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Corporate Asset Restructuring through Mergers and Acquisitions and Divestitures

by

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Declaration of Original Authorship

I confirm that this is my own work and the use of all material from other sources has been properly and fully acknowledged.

Vicky Lee

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Abstract

This thesis examines three separate topics related to corporate asset restructurings involving mergers and acquisitions and divestitures. Chapter 2 studies whether the explosive rise of boutique investment banks is justified by their M&A buyside success. Using the U.S. domestic deals during the period 2000 to 2016, short- and long-term event study analyses are performed to estimate shareholder wealth effects on boutique-led M&As. The results show that acquiring firms represented by boutique advisors generate significantly higher abnormal returns than those advised by full-service banks in difficult-to-value transactions with greater information asymmetry. These deals include private target deals, cross-industry acquisitions, and deals involving inexperienced bidders in the target sector. In these deals, boutique advisors reduce information asymmetry on the target firm and accrue more value creation to acquirers than do full-service banks using their distinctive knowledge and expertise in the target industry. This study provides important implications for conventional wisdom on the role of financial advisors in M&As.

Chapter 3 investigates various motives of bank divestiture that are previously undocumented based on the neoclassical theory and the resource-based view. Contrasting to previous findings, I find that bank divestitures are not motivated by regulatory capital requirement but are driven by mergers and bank-specific characteristics such as operating inefficiency, size, performance, and financial constraints. I also study how banks choose between focusing and diversifying strategies using both mergers and divestitures in the perspective of organizational search and select. These two strategies are sequentially implemented depending on

banks' performance and productivity. Banks use focusing strategy when they experience increasing performance and loan growth while diversifying strategy is pursued when they face financial distress and operating inefficiency. These findings have an important implication on short-term equity valuation: diversifying strategy induces negative announcement returns due to this endogenous selection by banks with declining productivity while firms with focusing strategy receive premium valuation due to their ex-ante outperformance. However, in the long-run, the abnormal effects dissipate and banks with both strategies perform comparably to their benchmarks. These findings provide considerable insights as to the role of bank divestiture in dynamic asset restructuring and subsequent performance.

Chapter 4 examines the role of divestiture as a turnaround strategy for a sample of U.S. firms faced with financial distress during the 2008 global financial crisis. Despite a widespread belief that divestments in an illiquid market destroy firm value with potential fire sale discounts, the evidence shows that divestiture has a positive impact on resolution of financial distress and long-term performance recovery. Over the 3-year period subsequent to divestiture, firms significantly improve their long-term operating performance compared to their non-divesting benchmarks. This outperformance appears to be attributed to financing benefits linked to an asset liquidation that can be used to relax financial constraints and subsidize continued investment in the remaining divisions. On the contrary, retrenchment strategies focusing on short-term cash flows and cost-cutting tactics through operational and financial restructurings exacerbate financial distress and trigger performance decline. This research sheds light on the long-term implications of corporate turnaround strategies employed by distressed firms in periods of economic downturn.

Contents

List of Tables

List of Figures

Chapter 1

Introduction

This thesis explores several topics related to corporate asset restructuring with a focus on mergers and acquisitions (M&As) and divestitures. Both strategies involve restructuring of assets. M&As represent consolidation of entities or assets through a form of absorption from one entity to another or combination of two firms into one. Divestitures involve sale of divisions and partial assets. While a broad array of studies exists in this research area, the topics presented in this thesis are inspired by ongoing issues discoursed but have rarely been delved in empirical research. Examples of such inquiries include: why do acquirers hire boutique financial advisors and what is their economic contribution? how do banks use divestiture to reconfigure their asset portfolio and to achieve performance stability over their business cycle? what are the strategic and economic implications of divestiture on the long-term performance of financially distressed firms during periods of economic crisis? Investigations into these questions comprise the next three chapters of my thesis. Specifically, Chapter 2 of this thesis aims to empirically examine the primary drivers of increasing reputation and involvement of boutique financial advisors in large scale and high-profile merger transactions.

Over the period 2000 to 2016, boutique investment banks have partaken in a large volume of M&A activities amounting to aggregated transaction value of approximately $2.3 trillion. During this period, their reputation started superseding

some of the largest names in the advisory market as well as in the investment banking league table. Prior study reports that boutique advisors are mostly limited to serving small and middle-market clients or larger and complex deals only in collaboration with full-service banks (Song, Wei, and Zhou, 2013). However, boutique firms founded by former bulge bracket bankers actually have skills and experiences to handle sizable deals on their own and established large-cap client portfolio from their prior relationships. Despite their growing importance, limited insights have been offered about boutique investment banks. One of the reasons is because their increasing reputation is a fairly recent phenomenon and prior to mid-2000s, the M&A advisory space has been dominated by bulge bracket and other full-service financiers. Accordingly, much of the attentions has been naturally given to so-called top-tier bulge bracket advisors (Servaes and Zenner, 1996; Rau, 2000; Hunter and Jagtiani, 2003; Ismail, 2010; Bao and Edmans, 2011; Golubov, Petmezas, and Travlos, 2012).

Another reason is due to the lack of established database providing classification between full-service and boutique financial advisors. Hence, the classification was manually performed by cross-checking various sources such as S&P Global Market Intelligence, SEC filings, company websites, news media, and past/local periodicals at the time of deal announcements. My classification not only is more comprehensive than the prior study with 141 vs. 462 boutique advisors, but also corrects earlier misclassifications in Song et al. (2013) as the definition of "boutique investment bank" has evolved over time.

Based on this advisor classification data, I measure the quality of boutique investment banks in comparison with full-service banks. The value of financial advisors is estimated using 3- day cumulative abnormal returns (CARs) of their buyside clients around the acquisition announcement date. I find that acquiring firms represented by boutique advisors generate significantly higher returns than those advised by full-service banks in transactions which involve greater information asymmetry. These economic gains are explicitly observed in acquisitions of private targets, cross-industry deals, and acquisitions by firms without prior experience in the target industry. These findings imply that boutique

advisors are particularly useful for transactions which require high level of industry expertise and due diligence skills.

This abnormal effect holds even after comparing only similar deals between the two advisor groups based on propensity score matching (PSM) and after controlling for unobservable endogenous selection bias using Heckman's two-step model. Prior studies only consider unobservable bias when comparing performance across different advisor groups. However, it is important to control for endogeneity derived by observable bias as client portfolios between boutique and full-service banks are extremely different. In this study, I compare matching deals based on firm and deal characteristics to eliminate observable selection bias. Further, I document long-term performance implications estimated using buy-and-hold returns and calendar-time portfolio returns. The results indicate that investors who purchase the bidder stock portfolio comprised of boutique deals outperform those who invest in full-service portfolio.

This research offers insights as to why boutique intermediaries are becoming more important. They smartly capture niche sector to mainstream clients by utilizing their sector-specialized skills to uncover information asymmetry residing in difficult-to-value firms and generate real synergy gains for their acquirer clients. Corporate takeovers normally cost millions to billions of dollars per transaction for acquirers. Hence, it could be risky to acquire opaque firms if not assessed properly. However, such information asymmetry could turn into greater synergy gains if unravelled by the financial advisor, which could give the acquirer bargaining power. Thus, in opaque deals, financial intermediation is much more crucial as it requires specific target sector knowledge and intensive due diligence to accurately value the target firm.

Chapter 3 of this thesis attempts to overcome two limitations in divestiture literature. While the financial services industry takes the largest proportion of divestiture transactions in the U.S., there is little known about divestiture of banks. Majority of research disregards the financial industry due to its association with intensive regulatory scrutiny and lack of segment data. Hence, divestiture studies

have mainly been conducted on listed industrial firms with plant-based data or segment-specific financial information. Exclusion of banking firms from the corporate divestiture sample, however, incurs data-snooping[1] issue (Barber and Lyon, 1997), especially considering that a large share of deals occurs in the financial sector.

Another limitation comes from the existing studies' restricted use of theories and sole focus on a type of divestiture. Apparently, mainstream divestiture studies in finance rely on a single theory in which divestiture is portrayed as a remedy for agency problem residing in diversified firms. Earlier studies find that divestiture of unrelated (non-core) assets by diversified firms, which increases corporate focus on their primary business significantly improves abnormal returns during the announcement period. Due to this strongly positive correlation between focus-increasing divestiture and firm value, they conclude that focusing strategy eliminates diversification discount which is a result of agency issues such as: divided managerial attention, inefficient resource allocation across divisions, and subsequent underinvestment (overinvestment) in profitable units (unprofitable units) (John and Ofek, 1995; Berger and Ofek, 1999; Rajan, Servaes, and Zingales, 2000; Dittmar and Shivdasani, 2003; Denis, Denis, and Sarin, 2012).

To resolve these limitations, this chapter tackles data-snooping problem by separately examining divestiture of banks and introduces an alternative perspective that counters conventional interpretation of the role divestiture plays in corporate diversification. Specifically, I prove inapplicability of the agency theory to bank diversification. In analysing the role of divestiture, I incorporate the neoclassical theory and the resource-based view. As opposed to the agency theory which proposes that diversification is a product of managerial entrenchment and undermines firm performance, these theories assume that managers in diversified firms are as equally motivated as those in specialized firms to maximize profit. This alternative hypothesis views divestiture as a vital means of obtaining funds and value-increasing activity. Based on this hypothesis, I find contrasting motivations

[1] Data snooping refers to an exclusion of certain observations from the sample after the researcher observes the data to find patterns which make the results statistically significant.

for bank divestitures to the prior study by Slovin, Sushka, and Poloncheck (1991). They suggest that bank divestitures are less of strategic decisions but more of forced restructurings by regulatory capital requirements. Contrarily, my results show that banks implement divestitures rather to fund segments with increasing performance and further the growth. Banks also divest to improve operating efficiency and resolve financial distress.

These theories also predict that restructuring decisions between focusing and diversification should be perceived as a process of search and match for synergistic opportunities over the corporate business cycle: firms focus on their core segment when it has sound performance and growth potential, but they diversify their revenue stream into a different sector when their current business is in mature stage and has no further competitive advantage in its industry. I provide empirical evidence to this hypothesis and show that banks use focusing strategy when they experience increasing performance and loan growth but use diversifying strategy when their operation becomes inefficient and less profitable. These findings repudiate previously identified divestiture motives based on the agency theory and show that diversification is irrelevant to managerial entrenchment.

This chapter further shows that diversifying strategy may be costly in the short-term due to the underlying firm-specific conditions such as ex-ante underperformance, which endogenously affect divestiture announcement returns. However, banks implementing diversifying strategy perform comparatively to their industry benchmarks in the long-term as it is initiated to reverse declining performance and improve productivity. Although the neoclassical theory has been previously applied to studies investigating alternative motives for corporate diversification, it has not been adopted in divestiture research. This chapter empirically examines the theory and corroborates that divestiture is an integral part of dynamic asset restructuring, which firms jointly undertake along with mergers to alter corporate scope and sustain their competitive advantage.

Chapter 4 of this thesis evaluates divestiture as a turnaround strategy along with other turnaround strategies that financially distressed firms use during periods

of economic crisis. These strategies include asset, managerial, operational, and financial restructuring. Majority of firms are found to respond to the economic crisis by adopting retrenchment strategies which include operational and financial restructuring such as reduction in costs and expenses. However, firms relying on short-term efficiency and cash flow may experience a weakened market positioning or performance stagnation post-crisis. This is due to the lack of investment and sustainable financing sources to survive the prolonged recessionary period (Denis and Kruse, 2000; Gulati, Nohria, Wohlgezogen, 2010; Mann and Byun, 2017). Thus, this chapter identifies which turnaround strategies are associated with the improvement in long-term operating performance and with the recovery from financial distress. According to the corporate turnaround literature, a successful turnaround can be achieved by implementing strategic reorientation which has long-term effects on firm performance with continued growth and profitability (Barker and Duhaime, 1997). Strategic reorientation occurs when firms change the existing strategy to gain competitive advantage corresponding to their declining performance compared to their industry counterparts.

One of the ways to achieve strategic reorientation is to reconfigure a firm's asset portfolio through divestiture. Divestiture allows firms to dispose unfit assets, focus on profitable divisions, and increase investment efficiency on the remaining assets. The proceeds from divestiture can also be used to repay debt and lower leverage or invest in positive NPV projects (Ahn and Denis, 2004; Hovakimian and Titman, 2006; Arnold, Hackbarth, and Puhan, 2018). As such, this chapter demonstrates that divestiture is the most viable strategy that firms can take to both relax financial constraints and improve long-term operating performance. Further findings show that complementing divestiture with other restructuring strategies is associated with greater improvement in performance. However, managerial restructuring and other retrenchment strategies alone cannot effectively turnaround performance of declining firms.

While management restructuring entails a radical change in strategy along with replacement of the incumbent manager, it is likely to be ineffectual in resolving financial distress triggered not by mismanagement, but by a deteriorating economic

condition. Moreover, retrenchment as a strategy is not viable to attain long-term profitability. For example, operational restructuring includes investment reduction, COGS reduction, fixed asset reduction, and layoffs and financial restructuring involves dividend cut or omission. These restructuring tactics are all designed to cut costs to enhance short-term cash flows, but also deter investment and growth. Further, other types of financial restructuring such as debt or equity issue could be costly during periods of severe external financing frictions. Debt issue involves higher interest payment and increase in leverage while equity is normally issued at discount for financially distressed firms. Thus, relying solely on retrenchment measures and alternative financing options could deter performance recovery and even exacerbate financial distress.

Despite discernible financing benefits related to divestiture as a turnaround strategy, it is less commonly utilized during economic downturn. The literature indicates that firms shun asset sales when the market is illiquid because there are not enough industry buyers and assets are sold at fire sale price (Shleifer and Vishny, 1992, 2011). Empirical studies investigating the relation between market illiquidity from industry shocks and asset liquidation document severe discounts in asset value. However, these studies mostly focus on industry-wide distress. Studies based on the economic crisis find no such evidence as fire sale discounts upon divestiture announcements (Alexandrou and Sudarsanam, 2001; Finlay, Marshall, and McColgan, 2018). They rather argue that the financing benefits outweigh any potential liquidity discounts that might have been applied to the asset price. Consistent with this financing hypothesis, this chapter also shows that divestiture announcements neither incur fire sale discounts, nor destroy shareholder value.

This research is both topical and practical as it tackles corporate strategies that can be exercised by firms facing economy-wide distress, especially with the ongoing Coronavirus pandemic. First, I find that firms optimizing their asset portfolio through divestiture recuperate from financial distress and significantly improve their long-term operating performance through continued investment. I also show that divestiture is a suitable strategy for distressed firms during the economic crisis because fire sale discounts are unobservable; liquidity can be

provided by non-industry buyers and the financing benefits offset expected liquidity discounts. Most importantly, while turnaround studies examining crisis-related restructurings fail to document long-run recovery and profitability due to their focus on retrenchment strategies, this research reiterates the importance of choosing crisis-driven strategy based on its long-term effects as over-pursuing retrenchment strategies can be short-sighted.

The thesis is structured as follows. Chapter 2 studies boutique financial advisors in mergers and acquisitions. Chapter 3 evaluates the role of divestiture in dynamic asset restructuring of bank holding companies. Chapter 4 investigates the long-term performance impact of divestiture as a turnaround strategy during the financial crisis. Chapter 5 summarizes main findings from each chapter and discuss further research ideas.

Chapter 2

Do Boutique Investment Banks Have the Midas Touch? Evidence from M&As

2.1 Introduction

By serving mid-size to large cap corporations, boutique investment banks have become a major driver of the financial advisory market in recent decades. Refinitive (2018) reports that the M&A fees earned by boutique investment banks surpassed those earned by top five banks in 2012.[2] In some cases boutique advisors' reputation, as manifested in the various league tables, has climbed above bulge bracket banks', with boutique advisors now leading some of the largest M&A transactions and commanding an ever-growing share of the total deal value and revenue pie.[3] The success of boutique advisors can be attributed to a number of

[2] See Refinitiv, July 31, 2018, "Mega deals keep the M&A boom afloat"
[3] The league table is available in Thomson One SDC Mergers and Acquisitions Database, Yearly Advisors Rank by Value. In 2018, four boutique investment banks, Evercore, Centerview Partners, Lazard, and PJT Partners preceded the largest banks such as Bank of America Merrill Lynch, Citi, Credit Suisse, and Barclays from the top 10 US league table. Refinitiv, May 7, 2019, "Boutique

factors. Among them is the sector-specific expertise and skillset that I tend to observe with boutique advisors. Further, most of the top-tier ones are typically founded by experienced former bulge bracket dealmakers with access to established client and investor bases which are instrumental in handling large scale transactions.[4] The very nature and structure of boutique financial advisors also tend to be associated with more independent advice and less conflicts of interest (Song, Wei, and Zhou, 2013) relative to full-service banks who often arrange deal financing and cross-sell multiple financial services for profit (Allen, Jagtiani, Peristiani, and Saunders, 2004). The 2008 financial crisis further enhanced the demand for boutique M&A advisors as it was associated with negative investor perception and stricter regulatory scrutiny toward large banks.[5]

Prior to the mid-2000s, the M&A advisory space has been dominated by bulge bracket and other full-service financiers. Accordingly, the existing literature is naturally devoted to examining the role such top-tier advisors play in the M&A market (Servaes and Zenner, 1996; Rau, 2000; Hunter and Jagtiani, 2003; Ismail, 2010; Bao and Edmans, 2011; Golubov, Petmezas, and Travlos, 2012). Despite the continuous growth of boutique advisors' market share, limited insights have been offered on the drivers of their success and whether this trend can be justified by their M&A deal-making skills and ability to deliver synergistic value. Accordingly, this study aims to shed light on the overarching question whether employing a boutique financial advisor comes with financial gains for acquiring firms and their shareholders.

I study a sample of U.S. M&As with a buyside financial advisor over the period 2000 to 2016. Overall, the sample comprises of 1,848 deals linked to boutique advisors and 3,162 deals advised by full-service banks. This sample includes a more recent period than previous studies, encapsulating the significant growth of boutiques in the aftermath of the financial crisis.[6] I also employ a comprehensive

M&A Fees" also highlights that in 2018 despite a 3% fall in total completed M&A fees from pre-financial crisis high in 2007, boutique fees increased by 80%.

[4] See Financial Times, March 16, 2014, "Small proves beautiful at boutique banks"

[5] See Financial Times, April 18, 2019, "Rise of the boutique banks"

[6] This period represents richer sample of boutique deals than mid-1990s which is included in Song et al. (2013) and during which boutique banks are known mostly for advising smaller deals and

manual classification approach for financial advisors based on various sources to tackle potential misclassifications.[7] More importantly, unlike Song et al. (2013) who examine the impact of boutique financial advisors in M&A public deal premia[8], I focus on the actual value creation mechanism of boutique intermediaries by studying directly their impact on short- and long-run M&A deal performance. This approach allows me to capture a broader spectrum of potential gains from the combination of firms that might be attributable to the deal-making skills of boutique advisors.[9] In addition, it allows me to include private deals which take up a larger share of M&A transactions in the market and comprise the majority of deals led by boutique advisors.

