strategic control, used by top-level executives to evaluate business plans according to the strategic vision of the firm, which is long-term, subjective and sometimes intuitive; and, 2) financial control, used by top-level executives to periodically review the performance of divisional managers, which is short-term and objective in nature (Hoskisson & Hitt, 1994). In diversified acquisitions of unrelated industry targets, as top executives dedicate significant amounts of managerial

efforts analyzing target and formulate negotiation strategies, it becomes increasingly difficult to process the information of deals involving another industry, so executives gradually shift from strategic control towards financial control (Hoskisson & Hitt, 1994). This shift from a long-term strategic focus to short-term result-orientation subsequently forces divisional managers to maximize short-term financial results, such that, in short-term, diversified M&As tend to improve acquirer performance (Hoskisson & Hitt, 1994). This approach however, is problematic in the long-term, because the new emphasis on financial control makes divisional managers risk averse, instead of proposing riskier and potentially more rewarding projects and investments, they adhere to conservative investments with manageable risks and predictable returns, at the detriment of firm performance. In other words, divisional managers minimize their employment risk at the expense of the firm performance, indicating why diversified M&As of unrelated industry targets decrease acquirer performance in the long-term (Hoskisson & Hitt, 1994). Conversely, if firms target related (versus unrelated) industry targets, where M&A target information is relatively straightforward to process, the strategic control and financial control mechanisms can be managed in tandem, and divisional managers have little incentive for risk aversion at the expense of long-term firm performance; as such, related-industry acquisitions improve acquirer performance both in the short-term and in long-term (Hoskisson & Hitt, 1994).

This theoretical framework of corporate control is supported by researchers of various M&A related topics. Some notable examples include the impact of M&A on corporate stakeholders (Waddock & Graves, 2006), the relationship between innovation and private equity buyouts (Ughetto, 2010), and R&D driven M&As (Al-Laham et al., 2010; Duysters & Hagedoorn, 2000).

To summarize, although the M&A performance results vary substantially depending on the chosen time horizon and measurements, for this thesis, the framework of Hoskisson and Hitt (1994) is adopted, to propose the below hypotheses regarding the impact of time horizon on M&A performance:

Hypothesis 3a: For related-industry acquisition, M&A positively affects acquirer's short-term performance

Hypothesis 3b: For related-industry acquisition, M&A positively affects acquirer's long-term performance

Hypothesis 4a: For unrelated-industry acquisition, M&A positively affects acquirer's short-term performance

Hypothesis 4b: For unrelated-industry acquisition, M&A negatively affects acquirer's long-term performance

3. Methodology

This section begins by discussing the methods to measure M&A performance, followed by explaining the two-step process of sample data selection. Next, the variables selected as measurements are described. Finally, analytical methods are specified.

3.1. Measurement Methods

According to Meglio and Risberg (2011), to measure M&A performance within the financial domain, two mainstream quantitative methods are used. One method is event study, focusing on the changes in company value on key milestone dates before and after M&A announcement date. Event studies observe fluctuations in company stock returns over a period of time, to determine if M&A activities increase or destroy company value (Meglio & Risberg, 2011).

The perceptions of event studies vary greatly. According to Oler et al. (2008), proponent opinions claim that event studies provide a relatively simple means to evaluate. If the company stock returns are higher relative to some benchmark, it can be concluded that the M&A event is viewed as beneficial by the stock market; if the stock return drops, it is perceived as detrimental to company value (Oler et al., 2008). Opposing views dispute the theoretical basis of event studies, pointing to the efficient market hypothesis. "If the initial market response to a corporate event is not efficient, then researcher inferences may be incorrect. This does not mean that the market is inefficient, but rather that the market is more efficient with respect to some events than others" (Oler et al., 2008, p.3). This is especially true for event studies conducted across multiple countries and regions with different levels of financial market maturity, and across various time scales; the efficient market hypothesis may not prove theoretically valid for all events (Borges, 2010). Another limitation of event studies is that the method is only applicable to publicly listed companies (at the exclusion of private firms), therefore excluding a large number of firms (especially small and medium sized firms)

from M&A performance sampling. As such, this method comes with significant limitations.

A second prevailing method for measuring M&A performance is the use of accounting ratios regarding profit, efficiency and cash flows. Some researchers have raised concerns with this accounting methodology, claiming it's backward-looking and easily manipulated, thus flawed in nature (Hult et al., 2008). Nevertheless, the advantage of accounting ratios is standardization and comparability, which explains why it is still the most widely accepted financial index by corporate managers and financial market analysts. Researchers in different disciplines also apply accounting ratios extensively in studies across firms, industries, regions and time horizons (Thanos & Papadakis, 2012). Therefore, in this thesis, the accounting ratios methodology is chosen to measure M&A performance.

3.2 Sample Data Selection

To build the dataset for performance measuring, qualified M&A deals and bank acquirers need to be identified first. A two-step data selection process was followed. Step one was M&A deal-level data selection, to identify 1) M&A deals with banks as acquirers, and FinTech firms as targets; and 2) M&A deals with banks as acquirers, and non-bank financial institutions as targets. Step two consisted of bank level data gathering, to describe acquirers' characteristics quantitatively and qualitatively.

Step one: M&A deal selection. M&A deals' information was retrieved from Zephyr (Bureau Van Dijk) database. The geographical coverage was worldwide. The time period of study was set from January 1, 2010, to December 31, 2018. This choice was based on three considerations: first, it matches the timeline from FinTech industry creation to high growth; second, it reflects the deal traits post-2008 global financial crisis era (as DeYoung et al. (2009) explain, financial industry M&A performance results could differ substantially due to key event influences and chosen time period); and,

third, it gives sufficient leeway to observe both short-term and long-term effects of M&A deals.

Only deals with status as “completed - confirmed” were selected, as this status implies that, legally, the target belongs to the acquirer and a formal confirmation of the deal has been located (Zephyr, 2017). This ensured that all rumored and announced deals without officially identified completion dates were excluded. Selected deal types included:

1. Acquisition: a deal where the acquirer has control of the target with more than 50% of its equity;
2. Institutional buyout: an acquisition where an acquirer has taken over 50% stake in the target through a ‘new company’ (newco) or an acquisition vehicle, often with Private Equity or Venture Capital inserted into the deal as financing method; and,
3. Capital increase: a deal where the acquirer has increased its stake in the target from a minority percentage to a controlling stake greater than 50% (Zephyr, 2017)

It was important to the study that, upon deal completion, the acquirer was a majority stakeholder of over 50%. According to the Canadian Institute of Chartered Accountants (2010), this majority ownership structure signifies a transfer of control and key decision-making rights, and a material impact on the acquirer’s consolidated financial statements, which in turn reflects in accounting ratios. In addition, as suggested by Thanos and Papadakis (2010), all acquirers had not completed any other acquisition deal two years before and after the deal completion year, to avoid financial statement data bias as a result of deals irrelevant to this study.

In accordance with the data selection criteria of Dranev et al. (2019), 4-digit US Standard Industrial Classification (SIC) codes were used to identify acquirer and target primary industry attributes. The SIC code was chosen over other codes because it’s widely applied in financial research (Kahle & Walkling, 1996), especially in seminal M&A

studies of multiple industries such as technology and banking (DeLong, 2001; Meglio, 2009; Morck et al., 1990). According to the United States Department of Labor, who owns the SIC coding system, in principle, 4-digit SIC codes follow a top-down structure where the first digit identifies one broad industry division, the second digit narrows the division down to a certain major industry group, the third and fourth digits represent more detailed sub-groups in that industry (United States Department of Labor, n.d.)

For all financial institutions, the first digit of the SIC code begins is “6”. The second digit of the SIC code represents, relevant for this research, the following categories: code 60 represents all banks and depository institutions; codes 61 to 64 represents non-bank financial institutions; and code 67 represents “Holding And Other Investment Offices”.