In general, private deals present challenges for financial advisors with aspects of target search, screening, and valuation, among others, partly because of information scarcity or asymmetry associated with private firms (Capron and Shen, 2007; Officer et al, 2009). Therefore, the in-depth sector knowledge and experience that can be typically observed with boutique advisors can be more relevant in a private deal setting, better placing them in identifying, valuing, and negotiating M&A opportunities that deliver synergistic gains.

Conversely, public deals require additional resources and integrated services to handle a broad range of tasks such as regulatory and shareholder approval, fairness opinion, and financing for large scale deals which are typically tackled by full-service banks. Therefore, arguably acquisitions of private targets may comprise a better testing ground to investigate deal outcome differentials among boutique and full-service advisors. I gauge short-term gains to acquiring firms through their

represented insignificant proportion of advisory market share. Moreover, several top-tier boutique firms such as Centerview Partners, Moelis & Company, and PJT Partners were only founded post-2006. Lastly, including the post-financial crisis period is important since boutique advisors started gaining significant market share since 2007. See Refinitive, May 7, 2019, "Boutique M&A Fees".

[7] The number of boutique advisors classified in this study is 462 compared to 141 in Song et al. (2013).

[8] Song et al. (2013) find that bidders (targets) hiring boutique advisors pay (receive) lower (higher) premium than those hiring full-service advisors due to their skills associated with industry specialization.

[9] As observed in previous studies, skilled advisors with industry expertise can identify better merger opportunities, reduce transaction costs, and generate greater value for their clients (Bowers and Miller, 1990; Servaes and Zenner, 1996; Song et al., 2013; Chang et al., 2016; Graham et al., 2017).

cumulative abnormal returns (CARs) surrounding the merger announcement date. The OLS regression analysis shows that deals advised by boutique advisors are subject to a 0.8% higher CAR relative to those linked to full-service advisors. The corresponding dollar wealth gain differential is economically significant and translates to $96 million for the average-sized acquirer in my sample.

Consistent with my conjecture, I also find that boutique advisors undertake a higher share of private deals than do full-service banks and are more successful at achieving superior announcement returns for acquirers in this case. In regression tests, the corresponding coefficient of boutique advisors for private deals reflects a 1.4% higher CAR.[10] In contrast, the return differential between boutique led and full-service led public deals is statistically insignificant. These findings show for the first time that employing a boutique financial advisor can yield better results for acquirers in private deals and offer a new dimension on the role of financial advisors in M&A outcomes.

As documented by the literature, the OLS approach suffers from unobservable bias since advisors are not randomly selected by their clients and certain advisor selection criteria that are unaccounted for in my model can be driving the results.[11] To control for unobservable bias, I implement Heckman's two-step analysis using an instrumental variable which captures whether a given financial advisor has advised an acquirer in the past five years. Interestingly, the first stage regression analysis indicates that boutique advisors are more likely to be retained by their previous clients for future acquisitions than are their full-service counterparts. Further, I find that boutique advisors are less likely to be chosen by highly levered firms and larger bidders.[12] Yet, boutiques seem to be the choice of advisors when a deal is harder to value and negotiate; such deals include inter-industry M&As and

[10] This wealth gain is comparable to $121.4 million for a mean-sized bidder acquiring a private target.
[11] The omitted variable bias in financial advisor study is also discussed in Golubov et al. (2012) and Song et al. (2013).
[12] Highly levered firms require an advisor who can arrange financing for the acquisition. Large firms may prefer an advisor who can provide financing and more integrated advisory services for its scale and complexity.

deals involving stock offers.[13] The second stage results show no evidence of unobservable selection bias, verifying my earlier findings from the OLS analysis.

Further, I perform a propensity score matching (PSM) where comparable deals from each advisor group are matched based on firm and deal characteristics to compare their acquisition performance. Previous studies investigating the quality of M&A advisors do not account for observable differences in their client portfolios and simply compare overall deals among different groups of advisors. Such comparison could potentially produce biased outcomes as it does not approximate the counterfactual; an alternative outcome had a deal led by a full-service advisor instead been advised by a boutique advisor. By applying PSM, I effectively control for endogeneity originating from fundamental dissimilarities in observables and examine whether boutique dealmakers have superior deal-making skills relative to their larger competitors based on similar transaction portfolios. The results indicate that the excess return associated with boutique is 1.57% in all deals and 1.47% for private deals, corroborating that hiring a boutique advisor typically yields a better M&A outcome. Moreover, I find that the documented performance differential remains robust when comparing the performance of boutique advisors to that of the top 10 full-service (bulge bracket) banks only.

Additionally, I examine the longer-term impact of boutique advisors on shareholder gains by employing buy and hold abnormal return (BHAR) and calendar-time portfolio return (CTPR) analyses. Results from both measures indicate that acquiring firms hiring boutique investment banks as M&A advisors generate greater long-term value for their shareholders. Abnormal returns for 12- and 24-month post-acquisition windows aggregate to 7.2% and 14.4%, respectively.

My findings may make one wonder why do boutiques perform better than full-service banks and why in private acquisitions only? I deduce the reason from Capron and Shen (2007) who conclude that acquiring managers make informed choices in the acquisition of private targets where information asymmetry is greater.

[13] Diversifying deals have higher information asymmetry than those within related industry and, thus, require specific knowledge in the target sector. Stock offers are more difficult to negotiate than cash deals and are negatively associated with shareholder returns in public deals.

For public deals in which all the information about the target firm is known, there may be little room to make difference in terms of offer price among capable financial advisors. Capron and Shen (2007) introduce two conflicting economic theories regarding information asymmetry to the M&A literature. The information economics theory (Akerlof, 1970) suggests that information asymmetry obstructs bidders from pursuing suitable targets by incurring costs to uncover the intrinsic value of the target. On the contrary, the strategic factor market theory (Makadok and Barney, 2001) views information asymmetry as an opportunity to obtain private information through which bidders can take advantage of the acquisition[14]. If a financial advisor has significant knowledge in the target industry and can identify a better target for the acquirer, the concerns suggested by the information economics theory can be resolved, and as a result, the bidder can save a great deal of search costs. Further, financial advisors take a considerably important role in offering proper due diligence and valuation by minimizing information asymmetry, thereby providing bidders better bargaining power. Boutique advisors in this regard are very resourceful as they not only are strongly sector specialized but are also frequently hired for due diligence to provide fairness opinions in public deals. This theory has been attested by Song, Wei, and Zhou (2013) who emphasize the skills and devotions of boutique advisors. They find that complex deals such as cross industry mergers and mergers with competing bids, which require greater due diligence, are more likely to involve boutique advisors, and they take longer time to complete transactions than do full-service banks to improve deal quality.

To support my argument on the skills and expertise of boutique advisors, I employ two additional proxies of information asymmetry following Graham et al. (2017) and perform propensity score matching. The first proxy is cross-industry deals in which target firms operate in different industries from acquiring firms. The second proxy is bidders without prior acquisition experience in the target industry. Similar to my findings in private deals, in both measures, bidders hiring boutique advisors outperform those hiring full-service advisors by an average of 1.37%.

[14] This theory is supported by Li and Tong (2018) who find positive correlation between bidders' announcement returns and targets' information asymmetry.

This study contributes to the literature in various important ways. First, employing a comprehensive manual classification of financial advisors, I provide new empirical evidence that boutique advisors create more value for their buyside clients than do their full-service counterparts and are more likely to be retained by their clients in future transactions. These findings challenge conventional wisdom that full-service banks' advanced capabilities and resources place them better to create value in M&A deals and offer a rational justification for the significant rise of boutique advisors' reputation and league table rankings. Second, I offer new evidence that boutique financial advisors tend to outperform full-service banks – even the top-tier ones – when leading private deals, while they also do not underperform even in more high profile, public deals. The fact that boutique advisors yield superior M&A deal outcomes in acquisitions of private targets complements the role of financial advisors in the success of M&As and has important implications for financial advisor choice when valuation uncertainty is high. Lastly, my findings yield important economic implications associated with antitrust issues within the market for financial intermediation. Previously, the advisory space has been dominated by a small number of bulge bracket banks who were largely responsible for the financial crisis. This dominance of limited number of players can inhibit competition and a free market economy. The emergence of boutique firms, therefore, is meaningful in that it can promote healthy competition and potentially enhance the overall quality of advisory services.

The rest of the paper is structured as follows. Section 2.2 presents literature review related to financial advisors in M&A. Section 2.3 analyses market share of boutique investment banks. Section 2.4 illustrates data collection and descriptive statistics. Section 2.5 reports empirical analysis. Section 2.6 provides additional robustness tests, and Section 2.7 concludes the study.

2.2 Literature Review

It is an intuitive supposition that the quality of service determines advisors' reputation and their future market share. However, earlier studies do not seem to corroborate this intuition. The controversy related to advisor reputation and quality began with the expensive fee investment bankers used to charge for M&A deal-making in early 1990s. McLaughlin (1990) cautions that the contingency-based fee contracts upon deal completion can undermine value creation by promoting conflicts of interest between advisors and clients. Advisors under this contract can complete mergers just for the sake of receiving fees, without putting their best efforts to create value for the acquirer. Consistent with this conjecture, McLaughlin (1992) discovers later that reputable advisors do not necessarily improve deal quality considering their clients pay similar deal premia to those of non-top-tier clients.

Rationally, skilled financial advisors should be able to lower the premium by reducing information asymmetry on the target firm and increasing negotiation power for their acquirer clients. High premium means more of the value creation in merger is accrued to the target firm than to the acquiring firm. Thus, his finding on merger premia weakens the connection between reputation of advisors and the quality of their service. McLaughlin's theory is further substantiated by Rau (2000)'s discovery that the contingent fee structure allows investment banks to focus more on completing deals than improving deal quality. He observes that reputation of investment banks estimated by their market share is positively associated with both contingent fee payments and deal completion rate but is negatively related to acquirers' post-acquisition performance in tender offers.

Like McLaughlin (1992), a series of similar studies (Servaes and Zenner, 1996; Rau, 2000; Hunter and Jagtiani, 2003; Ismail, 2010; Bao and Edmans, 2011) continue to disapprove this intuitive correlation between reputation and quality. Servaes and Zenner (1996) show that bidder returns do not change based on advisor reputation. Hunter and Jagtiani (2003) find that the use of top-tier advisor negatively affects shareholder returns for both acquirers and targets. Bao and Edmans (2011) assert that investment banks in general have positive contribution to deal outcome. However, they identify large variations in average CARs among

top-tier investment banks and conclude that this variation induces negative association between average bidder returns and advisor market share. They further demonstrate that bulge bracket advisors associated with lower average CARs tend to take higher proportion of value-destructive deals than small deals with positive returns.

As imaginable by constant divergence of top-tier banks' reputation from their deal quality, empirical efforts have been continuously made to unearth why reputable advisors do not improve deal outcome. Eventually, a study finds that advisor reputation matters in acquisition performance, but only in public deals (Golubov et al., 2012). Golubov et al. report that bidders advised by top-tier banks exhibit superior abnormal returns during acquisition announcements. They link the outperformance of top-tier deals to the advisors' ability to identify and accrue greater synergies for their clients, justifying the premium advisory fee. Yet, they do not clearly elucidate as to why top-tier-banks make no difference in private deals and how a firm's public status justifies the significance of any mergers. In general, private targets are traded at discounts due to information asymmetry, thereby acquirers can capture more synergies than they do in public deals. Synergies on the bidding firm can be magnified, especially when the financial advisor has greater expertise in the target industry. For all things considered, private acquisition is an important indicator of advisor skill as private targets are harder to discover and value than public targets. Moreover, the number of private deals as a proportion of overall M&A volume is too high to be taken lightly.

While earlier studies have consistently failed to link the ongoing market dominance by top-tier banks with their advisory quality, Sibilkov and McConnell (2014) identify technical issues in measuring reputation and market share of investment banks. Specifically, earlier studies use a time-invariant methodology to define top-tier banks. For example, Golubov et al. (2012) define top-eight banks based on total deal value over the entire sample period as top-tier advisors without applying year-on-year change in ranking. This causes imperfect correlation between advisors' prior performance and their market share in following periods. Another measurement issue comes from the use of static market share in regression

analysis. Sibilkov and McConnell (2014) re-examine Rau (2000) and Bao and Edmans (2011)'s model using change in advisory market share instead. Their methodology corrects both measurement issues originated from time-invariant definition of advisor reputation and market share and succeed in deriving different outcomes from previous studies. They find that prior client performance determines advisors' future deal flows as well as their market share and finally corroborates the unresolved puzzle for a long-time.

Apart from advisor quality, questions still remain on how else market share is determined and what other fundamental roles do financial advisors play. Bao and Edmans (2011) and Sibilkov and McConnell (2014) remind that prior acquisition performance is not the only factor considered in hiring decision of a financial advisor. Depending on the deal and acquirer characteristics, different types of advisors are hired, which is why the advisory market is not dominated by a single best advisor. For example, an experienced acquirer with enough capital to purchase a target may hire an independent advisor specifically for a target recommendation and valuation advice, whereas an inexperienced bidder without funding would hire a full-service advisor who can provide multiple pertinent services as well as capital. For this reason, recent studies started changing their focus from the quality of top-tier banks more toward the choice of financial advisor.

The most researched topic is the relation between deal complexity defined by information asymmetry and industry expertise. The primary role of buy-side advisor is to reduce information asymmetry residing between a buyer and a seller (Servaes and Zenner, 1996). Servaes and Zenner find that the probability of hiring an advisor increases when the target operates businesses across diverse industries. Diversified firms have greater information asymmetry on divisional cash flows when they have operations outside the bidder's industry, hence, M&A advisors' expertise on the target industry is essential. Based on the most active fifty advisors by transaction value, Chang et al. (2016) document that the probability of hiring advisors increases with their expertise in the merger counterparty's industry.

Song et al. (2013) study the choice between boutique and full-service financial advisor. They explain full-service banks mainly advise larger firms and firms with

which they have prior lending relationship. On the other hand, boutique investment banks advise smaller but more complex deals such as cross-industry acquisitions, competing bids, and stock deals due to their sector specialized nature and help bidders pay lower premium.

Graham et al. (2017) compare transactions led by industry specialists with those of non-specialist advisors and find that acquirers hiring specialists in the target industry receive higher announcement valuation. This value creation is enabled by the specialized advisors' ability to negotiate better price for their bidder clients by resolving information asymmetry on the target firm. Graham et al. adds that due to the significance of sector knowledge in deal-making, more value is created by small/medium-sized specialist advisors than by bulge bracket banks.

As observed in these studies, the literature on the choice of M&A advisor presents more persistent findings corresponding to the conventional role of financial advisor: advisors can identify better merger opportunities and reduce transaction costs using their expertise (Bowers and Miller, 1990; Servaes and Zenner, 1996). I take those insights into measuring what kind of role boutique advisors play in the corporate takeover market outside the traditional measure of advisor-tier system and how they create value for their buyside clients.

2.3 Boutique Financial Advisors' Market Share

In this section, I examine how the market share of boutique advisors has evolved over time. Figure 2. 1 shows the change in market share of boutique vs full-service advisors by the number of deals, while Figure 2. 2 provides the same trend based on deal value.[15] Both figures show that boutiques' market share has discernibly increased over time, especially post the 2008 financial crisis.

The perceived trend in advisory market share is complex and multi-faceted that various attributes must be considered from different angles. I suggest largely three

[15] The trendline in this figure is generated based on moving average to present a pattern more clearly by smoothing out fluctuations.

factors to explain the change in advisory market share in M&A: regulation, economy, and competition.

First, the role of regulation. The late 1990s were marked by a wave of mega M&A deals consummated by full-service banks and especially bulge brackets. This trend was underpinned by *Section 20 Subsidiaries*, enacted in 1997, which effectively allowed commercial banks increase their investment banking activity by directly acquiring investment banks, further blurring the line of separation between commercial and investment banks.[16] Further, in 1999, the repeal of the Glass-Steagall Act (Gramm-Leach-Bliley Act) propagated more merger activity by full-service and bulge bracket banks, up to 2007, prior to the financial crisis.[17] During this period, large banks benefitted from large deals due to their financing capacity and capabilities. Boutique investment banks' M&A market share began to steadily increase since 2007, fuelled, among other things, by regulatory hurdles for full-service banks as well as negative investor perceptions towards large banks in the aftermath of the financial crisis. Accordingly, The Dodd-Frank Act (DFA) enacted in 2010 forced full-service banks to revert to a more traditional business model by separating their commercial banking role from investment banking operations (Balasubramnian and Cyree, 2014). The regulatory framework was more lenient toward independent investment banks, which allowed them to reinvent and repurpose themselves.

Second, in the most recent merger wave, multi-billion mega deals became less prevalent relative to the waves of the 90s and 00s, with smaller business combinations thriving, providing a fruitful building block for boutique advisors to grow their market share. In addition, the financing capabilities of full-service banks,

[16] Cornett, Ors, and Tehranian (2002) estimate the effect of Section 20 subsidiaries on the performance of commercial banks and report enhanced operating cash flows due to investment banking activities. Bhargava and Fraser (1998) measure abnormal returns of large commercial banks around the Federal Reserve's conferral of expanded underwriting powers and find negative shareholder wealth effects as well as increase in idiosyncratic risk.

[17] Crawford (2011) analyzes the impact of the repeal of Glass-Steagall Act on enlarged investment banking role within commercial banks and how this played a role in the cause of financial crisis. Cyree (2000) documents that the repeal of the Glass-Steagall Act (which granted powers to large commercial banks by allowing them to increase their investment banking activities) widened the segregation between large commercial banks and small regional banks.

one of their key competitive advantages, can become less important with low interest rates, growing corporate cash reserves, and stock-for-stock more widely accepted and utilised as a financing method for acquisitions.[18]

The distinct qualities and skills that boutique banks bring to the market as well as the independent nature of their advice are also vital drivers for the boost to their market share. Due to their independence, conflicts of interest are less of a problem with boutiques, which are typically founded by former reputable bulge bracket bankers, with expertise and established business relationships in specific sectors (e.g. technology, retail, finance, and healthcare), or niche markets (e.g. small to medium size mergers, business valuation, fairness opinion) where their boutiques then specialise.