At the three-digit SIC level, there are six sub-groups that reflect different types of banks and depository institutions: 601, 602, 603, 606, 608, and 609 (see Table 2). For this study, all of these codes were included in the data selection except for SIC code 601, “Central Reserve Depository Institutions,” was excluded from the data selection because it represents central banks, i.e. government regulatory bodies who supervise all banks in their respective jurisdictions, but do not engage itself in any banking business. At the four-digit level, code 6712 “Offices of bank holding companies”, was also classified into banking, since their business description is “Establishments primarily engaged in holding or owning the securities of banks for the purpose of exercising some degree of control over the activities of bank companies whose securities they hold” (United States Department of Labor, n.d., SIC Manual Description for 6712 section, para.1).

Table 2: SIC Codes for M&A acquirer banks

SIC Code	Industry Group
602	Commercial banks
603	Savings institutions
606	Credit unions
608	Foreign banking and branches and agencies of foreign banks
609	Functions related to depository banking
6712	Offices of bank holding companies

For the non-bank financial institution targets, all codes in groups 61 to 64 were included, as well as all codes in group 67, except 6712 “Offices of bank holding companies”. Details are listed in Table 3.

Table 3: SIC Codes for M&A targets - non-bank financial institutions

SIC Code	Industry Group
61	Non-depository credit institutions
62	Security and commodity brokers, dealers, exchanges and services
63	Insurance carriers
64	Insurance agents, brokers, and service
67 (excluding 6712)	Non-bank Holding and other investment offices

For the FinTech targets, since specific SIC codes for the FinTech industry do not exist, the selection criteria of Dranev et al. (2019) was applied. Generally, firms classified in the technology industry were considered, along with technical-oriented firms coded in the finance industry, as shown in Table 4 and explained as follows.

The first SIC code digit for technology firms is 7. At the four-digit level, codes 7371 to 7379 belong to “Computer Programming, Data Processing, and Other Computer Related Services,” which are potentially relevant. By checking definition details, codes

7371 to 7375 were selected because they represent software and solution-based firms. Codes 7376 to 7379 were not selected, because they involve hardware facility-based services like computer maintenance and repair, machine rental or leasing activities.

Table 4: SIC Codes for M&A targets – FinTech firms

TECHNOLOGY INDUSTRY CODES		FINANCE INDUSTRY CODES	
SIC Code	Industry Group	SIC Code	Industry Group
7371	Computer programming services	60	Depository institutions
7372	Prepackaged software	61	Non-depository credit institutions
7373	Computer integrated systems design	62	Security and commodity brokers, dealers, exchanges and services
7374	Computer processing and data preparation and processing services	63	Insurance carriers
7375	Information Retrieval Services	64	Insurance agents, brokers, and services
		67	Holding and other investment offices

Once firms were selected according to these two industry groups, Fintech firms were identified based on a manual process, as defined by Dranev et al. (2019). For each firm, a set of qualitative criteria was analyzed for FinTech characteristics, including: 1) the deal's information disclosure in Zephyr database, 2) the acquirer's and target's M&A filing documents with regulators, 3) the target firm's business description, and 4) the FSB (2017) definition of FinTech: "technology-enabled innovation in financial services that could result in new business models, applications, processes or products with an associated material effect on the provision of financial services". Firms meeting the above criteria were identified as FinTech targets. This sample selection process yielded 52 qualified FinTech acquisition deals by 49 bank acquirers, and 265 qualified non-bank financial institution acquisition deals by 255 bank acquirers.

Step two: Individual acquirer data gathering. The BANKFOCUS (Bureau Van Dijk) database was used to retrieve bank-specific information, such as region and headquarter country, as well as data for selective variables - bank total assets, annual and quarterly accounting ratios based on financial statements, the details of which are explained in the measurements section below. To ensure comparability with the rest of the world, the ratios for US banks were collected under “IFRS consolidated financial statements” menu instead of “US GAAP consolidated financial statements”, so that variance in accounting rules didn’t impact data measurement consistency.

This step narrowed the dataset further, as some banks were not listed in the BANKFOCUS database, while others had no financial data available for the studied period. In summary, step two yielded 50 qualified FinTech acquisition deals by 49 bank acquirers based in 24 countries, and 163 qualified non-bank financial institution acquisitions by 158 bank acquirers based in 56 countries (or regions). Descriptive data for all selected deals and acquirer banks are detailed in Tables 5, 6 and 7.

Table 5: Finalized data set: Number of M&A deals by year

Deal Completion Year	Acquisition of FinTech firm	Acquisition of Financial Institution
2010	0	5
2011	0	15
2012	1	17
2013	2	16
2014	5	27
2015	10	23
2016	10	18
2017	10	23
2018	12	19
TOTAL	50	163

Table 6: Finalized data set: Number of acquirer banks by continent

Acquirer Origin	FinTech Target	Financial Institution Target
Africa	3	7
Asia	4	37
Europe	23	57
North America	12	41
South America	5	1
Oceania	2	15
TOTAL	49	158

Table 7: Finalized data set: Number of acquirer bank by home country (or region)

Acquirer Home Country (Region)	FinTech Target	Financial Institution Target
Argentina	1	1
Australia	4	1
Austria		2
Belarus		1
Belgium		1
Bermuda		1
Brazil	1	2
Cambodia		1
Canada	1	3
Chile		3
China		1
Columbia		1
Costa Rica		1
Cyprus	1	
Czech	1	1
Egypt		1
Finland	2	
France	1	3
Germany	3	5
Greece		1
HongKong SAR, China		1
Hungary		1
India	1	1

Indonesia		1
Ireland		1
Italy	2	4
Japan	1	8
Korea		4
Kuwait		1
Latvia		2
Lebanon		2
Lithuania		1
Luxemburg		1
Malaysia		3
Malta		1
Mexico		3
Morocco		2
Namibia		1
Netherlands	2	1
Nigeria		2
Norway	1	
Panama		3
Peru		1
Poland		4
Russia	3	5
Saudi Arabia		1
Singapore		1
Slovakia	1	
Slovenia		1
South Africa	3	1
Spain	1	9
Sri Lanka		3
Sweden	2	2
Switzerland	2	7
Taiwan, China		2
Thailand	1	2
Turkey	1	
UK	2	3
United Arab Emirates		2
USA	11	37

Vietnam		3
TOTAL No. of Banks	49	158
TOTAL No. of Countries (Regions)	24	56

3.3 Measurement of Variables

The hypotheses were operationalized using the variables summarized in Table 8 and discussed as follows.

Table 8: Summary of all variables

Variable Type	Variable Name	Variable Description	Data Source	Analysis Level
Dependent	Return on Asset (ROA)	Profitability ratio derived from quarterly and annual financial statements, calculated as net income divided by total assets	BANKFOCUS database	Bank
Dependent	Cost-to-Income Ratio (CIR)	Efficiency ratio derived from quarterly and annual financial statements, calculated as total operating expenses divided by total operating income	BANKFOCUS database	Bank
Independent	Target Industry Type (TECH or FIN)	Binary variable to define target industry type as either non-bank Financial Institution (FIN) or FinTech (TECH)	US Department of Labor SIC Coding System	Industry
Independent	Concentration Index	An index with value between 0 and 100 (%) to inversely measure a country's banking industry competition level Calculated as assets of three largest banks as a proportion of total banking assets in the country. The higher the index, the lower the competition, and vice versa	World Bank Global Financial Development Database	Country
Independent	Time Horizon (Years and Quarters)	Time dummy variable, 5 consecutive periods within 2 years or 2 quarters of deal completion year (Y) or quarter (Q) 5 years from pre-M&A to post-M&A: Y-2, Y-1, Y, Y+1, Y+2 5 quarters from pre-M&A to post-M&A: Q-2, Q-1, Q, Q+1, Q+2		Bank
Control	Acquirer Bank Size	Natural Log of bank's total assets (in thousand USD) from quarterly and annual financial statements	BANKFOCUS database	Bank
Control	GDP per capita	Natural Log of bank's home country annual GDP per capita	World Bank National Accounts database	Country

3.3.1 Dependent variables

As summarized in the previous section, a prevailing method to measure M&A performance is through the use of accounting ratios regarding profitability, efficiency and cash flows (Meglio & Risberg, 2011). In existing literature, analysis of cash flow as a performance ratio is not a common practice due to its limitations: statements of cash flow are compiled per cash basis, while balance sheet and income statements are compiled per accrual basis, so cash flow statements don't translate into net earnings or liquidity position in a given accrual period (Knechel & Salterio, 2016). Therefore, to keep accounting consistency measuring M&A performance, cash flow ratios as a measurement were not included.

As discussed in the introduction and literature review, the purpose of M&A is firm value creation, that is, "the increase in performance of the combined firms over what the two firms are already expected or required to accomplish as independent firms" (Sirower, 1997, p.20). Performance constructs can be operationalized both at the transaction level and at the firm level, to measure the changes in efficiency and revenue growth generated by the deal itself, as well as the degree of synergy realized over the life of the merger (Zollo & Meier, 2008). Therefore, financially speaking, successful M&As bring positive changes in projected revenue, net income and future cash flows for firms and shareholders (Campa & Hernando, 2004). An overarching indicator that incorporates these three variables is profitability, which is often used by researchers to measure the effects of value created, i.e. the M&A performance (e.g., Liu et al, 2011; Kane, 2000; Richard, 2000; Rubin, 1973).

Efficiency is also commonly used to measure M&A performance, both in short-term from deal initiation to deal closing, to evaluate the transaction level effectiveness, and in longer-term throughout the business consolidation process, to assess the degree of synergies realized between the combined firms. According to Bertrand and Zitouna (2008), aside from profitability, efficiency gain is also a motive for M&As. Firms' M&A strategies are usually driven by five types of efficiency gains: "production rationalization (reallocation of production across firms); economies of scale and scope (decrease in average costs with a higher total output); technological progress (diffusion of know-how and increasing R&D

incentives); purchasing economies (lower input costs); and lower slack (managerial and X-efficiency) (Bertrand & Zitouna, 2008, p. 5).” Therefore, in this thesis, both profitability and efficiency were selected as financial indicators for M&A performance, measured by accounting ratios.

A. Profitability - ROA (Return on Asset)

In the finance and management literature, profitability is often measured by a group of standard accounting ratios, including margin ratios (i.e. gross or net profit, earnings before interest, taxes, depreciation and amortization (EBITDA)) and return ratios (i.e. return on equity, return on invested capital and return on assets) (DeYoung et al., 2009). Return on assets (ROA) is calculated as a company’s net income divided by total assets, and measures how well a company utilizes its assets to generate profits. As an established route in existing literature, this ratio of a company is comparable with groups of other companies in the same industry, and with its own past or projected future performance (Zollo & Meier, 2008).

In M&A literature, ROA is the most widely used accounting ratio. A literature review by Thanos and Papadakis (2012) indicates that, in the past five decades, it has been used by almost half of the studies published in leading management journals (17 out of 36, approximately 47%). ROA is less influenced by potential biases and accounting manipulations than other types of ratios such as ROE and ROS (Meeks & Meeks, 1981). In the case of this thesis, ROA reflects a bank’s newly acquired assets in its target and takes into account current debt and equity levels (as either one or both could have funded the acquisition deal). It is therefore considered to be an appropriate measure of profitability.

B. Efficiency - CIR (Cost-to-Income Ratio)

To measure firm efficiency, key financial ratios include turnover rates such as AP (account payable) and AR (account receivable) turnover, inventory turnover and asset turnover (CPA British Columbia, 2016). However, this category usually fits the profile of manufacturing firms with tangible outputs. To measure the efficiency of financial institutions whose outputs are largely intangible, Cost-to-Income Ratio (CIR) is a basic yardstick well accepted by finance practitioners (Hess & Francis, 2004).

CIR is calculated as total operating expenses divided by total operating income of the business. Operating expenses comprise all the costs of running a business, such as fixed costs (e.g., rent, mortgage, insurance, utilities, property taxes) and administrative expenses (e.g., salaries, stationery and marketing expenditure). Operating income includes sales proceeds, fee income and interest earnings. A cost-to-income ratio of 60% means that \$0.6 is spent in order to generate \$1 of revenue, which shows inversely how efficiently a bank is being run.

CIR influences both action and perception. As Hess and Francis (2004) point out, although there is no ideal number for minimum CIR per se, financial institutions often use CIR to track how costs change compared to income, and make strategic decisions to achieve an optimal CIR range established by best practices in the industry. In the banking sector, per ABA Banking Journal's survey of US banks (Cocheo, 2000), CIR is generally considered an important benchmark in cost management. This is especially true for publicly listed banks, because many capital market analysts interpret a low CIR as an indicator of a bank's relative efficiency and operational competitiveness in the sector (Asher, 1994).

For both dependent variables ROA and CIR, data was collected from the BANKFOCUS database at multiple time intervals ex ante and ex post. As emphasized by Thanos and Papadakis (2012), accounting performance of M&As should be measured using various time lags in a same study to minimize data bias and yield more robust results.

Following the methods of Morosini and Singh (1994), long-term is defined in this thesis as five consecutive years around deal completion year (Y), starting from two years before M&A (Y-2 and Y-1) to two years after the deal (Y+1 and Y+2). According to a wide range of literature, a 5-year span is an adequate duration for long-term studies, because the preparation and execution of a major business plan, such as an M&A, lasts about two years; after deal completion, it usually takes two years to consolidate the firms and show integration results via financial performance (Jemison & Sitkin, 1986; Marks, 1982; Morosini & Singh, 1994).

Adopting the approach of Brown and Niederhoffer (1968), short-term is defined by five consecutive quarters, starting from six months before the deal (Q-2 and Q-1), to deal completion quarter (Q), and finally to six months after (Q+1 and Q+2). A quarterly time period is

appropriate, since accounting ratios are used as measurements; both timely and predictive, a firm's quarterly results are first indicators of its business status and of future earnings, well before audited annual report release (Baldwin & Glezen, 1992; Brown & Niederhoffer, 1968).

Therefore, for each acquirer bank, both ROA and CIR ratios were collected annually and quarterly in the BANKFOCUS database. However, unlike annual financial statement data releases, which are compulsory, many banks, especially private ones, do not release interim (quarterly or half-annually) financial results. As it applies to the dataset, of the 200 selected bank acquirers, only 109 provided their quarterly financials in the BANKFOCUS database. As a result, to test hypotheses 1 and 2, only annual data (of all 200 banks) is analyzed, thereby providing results specifically for long-term scenarios. When testing hypotheses 3 and 4, which test both short-term and long-term effects, both annual and quarterly data are needed, therefore our sample for these hypotheses were reduced to the 109 bank acquirers. Details of both datasets are presented in descriptive statistics section.

3.3.2 Independent variables

To identify the main contributing factors to M&A performance, variables are proposed at different levels and dimensions.

A. Target Industry Type - TECH or FIN

To compare changes in M&A performance as a result of different industry target choices, an important variable to explore is target industry type. With the two target industries of interest, a binary variable was introduced as either non-bank financial institutions or FinTech industry. FIN represents financial institution targets and TECH represents FinTech targets.

B. Acquirer Home Country Competition Level – Concentration Index

Factors at country level examine if variations in institutional environments such as industry competition, contribute to firms' M&A performance differences across countries and regions. As summarized in the Competition Fragility / Stability View theories, existing banking

literature measures competition as the inverse of industry concentration, so to quantify competition in banking, the common practice is to use a concentration index. According to Bikker and Haaf (2002), one of the most frequently used measures in the literature is the k-bank concentration index, defined as the sum of total assets of the k largest banks in a country, as a percentage of total assets of all banks in that country.