2.4 Data Collection and Descriptive Statistics

2.4.1 Sample Criteria

M&A transaction data is collected from the Securities Data Corporation (SDC) Mergers and Acquisitions Database based on the following criteria. The sample includes acquisitions announced between January 1, 2000, and December 31, 2016. Acquirers and targets are US domestic firms. Acquirers are listed firms while targets are public, private, or subsidiary companies. I exclude repurchases, recapitalisations, self-tenders, exchange offers, acquisitions of remaining interest, minority stake purchases, and intra-corporate restructurings. Acquirers own less than 10% of the target firm's shares before the deal announcement and seek to own more than 50% post-completion. Both completed and withdrawn deals with a transaction value of at least $1 million are included. I also require that acquirers have non-missing data on their buyside financial advisor(s). Acquirers are listed on

[18] See Deloitte, July 31, 2018, "Battle for dominance in the M&A advisory business Bulge-brackets vs. the boutiques"

NYSE, AMEX, or NASDAQ with share codes 10 and 11, and have data on CRSP and Compustat. Imposing the above sample criteria results in a sample of 5,010 M&A deals. I further exclude 934 deals where the financial advisors of the acquiring firm include both boutique and full-service banks from all regression analyses, since allocating such deals to both sub-sets could produce biased results, especially because there is no information on the role each advisor plays in the M&A process.

2.4.2 Advisor Classification

Since there is no commercially available, curated database distinguishing between full-service and boutique advisors, and given the inherent complexities in defining a boutique investment bank, I follow a manual classification approach to classify boutique advisors and adopt a dual classification plan to improve accuracy. Primarily, I search for whether an individual investment bank is explicitly described as "boutique" or "full-service" through company websites, S&P Global Market Intelligence from Bloomberg's private company information section, news media, SEC filings, and past/local periodicals around the time of deal announcements. Secondly, I identify parameters such as an investment bank's focus and expertise on M&A advisory service, regional focus, industry specialisation, and the asset value of their corporate clients within these sources to ensure that they retain characteristics of typical boutique advisors.[19] Moreover, I apply the advanced definition of "boutique investment bank" as advisory-service-only institutions is too strict for today's standard and could potentially eliminate an actual boutique firm from its category. Despite the fact that some boutique advisors also offer additional services such as wealth management, trading, investment, and research, this should not automatically disqualify them from being classified as boutique as

[19] Typically, boutique investment banks serve small to middle-market firms with a mean asset value of $250 to $500 million, although there are boutiques that also serve large cap clients. They are independent advisory firms focusing on corporate advisory such as mergers and acquisitions, divestiture, valuation, and restructuring. Most importantly, they focus on certain regions and are mostly specialized in a few industries.

long as corporate financial advisory is their core business and these products are largely independent. On the contrary, a firm providing both commercial and corporate advisory services, where M&A advisory is just part of their investment banking businesses, would be classified as a full-service bank. Collectively, this classification method allowed me to accurately identify larger number of boutique advisors and correct earlier misclassifications in Song et al. (2013). [20]

I provide below some excerpts for Bigelow LLC, which is classified as a boutique advisor based on this dual classification plan.

"*Bigelow LLC is an independently owned mergers & acquisitions advisory boutique focused on entrepreneur Owner-Managers. (Bigelow Website)*"[21]

"*The Bigelow Company LLC is an investment banking firm that provides financial advisory services to middle-market entrepreneurial companies in North America. It focuses on transactions between $25 million to $300 million. The firm provides restructuring, recapitalization, mergers and acquisition, divestiture, management consulting, debt and equity financing, and valuation advisory services. It focuses on aerospace, manufacturing, automotive, building materials, business services, commercial printing, computer hardware, distribution, education, electronics, environmental, industrial tools, metals, materials, publishing, specialty food, software, and telecommunications industries. (S&P Global Market Intelligence)*"[22]

The first source describes Bigelow as an M&A advisory boutique. The second source highlights characteristics of a typical boutique advisor and specifically the

[20] For reference, Song et al. (2013) have a sample of 141 boutique advisors and 152 full-service advisors. Of this sample, they misclassified 24 boutique advisors as full-service firms. I corrected for such misclassifications in my study. For robustness, when I define 339 deals belonging to the 24 advisors as full-service deals following Song et al.'s classification and estimate the regression model (OLS and PSM), the results remain qualitatively similar, and acquirers hiring boutique advisors significantly outperform those hiring full-service advisors in acquisition of all and private target deals.

[21] See "https:// bigelowllc.com."

[22] See "Company Overview of The Bigelow Company LLC" provided by S&P Global Market Intelligence.

average size of its corporate clients, types of services provided, and specific sectors of expertise. Following this comprehensive classification approach, I identify 462 boutique advisors and 154 full-service banks between 2000 and 2016.[23] However, since I exclude 934 mixed advisor deals from the regression analysis, the total number of advisors remaining include 443 boutique advisors and 147 full-service banks.

2.4.3 Descriptive Summary Statistics

Table 2. 1 exhibits summary statistics of (1) all advisor sample and of (2) boutique and (3) full-service advisor subsamples, respectively. I generate control variables which affect acquirer returns as well as the choice of financial advisor based on bidder and deal characteristics. The variable definitions are provided in Appendix *A*.

First, I discuss bidder characteristics. Moeller, Schlingemann, and Stulz (2004) demonstrate strong size effects on acquirer announcement returns, documenting better returns for smaller acquirers. *Bidder size* is also one of the key determinants of advisor choice in Song et al. (2013). Accordingly, I control for bidder size in my regression analysis. The overall mean (median) bidder size in my sample is $12,004.4 million ($1,478.7 million). However, consistent with Song et al., boutique investment banks advise on average much smaller companies ($6,480.8 million) than do full-service banks ($15,241.0 million).

The *book-to-market* ratio is an important indicator of a firm's equity value and growth prospects. Growth firms, in general, have a low book-to-market ratio. Higher market value of growth stocks reflects their expected outperformance in the

[23] The list of advisor classification can be provided upon request. I note that Song et al. (2013) classify advisors using news sources and the Dow Jones Factiva database while they apply a stricter classification where boutique advisors need to be specialized in certain industries and provide M&A advisory services only, rather than other services such as sales, trading, underwriting, research, and lending. However, more recently, boutique investment banks started offering services beyond corporate advisory, with their divisions acting independently from each other. (See Thomson Reuters, December 14, 2016, "As good as it gets? Boutique banks look to grow beyond M&A") I thank Lei Zhou for providing the list of financial advisor classification for comparison purposes.

future, but it also indicates overvaluation. In mergers, bidders of growth firms receive negative market reaction around deal announcements as they frequently use overvalued stocks as a method of payment (Martin, 1996; Rau and Vermaelen, 1998). Conversely, value firms with a high book-to-market ratio are associated with greater announcement returns since their equity is undervalued (Lang, Stulz, and Walkling, 1989). My sample shows that boutique investment banks advise more number of value firms than do full-service banks. The mean (median) book-to-market ratio of boutique clients is 0.551(0.501) while that of full-service clients is 0.463 (0.386).

Run-up is an estimation of pre-announcement returns potentially driven by the leakage of information on the forthcoming merger and is often used as a measure of insider trading (Keown and Pinkerton, 1981). Acquirers' pre-announcement stock price run-up is known to be negatively associated with bidder announcement returns (Masulis, Wang, and Xie, 2007) as inside-traders may capture part of the gains before the market is informed about the deal. My mean (median) bidder run-up is -0.014 (-0.000) and is comparable between boutique and full-service deals.

Moeller, Schlingemann, and Stulz (2007) denote that high price *volatility* yields lower announcement returns for acquirers, especially those with stock transactions, as the fluctuating stock price weakens their negotiation power. Given the difficulty of valuation, bidders' stock price volatility can also inform about the advisor's skill. Overall, my sample displays mean (median) bidder stock price volatility of 0.027 (0.021), which is statistically indifferent between boutique and full-service clients.

Conventionally, as a measure of financial distress, *leverage* has negative implications on acquirer returns (George and Hwang, 2010). However, empirical studies dominantly find that highly levered firms are associated with positive announcement returns; while firms with excess cash are more likely to pursue a merger to build an empire, highly levered firms would undertake an acquisition only when merger synergies are greater than the risk of financial distress (see e.g. Lang, Stulz, and Walkling, 1991). Meanwhile, leverage is also closely related to advisor choice decision because it indicates acquirers' funding capacity. Higly

levered firms are more likely to hire full-service firms, whereas those with lower leverage may not require their financial advisor to additionally arrange capital. Consistent with my conjecture, my sample shows that full-service clients are more levered than boutique clients. The mean (median) leverage ratio of full-service clients is 0.226 (0.197) and that of boutique clients is 0.157 (0.109).

Similar to leverage, *liquidity* of acquirer is related to acquisition funding capacity[24]. Liquid acquirers are less likely to necessitate the level of funding that full-service banks are able to offer, meaning boutique clients are more likely to be liquid than full-service clients. My sample statistics confirm this postulation and show that the mean (median) liquidity ratio of boutique clients is 1.274 (0.599) while that of full-service clients is 0.956 (0.436).

The next cluster of variables describe deal characteristics. *Deal value*, which represents target size, is negatively associated with announcement returns; the larger the target, the more the destruction of acquirer shareholder value due to the lengthy and costly process of post-acquisition integration (Alexandridis et al., 2013). My sample statistics show that bidders are more likely to hire a full-service bank as deal size gets larger. The mean (median) deal value of boutique advisors is $724.5 (95.1) million while that of full-service advisors is $2,126.4 (430.4) million.

The target-bidder *relative size* has been known to be positively related to bidder returns, especially for successful mergers (Asquith, Bruner, and Mullins, 1983), but can have a negative effect on bidder announcement returns in public deals (Fuller et al., 2002). The mean (median) relative size is 0.436 (0.180) and is similar between boutique deals and full-service deals.

A firm's public or private status in association with the method of payment has significant impact on bidder announcement returns. Officer, Poulsen, and Stegemoller (2009) imply that stock consideration is better for private-target deals where information asymmetry is greater. By offering stocks, bidders can avoid overpayment and retain valuable target shareholders (Harford, Humphery-Jenner,

[24] Liquidity is also studied in the context of managerial hubris in M&A literature. Bidders with large cash reserves may pursue value-destroying acquisitions (Harford, 1999) as they are more susceptible to managerial hubris. This is further substantiated by the association of cash-rich bidders with more diversifying deals and less competing bids.

and Powell, 2012). As mentioned in the analysis of the book-to-market ratio, stock financing is also preferred by growth firms because the exchange ratio is favourable to bidders when they use their inflated price to purchase the target. Contrarily, returns in public deals are positively associated with cash offer, but are negatively related to stock offer (Chang, 1998). Martin (1996) also suggests that bidders with large cash reserves or a block-holding in the target firm prefer to use cash transaction. Accordingly, I include both the target firm's public status and the payment method in my analysis.

Public deals and *private deals* comprise 39.9% and 60.1% of my sample, respectively. As expected, boutique investment banks focus more on private deals than do full-service banks. The mean rate of public deals that boutique (full-service) advisors take is 37.8% (41.1%) while that of private deals is 62.2% (58.9%). As for the method of payment, *all cash deals*, *all stock deals*, and *mix payment* deals comprise 31.4%, 18.2%, and 50.3% of my sample, respectively. Song et al. (2013) highlight the skills of boutique advisors based on their frequent involvement in stock deals because these are harder to negotiate than cash deals and tend to negatively affect deal outcomes in public deals. Consistent with their finding, my sample indicates that boutique advisors take a larger proportion of stock deals than full-service banks do. The mean proportion of all stock deals that boutique (full-service) advisors take is 20.7% (16.8%) while that combined with mixed payments involving stock is 73.9% (65.4%).

Prior studies have found conflicting evidence on the announcement returns of *diversifying mergers*. Proposed motives for cross-industry mergers vary from managerial hubris to lower risk of default, which can be achieved through diversified revenue streams (Datta, Pinches, and Narayanan, 1992). For my study, diversifying deals are useful events in determining whether advisor expertise is beneficial to bidders, since acquiring an unrelated company requires critical knowledge in the target sector. In my sample, 33.9% are diversifying deals, and full-service firms advise slightly higher proportion of diversifying mergers than boutique banks do.

Most *hostile takeovers* occur within related industries (Bhagat, Shleifer, and Vishny, 1990). Firms engaging in hostile deals typically pursue cost efficiencies and seek to increase market power but are highly susceptible to overpayment due to target firms' resistance (Bhagat et al., 1990). Thus, hostile deals have higher failure rates than friendly deals (Malmendier, Opp, and Saidi, 2016) and tend to have a negative effect on CARs. The sample has only 1.6% of hostile deals, advised more often by full-service banks.

Under a general perception that skilled acquirers takeover poorly managed targets, successful *tender offers* increase shareholder returns of both bidding and target firms (Dodd and Ruback, 1977; Jarrell and Poulsen; 1989; Lang, Walkling, and Stulz, 1989). Tender offers represent 5.6% of my sample, a relatively larger proportion of which are advised by full-service firms.

In the last column of Table 2. 1, I display mean-difference tests (T-test) for each variable between the boutique and full-service subsamples. Except for run-up, volatility, relative size, and premium, all variables exhibit significant difference in means. This indicates that boutique and full-service intermediaries advise clients of seemingly different profiles. I account for the potential effects of these differences on advisor selection by employing matching techniques in my empirical analysis.

2.5 Empirical Analysis

2.5.1 OLS Regression for Bidder CARs

Most studies estimate cumulative abnormal returns (CARs) as a proxy for advisor quality[25] and find top-tier advisors are associated with greater acquirer CARs (Bowers and Miller, 1990; Kale et al., 2003; Walter et al., 2008; and Golubov et al., 2012). Yet, boutique advisors' contribution on merger wealth gains has not been documented. Accordingly, I investigate the wealth effect of boutique advisors on

[25] See Renneboog and Vansteenkiste (2019) for a review of M&A event studies.

acquirer performance by 3-day bidder CARs around the announcement date in multivariate OLS regression analysis. The key independent variable in the model is *boutique*, which takes the value of 1 for boutique deals and 0 for full-service deals. I also control for acquiring firm and deal characteristics. Additionally, I control for *year fixed effects* and *industry fixed effects*. For industry fixed effects, I use Fama and French's 12 industry classification method[26]. Standard errors are adjusted for heteroscedasticity and bidder clustering as in Golubov et al. (2012). All control variables are winsorized at 1%.

Table 2. 2 displays the OLS regression results. In specification (1) [27], I find a positive and statistically significant coefficient for the boutique variable. Specifically, acquirers employing boutique investment banks outperform those employing full-service banks by 0.8% (at the 5% level). This excess return translates as an upside of $96 million for the average acquirer[28]. This preliminary analysis suggests that the contribution of boutique advisors to shareholder value is superior to that of full-service banks.

However, the choice between boutique and full-service advisors may have different performance implications for deals with public and private targets. Target public status affects various deal aspects, and advisors with the appropriate skillset could prove valuable to acquirer shareholders. For instance, private deals are subject to higher information asymmetry between acquirer and target firms (Officer et al., 2009), mainly due to limitations on publicly available information for the target's operations, finances, and prospects. Advisors with the ability to mitigate information asymmetry costs by superior knowledge in, e.g., target identification, industry specialisation, and business environment, could contribute to wealth creation for acquirer shareholders.[29] Boutique advisors are frequently specialised in

[26] Eugene Fama and Kenneth French (1997) "Industry Cost of Equity," Journal of Financial Economics 43. For industry classification, I use target firms' SIC code.
[27] I have a smaller number of observations than in the sample statistics because I exclude deals that are advised by both boutique and full-service banks (934 observations) to produce clean results.
[28] The excess return is computed as the average market value of bidders ($12 billion) in my sample times excess CAR (0.8%) of the boutique coefficient in specification (1).
[29] The skillsets mentioned stem from boutique investment banks' regional focus and industry specialization. Some boutiques such as Bigelow LLC focuses on advising private firms only within certain sectors as highlighted in advisor classification while most firms are regional boutiques.

business and geographical segments, therefore, they are better positioned to mitigate information asymmetry for acquirer shareholders, especially for private deals. On the contrary, public deals may require a wider service offering beyond traditional corporate advisory such as regulatory and shareholder approval, or financing arrangements. Hence, I perform the analysis separately for public and private deals as in models (2) and (3), respectively, to further investigate the context in which deals boutique advisors create significant value.[30]

The results suggest that boutique and full-service advisors have indistinguishable contribution to public deal performance since the boutique coefficient is statistically insignificant in model (2). However, boutique advisors generate significantly greater returns (at the 1% level) in private deals with an average of 1.4% higher CARs than do full-service banks, as it is displayed in model (3). The implied shareholder wealth creation associated with boutique advisors in private deals is equivalent to $121.4 million in excess of full-service deals.[31] This performance differential is economically significant, especially after considering private deals are smaller than public deals on average. Boutique banks appear to have unique abilities in mitigating information asymmetry, which is major concern in private deals. These findings partially contradict the inferences of Golubov et al. (2012) who attribute the superior performance of top-tier advisors in public deals to resource allocation discrepancies, since public deals have greater impact on their reputational capital. My results do not support this reasoning. In my study, boutique advisors achieve similar performance in public deals and superior performance in private deals against full-service advisors. In untabulated analysis, I find that the performance differential persists after accounting for advisor classification in the top 5, 8, or 10 bulge bracket banks. My analysis so far indicates that involvement of boutique advisors in acquisitions result in superior performance for acquirer shareholders.

[30] In case of Golubov et al. (2012), public and private deals are separately evaluated to prove top-tier advisors' disproportionate focus on and outperformance in public deals.

[31] The mean dollar gain in private acquisitions is estimated as the average market value of bidders ($8,671.23 million) acquiring private targets multiplied by excess CAR (1.4%) which is the boutique coefficient in specification (3).

Consistent with the prior literature, size effect is strong and has a negative effect on bidder CARs, but only in public deals.[32] Other variables negatively affecting bidder returns include the book-to-market ratio, public deals, all stock deals, and diversifying deals. Conversely, run-up and leverage are significantly and positively associated with bidder CARs, implying no impact of insider trading leading to the merger announcements, as well as a positive influence of creditor monitoring on corporate takeover activity.

2.5.2 Sample Selection Bias and Causal Inference

The OLS regression analysis suggests that boutique advisors contribute positively to acquirer shareholder performance. However, this methodology may produce precarious inferences. As earlier studies have shown, the analysis using the OLS estimator can suffer from *sample selection bias* (Roy, 1951 and Heckman, 1979). Explicitly, the *boutique* coefficient estimated in Table 2.2 could misrepresent the impact of boutique advisors on acquisition performance if the sample used in the analysis is non-random. Furthermore, the analysis may suffer from *causal inference* (Heckman, 1989), which refers to my inability to observe the deal outcome had a firm hired a full-service advisor instead. On an additional note, Rosenbaum and Rubin (1983) suggest that direct comparisons between two treatment groups may be misleading in nonrandomized experiments as the distribution of characteristics may differ systematically between treatment and control groups.