The appropriateness of this index stems first from its simplicity and dynamic nature. Based on a limited requirement of data, it reveals existing competition pattern, and keeps track of new market entries and exits that reshape competition (Bikker & Haaf, 2002). Secondly, as an index closely monitored by banking regulators and law enforcement agencies, it may trigger regulatory or legal actions upon the industry. For example, in its horizontal merger guidelines, the European Union (2004) clearly establishes k-bank concentration index thresholds as a basis for deal approval, suspension or rejection. The US Department of Justice (2010) also uses similar calculation methods to address antitrust concerns.

The optimal number for k is at the discretion of researchers (Bikker & Haaf, 2002). For this thesis, the 3-bank concentration index compiled in the World Bank Global Financial Development Database (2019) was adopted. This is an annualized index updated and published each year by World Bank for its member countries, since 1996. Although the 3-bank concentration index is calculated in percentage terms, the World Bank presents all percentage values in absolute numbers, ranging from 0 to 100. In principle, the higher the index number, the greater the market share concentrated in the largest three banks, thus the lower the competition. On the contrary, the lower the index number, the greater the market share for banks with smaller asset sizes, therefore the higher the competition (The World Bank, 2016).

Like the dependent variables explained above, the concentration index data was collected for all acquirer banks' home countries across a 5-year horizon around M&A deal completion year. No quarterly index is available, so a year matching process was conducted. For instance, if a M&A deal was completed in November 2015 by a British bank, then the second, third and fourth quarter of calendar year 2015 (correspond to Q-2, Q-1, Q of our dataset) all

adopt the 2015 concentration index for the UK, while the first and second quarter of year 2016 (correspond to Q+1, Q+2) both adopt the 2016 UK concentration index.

C. Time Horizon - Years and Quarters

As elaborated in the dependent variable section, to analyze M&A performance changes over time, a 5-year span and 5-quarter span were chosen to represent long-term and short-term, respectively. The five consecutive years are: two years and one year before M&A deal completion, deal year, and up to two years after the deal, written as Y-2, Y-1, Y, Y+1, Y+2. Similarly, the five consecutive quarters trace back to six months before the deal and extend up to six months after the deal, written as Q-2, Q-1, Q, Q+1, Q+2. Two sets of dummy variables from 1 to 5 were created to represent year and quarter; the smaller the dummy variable, the further back the timing.

In summary, as explained earlier, existing M&A literature supports the choice of a 5-year period for long-term analysis, because it usually takes two years to prepare and execute the M&A business plan, and two years after deal completion to integrate firms and show financial results (Morosini & Singh, 1994). Combining ex ante and ex post studies of the same duration presents a complete trajectory of change (Jemison & Sitkin, 1986; Marks, 1982). Meanwhile, interim quarterly financial results are timely first indicators of business robustness. Looking six months ahead is predictive, while examining six months behind is informative (Baldwin & Glezen, 1992; Brown & Niederhoffer, 1968).

3.3.3 Control variables

A. Acquirer Bank Size – Total Assets (thousand USD)

In the existing finance literature, empirical evidence suggests that bank size impacts bank performance. Hughes and Mester (2013) discover scale economies of large banks generated by cost advantages, technological scale economies and too-big-to-fail subsidies. Bertrand and Betschinger (2012) state that larger firm size represents greater financial and non-financial resources and capabilities, such as knowledge, business ties and political influence,

therefore a positive relationship exists between firm size and profitability. These conclusions suggest that, for this thesis, bank size should be controlled to avoid interfering with the correlation between the dependent and independent variables.

Using the same approach of Laeven et al. (2016) and Bertrand and Betschinger (2012), bank size was measured as a bank's total assets, converted into a natural logarithm. Total assets depict a bank's involvement in market-based activities. Logarithm conversion transforms the exponential pattern of this variable into a linear one in relation to the dependent variables, and transforms the highly skewed data distribution into an approximate normal distribution, stabilizing the variance for regression modeling (Lütkepohl & Xu, 2012). Banks' total assets (in thousand US dollars) were collected annually and quarterly from the BANKFOCUS database.

B. GDP per capita

An analysis of individual firm behaviors across countries must control for the influence of country-level variance, such as different degrees of economic development and standards of living. These factors are measured by macroeconomic indicators such as Gross Domestic Product (GDP) or GDP per capita. For this thesis, GDP per capita was selected over GDP because the latter describes a country's aggregate economic output, while the former takes population size into account, representing an average person's economic wellbeing, individual demands and purchasing power of that country. As Weill (2004) explains, GDP per capita is expected to have a positive impact on bank performance, because residents in high per capita income countries tend to consume more banking products. GDP per capita was therefore selected as a control variable and collected from World Bank dataset (2019). Annual GDP per capita for each bank's home country was collected for the five years observed. Quarterly data was not available, so annual data was matched to each quarter in the same way as concentration index. As for bank size, all the GDP per capita source data was converted into a natural logarithm.

3.4 Analytical Methods

The nature of this dataset is panel data, which consists of over 200 bank-deals across multiple time horizons. Regression analysis is therefore used to test the hypotheses.

In order to determine which type of model fits the characteristics of this dataset, the statistical standard practice of Hausman test was performed in STATA software (Hausman, 1978). The Hausman test rejected the null hypothesis (i.e. random effects models) at 99.99%, suggesting that fixed effects regression models were appropriate for this particular dataset. However, fixed effects models by construct automatically omit time-invariant variables. Since target industry type (FIN or TECH) is both time-invariant and a major independent variable that cannot be omitted, exceptionally Hypothesis 1 was tested in models 1 and 2 using multiple linear regression. All other models used fixed effects regression, because either target industry type (FIN or TECH) is a control variable, or only one target industry is included in the model. In total, 12 regression models were tested, described as follows.

Model 1 and Model 2 analyze the influence of the binary independent variable target industry type (TECH or FIN) on dependent variables ROA and CIR, to test Hypothesis 1. Model 3 and Model 4 analyze the influence of concentration index on ROA and CIR, to test Hypothesis 2. All four model tests are based on the annual dataset only, as explained previously.

To evaluate short-term and long-term effects, analyses were conducted using both annual and quarterly datasets, but due to incompatible time intervals, these two datasets were tested separately using different regression models. Therefore, the eight regression models for H3 and H4 present independent short-term vs. long-term results.

For related-industry non-bank financial institution M&As, to check the validity of H3a, Model 5 and Model 6 were tested to track short-term ROA and CIR changes. To check the validity of H3b, Model 7 and Model 8 were tested to track long-term ROA and CIR changes.

For M&As of unrelated FinTech industry targets, to check the validity of H4a, Model 9 and Model 10 were tested to track short-term ROA and CIR changes. To check H4b, Model 11 and Model 12 were tested to track long-term ROA and CIR changes.

The following section presents dataset descriptive statistics and analyzes regression results.

4. Results & Discussion

This section begins by presenting descriptive statistics of both annual and quarterly datasets, followed by analyzing correlation matrixes of variables. Next, regression models and hypotheses testing are presented in detail. Finally, all results are discussed with theoretical implications.

4.1 Descriptive Statistics

Table 9 and Table 10 show the sample statistics of all bank acquirers, using the annual dataset. The non-categorical variables are descriptive, while for binary variable target industry type, the frequency statistics are presented. Although for statistical variance stabilization, Bank Size and GDP per capita data are converted to natural logarithm, their original source data are summarized below, to describe the scale of these two factors.

Table 9: Sample Statistics of all non-categorical variables (Annual dataset)

Variable	Observations	Mean	Std.Dev.	Min	Max
<i>Dependent</i>					
ROA	1015	0.725	4.080	-90.82	12.59
CIR	1014	185.8	4180	-3969	133072
<i>Independent</i>					
Bank Size (K USD)	1015	1.340e+08	3.070e+08	13369	1.950e+09
Log Bank Size	1015	16.58	2.330	9.500	21.40
Concentration (%)	862	53.76	17.92	24.60	100
GDP per capita (USD)	1015	39220	18032	2873	107428
Log GDP per capita	1015	10.43	0.620	7.963	11.59

Table 10: Sample Statistics of categorical variables - Target Industry Type (Annual dataset)

Variable	Frequency	Percent	Cum.
FIN	782	77.04	77.04
TECH	233	22.96	100
Total	1015	100	

Table 11 and Table 12 are based on bank acquirers' quarterly dataset. As the data shows, the quarterly financial performance ratios are far superior than annual ratios, with average ROA higher by 92% (1.389 vs. 0.725), and CIR improved by 66% (62.79 vs. 185.8). This could be due to the impact of outliers, or due to a smaller quarterly sample size. It does not necessarily mean short-term M&A performance worsen over the long-term. Nevertheless, more detailed regression analysis shall be conducted to test the hypotheses.

Table 11: Sample Statistics of all non-categorical variables (Quarterly dataset)

Variable	Observations	Mean	Std.Dev.	Min	Max
<i>Dependent</i>					
ROA	459	1.389	4.472	-7.080	66.34
CIR	457	62.79	31.37	-263.6	364.8
<i>Independent</i>					
Bank Size (K USD)	545	2.020e+08	3.770e+08	41616	1.930e+09
Log Bank Size	545	17.23	2.366	10.64	21.38
Concentration(%)	545	54.66	17.39	25.12	98.22
GDP per capita (USD)	545	151148.2	2628067	5958.47	6.14e+07
Log GDP per capita	545	10.42	0.592	8.690	11.23

Table 12: Sample Statistics of categorical variables - Target Industry Type (Quarterly dataset)

Variable	Frequency	Percent	Cum.
FIN	375	68.81	68.81
TECH	170	31.19	100
Total	545	100	

4.2 Correlation Matrix

Table 13 and Table 14 present the correlation matrices of all non-categorical variables. Of interest is the correlation between the three independent variables - Log Bank Size, Concentration and Log GDP per capita. For the annual dataset (Table 13), the correlation coefficients are significant between Log Bank Size and Concentration (0.1824, $p < 0.001$), as well as between Log Bank Size and Log GDP per capita (0.0815, $p < 0.01$). However, according to the

correlation guide by Evans (1996), correlation coefficients below 0.19 are considered very weak, so there is no need to adjust the choice of variables for high multicollinearity concerns.

Table 13: Correlation Matrix (Annual dataset)

	ROA	CIR	Log Bank Size	Concentration Index	Log GDP per capita	INDUSTRY (FIN / TECH)
ROA	1					
CIR	-0.8519*** (0)	1				
Log Bank Size	0.0781* (0.0129)	-0.0783* (0.0127)	1			
Concentration Index	-0.00110 (0.974)	-0.00380 (0.911)	0.1824*** (0)	1		
Log GDP per capita	-0.0532 (0.09)	0.0135 (0.667)	0.0815** (0.0094)	0.0565 (0.0971)	1	
INDUSTRY (FIN / TECH)						1

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 14: Correlation Matrix (Quarterly dataset)

	ROA	CIR	Log Bank Size	Concentration Index	Log GDP per capita	INDUSTRY (FIN / TECH)
ROA	1					
CIR	-0.1776*** (0.0001)	1				
Log Bank Size	0.00700 (0.881)	-0.1903*** (0)	1			
Concentration Index	0.0644 (0.168)	0.0345 (0.462)	0.0796 (0.0635)	1		
Log GDP per capita	0.0460 (0.326)	0.1291** (0.0057)	0.1630*** (0.0001)	0.1346** (0.0016)	1	
INDUSTRY (FIN / TECH)						1

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

For the quarterly dataset (Table 14), the correlation coefficients are significant between Log GDP per capita and Log Bank Size (0.163, $p < 0.001$), as well as between Log GDP per capita and Concentration Index (0.1346, $p < 0.01$). Both of these coefficients are below 0.19, considered very weak (Evans, 1996), therefore there is no need to adjust variables.

4.3 Regression Models and Hypotheses Testing

4.3.1 Industry relatedness and M&A performance (H1)

Model 1 and Model 2 use the annual dataset to test the impact of binary variable target industry type FIN or TECH on ROA and CIR respectively (Table 15). All other variables are control variables. Even though R-Squared numbers are quite small, suggesting that only a limited proportion of the dependent variable variance can be explained by the independent variable, both regression models are significant.

Table 15: Target Industry Type and M&A Performance

	H1	
	Model 1 ROA	Model 2 CIR
TECH	-1.075** (-2.79)	954.6* (2.38)
Log Bank Size	0.221** (3.30)	-209.4** (-3.00)
Concentration Index	-0.000306 (-0.04)	-0.200 (-0.02)
Log GDP per capita	-0.319 (-1.31)	85.55 (0.34)
Y-1	-0.0320 (-0.07)	629.9 (1.42)
Y	0.339 (0.76)	-5.484 (-0.01)
Y+1	0.155 (0.33)	22.53 (0.05)
Y+2	0.209 (0.41)	64.99 (0.12)
_cons	0.482 (0.18)	2413.5 (0.85)
<i>N</i>	862	861
<i>R-Squared</i>	0.02	0.02

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In Model 1, compared to FIN, the benchmark industry, TECH has a highly significant negative coefficient with ROA (-1.075, $p < 0.01$). This suggests that a target industry shift from FIN to TECH results in ROA decrease. Therefore, banks who acquire unrelated FinTech firms profit less than acquirers of related non-bank financial institutions.

In Model 2, compared to FIN, TECH has a positive coefficient with CIR (954.6, $p < 0.05$). A higher CIR means lower efficiency, which is the result of a target industry shift from FIN to TECH. Therefore, banks who acquire unrelated FinTech firms become less efficient than banks who acquire related non-bank financial institutions.

To summarize, empirical evidence based on Model 1 and Model 2 support the theoretical claim that, compared to M&As of related-industry targets, M&As of unrelated-industry targets have more negative impact on the acquirer's performance, both profitability and efficiency. Therefore, hypothesis 1 is supported.

4.3.2 Industry competition and M&A performance (H2)

Model 3 and Model 4 use the annual dataset to test the impact of acquirer banks' home country industry competition on ROA and CIR respectively (Table 16), where concentration index is the independent variable and all others are control variables. Although the Industry variable (FIN or TECH) is omitted during regression, due to aforementioned time-invariant variable collinearity in fixed effects models, it doesn't impact the model results. Both regression models are significant.

Table 16: Industry Competition and M&A Performance

	H2	
	Model 3 ROA	Model 4 CIR
Log Bank Size	7.211*** (18.34)	-8036.2*** (-12.34)
Concentration Index	-0.0542* (-2.25)	34.57 (0.95)
Log GDP per capita	2.825 (0.09)	-4660.9 (-0.10)
Y-1	-0.692** (-2.65)	1016.4** (2.60)
Y	-0.957*** (-3.36)	1058.0* (2.47)
Y+1	-1.559*** (-4.97)	1626.9*** (3.44)
Y+2	-2.233*** (-6.48)	2438.9*** (4.67)
_cons	-143.7 (-0.44)	178254.0 (0.36)
<i>N</i>	862	861
<i>R-Squared</i>	0.35	0.20

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In Model 3, Concentration Index has a significant negative coefficient with ROA (-0.0542, $p < 0.05$), indicating that the higher the concentration index, the lower the ROA. By definition, concentration index is the inverse of competition level, so the correlation between competition and ROA is actually positive. In other words, for a bank acquirer, the more competitive its home country's banking industry, the more profitable it becomes, and vice versa.

In Model 4, Concentration Index has a positive coefficient with CIR (34.57), seemingly showing that there might be a positive correlation between concentration and CIR (therefore inversely a positive correlation between competition and efficiency), but the correlation is not statistically significant. As a result, no conclusion can be drawn between home country industry competition level and bank acquirer efficiency.

To summarize, the empirical evidence based on Model 3 and Model 4 support the claim that industry competition level in an acquirer's home country positively affects its profitability. However, there is no statistically significant evidence of a relationship between industry competition and a bank acquirer's efficiency. Therefore, hypothesis 2 is partially supported.