I conduct additional analysis in order to test whether my inferences change after accounting for the aforementioned issues. Tucker (2010) recommends two methodologies related to my issues. First, she suggests Heckman's Inverse Mills Ratio (IMR) for selection bias caused by unobservable factors, i.e., omitted variable bias. Second, she recommends Propensity Score Matching (PSM) for the treatment of selection bias that can be explained by observable factors. In both methods, I first estimate the advisor selection model and then, compare deal performance by

[32] *Bidder size* is the log of bidder market value four weeks prior to the announcement.

generating mean difference in excess returns between boutique deals and full-service deals. Nevertheless, the two methodologies follow different procedures. The IMR process entails the estimation of lambda, an omitted variable in the selection process, that is included in the second stage regression. In the PSM process, I match deals from the treatment group, i.e., boutique deals, with deals from the control group, i.e., full-service deals, based on the *propensity score* calculated during the first-stage regression. Then, I run the second-stage regressions and produce a performance comparison using only matched observations. Both techniques tackle issues arising from selection bias and can augment my analysis.

I incorporate both techniques to my analysis because sample selection can be driven by both observable and unobservable bias. First, I conduct the IMR analysis in order to ensure that my results are not driven by the omitted variable bias that can simultaneously affect both deal performance and the decision to hire a boutique advisor, as it has been suggested by previous studies (see e.g., Kale, Kini, and Ryan, 2003; Chang, Shekhar, Tam, and Yao; 2016). Subsequently, I run the PSM analysis in order to ensure that the result in the main regressions is not driven by group differences in acquirer and deal characteristics between boutique and full-service deals. A definitive, supportive outcome in both analyses will ensure that my results hold even after accounting for selection bias. I discuss the results on IMR and PSM in the next two sections of the paper.

2.5.3 Advisor Choice and Heckman's Two-Step Regression

To test whether there is an omitted variable bias, I perform Heckman's two-step regression analysis following Golubov et al. (2012). The first stage model is estimated using a probit regression where the dependent variable takes the value of 1 if the advisor is a boutique firm and 0 otherwise. In this selection stage, I use the same set of control variables as in my OLS estimation, excluding the *tender offers* variable which does not affect the advisor choice. Additionally, I include the *prior advisor* variable as an instrument, which indicates whether the investment bank has

advised the acquirer in the past five years. This variable should influence advisor selection, but not the outcome of the announcement returns.

$$Pr\left(choice\ of\ boutique\ advisor_{i,t} = 1\right) = \Phi\left[\alpha + \beta\ prior\ advisor_{i,t} + \gamma\ control\ variables_{i,t} + \varepsilon_{i,t}\right], \quad (1)$$

The results of the probit regression analyses are reported in Table 2. 3. The prior advisor coefficient is significantly and positively correlated with the choice of boutique advisor across all model specifications. Thus, boutique financial advisors appear more likely to be retained by acquirers in their future deals than full-service banks do. This is an intriguing result since it implies that acquirers are in general more satisfied with the advisory quality of boutique banks. This might also suggest that independence of financial advisory from conflicts of interest is an important factor in advisor switching decisions. For instance, studies document that full-service banks who provide both lending and corporate advisory services are prone to conflict of interest, which prompts acquirers to switch their financial advisors (Allen, Jagtiani, Peristiani, and Saunders, 2004).

The probability of selecting boutique advisors increases further with *stock offers* in the public subsample model, and *diversifying deals*. Song et al. (2013) suggest that these deal types require higher advisor skills as both are related to greater information asymmetry costs. For instance, stock deals involving public targets are known to entail added complexity during negotiations and are also linked to negative announcement returns due to fears of overpayment (Chang, 1998). Hence, the positive effects of all-stock and diversifying deals on boutique selection suggest that the latter may have knowledge and expertise that could be valuable in deals with higher information opacity.

On the contrary, *bidder size*, *relative size*, and *leverage* are negatively related to the choice of boutique advisors. Boutique investment banks are less likely to be hired when the size of the acquirer or target increases and when financing burden can be a focal issue in designing deal consideration. These findings are, in general, consistent with Song et al. (2013)'s transaction scale and advisor skill hypotheses.

They argue that firms prefer full-service banks as the scale of a transaction becomes larger, but acquirers are more likely to hire boutique advisors as deal complexity increases.

In the second stage OLS regression, I include the *inverse mills ratio* (IMR) obtained from the probit model to examine whether unobservable factor bias drives deal outcomes.

$$bidder\ CAR_{i,t} = \alpha + \gamma\ control\ variables_{i,t} + mills\ ratio_{i,t} + \varepsilon_{i,t}, \quad (2)$$

If my results were affected by omitted variable bias, the IMR coefficient would be statistically significant. However, IMR coefficients are insignificant across all model specifications, implying there are no unobservable characteristics associated with both the choice of boutique advisors and bidder CARs. Thus, I reiterate initial findings from the main OLS analysis about the positive contribution of boutique advisors to deal outcomes.

2.5.4 Propensity Score Matching (PSM)

The summary statistics exhibit material differences on acquirer and deal characteristics between the boutique and full-service groups. In order to account for inter-group heterogeneity when comparing the performance, I repeat my main analysis after matching boutique deals with similar full-service deals. I follow the Propensity Score Matching method considering its wide scope and flexible inclusion of matching factors.

Step 1 Obtain propensity scores (the probability of receiving treatment[33]) using a logit regression estimation with a set of x covariates (bidder and deal characteristics) that influence the choice of advisor.

$$p(x) = prob(d = 1|x) = E(d|x), \quad (3)$$

[33] The probability of receiving treatment in my model is the probability of a boutique advisor to be selected by an acquirer.

where $p(x)$ is a propensity score, d (dependent variable) is the boutique dummy, and x is a set of control variables which determine the advisor choice.

Step 2 Match deals based on a similar propensity score between the treated (boutique advisors) and control group (full-service advisors), using different matching methods - Nearest Neighbour Matching (one-to-one and 5 nearest) and Gaussian Kernel Matching – to validate consistency of the results throughout different matching methods.

Step 3 Measure the average treatment effects by comparing the deal outcome between the treated, $Y_i(1)$ and of the treated, had they not been treated, $Y_i(0)$ as below[34]:

$$\mathrm{ATT} = \mathrm{E}(\Delta|\mathrm{d}=1) = \mathrm{E}(Y(1)|\mathrm{d}=1) - \mathrm{E}(Y(0)|\mathrm{d}=1), \qquad (4)$$

Throughout the estimation, I apply common support restrictions which perform matching only based on the common range of propensity scores since a range outside the common support will not provide very good matches.

This treatment methodology allows unbiased use of the selected sample and estimation of the outcome at the population level. Table 2. 4 presents the PSM results. Panel A is a logit regression model on the choice of boutique over full-service banks. Panel B summarizes the treatment effects on bidder CARs. In the analysis for the aggregate sample, acquirers using boutique advisors are associated with significantly higher returns (at the 1% level). Moreover, the excess returns in the PSM analysis are even greater than in the original analysis when I compared all deals without matching, meaning there is a downward bias in the OLS model, which underestimates boutiques' economic contribution. According to one-to-one nearest neighbour matching, acquirers experience an average of 2% higher CAR when hiring boutiques over full-service banks. In addition, similar to my findings from the OLS analysis, bidder CARs do not differ in public deals, but in private

[34] $Y_i(1)$ is boutique CARs. $Y_i(0)$ is counterfactual which is unobservable because it has not happened and should be estimated using the outcome of matched full-service banks (full-service CARs).

acquisitions, boutique advisors improve shareholder returns by an average of 1.47%.[35]

2.5.5 Long-term Abnormal Returns

The analysis on acquirer announcement CARs points to superior performance for deals involving boutique advisors. However, announcement CARs reflect investor expectations on deal performance at the time of public disclosure, while the deal's actual impact on firm performance may take years to materialise. In order to identify the long-term implications of advisor selection, I look into acquirer long-run performance. I employ two methodologies in estimating long-run returns: buy-and-hold abnormal return (BHAR) and calendar-time portfolio regression (CTPR).

In estimating BHAR, the literature documents three approaches that are commonly employed for a benchmark: i) reference portfolio approach (Kothari and Warner, 1997), ii) the three-factor asset pricing model (Fama and French, 1993), and iii) the control firm approach (Barber and Lyon, 1997). The use of reference portfolios, such as CRSP equal- or value-weighted market index, results in test statistics that are misspecified due to *new listing bias*[36], *portfolio rebalancing bias*[37], and *skewness bias*[38]. Considering the three-factor model which includes four parameters (risk-free rate as well as market, size, and book-to-market factors) requires at least five observations, it is subject to a *survivor bias*. It also relies on a strong assumption that the three factors are stable for the estimated long-term period. I use the control firm approach following Barber and Lyon (1997) since it corrects for these biases residing in other approaches and yields well-specified test statistics. In this approach, returns of an acquiring firm are compounded over an estimation period and then are adjusted by compounded returns of a matching benchmark

[35] This is based on the average of returns from all three matching methods.
[36] While event firms have a long period of returns followed by the event date, the benchmark index often includes newly listed firms with stock prices available sometime after the event month.
[37] Market indices are frequently rebalanced by including or excluding different stocks, but sample firms are not rebalanced.
[38] Long-run abnormal returns are subject to positive skewness.

portfolio formed over the same period. The benchmarks are Fama-French's 25 equal-weighted size and book-to-market portfolios:[39]

$$BHAR_i = \prod_{t=1}^{T}[1 + R_{i,t}] - \prod_{t=1}^{T}[1 + R_{benchmark,t}], \quad (5)$$

where $R_{i,t}$ is monthly returns of a sample firm i compounded over the 12- and 24-month period beginning from the announcement date.[40] $R_{benchmark,t}$ is returns of a benchmark portfolio corresponding to the same size/book-to-market group as the sample firm i. Table 2. 5 shows the regression results generated using 12- and 24-month BHARs as dependent variables. The boutique dummy is positively and significantly related to both BHAR configurations, indicating firms hiring boutique advisors experience higher gains than those hiring full-service banks with excess returns of 4.0% over 12 months and 7.8% over 24 months. In subsequent analysis of public and private acquisitions, I observe findings similar to the announcement CAR analysis. Boutique advisors make no difference in shareholder value in public deals, but in private deals, they significantly increase acquirer returns by 7.4% over 12 months and 16.1% over 24 months. Overall, the BHAR method confirms my previous findings regarding the contribution of boutique advisors to acquirer deal performance.

The BHAR methodology provides useful insight on firm performance over and above the performance of an appropriate benchmark. Nevertheless, the BHAR measure is subject to cross-sectional correlation. In order to account for cross-sectional correlation in the event-firm returns, I also use the calendar time portfolio regression (CTPR) approach following Mitchell and Stafford (2000). For each month, the sample firms participating in the event of deal-making enter the monthly portfolio and remain for 12 or 24 months. Portfolios are rebalanced monthly with firms entering the event portfolio when a deal is announced and with other firms

[39] The use of value-weighted portfolios produces qualitatively similar results.
[40] The results are consistent when the returns are compounded beginning from the deal completion date.

exiting the portfolio when they reach the end of the 12- or 24-month periods. The monthly portfolio returns are regressed against Fama-French (1993) and Carhart (1997) factors as in the equation below:

$$R_{p(boutique),t} - R_{p(full-service),t} = \alpha_p + b_p\left(R_{m,t} - R_{f,t}\right) + s_p SMB_t + h_p HML_t + u_p UMD_t + e_{p,t}. \quad (6)$$

where $R_{p(boutique),t} - R_{p(full-service),t}$ is a zero-investment portfolio estimated by the monthly boutique portfolio returns in excess of the full-service portfolio returns, $R_{m,t} - R_{f,t}$ is the market excess return, SMB is the difference between small and large stock portfolios, HML is the difference between high and low book-to-market equity stock portfolios, and UMD is the difference between winners and losers stock portfolios. The intercept, α_p estimates boutique portfolio's monthly abnormal return. I conduct the analysis for both equal-weighted (EW) and value-weighted (VW) portfolios.

Table 2. 6 presents the results from the time-series OLS regression analysis based on equation (6). In the model using all deals and 12-month duration, the boutique portfolio exhibits positive and statistically significant alpha for the VW configuration. The superior boutique performance is also economically significant as it amounts to 0.6% per month or 7.4% in annualised terms. Consistent with the BHAR analysis, the boutique portfolio significantly outperforms the full-service portfolio for private deals in both EW and VW configurations by 0.7% and 1.0% per month, respectively, or 8.7% and 12.7% in annualised terms, respectively. The boutique deals seem to underperform full-service deals only in the public deals, EW configuration by 0.5% per month or 6.2% in annualised terms.

The results are qualitatively similar for the 24-month portfolio durations. Boutique deals significantly increase in value in both EW and VW measures with excess returns of 0.3% and 0.6% per month or 7.5% and 15.4% in biannual terms, respectively. During this period, there is no difference in public deal performance between boutique and full-service portfolios. In private acquisitions, EW measure

indicates that boutique portfolio yields excess returns of 0.6% per month or 15.4% in biannual terms.

Overall, both event study methods of BHAR and CTPR indicate that boutique deals outperform full-service deals in the long-term in "all" and "private" deal subsample. The combination of our findings in the CAR and long-run returns analyses points towards a unique benefit in hiring boutique advisors, especially in deals with high informational asymmetry, such as private deals. Thus, the policy implications for acquirer management are clear: hiring boutique advisors can lead to superior returns for shareholders, especially if the target's public status requires the expertise of niche-focused, specialised advisors.

2.6 Additional Robustness Checks

2.6.1 Information asymmetry and boutique client returns

So far, I have shown that boutique advisors generate superior wealth gains for bidding firms' shareholders in private deals, where financial advisors face more challenges in valuing a target firm than in public deals. Officer et al. (2009) emphasize that private deals have substantially greater information asymmetry than do public deals, thus, entail considerable valuation uncertainty. Capron and Shen (2007) argue that the lack of information on private targets increases search costs and the risk of misvaluation. However, information asymmetry in private deals can work in favour of acquirers with the potential to generate higher returns if they are already familiar with the target firm's industry. This is supported by acquirers' choice of private targets based on familiar industries or closer geographic proximities (Capron and Shen, 2007). Aspiring acquirers may find attractive targets in vastly different regions or industries; hence they may seek the assistance of specialised boutique banks. Boutique advisors frequently focus on specific regions, industries, and private deals. Their unique insight in opaque market niches can be

well coveted by acquirers who may not have adequate insight into the target company's region, industry, or operations.

In my study, I argue that the outperformance of boutique advisors in private acquisitions is associated with their ability to mitigate the effects of information asymmetry by applying their sector-specific expertise and regional focus. To assess this argument, I consider a partial segmentation of my sample in order to focus on deals with high information asymmetry following Graham et al. (2017). I consider two deal types. The first deal type is cross-industry vs same-industry deals, classified using the acquirer and target firms' 3-digit SIC code. The second deal type is generated based on whether the acquirer has acquisition experience in the target's industry in the last three years before the deal announcement[41]. I expect the case of cross-industry deals and deals where the acquirer has no recent experience in the target's industry to increase information asymmetry, rendering the valuation of the target company more difficult. My expectation is that the choice of boutique acquirers will be more valuable to bidder investors when information asymmetry is higher.

In order to test my hypothesis, I perform Propensity Score Matching analysis, where I match boutique with full-service advisors similar to Table 4. In Table 2. 7, I show the PSM results of the advisor selection model of cross-industry and same-industry deals. In Panel A where I exhibit the probability model of hiring a boutique advisor, following Graham et al. (2017), I include the *industry peers* variable which measures average use of boutique advisors by industry peers[42]. The use of boutique advisor by the bidder's industry peers significantly and positively affects the probability that the bidder is likely to hire a boutique advisor in cross-industry deals (at the 1% level). As for the performance of bidders hiring boutique advisors, Panel B indicates that bidders in cross-industry deals experience up to an average of 1.6% higher returns than bidders hiring full-service advisors. In contrast, the

[41] 3-digit SIC code of the current target firm is used to measure the number of deals in the target industry. If an acquirer's prior experience is zero, it is considered *without prior experience* whereas greater than zero is classified as *with prior experience*.

[42] *Industry peers* is computed as the number of boutique advisors hired by a bidder's industry peers (based on the same 3-digit SIC code) in the year prior to the announcement date over the total number of advisors employed by the same group of peers during the same period.

announcement CARs are similar between boutique and full-service deals in same-industry acquisitions. This indicates that boutique advisors offer a unique advantage to bidders in acquisitions of targets with higher information asymmetry.

The same conclusion is reiterated when considering deals with or without prior bidder experience in the target industry. Table 2. 8 shows that industry peers significantly influence the bidder's decision to hire a boutique advisor when it lacks prior acquisition experience in the target industry (at the 5% level). The results on deal outcome in Panel B are similar to cross-industry deals and confirm that bidders with lack of target-sector experience significantly outperform the full-service matched peers by up to 1.6% on average when they hire boutique advisors. Overall, the results imply that bidders pursuing deals with higher information asymmetry can benefit by hiring boutique advisors.

2.6.2 Sensitivity Analysis on CARs

Sibilkov and McConnell (2014) uses Fama-French value-weighted portfolios instead of market model to calculate CARs during the announcement period. To see whether the use of different benchmark model changes my results, I also employ the Fama-French model and Fama-French Momentum model to produce announcement returns. My results remain qualitatively the same with these variations.

2.6.3 Matching Quality Using Balance Diagnostics

The quality of matching can be assessed by comparing the similarity of baseline covariates between treated and untreated subjects: when there are no differences between the treatment and control group after matching on propensity score, the matching is considered well-balanced. Therefore, in untabulated analysis, I check the distance in marginal distributions of the x covariates by comparing the standardised bias (SB) before and after matching as suggested by Rosenbaum and Rubin (1983). While empirical studies typically suggest that the bias be less than

3% or 5% after matching, my sample displays below 3% for all covariates. The mean bias for all groups is also less than 5% after matching. However, this does not uphold the success of matching. Hence, I employ additional approaches to evaluate the matching quality. The t-test is similar to SB testing and informs on whether there are significant mean differences between the treated and untreated group for each covariate. The matched advisor groups in my sample show no significant differences in covariates after matching. Additionally, an approach by Sianesi (2004) shows drastically low pseudo R-squared for the matched sample, indicating no systematic differences in covariates between treatment and control group. Finally, the F-test on the joint significance of all covariates is rejected before matching, but it is not rejected after matching. Thus, I conclude that certain level of balancing between the treated and untreated group is achieved via the matching process. I visually present the matching quality in a box chart and density graph exhibited in Figure 2. *3*.