4.3.3 Related-industry M&As and acquirer short-term & long-term performance (H3a & H3b)

Model 5 to Model 8 look at banks who acquire non-bank financial institutions (see Table 17). Model 5 and Model 6 measure short-term time effects on ROA and CIR, based on quarterly dataset. Model 7 and Model 8 test the year-on-year long-term effects on ROA and CIR, using the annual dataset. In these models, the time horizon dummy variable is the independent variable, while all others are control variables.

Table 17: Related-industry M&A and acquirer short-term & long-term performance

M&A Targets: Financial Institution	H3a (Short-term)		H3b (Long-Term)		
	Model 5	Model 6	Model 7	Model 8	
	ROA	CIR	ROA	CIR	
Log Bank Size	2.309** (3.13)	-2.050 (-0.08)	1.614*** (6.57)	-77.34*** (-15.48)	Log Bank Size
Concentration Index	0.00326 (0.19)	-0.516 (-0.85)	-0.0150 (-1.12)	0.495 (1.82)	Concentration Index
Log GDP per capita	10.77 (0.00)	-91204.8 (-0.29)	-863.7 (-0.96)	46209.0* (2.52)	Log GDP per capita
Q-1	-0.196 (-1.36)	1.128 (0.22)	-0.0431 (-0.30)	0.115 (0.04)	Y-1
Q	-0.0976 (-0.70)	1.147 (0.24)	-0.256 (-1.67)	3.876 (1.24)	Y
Q+1	-0.269 (-1.84)	4.580 (0.90)	-0.403* (-2.40)	9.139** (2.68)	Y+1
Q+2	-0.386** (-2.71)	-3.690 (-0.74)	-0.572** (-3.10)	13.03*** (3.47)	Y+2
_cons	-148.7 (-0.00)	943911.8 (0.29)	8944.1 (0.96)	-478546.2* (-2.51)	_cons
<i>N</i>	311	312	682	682	
<i>R-Squared</i>	0.07	0.02	0.08	0.34	

t statistics in parentheses

** p < 0.05, ** p < 0.01, *** p < 0.001*

Model 5 is significant. Compared to the benchmark Q-2 (six months before M&A), the four quarters that follow all have negative coefficients with ROA, consistently showing a decrease in profitability as opposed to Q-2. This trend is not statistically significant in Q-1, Q or Q+1, but becomes highly significant in Q+2, whose coefficient is at -0.386 ($p < 0.01$), suggesting that short-term ROA worsened six months after the deal, as opposed to six months prior to the deal. So there is evidence to conclude that, for related non-bank financial institution M&As, bank acquirer profitability decreases in the short-term.

Model 6 is not significant, so we cannot draw any conclusions regarding the quarter-by-quarter changes of CIR. In other words, by acquiring related-industry targets such as non-bank financial institutions, banks in our sample do not show a clear pattern of increase or decrease in their short-term efficiency.

To summarize the short-term effects, the empirical evidences based on Model 5 and Model 6 suggest that, for related-industry acquisition, acquirer profitability decreases in the short-term, but there is not enough evidence to conclude the short-term effects on acquirer efficiency. The results contradict the claim that “for related-industry acquisition, M&A positively affects acquirer’s short-term performance”, therefore H3a is rejected.

Model 7 is significant. Compared to the benchmark Y-2 (two years before M&A), the four years that follow all have negative coefficients with ROA, whose absolute values keep increasing (-0.0431, -0.256, -0.403, -0.572). This seems to indicate a steady decrease of ROA over the years. The coefficients for Y-1 and Y are not significant, but become significant in Y+1 (-0.403, $p < 0.05$), and highly significant in Y+2 (-0.572, $p < 0.01$). This is strong evidence of worsened ROA after three to four years. In conclusion, for related financial institution M&As, bank acquirers’ profitability decreases in the long-term.

Model 8 is significant. Compared to Y-2, the four years that follow all have positive coefficients with CIR, with increasing absolute values year after year (0.115, 3.876, 9.139, 13.03). The coefficients for Y-1 and Y are not significant but become highly significant in both Y+1 (9.139, $p < 0.01$) and Y+2 (13.03, $p < 0.001$). Increases in CIR translate to decreases in efficiency, so these positive coefficients are strong evidence of worsened efficiency over the long-term. In conclusion, for related financial institution M&As, bank acquirers’ efficiency decreases in the long-term.

To summarize the long-term effects, the empirical evidence based on Model 7 and Model 8 do not support the claim that for related-industry acquisition, acquirer performance improves over long-term, as both profitability and efficiency decreases are observed. Therefore, H3b is rejected.

4.3.4 Unrelated-industry M&As and acquirer short-term & long-term performance (H4a & H4b)

Model 9 to Model 12 look at banks who acquire FinTech firms (see Table 18). Model 9 and Model 10 measure short-term quarterly effects on ROA and CIR. Model 11 and Model 12 test the long-term yearly effects on ROA and CIR. The dummy variable, time horizon, is the independent variable, while all other variables are controlled. All four models are statistically significant.

Table 18: Unrelated-industry M&A and acquirer short-term & long-term performance

M&A Targets: FinTech	H4a (Short-term)		H4b (Long-term)		
	Model 9 ROA	Model 10 CIR	Model 11 ROA	Model 12 CIR	
Log Bank Size	1.666*** (3.43)	-0.519 (-0.01)	15.12*** (17.79)	-27738.6*** (-15.36)	Log Bank Size
Concentration Index	0.0154 (1.38)	-0.0674 (-0.08)	-0.0915 (-1.37)	78.99 (0.73)	Concentration Index
Log GDP per capita	-37937.6 (-0.81)	-257741.6 (-0.07)	1.978 (0.04)	-6376.9 (-0.09)	Log GDP per capita
Q-1	0.0924 (1.10)	-6.054 (-0.92)	-2.387** (-3.25)	3595.2** (3.04)	Y-1
Q	0.0285 (0.34)	-12.74* (-1.99)	-2.421** (-2.87)	4163.5** (3.05)	Y
Q+1	0.0820 (0.97)	-5.869 (-0.89)	-4.160*** (-4.21)	6991.2*** (4.35)	Y+1
Q+2	0.0992 (1.22)	-4.251 (-0.68)	-4.538*** (-4.01)	7861.1*** (4.27)	Y+2
_cons	401024.6 (0.81)	2723893.3 (0.07)	-278.5 (-0.59)	547676.9 (0.73)	_cons
<i>N</i>	148	145	180	179	
<i>R-Squared</i>	0.20	0.04	0.73	0.67	

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In Model 9, compared to the benchmark Q-2 (six months before M&A), the four quarters that follow all have positive coefficients with ROA (0.0924, 0.0285, 0.0820, 0.0992), which may seem to suggest an increase in short-term ROA. However, none of these four

coefficients are significant, so we cannot conclude the time effect on short-term profitability of FinTech acquiring banks.

In Model 10, compared to Q-2, the four quarters that follow all have negative coefficients with CIR, and Q is the only significant period (-12.74, $p < 0.05$). The interpretation is as follows: compared to six months pre-M&A, CIR decreases in the same quarter shortly after M&A completion, suggesting a post-deal efficiency increase. We can therefore conclude that, with unrelated FinTech M&As, bank acquirers become more efficient in the short-term.

To summarize the short-term effects, the empirical results based on Model 9 and Model 10 do not have enough evidence to conclude that, for unrelated-industry acquisition, acquirer profitability improves in short-term, but findings do support the claim that acquirer efficiency improves in short-term. Therefore, H4a is partially supported.

In Model 11, the four years following benchmark Y-2 all have highly significant negative coefficients with ROA, with increasing absolute values year after year (coefficients of Y-1 at -2.387, $p < 0.01$; Y at -2.421, $p < 0.01$; Y+1 at -4.160, $p < 0.001$; Y+2 at -4.538, $p < 0.001$). These results provide strong and consistent evidence of steady ROA decrease over the years. In conclusion, with unrelated FinTech M&As, bank acquirers' profitability decreases in the long-term.