2.6.4 Entropy Balancing

Entropy balancing is an alternative method to PSM to preprocess data and achieve balancing from the control group prior to estimating the impact of the treatment on the outcome based on the standard regression analysis (Hainmueller, 2012; Hainmueller and Xu, 2013). While PSM can be limited in jointly balancing out all covariates included in the matching process, entropy balancing overcomes these issues by adjusting weights that satisfy constraints from a large set of covariates and improving the overall covariate balance. In untabulated analysis, I implement the entropy balancing method and derive results that are similar to those from PSM. Acquirers hiring boutique advisors are associated with significantly higher returns in all deals (at the 5% level) and in private deals (at the 1% level) with an average of 1.1 and 1.7 % CAR, respectively.

2.7 Conclusion

With the increasing demand in industry specialization for strategic mergers and diversified sources of funding, corporate clients have turned their eyes to highly specialized advisory boutiques for M&As. This study investigates the source of their increasing market share and reputation and provides new empirical evidence on the value of boutique investment banks.

Based on the analysis of 3-day bidder announcement returns, I find that boutique advisors' growing reputation is attributable to the superior quality of their services with economically significant value creation for acquirer shareholders. In particular, boutique advisors generate higher CARs relative to full-service advisors in all deals and private deals. Moreover, boutique advisors are more likely to be rehired by their clients for future acquisitions and chosen for complex deals such as diversifying mergers and deals involving stock offers. Lastly, boutique advisors retain strongly qualified skillsets and expertise in advising deals involving high level of information uncertainty; namely, private deals.

My findings are robust with a series of subsequent tests I provide in this paper. I corroborate our results by controlling for two different types of sample selection bias, observable and unobservable, using propensity score matching as well as Heckman's IMR model. I confirm that the results are not affected by unobservable or observable bias in which certain characteristics associated with the acquirer and the deal affect both the choice of advisor and deal outcome. I also consider the long-term effects of boutique advisors on acquirer shareholder wealth and find that investors receive higher returns in the long-run when they invest in a portfolio of boutique deals than when they invest in a full-service portfolio.

Bowers and Miller (1990) argue that highly reputable bankers identify better deals and create value for their clients. My findings on the quality of boutique advisors reflect the conventional role of financial advisor highlighted by Bowers and Miller and add diverse insights to the financial intermediary literature.

Chapter 3

The role of divestiture in dynamic asset restructuring: Evidence from bank holding companies

3.1 Introduction

Corporate divestiture as part of asset restructuring has proven to help non-financial firms improve performance and resolve financial distress according to the prior research, but little is known about divestiture of banks. The lack of academic research in bank divestitures is largely because i) the industry is highly regulated as the risks associated with banking organizations are different from and much greater than those of non-banking firms[43]; hence, most divestitures are assumed to be forced under regulatory pressure, and ii) there is no segment data available for banks to evaluate divested units.

[43] The risks uniquely associated with banks include credit risk from payment defaults by borrowers, market risk from large security holdings, liquidity risk from sudden deposit withdrawals, and systemic risk due to their interconnectedness with other financial institutions as well as the economy.

An exclusion of banking firms from the sample of corporate divestitures, however, incurs two major concerns. Firstly, as Barber and Lyon (1997) elucidates, it is subject to data-snooping[44]. Barber and Lyon (1997) highlight that an earlier study by Fama and French (1992) which measure the relation between stock returns and firm size/book-to-market ratio has faced criticisms by financial economists as they left out sizable observations belonging to financial firms from their estimation, rendering a speculation on whether the anomalies in returns are more likely to be a result of massive data-snooping by researchers. To resolve this speculation, Barber and Lyon (1997) separately examine the robustness of the relation using the holdout sample of financial firms in their study. Similarly, it is concerning that practically all studies on divestiture exclude financial firms without providing any justifications or explaining the potential impact of such an exclusion on the results, even though the proportion of bank divestitures are unignorably larger than those in any other individual sectors. Accordingly, this study not only attempts to acknowledge potential data-snooping in prior studies, but also fill the research gap by separately evaluating the motives and role of bank divestiture which are previously undocumented.

Moreover, bank divestitures are ideal for studying managerial motives on restructuring decisions based on different theories beyond the agency theory. It is not unknown that banks are highly diversified, and preponderance of research regard divestitures as a remedy for diversification discount and the agency problem (John and Ofek, 1995; Berger and Ofek, 1999; Lang, Poulsen, and Stulz, 1995; Rajan, Servaes, and Zingales, 2000; Lamont and Polk, 2002; Dittmar and Shivdasani, 2003; Denis, Denis, and Sarin, 2012). However, the agency theory has a limited application for banks because the banking industry is highly regulated with the strict antitrust law that diversification is much less likely to be a result of managerial entrenchment. For non-financial firms, it would be hard to distinguish managerial motive behind a restructuring decision, especially for large industrial firms in highly concentrated industries such as the oil and telecommunications

[44] Data snooping refers to an exclusion of certain observations from the sample after the researcher observes the data to find patterns which make the results statistically significant.

industry (Yermack, 1996; Berger, Ofek, and Yermack, 1997; Kumar and Rabinovitch, 2013). Thus, this study uses *the neoclassical theory* which have been studied by a growing body of literature repudiating the existing interpretation of corporate diversification (Matsusaka, 2001; Maksimovic and Phillips, 2002; Campa and Kedia, 2002; Gomes and Livdan, 2004) and *the resource-based view* which has been widely employed by studies on corporate asset reallocation including divestiture ((Penrose, 1959; Chang, 1996; Capron, Mitchell, and Swaminathan, 2001; Levinthal and Wu, 2010; Kaul, 2012; Vidal and Mitchell, 2015).[45] These two theories provide similar views regarding the role of asset restructurings and suggest that both focus and diversification involving mergers or divestitures should be perceived as resource-increasing and value-maximizing strategies that firms pursue to free resources and fund a growing or a new business opportunity.

In this study, I separately evaluate the motives and role of divestiture in bank holding companies as this allows me to control for unobservable industry-specific factors such as regulation and unique risks associated with banks, which could affect restructuring choices and returns (Delong, 2001). Also, focusing only on banks can lead to less spurious results coming from inter-industry differences. For instance, Lang and Stulz (1994) ascertain that diversification decisions are highly affected by the industry characteristics and firms in industries with slow growth are more likely to diversify. They also argue that diversified firms have lower Tobin's q[46] than do focused firms, but it fluctuates across industries rather than within an industry. As a holdout sample, bank divestitures can provide exemplary information on its own for testing several theories explored and underexplored in divestitures of non-financial firms.

I begin by examining the impact of bank-specific characteristics on divestiture decisions and of different types of restructuring strategies on the performance of banks. Specifically, I re-evaluate the hypothesis suggested by Slovin, Sushka, and

[45] These studies expound that the agency theory substantiate neither the managerial decisions between focus and diversification, nor the subsequent outcomes.
[46] Tobin's q is used to measure diversification discount.

Poloncheck (1991). They posit that banks are obligated to divest due to its regulatory capital requirement which confines managerial flexibility and investment. Thus, they argue that divestiture announcements by banks convey unfavourable information regarding their capital position and call this the economic cost of bank regulation. To assess this argument, I examine the relation between the regulatory risk-based capital ratio of banks and their decision to divest in the fixed-effect probability model. Unlike their argument, I find that bank divestitures are not motivated by regulatory capital needs, and banks' mean (median) capital ratio prior to divestitures is much higher than the required risk-based capital ratio. According to my divestiture decision model, bank divestitures are rather strongly motivated by ex-ante productivity such as size of the bank, financial distress, and operating inefficiency similar to divestitures of nonfinancial firms.

More importantly, I estimate the resource-based view which suggests that firms with increasing performance divest assets to fund their growing business (Capron, Mitchell, and Swaminathan, 2001; Vidal and Mitchell, 2015). Consistent with studies based on this theory, I find that banks with positive performance gap (increasing performance) are more likely to undertake divestitures. An additional driver of bank divestiture includes mergers and acquisitions. Several studies have documented that merger is a primary determinant of divestiture and roughly 20 to 50% of acquired assets are eventually divested (Mitchell and Lehn, 1990; Kaplan and Weisbach, 1992; Fluck and Lynch, 1999). Furthermore, large bank mergers are rarely approved without ensuing divestitures as required by the antitrust law[47]. In my sample, 68.2% of bank divestitures are accompanied by acquisitions.

As mergers are significant part of banks' restructuring strategies concomitantly implemented with divestitures, I estimate how banks use both means of asset restructurings to change their corporate scope. Changes in business scope are defined as follows. Banks which acquire related business to their primary industry and divest non-core unit are defined to have implemented focusing strategy; but those which acquire unrelated business and divest non-core or core unit are

[47] Section of Antitrust Law, ABA. (2006). *Bank mergers and acquisitions handbook*. Chicago, IL.

considered to have taken diversifying strategy.[48] In order to determine which firm-specific characteristics affect the choice between focusing and diversifying decisions, I generate hypothesis proposed by studies using the neoclassical theory and the resource-based view (Chang, 1996; Matsusaka, 2001). These studies imply that firms alternate between focusing (scope-decreasing) and diversifying (scope-increasing) strategies over their business cycle to explore synergistic opportunities that could help maintain their performance and growth. More specifically, firms in the stage of increasing performance employ focusing strategy to specialize in their profitable segment. However, once they exhaust all the synergistic opportunities within their core segment, firms diversify into another industry in search for a new revenue stream.

Consistent with this hypothesis, I find that positive performance gap, increasing loan growth, and higher earnings prospect are positively associated with the choice of focusing strategy but are negatively associated with diversifying strategy. For instance, banks with increasing loan growth are more likely to focus on their core business while those with decreasing loan growth are more likely to diversify. Additionally, operating inefficiency and financial distress are major reasons why banks implement diversifying strategy. Lastly, as the level of diversification increases within the banking firm, it is more likely to undertake focusing strategy and is less likely to diversify. These findings indicate that banks in their profitable stage of business cycle tend to focus on the existing segments, but they continue to search for a new business opportunity when current operations become inefficient and less profitable. My findings are inconsistent with the agency theory which ascribe diversification discount to managerial entrenchment or empire building since diversification is used only to sustain organizational productivity.

These restructuring choices banks make to change their corporate scope convey important implications about their equity performance subsequent to focusing or diversification. According to studies involving the neoclassical theory

[48] Divesting the core unit is called legacy divestiture and is known to be associated with negative announcement returns as it signals underperformance and lack of growth opportunities of the divesting firm's primary business.

(Matsusaka, 2001; Campa and Kedia, 2002; Gomes and Livdan, 2004), even if managers diversify to improve the firm's declining productivity, diversification can incur discount. This is because of endogenous selection, whereby firms with declining performance diversify while those with increasing performance choose to focus. Hence, the ex-ante underperformance (outperformance) of diversifying (focusing) firms transforms into equity discount (premium) when the strategy is implemented (Maksimovic and Phillips, 2002; Campa and Kedia, 2002; Gomes and Livdan, 2004; Villalonga, 2004) [49]. Consistent with previous empirical evidence on endogenous selection and the neoclassical theory, I find that focusing strategy by diversified banks induces positive stock market reaction with an average of 2.2% increase in CAR around divestiture announcements. On the contrary, diversifying strategy involving legacy divestiture (divestiture of core asset) negatively affects the announcement returns with an average of 1.4% reduction in value.

Though banks with diversifying strategy get panelised in the short-term and experience discount, I expect that their performance would recover in the long-term. My further intuition is that firms are already aware of discounts (price correction) upon the announcement of such deals. They simply sacrifice short-term returns for the long-term gains to restore their declining performance. If the neoclassical theory holds, diversifying strategy undertaken to improve productivity of the firm should alleviate the discount in the long-term. For the long-term equity performance, I estimate 12- to 36-month post-divestiture stock returns using buy-and-hold abnormal returns and calendar-time portfolio regressions. Both measures show that the performance of banks with focusing and diversifying strategy is not significantly different from that of their benchmarks. These findings affirm that diversifying (focusing) strategy normalizes the performance of banks and eliminates discount (premium) in the long-run.

[49] In theoretical perspective related to the neoclassical theory, firms choose to specialize in their existing business only when they already have a good match. Otherwise, they have to keep exploring a new business until they find the most compatible match for their organizational capabilities. Therefore, announcement returns are more likely to be a reflection of investor reaction to the corporate strategies containing implications about the match and less likely to be just diversification discount.

This paper provides new evidence on divestiture of banks. Contrasting to the previous supposition by Slovin, Sushka, and Poloncheck (1991), I show that the regulatory capital requirement is not the main determinant of bank divestitures, and divestitures on average have positive impact on equity returns in both the short- and long-term. Additionally, this study conjoins the neoclassical theory and the resource-based view to predict how banks make scope-changing decisions through acquisitions and divestitures and how they perform subsequently. These theories are employed to overcome limited scopes suggested by prior studies in divestiture; most studies presume that diversification is related to managerial entrenchment or inefficient resource allocation and misconstrue focus-increasing divestiture as a means of eliminating the agency problem.

Inconsistent with these arguments, I show that managerial motives suggested by the agency theory does not explain banks' decision to focus or diversify. Instead, these decisions depend on ex-ante productivity and performance of banks. Banks are more likely to diversify (focus) when their performance and loan growth decline (increase) and experience operating inefficiency and financial constraints. I further prove that regardless of the managerial motive, announcement returns increase with focusing strategy but decrease with diversifying strategy. However, short-term stock performance is merely based on what the strategic direction is informing about the bank's ex-ante performance which is endogenously related to the selection of a particular strategy. In the long-run, there is no evidence that banks with diversifying strategy underperform their industry benchmarks, and both focusing and diversifying banks perform comparatively.

Feldman and McGrath (2016) note that divestitures comprise about one-third of overall deal-making value annually, and divestiture transactions accounted for over $3.9 trillion worldwide between 2010 and 2018 (Divestment Performance Monitor)[50]. Over the same period, an analysis of the Thomson One's US domestic

[50] "Majority of companies lose value from divestitures, research shows." Willis Towers Watson and Cass Business School. Accessed May 27, 2020. https://www.willistowerswatson.com/en-US/News/2019/02/majority-of-companies-lose-value-from-divestitures-research-shows.
Additionally, PWC reports that annual deal value of total divestitures accounts for over $350 to $800 billions based on the Thomson Reuters data. Refer to "Deciding on a divestiture? Here's how to

divestiture transactions data indicates that approximately 37 to 50% of divestitures were undertaken by financial services firms. Despite their frequent involvement in divestment activities and economic significance of these deals, divestiture of banks has not received proper attention in academic literature. Empirical contribution of this research is notable given that the findings and theoretical arguments in this study have not been examined previously in divestiture studies and can add diverse perspectives to broaden the existing knowledge in this research area.

Following sections of the paper is organized as section 3.2 literature review, section 3.3 Hypothesis, section 3.4 data and sample collection, section 3.5 methodology, section 3.6 empirical results, and section 3.7 conclusion.

3.2 Literature Review

Divestitures comprise the largest part of corporate asset restructuring activities and is commonly implemented along with M&As. However, due to its frivolous transaction scale as compared to mergers, it has gained less empirical considerations. Nevertheless, there is one angle that has been predominantly explored in divestiture-related studies, which is the focusing strategy or namely, divestiture of unrelated (non-core) assets. First and foremost, John and Ofek (1995) discern that asset sales targeted at reducing corporate scope improve operating performance and shareholder value. They support this finding through the focus hypothesis in which firms seek to raise capital by disposing an unrelated asset and invest in their core business. The effect of this strategy is cash flow enhancement on the divestor's remaining assets and productive use of the disposed asset by a more suitable acquirer.

The literature's fascination with focus-driven divestitures was instigated by the notion of diversification discount, whereby diversified firms are traded at lower value than standalone companies specialized in one sector. For instance, Berger and

protect an asset's value." Mike Niland. Accessed May 27, 2020. https://usblogs.pwc.com/deals/deciding-on-a-divestiture-heres-how-to-protect-an-assets-value/.

Ofek (1995) find that diversification lowers firm value on average by 13 to 15% than when a firm is single-segmented. Because it causes discounts in firm value and shareholder returns, researchers often link diversification with the agency theory. The theory suggests that diversification is a tool for managers to increase their compensation and entrench their position within the firm by expanding into areas related to their personal skills or interests [51] rather than to the firm's core competencies (Jensen and Murphy, 1990; Shleifer and Vishny, 1990; Morck, Shleifer and Vishny, 1990; Scharfstein and Stein, 2002).

While the literature in 90s is filled with the ongoing demonstration on the value-destructive nature of diversification, the discovery on scope-decreasing divestiture spurs another series of studies reenforcing the agency view. As reducing corporate scope through divestiture of non-core asset is discovered to have positive effects on firm value, studies started concluding that divestiture is a remedy for diversification discount and uniformly presented the following narratives: diversification leads to discount in firm value because pursuing diversification conflicts with shareholders' interest; but scope-decreasing divestitures moderate discount and induce positive revaluation, which justifies the focusing strategy in resolving the agency problem in diversified firms. Similar narratives have been exhaustively recycled in the literature of corporate and asset control (Lang and Stulz, 1994; John and Ofek, 1995; Berger and Ofek, 1999; Lang, Poulsen, and Stulz, 1995; Rajan, Servaes, and Zingales, 2000; Lamont and Polk, 2002; Dittmar and Shivdasani, 2003; Denis, Denis, and Sarin, 2012).

Among various forms of agency problems, most frequently raised issue prone to diversified firms in the literature is inefficient allocation of free cash flows among divisions, which leads to overinvestment in unprofitable divisions and underinvestment in profitable business (Jensen, 1986; Stulz, 1990; Berger and Ofek, 1995). Scharfstein and Stein (2002) refer to this inefficient internal capital allocation in which profitable divisions subsidize unprofitable ones as corporate

[51] The expansion as part of managerial entrenchment happens through takeovers of unrelated business using free cash flow of the firm (Jensen, 1986). Subsequent studies report that diversifying mergers are value-destroying (Servaes, 1996; Megginson, Morgan, and Nail, 2004).

socialism. In divestiture studies, proponents of the agency theory prove how focusing strategy eliminates diversification discounts by improving divisional capital allocation and reinstates shareholder value and long-term performance (John and Ofek, 1995; Comment and Jarrell, 1995; Dittmar and Shivdasani, 2003).