In Model 12, the four years following Y-2 all have highly significant positive coefficients with CIR, with increasing absolute values year after year (coefficients of Y-1 at 3595.2, $p < 0.01$; Y at 4163.5, $p < 0.01$; Y+1 at 6991.2, $p < 0.001$; Y+2 at 7861.1, $p < 0.001$). As elaborated before, CIR is the inverse of efficiency. The results therefore show a steady trend of substantial efficiency decrease over the years. In conclusion, with unrelated FinTech M&As, bank acquirers' efficiency decreases in the long-term.

To summarize the long-term effects, the empirical evidence based on Model 11 and Model 12 supports the claim that, for unrelated-industry acquisition, acquirer performance deteriorates in the long-term, as both profitability and efficiency decreases consistently. Therefore, H4b is supported.

Based on the empirical evidence of models 5 to 12 (H3 & H4), results indicate that bank acquirers of financial institution are on a trajectory of value destruction; both short-term and long-term profitability decrease steadily, while efficiency decreases over long-term. Conversely, FinTech M&A show opposing results for bank acquirers over different time horizons. In the short-term, there is a positive impact on efficiency and insignificantly positive impacts on profitability, while in the long-term, there is deterioration in both profitability and efficiency.

Table 19 below summarizes all key elements in the 12 regression models, as well as the testing results of all six hypotheses. The following section discusses the theoretical implications.

Table 19: Summary of regression models and hypotheses testing results

Model	Independent Variable	Dependent Variable	Relationship	Result Interpretation	Hypothesis
1	Industry TECH (as opposed to FIN)	ROA	Negative	Unrelated industry acquisition negatively affects acquirer profitability (as opposed to related)	H1 supported
2	Industry TECH (as opposed to FIN)	CIR	Positive	Unrelated industry acquisition negatively affects acquirer efficiency (as opposed to related)	
3	Concentration Index	ROA	Negative	Industry competition positively affects acquirer profitability	H2 partially supported
4	Concentration Index	CIR	Not Significant	Cannot conclude industry competition's impact on acquirer efficiency	
5	Short-term time horizon	FIN ROA	Negative	Related industry acquisition negatively affects acquirer profitability in short-term	H3a rejected
6	Short-term time horizon	FIN CIR	Not Significant	Cannot conclude related industry acquisition's impact on acquirer efficiency in short-term	
7	Long-term time horizon	FIN ROA	Negative	Related industry acquisition negatively affects acquirer profitability in long-term	H3b rejected
8	Long-term time horizon	FIN CIR	Positive	Related industry acquisition negatively affects acquirer efficiency in long-term	
9	Short-term time horizon	TECH ROA	Not Significant	Cannot conclude unrelated industry acquisition's impact on acquirer profitability in short-term	H4a partially supported
10	Short-term time horizon	TECH CIR	Negative	Unrelated industry acquisition positively affects acquirer efficiency in short-term	
11	Long-term time horizon	TECH ROA	Negative	Unrelated industry acquisition negatively affects acquirer profitability in long-term	H4b supported
12	Long-term time horizon	TECH CIR	Positive	Unrelated industry acquisition negatively affects acquirer efficiency in long-term	

4.4 Discussion

With 12 regression models, this thesis empirically tests the six hypotheses regarding different factors influencing M&A performance, using the two sets of data on bank acquirers.

Hypothesis 1 “compared to M&As of related-industry targets, M&A of unrelated-industry targets have more negative impact on the acquirer’s performance” is supported, as the regression results show that bank acquirers of FinTech firms have worse profitability and efficiency than bank acquirers of non-bank financial institutions. These results support the positive relationship between industry relatedness and firm performance proposed by the resource-based theory, i.e. related diversification outperforms unrelated diversification. The empirical evidence complements the existing strategic management literature (e.g., Barney, 1991; Penrose 1959) and banking literature (e.g., Liu et al., 2011; Richard, 2000); it also expands the applicability of the industry relatedness - performance relationship into M&A contexts.

Hypothesis 2 “an acquirer’s home country industry competition level positively affects its M&A performance” is partially supported. The regression results show that industry competition has a positive impact on the bank’s profitability, and a statistically insignificant but positive effect on bank efficiency. Therefore theoretically, this result partially supports the competition stability view and rejects the opposite competition fragility view in banking literature. It provides empirical evidence for the pro-competition and anti-megamerger assertions of researchers (e.g., Dash, 2009; Demirgüç-Kunt & Huizinga, 2013) as well as the macroprudential policies adopted by banking regulators worldwide in the post-2008 financial crisis era, to ensure the stability in global financial system (e.g., Bernanke, 2010; European Central Bank, n.d.).

Hypothesis 3a “for related-industry acquisition, M&A positively affects acquirer’s short-term performance” is rejected. Results show that, with non-bank financial institution acquisitions, bank acquirers’ profitability decreases in the short-term, but there is no statistically significant conclusion regarding the short-term efficiency changes. The empirical evidence contradicts the hypothesis of corporate control and its reasoning on the relationship between related diversification and acquirer short-term performance (Hoskisson & Hitt, 1994).

One reason could be the small sample size in our dataset that reduces the validity of the results. Another reason could be that time and industry relatedness factors alone cannot explain all performance changes; other factors such as the aforementioned method of payment (Andrade et al., 2001; Travlos, 1987; Yang et al., 2019) or M&A target firm type (private or public) discussed in the strategic factor market theory (Barney, 1986; Capron & Shen, 2007; Makadok et al., 2001) also impact the acquirer's performance in the short-term.

Hypothesis 3b "for related-industry acquisition, M&A positively affects acquirer's long-term performance" is rejected, as results show that both profitability and efficiency decrease in the long-term for bank acquirers of non-bank financial institution targets. This contradicts the hypothesis of Hoskisson and Hitt (1994) on corporate control and the long-term benefit of related diversification for acquirers. It also contradicts the positive relationship between industry relatedness and firm performance proposed by the resource-based theory, i.e. related diversification outperforms firm internal growth without diversification. However, if industry relatedness is not considered as an independent contributing factor to acquirer performance, our regression results are aligned with the conclusion of most long-term M&A research in the management and banking literature. According to researchers, M&A acquirers do not experience performance improvement, and some even experience performance decreases in the long-term (e.g., Ismail et al., 2010; Meeks, 1977; Porter, 1989; Rau & Vermaelen, 1998). Based on existing literature, the factor of M&A motive may contribute to the acquirer's unsatisfactory long-term performance. In the seminal paper of Berkovitch and Narayanan (1993), the authors propose synergy, agency, and hubris as three major M&A motives, and argue that the acquirer performance should be positive if the motive is synergy (i.e., managers of targets and acquirers engage in M&As only if both shareholder wealth are maximized), negative if the motive is agency (i.e., deals are primarily motivated by the self-interests of the acquirer management), zero if the motive is hubris (i.e., deals are driven by the acquirer management mistakes and that no synergy exists), and unclear to distinguish if all three motives coexist.

Hypothesis 4a "for unrelated-industry acquisition, M&A positively affects acquirer's short-term performance" is partially supported. Regression results show that Fintech acquirers

experience significant efficiency increase and insignificant profitability increase in the short-term. Theoretically, therefore, the hypothesis of Hoskisson and Hitt (1994) on corporate control is supported, because there exists a positive relationship between unrelated diversification and acquirer short-term performance gain. In addition, despite different choices of methodology and measurements (market-based vs. accounting-based), these empirical results concur with some M&A studies in the management and banking literature that provide evidence for short-term value creation for acquirers (e.g., Capron & Pistre, 2002; Cornett & De, 1991).

Hypothesis 4b “for unrelated-industry acquisition, M&A negatively affects acquirer’s long-term performance” is supported, as both profitability and efficiency decrease over the long-term for FinTech acquiring banks. These results support the hypothesis of corporate control and the negative impact of unrelated diversification on acquirer long-term performance (Hoskisson & Hitt, 1994). This hypothesis also supports the conclusion that M&A, in general, may not be a financially rewarding expansion strategy because it destroys long-term value for acquirers (e.g., Dickerson et al., 1997; DeLong, 2003; Hoskisson & Hitt, 1994).

In summary, the above empirical results contribute to existing theories in both the management and the banking literature in two important ways. First, in the strategic management domain, the industry relatedness - performance relationship proposed by the resource-based view (Barney, 1991; Penrose 1959) has been expanded into M&A performance contexts. On the one hand, findings of this M&A performance study support the assertion that related-industry diversification outperforms unrelated-industry diversification (e.g., Lubatkin, 1983; Morck et al., 1990; Porter, 1980). On the other hand, this study presents new evidence contradicting the hypothesis that related-industry diversification outperforms firm internal growth without diversification (e.g., Rubin, 1973; Salter & Weinhold, 1980); empirical results demonstrate worsened post-M&A performance compared to pre-M&A for related diversification deals. This finding emphasizes the need for ongoing research efforts comparing the effectiveness of diversification versus internal growth strategic choices. In addition, this study addresses the limited theoretical application of the resource-based view in existing banking and finance literature (Liu et al., 2010) by including M&A participants from banking,

FinTech and non-bank financial industries, as a means to diversify the samples testing the industry relatedness - performance relationship.

Second, for banking literature, this thesis provides new evidence in support of the Competition Stability View (Boyd & Nicolo, 2005) over the Competition Fragility View (Keeley, 1990), with a worldwide sample of over 200 M&A banks that occurred over the past decade. More specifically, the empirical results support the claim that the level of banking industry competition in a country or region positively (rather than negatively, as proposed by Competition Fragility View) affects banks' performance, concurring the claims of Berger and Hannan (1998) as well as Fiordelisi and Mare (2014). Furthermore, this thesis expands on the study of Kane (2000) by including bank M&A events into the competition – bank performance correlation, and empirically supports industry competition as a contributing factor to bank performance improvements in M&A contexts, providing a new perspective validating the Competition Stability View.

In addition to theoretical contributions in management and finance, this M&A study also provides practical implications for banking industry practitioners. For bank managers exploring different options of strategic expansion, it casts doubt on the financial payoff of M&A strategy, as empirical results show that 1) bank financial performance worsens with M&A deals compared to internal growth without M&A; and 2) while short-term financial performance outcomes are mixed, in the long-term, bank acquirers all experience performance deterioration post-M&A with decreasing profitability and efficiency. Therefore, to justify the appropriateness of M&A over other types of growth strategy, bank managers need to present convincing cases for M&A, including potential non-financial payoffs and other incentives. However, if M&A is already chosen by bank management as the only option for further growth, this thesis provides evidence in terms of target industry choice for bank acquirers, namely M&As of related industry targets (such as non-bank financial institutions), as they contribute to better financial performance than M&As of unrelated industry targets (such as FinTech firms).

This research also provides up-to-date evidence supporting regulatory policies and laws promoting active levels of competition by banking regulators and supervisory agencies across

different countries and regions. By demonstrating the positive impact of industry competition and the negative impact of high concentration on individual bank M&A performance (especially profitability), the empirical results of this study can be used as latest reference, reaffirming that the macroprudential policies, adopted worldwide by central banks of major economies post the 2008 financial crisis to constrain too-big-to fail banks in order to encourage competition and mitigate financial systemic risks (e.g., Bernanke, 2010; European Central Bank, n.d.), are still highly relevant and pertinent in current times.

5. Conclusion

By using a global dataset of over 200 banks that acquire non-bank financial institutions and FinTech targets between 2010 and 2018, this thesis empirically tests the firm level, industry level and country level factors that impact M&A acquirer performance. The results suggest that target industry relatedness and the industry competition level in an acquirer's home country both have positive influences on acquirer performance. In terms of time horizon, in the short-term, negative performance results (profitability decrease) are observed for bank acquirers of financial institution targets, and positive results (efficiency increase) are observed for bank acquirers of FinTech targets. While bank acquirers' short-term performance varies depending on the target industry relatedness, their long-term performance decreases regardless of target industry, suggesting that M&A is a value destruction strategy in the long run.

This thesis contributes to existing management and banking literature in multiple ways. First, it addresses two under-studied industries in banking and finance literature: non-bank financial institutions and Fintech firms. By analyzing both industries as M&A targets, this research adds new subjects (FinTech and non-bank financial institutions) and new topics (cross-industry diversification for banks worldwide) for future researchers. Second, the thesis not only presents new evidence to support the industry relatedness – firm performance relationship proposed by the resource-based theory, but also expands the applicability of resource-based theory by examining firm performance in M&A contexts. Third, the thesis uses an up-to-date dataset of over 200 banks globally to test the long-debated Competition Fragility / Stability Views, and supports the Competition Stability View with sample banks from diversified national and regional institutional backgrounds. Lastly, this research measures M&A performance in mixed time horizons and compares the changing patterns of value creation and destruction over time.

The thesis has some limitations. First, due to the limited number of banks acquiring FinTech and non-bank financial institutions in the chosen time period being studied, and the lack of interim accounting statements, the research sample size is relatively small, therefore, the empirical results have limited robustness supporting the theoretical hypotheses. In

addition, as a result of such small sample size, it's unpractical to introduce more measurements such as bank type or bank origin and further divide the dataset into sub-sets, to evaluate their impacts on M&A performance. Even if the regression results proved to be statistically significant with further variables added to the tests, they would have had limited validity. This sample size limitation could be partially overcome by expanding the data selection period for longer than a decade; while, for FinTech M&A deals, the impact would be minimal, for non-bank financial institution M&As, the increasing sample size would address the statistical robustness concerns. Second, the thesis measures only the M&A performance of acquirers, and not of targets, given that FinTech firms, many of which are start-ups, do not disclose financial information to the public. This same issue exists in private non-bank financial institutions, who consider financial information sensitive and exclusive to stakeholders. Given these constraints, it was only possible to measure acquirer performance. Third, although the use of an accounting-based methodology allows for a wide coverage of both public and private banks, it excludes market-based financial indicators and non-financial aspects of firm performance that may not be captured by using solely accounting-based measures. Lastly, in a global study like this one, it is difficult to identify the role of national and regional institutions on individual bank behaviors and performances. Therefore, while creating dummy variables per country is not practical for this study, more control variables could be introduced at the country level, to account for the impacts of different industry regulations and institutional environments. For instance, indexes measuring regulatory transparency or supervisory power can reflect banking industry regulation differences across nations, whereas governance indexes (such as World Governance Indicators compiled by the World Bank) and legal system identifiers can represent the degree of government effectiveness, political stability, and rule of law at country-level.

Future research can address a number of avenues. First, given its rapid growth, especially in the last decade, the FinTech industry deserves more academic attention. It could be studied independently, as part of the technology sector, or jointly with financial institutions. This thesis analyzes the impact of FinTech targets on bank M&As from an industry-relatedness perspective, using quantitative methods. Similar research topics could expand into analyzing other characteristics of FinTech firms, such as firm size, firm age, type (private or public), origin

(country or region; domestic or overseas), business scope, or management teams, and measure their respective impact on M&A acquirers in the financial industry, using mixed methods. As Kavuri and Milne (2019) argue, for the FinTech industry, significant research gaps remain; there is much work to be done before it becomes an established academic discipline.

Second, concerning issues of data sampling and representativeness, further research is needed at the global level. Existing banking research tends to focus on bank activities at the domestic and regional level, with a large body of literature from the US or European Union (DeYoung et al., 2009). This thesis makes an effort to compare M&A performance of banks globally, focusing on two target industries. Future research could study worldwide bank M&As of targets from other industries, or focus on M&A banks based in previously under-studied regions, such as emerging markets in Asia, Africa and Latin America. Given the interconnectedness of global banking systems, a well-diversified sample of banks from all over the world can provide more evidence and representativeness for theoretical studies.

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