Dittmar and Shivdasani (2003) bolster that diversified firms trade at a discount because managers misallocate investments to an underperforming unit over a more valuable unit. Consequently, those which divest the underperforming non-core unit experience significant reduction in discount, leading to positive announcement returns and substantial increase in efficacy of post-divestiture segment investment. Although they do not find the evidence on cross-subsidization of cash flows, Daley, Mehrotra, and Sivakumar (1997) also document that increasing corporate focus via cross-industry spinoffs have significantly positive effects on announcement returns and operating performance of the parent firm after spinoff. They find that this is attributable to the focusing strategy which allows divided managerial attention to be invested in where their skillset lies. Similarly, Desai and Jain (1999) show that focus-increasing spinoffs are associated with improvement in both long-term abnormal stock returns and operating performance while non-focus-increasing spinoffs are not.

Studies incorporating mergers and acquisitions report similar results. Megginson, Morgan, and Nail (2004) find positive association between focus-increasing mergers and long-term performance, but negative relation for diversifying mergers. Bennett and Feldman (2017) suggest that firms acquire a related business and concurrently spinoff non-core assets to constantly generate synergies and assemble divided managerial attentions to their primary division.

As characterized by numerous examples, although the focusing and agency theories have been the underpinning of divestiture research, some studies allude monotonously value-destructive nature of managerial behaviour within diversified firms seem inadequate (Gomes and Livdan, 2004; Feldman and McGrath, 2016). More eloquent rationalization should be that managers in diversified firms could be as equally motivated as single-industry firms to maximize firm value. After all, the agency theory does not explain most of the critical aspects of corporate decisions

such as: why and how diversified firms and conglomerates exist if diversification destroys value; how firms manage risk without diversifying their business portfolio and survive an industry shock; how firms in a mature stage of their lifecycle find growth opportunities without increasing business scope to another industry. Moreover, diversification has its own advantages as much as specializations. For example, diversification eliminates redundancies across segments, hence, reduce fixed costs, which essentially allows conglomerates to operate more efficiently; it also allows mature firms with slowing growth in their industry to discover a new business avenue and utilize their capabilities (Gomes and Livdan, 2004). Consequently, many studies started questioning managerial motives on diversification discount defined by the agency theory in prior studies and investigating alternative motives. Two plausible theories counter the agency view and provide sound rationale on diversification decision: the neoclassical theory of profit maximization and the resource-based view of capital allocation.

The neoclassical economics theory provides basis for determining firms' production and allocation decisions. In its essence, firms are assumed to pursue profit maximization, a goal that influences every process of corporate decision-making including resource allocation and restructuring choice between focus and diversification (Maksimovic and Phillips, 2002, 2007; Gomes and Livdan, 2004; Yang, 2008; Arikan and Stulz, 2016).

Earlier I mentioned that the agency theory postulate that diversified firms inefficiently allocate resources across divisions and profitable segments subsidize unprofitable ones. Controverting evidence is presented based on the neoclassical theory of profit maximization. Maksimovic and Phillips (2002) show that resources within diversified firms (e.g. conglomerates) are allocated depending on the productivity of each segment and industry demand. Specifically, larger capital is invested into a more productive segment and a segment which operates in an industry with higher demand. Their findings indicate efficient allocation of resources across diverse segments, with larger segments being more productive than smaller segments and the largest segment being the most productive. In the study of diversifying acquisitions, Doukas and Kan (2008) also find that internal

capital resources are transferred from less profitable segments to more profitable segments subsequent to diversification.

In examining diversification decisions, studies under the neoclassical theory commonly use a dynamic model which accounts for endogenous self-selection between the characteristics of firms and the decision to diversify (Campa and Kedia, 2002; Chevalier, 2004; Gomes and Livdan, 2004; Villalonga, 2004). Campa and Kedia (2002) and Gomes and Livdan (2004) argue that the decision to diversify is not random but is endogenously determined depending on ex-ante differences in firm-specific characteristics such as size and productivity. These characteristics explain not only the choice of diversification, but also the ex-post performance and valuation of diversified firms.

The dynamic model proves that diversification decisions are optimally made. Gomes and Livdan (2004) find that diversification is driven by productivity differentials and decreasing returns to scale. Firms remain focused when productivity is high, but they diversify when productivity becomes too lower for the scale. Campa and Kedia (2002) document that firms only diversify when the benefits outweigh the costs of diversification. Maksimovic and Phillips (2002) show that the optimal level of diversification depends on the firm's comparative advantage. For example, a firm with industry-specific skills can incur higher opportunity costs from diversifying, which makes it more productive to remain focused. However, firms with declining returns in the existing segments but with skills that can be extended to different industries explore diversification option as they see profit opportunities. Diversification threshold can also be extended as outside opportunities rise. Doukas and Kan (2008) study decisions between related and diversifying acquisitions and find that firms acquire related business when their core segment is in a high growth industry and generates superior cash flows. However, firms diversify when their core segment is in a low growth industry and its cash flows and growth prospects are lower than those of non-core assets.

Regardless of the optimality of diversification decisions explained by the dynamic model, these studies unanimously corroborate that diversification discount exists. However, they note that the source of discount is not attributable to

diversification itself, but to the underlying characteristics that are endogenously related to the diversification decision. In congruence with this endogenous selection explanation, Campa and Kedia (2002) share an example where an underperforming firm in its industry decides to diversify. In this case, not accounting for the impact of the ex-ante performance on diversification decision will falsely ascribe the discount to the diversifying activity. Similarly, Matsusaka (2001) argues that when firms exhaust a good match for their capabilities – valuable and productive skills which could be applied to certain types of businesses –, their performance may dwindle, and this performance decline is what drives firms to diversify, not the other way around. Based on plant-level observations[52], Schoar (2002) observes a significant productivity premium for plants in diversified firms compared to those in standalone companies. However, total productivity diminishes as the managerial attention shifts from incumbent plants to newly acquired plants[53]. Gomes and Livdan (2004) also report that firms increasing their scope are less productive than focused firms (non-diversifying firms)[54] prior to diversifying. This endogenous self-selection between productivity and diversification decision leads to the lower valuation of diversified firms.

While these studies indicate that diversification discount endogenously occurs due to diversifying firms' ex-ante performance or productivity, other research present additional sources of discount. Schoar (2002) cite that diversification discount in market value is more likely to be a result of wage difference which accounts for approximately 30% of the discount since conglomerates pay higher wages than standalone firms. Graham, Lemmon, and Wolf (2002) reevaluate diversification discounts in mergers presented in Berger and Ofek (1995) and identify that the source of value reduction is from the acquisition of already discounted targets.

[52] They use the plant-level data from the Longitudinal Research Database instead of the COMPUSTAT segment data reasoning that they are systematically biased toward resulting in diversification discount.
[53] The increase in productivity of newly acquired plants is deducted by the decline of productivity in incumbent plants.
[54] They discover that specialized firms are more efficient and more productive.

Further suggested source of discount include measuring issues in estimating the valuation effect. Graham, Lemmon, and Wolf (2002) point out that there are systematic differences between divisions of diversified firms and standalone firms. Thus, using standalone firms as a benchmark in measuring diversification discount can be misleading. Explicitly, Villalonga (2004) describes that since segments within diversified firms are larger than standalone firms in the same industry, it is inadequate to assign the q ratio obtained from a standalone firm to a segment in multi-divisional firms. Campa and Kedia (2002) also observe systematic differences between diversified and single-segment firms in their underlying characteristics and discover that the characteristics driving firms to diversify also causes discounts in firm value. After controlling for endogenous selection bias through different methods, they discover that the average discount not only diminishes, but also adjusts to premium.

Overall, irrespective of perceivable discounts associated with diversifying strategy, recent studies using a dynamic model assent that the managerial motive of diversification is consistent with profit maximization.

Similar to the neoclassical theory, studies exploring the resource-based view also perceive that firms make profit-maximizing decisions and diversification is part of such decisions. The resource-based theory suggests that a firm's competitive advantage comes primarily from its unique resources and capabilities that are hard to replicate (Barney, 1991). While firms' growth can be attained by manipulating and expanding resources, the limited scope of firms (lack of diversification) stems from scarce resources and managerial capabilities (Penrose, 1959). In the study of diversification decision, Levinthal and Wu (2010) assert that firms with lower capabilities remain focused while those with more capabilities diversify when their current industry becomes mature. They perceive that diversification discount is a result of the dispersion in capabilities across increased number of divisions. They further indicate that firms in general focus more on total profit rather than profit margin or q ratio which are used to measure diversification discount. Hence, firms remaining focused generate greater profit margins but become less profitable than their diversifying competitors in terms of total profit growth.

The resource-based view has been frequently applied to divestiture studies unlike the neoclassical theory. Studies espousing the resource-based theory in asset transactions find that firms with increasing performance adopt divestitures to free resources and support their growing business (Chang, 1996; Matsusaka, 2001; Capron, Mitchell, and Swaminathan, 2001; Kaul, 2012; Vidal and Mitchell, 2015). These firms continuously reconfigure their resources through divestitures and other means of asset restructurings even when they are already generating good performance without financial distress to sustain competitive advantage. Vidal and Mitchell (2015) find that firms with increasing performance undertake partial divestitures to free resources that can be invested for future growth. Kaul (2012) notes that new knowledges and skillsets obtained through technological innovation prompt firms to change their scope by redeploying limited resources from incumbent businesses that are marginally profitable to the newly acquired segment. Capron, Mitchell, and Swaminathan (2001) investigate how firms reconfigure corporate resources and find that firms divest immaterial assets post-acquisition to eliminate redundancy and achieve scale efficiency.

A stream of literature with the resource-based view enunciate that divestitures are not merely a remedy for ill-perceived diversification but are more of a resource increasing and value-maximising instrument. In this paper, departure from the agency and focusing theories which have been predominantly and repeatedly examined in corporate divestiture studies, I incorporate the dynamic value-maximizing approach of the neoclassical theory and resource-based view into evaluating motives and performance of bank divestitures.

3.3 Hypotheses

There is little known about divestiture of banks as the financial industry is normally excluded in divestiture studies due to heavy regulation. Slovin, Sushka, and Poloncheck (1991) portray such limitations of bank divestitures imposed by the financial regulation in their study and suggest that banks are forced to divest under

regulatory capital requirement. They then argue that since divestitures are mandated when banks have insufficient capital, divestiture announcements carry negative information about the divesting bank's financial position. Another reason for lack of bank divestiture studies is that a large proportion of bank divestitures are mandatorily required upon takeover activities[55] (Burke, 1997; Baer and Redcay, 2000; Pilloff, 2002), thus, divestitures are not individually studied. However, it is hard to believe that all bank divestitures are implemented involuntarily as banks comprise one of the largest conglomerates which often use divestitures as part of portfolio reconfiguration similar to other listed non-financial firms. As a matter of fact, banks undertake divestitures more frequently than any other sectors. Yet, the existing studies provide weak documentation on divestiture of banks. In this study, I investigate whether bank divestitures are driven solely by regulatory capital requirement and merger plans as previously reported or can also be explained by additional motives applicable to divestitures of non-financial firms.

In developing hypotheses on additional divestiture motives, I consider a theoretical approach backed by empirical evidence as discussed in the literature review. As I mentioned earlier, divestiture studies, in general, have been limited to measuring the effectiveness of focusing strategy on removing the agency problem in diversified firms. However, according to recent studies conducted based upon the neoclassical theory and the resource-based view, focusing strategy is irrelevant to the agency problem, but rather is mainly implemented by firms with increasing performance and growth potential in their current industry. They also discover that the corporate decision between focus and diversification depends on underlying firm-specific characteristics which cannot be explained by the agency theory. While these theories have been actively researched leading to important discoveries on corporate diversification behaviour, I recognize that both theories have been underutilized in divestiture studies. Therefore, I first begin by identifying a set of managerial motives of bank divestitures based on these theories.

[55] Kaplan and Weisbach (1992) document that 44% of acquisitions from 1971 to 1989 were followed by some form of divestiture. Baer and Redcay (2000) note that a number of mergers are challenged by FTC (Federal Trade Commission) and DOJ (Department of Justice) and divestitures are often demanded by antitrust agencies as a merger remedy. As such, I test the following hypothesis.

The neoclassical theory concerns efficient allocation of limited resources to maximize profit, and corporate divestitures are primarily implemented to have specific assets operated by those who can operate them most efficiently (Hite et al., 1987; Maksimovic and Phillips, 2001). Maksimovic and Phillips (2001) find that the probability of asset sales is related to ex-ante efficiency of buyers and sellers and that divestiture transactions tend to improve the allocation of resources, utility, and wealth of the parties involved[56]. In this context, asset reallocation through divestiture is consistent with a simple neoclassical model of profit maximization. Yang (2008) also argue that the change in productivity measured by the efficiency ratio affects firms' decision to buy or sell assets: firms with rising productivity expand their scale while those with falling productivity downsize. As divestitures enable efficient allocation of corporate assets in the market, I deduce that operating inefficiency is likely to drive divestitures by banks that aim to achieve efficiency gains.

In the process of scrutinizing recurrent divestiture motives for non-financial firms in prior research, I find that asset sales are also followed by financial distress (Gilson, John, and Lang, 1990; Shleifer and Vishny, 1992; Brown, James, and Mooradian, 1994; John and Ofek, 1995). When firms are in financial distress with declining performance and high leverage, they may experience difficulty in borrowing and raising funds to invest in their ongoing operation. Divestitures are particularly useful for firms that are incapable of raising funds externally and are implemented to relax credit constraints (Shleifer and Vishny, 1992) and repay debts (Lang, Poulsen, and Stulz, 1995). Considering banks are highly leveraged due to the nature of their business making debt a cheaper source of financing, divestiture can be a natural strategic choice for banks to take when they are financially constrained.

Interestingly, divestitures are also known to be undertaken by firms with increasing performance. According to studies based on the resource-based view, divestitures free limited resources through asset liquidation and invest the capital

[56] Unlike mergers and acquisitions, both acquirers and targets experience positive announcement returns in divestitures.

raised to foster firms' growing performance (Vidal and Mitchell, 2015; Bennett and Feldman, 2017). Matsusaka (2001) also indicate when firms have a good business match for their capabilities, it is reflected in their increasing performance and growth. These firms then undertake divestitures of unrelated business to help support investment in their thriving segments and magnify profitability. Vidal and Mitchell (2015) argue that firms incessantly reconfigure their resources through divestitures to maintain profitability. They explain that managers perform divestitures either to sidestep declining performance against competitors or to propel positive performance for a longer period by removing superfluous operations inhibiting growth. Frequent involvement in divestitures by banks may be part of their efforts to reconfigure their asset portfolio and sustain more profitable branches and segments.

The literature denotes that banks have become larger and highly diversified (Winton, 1999; Acharya, Hasan, and Saunders, 2006; Berger, Hasan, and Zhou, 2010; Laeven, Ratnovski, and Tong, 2016), and approximately 94% of the banks in my sample operate in more than one sector besides traditional banking. Bank size can be an important determinant for divestiture decision in both a voluntary and a regulatory standpoint. In a regulatory perspective, bank size is linked to systematic risk, for which banks are regulated by size threshold, minimum capital requirement, limitation on risky activities, and stress tests. Such restrictions may require banks to divest their assets as their overall scale becomes larger. Banks can also voluntarily divest to achieve scale efficiency. While bank divestitures are often followed by acquisitions, Capron, Mitchell, and Swaminathan (2001) argue that post-acquisition divestiture is part of portfolio reconfiguration through which firms absorb and integrate only necessary portion of the target's assets. They show that as the business similarity between acquirer and target increases, redundant assets are more likely to be divested. Divestitures in this sense help acquiring firms achieve scale efficiency.

Based on those conceivable motives of divestiture discussed above, I propose the following hypothesis that has not been evaluated in previous studies on bank divestiture.

Hypothesis 1 Bank divestitures are driven not only by regulatory capital requirement and mergers, but also by ex-ante productivity and performance such as operating inefficiency, financial distress, size, and positive/negative performance gap.

Firms constantly change corporate scope throughout their business cycle[57] to reconfigure their business portfolio, which is typically done via asset restructuring using mergers and divestitures. While many empirical studies in finance simply view focusing and diversifying strategies as alternative choices firms make and measure their usefulness based on resultant performance, I focus on the fact that those activities are repeated sequentially in most firms including banks. For instance, Berger and Ofek (1999) argue that many diversified firms experiencing value destruction end up refocusing by disciplinary events or external pressure. However, using the same sample, Hyland and Diltz (2002) find that 82 percent of the firms which participated in the refocusing program re-diversified afterwards. Further, in his theoretical approach on firms' sequential entry and exit into a business, Chang (1996) postulates that the accumulation of new entries in the past should have negative impact on diversification in the next period.

Considering more than half of bank divestitures are accompanied by mergers and given the fact that banks are becoming more diversified, incorporating the business cycle is particularly important to understand what motivates banks to increase or decrease their business scope. Accordingly, I review studies built on the neoclassical theory and the resource-based view which construe scope-changing decisions as natural responses of firms facing limited growth opportunities within their retained segments over the course of different business cycles.

Studies espousing the resource-based view document that firms' behaviour involving consistent change in business scope resembles the sequence of organizational search and selection and can be explained by profit-maximizing

[57] The business cycle refers to the sequence of ups (profitable) and downs (unprofitable).

motives. This interpretation is inspired by the earlier literature on organizational search (Rumelt, 1974; Levinthal and March, 1981; Chang, 1996): firms primarily explore an existing knowledge base and maximize profit opportunities within the industry by focusing on their core business, which can be accomplished by acquiring related businesses and/or divesting unrelated assets; however, once they have depleted all the synergistic resources, firms enter a new industry (diversify) through an acquisition of unrelated asset. They may also exit from their existing business simultaneously using divestiture.

Studies based on the neoclassical theory share similar insights. Matsusaka (2001) explains how firms repeat focus and diversification to search and match better businesses for their organizational capabilities: firms with good match based on increasing performance specialize in their primary sector by either divesting unrelated assets or expand its scale further to increase market share and maximize profit; but firms with poor match approximated by decreasing performance diversify to find a better match that can generate profits. Firms continue to search until they find a good match for their organizational capabilities, and at the end of the cycle, when they finally do, they refocus and divest subordinate matches. Even with the absence of acknowledgement in organizational search, studies using the neoclassical theory to analyze shift in business scope still observe similar corporate decision-making process and show that firms diversify when their productivity and profitability fall (Maksimovic and Phillips, 2002; Campa and Kedia, 2002; Gomes and Livdan, 2004).

Those studies unanimously predict that firms use focusing strategy when they experience increasing performance; on the contrary, firms use diversifying strategy when they experience performance decline. Based on this theoretical argument provided by prior studies, I propose the corresponding hypothesis.

Hypothesis 2 Profitable banks are more likely to use focusing (scope-decreasing) strategy while poorly performing banks are more likely to use diversifying (scope-increasing) strategy.

A seemingly manifested presumption that may be misguiding in studies relying solely on the agency theory is that diversification is a heredity of agency problem which destroys value, and divestitures are regarded as a damage control mechanism. For this assumption to work, firstly, one has to prove firms increase their scope to irrelevant industries even if they already have a growing and profitable business to focus on. As mentioned earlier, however, restructuring decisions are sequentially made based on firms' ability to generate profits with given resources and knowledge at each stage. Further, studies articulating asset restructuring strategies do not find a direct connection between the agency problem and discount in diversifying deals. Mulherin and Boone (2000) demonstrate that scope increasing acquisitions are as synergistic as other restructuring strategies, and wealth effects obtained from scope-increasing deals are inconsistent with the agency theory.

Nevertheless, there is consensus in literature that firms which use the focusing strategy yield higher returns than ones that use the diversifying strategy (Lang and Stulz, 1994; John and Ofek, 1995; Rajan, Servaes, and Zingales, 2000; Gomes and Livdan, 2004). Matsusaka (2001) stresses that even if diversification strategy is value-maximizing, firms using the strategy may trade at discount as compared to specialized firms due to efficiency costs from multi-sector operations and imperfect match. On the other hand, firms announcing the focusing strategy are traded at premium due to increase in efficiency and managerial attention on the remaining business. He also hints that when the core operation is marginal, yet is not a lost cause, it is better to keep it than to liquidate. Feldman (2014) substantiates this argument and finds that legacy divestitures (divestitures of a firm's original business) are costly due to the unit's historical interdependency with remaining units and cause weaker post-divestiture operating performance compared to that of competitors.

Similar results have been presented in studies of bank merger. Delong (2001) distinguishes bank mergers between focus and diversification according to activity and geographic similarity and compares announcement returns. The results show that diversifying mergers neither create, nor destroy value while focusing mergers increase shareholder value. Laeven and Levine (2007) argue that financial

conglomerates experience discounts in market valuation in relative terms to their diversification intensity. The reason is as follows. I mentioned earlier in Hypothesis 2 that firms are more likely to use focusing strategy by acquiring related assets and divesting unrelated assets when they have increasing performance, whereas diversifying strategy is more likely to be undertaken by firms with declining performance. This endogenous selection of underlying firm characteristics determining both the choice between focus and diversification and ensuing performance will be reflected in valuation upon divestiture announcement. Accordingly, I propose the following hypothesis.

Hypothesis 3 Divestiture announcements by banks induce positive investor reactions when involving focusing strategy but negative responses when accompanied by diversifying strategy.

Focusing strategy is also known to improve long-term performance. Desai and Jain (1999) find that focus-increasing spinoffs are associated with significantly greater long-term abnormal returns than non-focus-increasing spinoffs. Similarly, Megginson, Morgan, and Nail (2004) estimate long-run stock performance for focus-increasing mergers and discover significantly higher returns. While it is fairly evident that focusing strategy increases both short-term and long-term performance according to the prior literature, the long-term effect of diversifying strategy requires further considerations. Hence, I gauge different ways banks create value through focusing and diversifying strategy.

Benefits of focusing strategy in the literature were mostly built around the agency theory. Focusing strategy is presumed to resolve agency problems residing in diversified firms such as misallocation of corporate resources, overinvestment, and divided managerial attention. (John and Ofek, 1995; Berger and Ofek, 1999; Lang, Poulsen, and Stulz, 1995; Rajan, Servaes, and Zingales, 2000; Lamont and Polk, 2002; Dittmar and Shivdasani, 2003; Denis, Denis, and Sarin, 2012). However, proposed agency problems have been contested in the grounds of

inappropriate benchmarks[58], different sources of discount unrelated to diversifying activities[59], and endogenous selection bias in measuring diversification discount (Chevalier, 2001; Maksimovic and Phillips, 2002; Schoar, 2002; Campa and Kedia, 2002; Gomes and Livdan, 2004; Villalonga, 2004). Outside the agency theory, value creation in corporate focus comes from increase in market power and economies of scale (Delong, 2001; Laeven and Levine, 2007).

Value creation in bank diversification is generated from the economies of information and economies of scope. Elsas, Hackethal, and Holzhäuser (2010) acknowledge that banks have extensive information on their customers through long-term contractual relationships and can use it to achieve economies of information. For example, banks often cross-sell different financial services such as securities underwriting or insurance to firms with which they have prior lending relations. Further, economies of scope can be realized by diversifying revenue streams into non-interest activities[60] besides traditional loan making (Baele, Jonghe, and Vennet, 2007). Diversification can also help bank holding companies create efficient internal capital markets and lower the cost of capital when external financing is costly[61] (Hubbard and Palia, 1999; Delong, 2001; Matsusaka and Nanda, 2002). Most importantly, banks play an essential role in facilitating the flow of credit in the economy. For this reason, regulatory agreements such as Basel III emphasize the need for countercyclical capital buffer for banks to remain solvent and help the real economy during recession. Diversifying revenue sources allows

[58] Studies associating diversification with the agency theory compare the performance of each segment in diversified firms with that of standalone firms that are systematically different. In my opinion, more appropriate benchmark would be other diversified firms which have similar firm characteristics, especially in terms of performance and size, and are from the same industry but do not diversify.

[59] Examples of different sources of discount include additional costs incurred by higher wages in diversified firms (conglomerates) than those in specialized firms and acquisition of underperforming targets.

[60] Banks increase non-interest income by diversifying into areas such as mutual funds, insurance, trading, brokerage, investment banking, and wealth management which are accelerated by technological innovation and deregulation.

[61] In the presence of information asymmetry between divisions and headquarters as well as between headquarters and outside investors, external financing could be costly and capital could be inefficiently allocated across divisions. Internal capital markets allow headquarters to efficiently allocate investment funds to the most profitable divisions and reduce reliance on expensive external capital.

banks to not only increase capital buffer through which they can navigate unexpected capital shocks and lower the risk of default, but also alleviate total earnings volatility (Shim, 2013).

These benefits provide solid reasons why banks alternately implement focusing and diversifying strategies. Firms announcing diversifying deals may experience discount in value due to their ex-ante performance. However, if managers alternate these strategies to dedicate their organization's capability to the best match as proclaimed by the neoclassical theory, this may mean that diversifying firms deliberately sacrifice short-term returns to make a long-term investment commitment to the new segment. This way firms can ensure longevity and growth even during the periods of underperformance in their business cycle. If focus and diversification are a sequence of value-maximizing decisions, regardless of short-term market performance influenced by endogenous selection, banks should exhibit competitive performance in the long-run.

This conjecture is supported by findings on diversifying bank merger. Baele, Jonghe, and Vennet (2007) demonstrate that banks diversifying into non-interest income activities improve long-term market returns and lower idiosyncratic risk. The source of performance increase comes from economies of scope via cost savings and consolidated revenue enhancement. Likewise, Elsas, Hackethal, and Holzhäuser (2010) find that bank diversification increases both profitability and market valuation. As such, I measure the following hypothesis.

Hypothesis 4 In the long-run, diversification discount dissipates, and banks with diversifying strategy uphold comparable performance to that of their benchmarks.

3.4 Data and Sample Collection

3.4.1 Data

I obtain divestiture transactions data from the SDC Mergers & Acquisitions database. Divestors are public U.S. banks which announce divestitures between 1980 and 2019. Table 3. 1 presents the distribution of divestitures completed each year. The table indicates that the financial services sector comprises significant portion of divestiture activities and banks partake an important role in this. For the analyses of banks' divestiture decision, I download the list of public U.S. banks with the accounting data from the Compustat bank fundamentals annual database. I merge the transactions data with the accounting data to create firm-year observations in which each bank has one yearly observation. Panel A in Table 3. 2 reports summary statistics of the merged unbalanced panel data (number of banks included in the sample fluctuate each year). This sample has 27,179 firm-year observations in total and is used to analyse divestiture decision of banks. In Panel B, I present the summary statistics of divestor and non-divestor sample. The divestor sample has 1,149 firm-year observations and the non-divestor sample has 26,030 firm-year observations. Panel C exhibits summary statistics of the cross-sectional data with all divestiture transactions which have the accounting data available from the Compustat for the event study analyses. This sample contains 1,603 observations of divestiture events. The market value of equity data is obtained from CRSP. All variables are defined in Appendix *B*.

3.4.2 Summary Statistics

I compare the divestor and non-divestor characteristics in Panel B of Table 3. 2 and report the results of t-tests and non-parametric Wilcoxon rank-sum tests for the mean and median difference, respectively. All continuous variables are winsorized at the 1%. In general, divestors are significantly larger than non-divestors when comparing the *size* variable measured by the book value of total assets in US $ million. While the mean (median) size of divestors is $71.9 ($7.7) billion, that of non-divestors is only $22.8 ($1.1) billion.

Divestors are less efficient than non-divestors prior to divestitures as the mean (median) *operating inefficiency* of divestors, which is 3.4% (3.1%), is significantly higher than that of non-divestors, which is 2.9% (2.7%).

Consistent with the prior findings on divestitures of non-financial firms (Schlingemann, Stulz, and Walkling, 2002), divestors are less liquid prior to divestitures. The mean (median) *liquidity* ratio for divesting banks is 25.4% (24.5%) and that of non-divesting banks is 26.6% (25.3%). This means that financial distress motivates some banks to divest.

The mean (median) leverage ratio computed as common equity over the book value of total assets is significantly lower for divestors, 8.0% (7.9%) than that of non-divestors, 9.2% (8.7%).

The *capital* ratio is measured by the bank's Tier-1 capital (core capital) as a proportion of total risk-weighted assets. This ratio is an important indicator of banks' financial soundness because Tier-1 capital is comprised of highly liquid assets that can be readily liquidated in the event of financial distress and it ensures that banks can absorb losses. Prior to divestitures, divesting banks have significantly less mean (median) core capital, 10.5% (10.4%) than do non-divesting banks, 12.0% (11.5%). However, divestors on average reserve much higher capital ratio than the minimum statutory requirement of 4%, which implies risks associated with the regulatory capital requirement may not be the primary motive of bank divestitures. This assumption will be tested in the divestiture decision model later.

The *default risk* ratio is measured as the proportion of nonperforming assets over total assets. The mean (median) default risk of divestors is 1.3% (0.6%) prior to divestitures and that of non-divestors is 1.2% (0.6%). Significantly higher default risk of divestors suggests that financially distressed banks are motivated to divest.

The *market-to-book ratio* of divestors is significantly higher than that of non-divestors. The mean (median) market-to-book ratio of divestors is 1.4 (1.3) and that of non-divestors is 1.3 (1.2). This means banks take an advantage of high market valuation in raising capital by liquidating assets.

The *loan growth* rate indicates an average percentage growth in bank loans over the past three years. Divestors, 43.5% (30.3%) on average have significantly

lower mean (median) growth rate than do non-divestors, 45.5% (32.6%). However, putting the statistical differences aside, divestors still exhibit healthy growth rates similar to non-divestors.

Iemploy different measures of profitability – *return on asset (ROA)*, *return on equity (ROE)*, and *net interest margin (NIM)* – and on average, divestors are slightly less profitable before undertaking divestiture according to mean differences. Medians are statistically indifferent.

Divestitures are often accompanied by acquisitions (Kaplan and Weisbach, 1992; Burke, 1997; Baer and Redcay, 2000; Pilloff, 2002) whether it is to remove unfit assets post-acquisition or to boost market share and growth of a business segment within a firm. My sample statistics acknowledge that on average the probability that a bank is likely to pursue an *acquisition* is significantly higher for divestors (68.2%) than for non-divestors (24.7%).

The statistics show that banks are on average less efficient, are financially more distressed, and have lower growth rate and less core capital prior to divestitures. Moreover, divesting banks are much larger than non-divesting banks, and majority of divestitures are followed or preceded by acquisition.

I present characteristics associated with bank divestiture transactions in Panel C of Table 3. 2. The mean (median) *market value* of divesting banks is $35.7 (3.4) billion. The mean (median) *Tobin's Q* which represents over or undervaluation is 1.1 (1.0). The mean (median) *total assets* of divesting banks which is used to measure bank size is $282.3 (24.7) billion. The mean (median) *deal value* of the divested units is $261.4 (56.3) million. The mean (median) *relative size* of the divested units is 14.7% (2.7%) of the divesting banks' market value of equity. Most divested units are *subsidiaries* (97.9%), and only few are *public* (1.1%) or *private* (0.3%). 69.9% of the transactions involve divestitures of *unrelated (non-core) unit* while 30.1% of the divested units are divestors' *core unit*. 56.8% of divestitures are accompanied by *related mergers* in which divestors acquire a business related to their core industry. 40.2% of acquisitions that are performed by divestors are *unrelated mergers*. 45.5% of the divested units are from the same *state* as their buyers. The mean (median) *divestiture experience* by banks in the past 3 years is

88.9% (69.3%). With a small number of observations available on the method of payment, I generate *percentage of payment made by cash* for which the mean cash payment is 93.6%. The mean (median) stock price *runup* before divestiture announcements is 0.8% (-0.2%).

3.5 Methodology

3.5.1 Divestiture Decision Model and Variable Construction

There are limited number of empirical studies examining the role of divestiture in banks, and divestiture research typically excludes financial firms from the sample. A few studies which evaluate bank divestitures accentuate that banks are highly regulated and that divestitures are a proviso to mergers. To find out whether divestiture is an important restructuring event for banking organizations, I test what motivates banks to divest using a fixed-effects linear probability model as in the equation (1). I do not use conventional binary model such as the probit or logit model because those are subject to inconsistency and incidental parameters problem which occur in panel data (Kiefer and Wolfowitz, 1956; Heckman, 1987; Lancaster, 2000; Fernández-Val, 2009; Jang, 2019)[62]:

$$
\begin{aligned}
&Divest_{i,t} \\
&= \alpha \\
&+ \beta_1 Positive\ performance\ gap_{i,(t-4,t-1)}\ or\ \beta_1 Negative\ performance\ gap_{i,(t-} \\
&+ \beta_2 Size_{i,t-1} + \beta_3 Operating\ inefficiency_{i,t-1} + \beta_4 Liquidity_{i,t-1} \\
&+ \beta_5 Leverage_{i,t-1} + \beta_6 Capital_{i,t-1} + \beta_7 Default\ risk_{i,t-1} + \beta_8 M/B_{i,t-1} \\
&+ \beta_9 Loan\ growth_{i,(t-3,t-1)} + \beta_{10} ROA_{i,t-1} + \beta_{11} Acquisition_{i,(t-3,t+1)} \\
&+ Year\ fixed\ effects + Firm\ fixed\ effects + \varepsilon_{i,t}
\end{aligned}
\qquad (1)
$$

[62] I additionally estimate a conditional fixed-effects logistic model and the results are similar to those in the fixed-effects linear probability model.

where the dependent variable, *Divest*, is a dummy equal to one if a bank divests in a given year, and zero otherwise. The definition of explanatory variables is available in Appendix *B*. As addressed in the hypothesis section, I include variables which measure divestiture motives based on the neoclassical theory and resource-based view. These theories suggest that financially distressed firms are more likely to liquidate assets to raise capital and relax credit constraints. I create indicators of financial distress following Simpson and Gleason (1999):

i. the size of the bank measured by the natural log of total assets;
ii. financial leverage measured by the ratio of the book value of equity over the book value of total assets;
iii. the default risk measured by the proportion of nonperforming assets over total assets; and
iv. the equity market risk measured by the market value of equity over the book value of equity.

Additionally, I include the liquidity and capital ratio to examine the hypothesis suggested by Slovin, Sushka, and Poloncheck (1991). They argue that bank divestitures are more likely to be motivated by the regulatory capital obligation. Estimating the correlation between those variables and the likelihood of bank divestiture will confirm whether their hypothesis is true.

The resource-based view suggests that firms with increasing performance undertake divestitures to free resources and invest in growing business. To test this hypothesis, I generate *Historical aspiration gap* following Vidal and Mitchell (2015), which measures the average performance of a bank for the last three years using ROA. The formula is as follows:

$$Historical\ aspiration\ gap_{t-1} = ROA_{t-1} - \frac{ROA_{t-2} + ROA_{t-3} + ROA_{t-4}}{3} \qquad (2)$$

From the Historical aspiration gap, two control variables are created:

i. *Positive performance gap* takes the value of the Historical aspiration gap when it is positive and takes the value of zero when it is negative. This variable indicates increasing performance.

ii. *Negative performance gap* takes the absolute value of the Historical aspiration gap when it is negative and takes the value of zero when it is positive. This variable indicates decreasing performance.

3.5.2 Dynamic Restructuring Strategies

Divestitures in amalgamation with acquisitions are more of dynamic restructurings which involve expansion of scale and scope. For instance, a firm acquiring a related business to its primary industry with subsequent divestiture of a non-core unit intends to increase focus (by decreasing its business scope) and scale on its core operation. Conversely, a firm acquiring an unrelated business and divesting its core or other non-core unit can shift or expand its scope into a different industry. Based on scale and scope dimensions related to the implementation of multiple forms of restructurings, I generate the below diagram and define strategies.

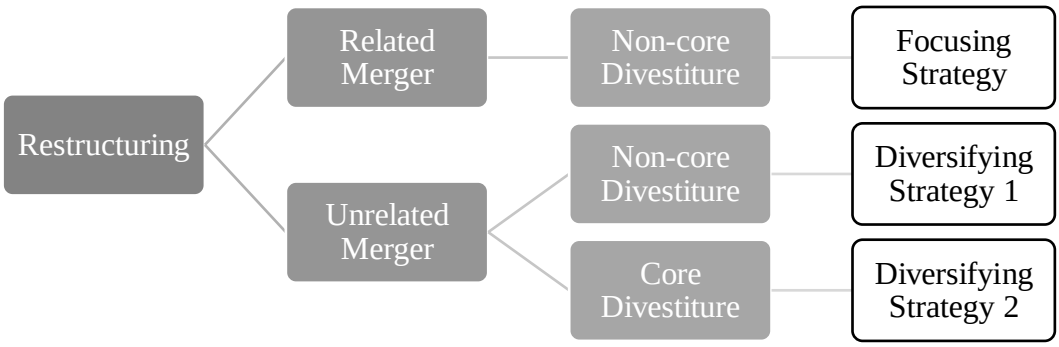

Figure 1 Illustration of dynamic restructuring strategies

The figure above defines each strategy:

1. *Focusing strategy* involves divesting non-core unit and/or acquiring related business. This strategy strengthens firms' existing position in their primary market and restore managerial attentions.
2. *Diversifying strategy 1* involves an acquisition of unrelated business and divestiture of non-core unit. This strategy allows firms to enter a new business and simultaneously monetize unfit resources.
3. *Diversifying strategy 2* involves an acquisition of unrelated business and divestiture of core unit (legacy divestiture). Firms can shift their business scope into a different segment through this strategy.

I use those strategies to estimate both divestiture decision and performance models.

3.5.3 Corporate Restructuring Strategy and CARs

The literature relying on the agency theory favours focusing strategy, and the use of focusing strategy within divestiture literature has been limited to explaining a reduction in diversification discount in multi-sector firms. It is because empirical evidence reveals that focusing strategy improves equity returns and long-term profitability. Further, investors positively react to announcements of focus-increasing divestiture. However, these studies overlook the fact that focusing strategy is one of the restructuring strategies sequentially undertaken by managers to sustain continuous growth and profitability along with diversifying strategy. Under the neoclassical theory, diversification is as value-maximizing as focusing strategy, but less is known about announcement returns of bank divestitures involving diversifying strategy. I examine the effect of different types of restructuring strategies on the announcement returns using the 3-way interaction variables in the following cross-sectional OLS regression model:

$$\begin{aligned} CAR_{i,t} = \ & \alpha + \beta_1 3 - way\ interation\ variable + \beta_2 Divest\ experience_{i,t-1} \\ & + \beta_3 Size_{i,t-1} + \beta_4 State_{i,t-1} + \beta_5 Liquidity_{i,t-1} \\ & + \beta_6 Leverage_{i,t-1} + \beta_7 Tobin'sQ_{i,t-1} + \beta_8 Runup_{i,t} \\ & + Year\ fixed\ effects + \varepsilon_{i,t} \end{aligned} \quad (3)$$

where the dependent variable is 3-day cumulative abnormal returns (CARs) around the divestiture announcement date. All control variables are defined in Appendix *B*. The 3-way interaction variable has three different combinations depending on the restructuring strategy:

1. Focusing Strategy: $Diversified\ bank_{i,t-1} \times Noncore\ divestiture_{i,t} \times Related\ merger_{i,t}$
2. Diversifying Strategy 1: $Diversified\ bank_{i,t-1} \times Noncore\ divesiture_{i,t} \times Unrelated\ merger_{i,t}$
3. Diversifying Strategy 2: $Diversified\ bank_{i,t-1} \times Core\ divestiture_{i,t} \times Unrelated\ merger_{i,t}$

3.5.4 Post-divestiture Stock Return Performance

3.5.4.1 Buy-and-Hold Abnormal Return (BHAR)

In addition to short-term performance, I estimate long-term post-divestiture equity performance. Precisely, I examine buy-and-hold abnormal returns (BHAR) following Barber and Lyon (1997) in which the performance of event firms is compared to that of benchmark firms matched by size and book-to-market ratio. The BHAR is computed over the 12, 24, and 36 calendar months beginning the month following the divestiture completion date. The post-divestiture BHAR of bank i is calculated as follows:

$$BHAR_i = \prod_{t=1}^{T}[1 + R_{i,t}] - \prod_{t=1}^{T}[1 + R_{benchmark,t}], \quad (4)$$

where $R_{i,t}$ is compounded returns of a sample firm i, and $R_{benchmark,t}$ is Fama-French's 25 benchmark portfolio returns which fall into the same size/book-to-market decile as the sample firm. To find benchmark firms, first, I construct the size (market value of equity) and BM (book-to-market ratio) variable for banks in my sample. The size variable is the price on the last trading date of the month multiplied by the number of shares outstanding at the end of the divestiture completion month. The BM variable is computed as the book value of equity[63] from the Compustat bank fundamentals annual data at the fiscal year end prior to the divestiture effective date over the market value of equity.

Next, I create size and BM breakpoints based on which each sample firm is assigned to its corresponding 25 size and book-to-market benchmark portfolios. Size breakpoints are determined by all NYSE stocks sorted into quintiles according to their market equity at the end of June in year t[64]. When assigning breakpoints for the sample firm, I use the firm's market equity from the prior month before the divestiture announcement month. BM breakpoints are computed at the end of each June using NYSE stocks sorted into quintiles using book equity at the fiscal year ending in year t-1 and market equity at the end of December in year t-1. Once all the sample firms are assigned with size and BM breakpoints, I obtain benchmark returns for each firm by matching its breakpoints with those in Fama-French 25 size and book-to-market portfolios. In deriving the BHARs for each sample firm, if a stock is missing returns before the end of the cumulation window, I replace the return with the delisting return and its benchmark return for the rest of the remaining period. The benchmark portfolios are not rebalanced to generate true buy-and-hold returns so that it eliminates the rebalancing issue inherent in reference portfolios such as CRSP value-weighted index which is rebalanced every month. I estimate both equal-weighted (EW) and value-weighted (VW) mean BHARs, in which the value weights are generated as: the sample firm's market value of equity at the

[63] Book value is calculated as the book value of common equity plus deferred taxes minus preferred stock values – redemption value, liquidation value, and par value in this order. If book equity is less than zero, I eliminate it.

[64] Calculation of size and BM quintiles are available at "U.S. "Research Breakpoints Data." Kenneth R. French. http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html#Breakpoints.

divestiture completion date divided by the CRSP value-weighted market index on the same date (Mitchell and Stafford, 2000).

Prior findings on this long-term stock performance test statistics (Barber and Lyon, 1997; Mitchell and Stafford, 2000), however, acknowledge that the distribution of event firm BHARs is highly positively skewed which makes the average BHAR different from zero. To resolve this bias, I further calculate bootstrapped *p*-values following Mitchell and Stafford (2000). The procedure is as follows. For each sample firm which enters the divestiture event, I randomly select a firm which falls into the same size and book-to-market quintiles as the sample firm at the time of the event from the Compustat bank fundamentals annual file. This selection process yields a pseudo-sample with the same number of observations, size/book-to-market distribution, and calendar time frequency as the original sample. I generate 1,000 pseudo-samples by repeating this procedure. Next, I calculate BHAR for the pseudo-sample by adjusting with Fama-French 25 benchmark portfolios and produce an empirical distribution of mean BHARs across 1,000 pseudo-samples. The bootstrapped p-value is then calculated as the fraction of the mean pseudo-sample BHARs that are larger in magnitude, but of the same sign, than the mean BHAR from the original event sample.

3.5.4.2 Calendar-Time Portfolio Regression

Fama (1998) and Mitchell and Stafford (2000) highlight a limitation in using BHAR, which assumes independence, for statistical inference as BHARs of individual event firm are positively correlated with the industry-wide movements. Consequently, an alternative approach is implemented to measure the long-term stock performance. Advocated by Fama (1998), calendar-time portfolio regression approach captures any cross-correlation effects on the individual firm returns by allowing time-series variation. To perform the calendar-time portfolio regression, I first construct EW and VW portfolios with the returns of all banks which enters the event within the previous 12, 24, and 36 months. The value weights are the sample firm's market value of equity at the divestiture completion date. Portfolios are

rebalanced every month by including banks which enter the event in that month and excluding banks which reach the end of their holding period. The portfolio excess returns are calculated by deducting risk-free rate within the same month and then are regressed against Fama and French (1993) and Carhart (1997) factors as in the following equation:

$$R_{p,t} - R_{f,t} = \alpha_p + b_p(R_{m,t} - R_{f,t}) + s_p SMB_t + h_p HML_t + u_p UMD_t + e_{p,t}. \quad (5)$$

where $R_{m,t} - R_{f,t}$ is the market excess return, SMB is the difference between small and large stock portfolios, HML is the difference between high and low book-to-market equity stock portfolios, and UMD is the difference between winners and losers stock portfolios. The intercept, α_p estimates average monthly abnormal returns of the event portfolios.

3.6 Empirical Results

3.6.1 Determinants of Bank Divestiture

Divestitures of banks are practically unexplored terrain in the literature as compared to divestitures of non-financial firms. Given lack of research, I begin by revisiting the theories that have been a foundation of divestiture studies. Divestiture is a crucial means of reallocating resources in an efficient market perspective. When a firm has a marginal business, which makes the entire operation less efficient and less profitable, it is better to be transferred to another company which could better utilize the asset. This transaction can be synergistic for both parties, but especially, for the sellers in any theoretical standpoints. For financially distressed firms, the proceeds from asset liquidation relax credit constraints, which corresponds to the financing theory. Under the neoclassical theory, divestiture helps divesting firms optimize resource allocation by removing marginal or redundant assets and enhance operational efficiency of their remaining business. According to the resource-based

view, additional cash flow generated by divestiture can be used to fuel the growing business.

In this study, I reflect these theories in assessing various motives of bank divestiture proposed in *Hypothesis 1*. Selected potential motives of bank divestiture contain bank-specific characteristics. I test the correlation between these characteristics and the decision to divest using a fixed-effect probability model[65]. The results are reported in Table 3. 3. All the variables are defined in Appendix *B.*

Following Simpson and Gleason (1999) as discussed in the methodology, I generate four indicators of financial distress associated with banking firms: *size*, *leverage, default risk*, and *market-to-book ratio*. I display the results in model (1) and (2)[66]. The bank size and default risk have significantly positive impact on bank divestiture. Large banks entail higher systemic and idiosyncratic risks overall and default risk obstructs banks' ability to raise capital exacerbating financial constraints. Thus, these findings support the financing hypothesis and highlight that financially distressed banks are more likely to undertake divestiture. On the contrary, the market-to-book ratio is negatively associated with the divestiture decision, signifying that banks are less likely to divest as expected earnings power become lower. Leverage, another indicator of financial distress, is insignificantly associated with divestiture decision.

Consistent with the efficiency hypothesis based on the neoclassical theory, banks are more likely to divest to improve operational efficiency. The *operating inefficiency* ratio, which is measured by a bank's total operating expenses over the book value of total assets, significantly increase the likelihood of bank divestiture.

The key independent variable in model (3) is *positive performance gap*[67] which measures whether a positive performance trend stimulates banks to divest. The result shows that positive performance gap significantly and positively affects

[65] Refer to equation (1) in the methodology section.
[66] In model (1), I exclude some of the variables shown in model (2) because the Compustat bank fundamentals annual database does not provide some financial information necessary to generate the operating inefficiency, leverage, and default risk ratio before 1993. When I include those variables, the model loses all observations before 1993, hence, I estimate the model both with and without those ratios.
[67] Refer to equation (2) in the methodology section for the variable construction.

banks' decision to divest. Consistent with the resource-based view, this finding corroborates that divestitures are instigated by firms with increasing performance to fuel the growing trend. On the other hand, negative performance gap in model (4) is not significantly related to divestiture decision.

The negative association between loan growth and probability of divestiture indicate that banks with increasing loan growth have less incentive to reduce their business scale.

Banks actively engage in divestitures to deploy a redundant or debilitated unit following an acquisition. For example, Credit Suisse merged with Winterthur Swiss Insurance Company in 1997 and in the following year, they sold Winterthur's reinsurance operations[68]. Likewise, banks conform to the strict code of federal regulation for divestiture procedures with any planned mergers[69]. As a result, there is high correlation between *acquisitions* and divestitures as shown in the regression results.

Lastly, my finding does not support the hypothesis proposed by Slovin, Sushka, and Poloncheck (1991). They suggest that banks are obligated to divest due to the regulatory capital requirement, but model (2) shows that the *capital* ratio has no significant influence on divestiture decision. The *liquidity* ratio also has insignificant impact on bank divestiture.

Overall findings on additional motives of bank divestiture are consistent with the Hypothesis 1 and support the neoclassical theory and the resource-based view. Further, my finding refutes the argument suggested by Slovin, Sushka, and Poloncheck (1991) and shows that the capital requirement is not the main driver of bank divestiture.

[68] "Acquisitions and divestitures." Credit-Suisse. Accessed May 29, 2020. https://www.credit-suisse.com/about-us/en/investor-relations/corporate-and-share-information/corporate-information/acquisitions-divestitures.html.

[69] From "Title 12-Banks and Banking," by Code of Federal Regulations, January 1, 2010, Pt. 220-299.

3.6.2 Change in Corporate Scope through Mergers and Divestitures

As mergers have been proven to be an integral part of restructuring strategies jointly exercised with divestitures, I look into what motivates banks to involve acquisitions to change corporate scope. Chang (1996) describes that firms expand and contract corporate scope in the process of search and selection to modify current organizational routines and upgrade their knowledge base. He indicates that while both highly and poorly performing firms engage in search and selection, poorly performing firms have more incentive to do so to resolve the discrepancy in their performance gap. This perception of organizational search has been transpired in studies investigating change in corporate scope in conjunction with the neoclassical theory and the resource-based view.

Studies inspired by the resource-based view suggest that poorly performing firms are more likely to pursue diversifying strategy since the underperformance signals exhausted synergistic opportunities in their current segments. On the contrary, firms with increasing performance are more likely to specialize in their growing business (Christensen and Montgomery, 1981; Chang, 1996; Vidal and Mitchell, 2015).

Corresponding to the neoclassical theory, Matsusaka (2001) specifies search and selection as a sequential process of finding a good match[70] and explains how the status of match motivates a particular restructuring strategy. He suggests that firms with a good match use focusing strategy to amplify the profitability of the ongoing business while those with a marginal or a bad match use diversifying strategy to discover a better match for their organizational capabilities.

Based on these theories, I estimate what motivates banks to change their scope. As highlighted in *Hypothesis 2*, my conjecture is that highly performing banks (banks with a good match) are more likely to use the focusing (scope-decreasing) strategy while poorly performing banks (banks with a poor match) are more likely to use the diversifying (scope-increasing) strategy. I evaluate this hypothesis using

[70] A type of business defined as a good match for the firm's capabilities (unique knowledge and skillset) can produce synergies, but a bad match lowers profitability and causes performance decline.

the fixed effect probability model. The dependent variable is the choice between scope-decreasing and scope-increasing strategy. The key independent variable is positive performance gap, which indicates a good match, and negative performance gap, which indicates a bad match. Additionally, I include ex-ante firm characteristics representing financial distress and profitability as control variables and estimate their relation to scope-changing decisions.

Table 3. 4 exhibits the regression results. Consistent with the *Hypothesis 2*, banks with positive performance gap are more likely to undertake the focusing strategy and are less likely to employ the diversifying strategy. Banks with negative performance gap exhibit exactly opposite relations with the strategic decisions, however, the results are statistically insignificant. Positive correlation between the market-to-book ratio and focusing strategy indicates that banks with higher earnings potential are motivated to specialize in their core business. Conversely, those with lower expected earnings are more likely to diversify. Moreover, banks with an increasing loan growth rate have higher probability to implement the focusing strategy to continue the growth trend, but those with declining loan growth are more likely to search for a better match by diversifying into a new industry. [71]

My findings are consistent with profit-maximizing motives explained by the neoclassical theory and the resource-based view in that highly performing banks, due to a synergistic match, are more likely to specialize in the existing segments and are less likely to pursue diversification. The fact that positive performance gap as well as loan growth and earnings potential are negatively associated with the diversifying strategy also provides a critical implication against the agency theory. Studies advocating the agency theory argue that excess cash flows tend to trigger value-destroying takeovers such as diversifying mergers to entrench managerial power and build an empire (Jensen, 1986; Mann and Sicherman, 1991; Chen, Chen, and Wei, 2011). Lang et al. (1995) also note that free cash flows generated by selling assets can lead to agency problem when it is retained by the firm. My results

[71] The results are similar when focusing and diversifying strategy are defined using an alternative period in which a bank acquires an asset in a given year and divest a segment over the five-year period (-3, +1).

denounce these concerns arising from the agency costs of free cash flow as diversifying deals occur when firms experience weak performance. In the next section, in relation to these theories, I contemplate how different strategic choices affect banks' divestiture announcement returns.

3.6.3 Cross-sectional Analysis of Bank Mergers and Divestitures

In this section, I break down strategies further into (1) divestiture of a non-core unit, (2) focusing strategy, (3) diversifying strategy 1, and (4) diversifying strategy 2[72] and examine the cross-sectional data comprised of all divestiture transactions occurred between 1980 and 2019[73] instead of the firm-level data. I estimate logistics regression analyses to measure the relation between bank-specific characteristics and the choice of scope-changing strategy. Table 3. 5 presents the results. All control variables are defined in Appendix *B.*

Similar to my findings from the panel regression analyses, banks are more likely to specialize when their loan growth rate increases. However, as their operations become more inefficient along with declining loan growth, banks are more likely to diversify their revenue streams and divest dysfunctional units. Regarding diversifying strategies involving two different types of divestitures between divestiture of core and non-core unit, I observe interesting variation in strategic choice depending on banks' financial status. Previously, in the panel regression analyses, leverage and regulatory capital requirement were insignificant determinant of bank divestiture. However, model (3) shows that banks with lower leverage and higher risk capital are more likely to undertake diversifying acquisition along with divestiture of non-core asset (diversifying strategy 1). Conversely, financially distressed banks - with higher leverage, lower risk capital, and higher default risk – are more likely to shift their scope by taking a legacy divestiture (divestiture of core asset). Those findings are consistent with Matsusaka

[72] Refer to 3.5.2. Dynamic Restructuring Strategies in the methodology section for the definition of each strategy.
[73] Refer to Panel C in Table 3. 2 for the summary statistics of divestiture transactions data obtained from the SDC.

(2001)'s prediction, whereby firms with a good match continue to focus on their current segments while firms with a poor match diversify into a new industry; and firms with the worst match shift their business scope by disposing their core assets.

For determinants of scope-changing strategies, I add a new variable, diversification level[74], which is a categorical variable measured by the number of different first 2-digit SIC codes within a bank. In exploration of the neoclassical theory, Matsusaka (2001) cognizes that firms diversify to find a better match when they have a decreasing performance and growth prospect. Intuitively, however, as the level of diversification increases, firms which have already explored other sectors and applied their capabilities could have realized which operations to focus. Chang (1996) supports this intuition and imply that the accumulation of new entries in the previous period is negatively associated with the probability of diversification in the next period. Consistent with this intuition, I find that the level of diversification in banks is positively (negatively) associated with focusing (diversifying) strategy as shown in model (2) and (3).

3.6.4 Cumulative Abnormal Returns (CARs) surrounding Bank Divestiture Announcements

To this point, I have focused on what drives bank divestitures. In this section, I estimate how investors react to banks' restructuring choices using cumulative abnormal returns (CARs) around divestiture announcements. Table 3. 6 reports announcement returns of (1) all divestitures, (2) divestitures of non-core unit, (3) divestitures as part of the focusing strategy, (4) divestitures as part of the diversifying strategy 1, and (5) divestitures as part of the diversifying strategy 2, based on different event windows. Panel A includes all banks in the sample and Panel B only includes diversified banks with operations in more than one industry.

[74] Diversification level is generated following Jenner, Powell, and Zhang (2019) and is added to the cross-sectional analyses because SIC codes for entire sectors a bank is operating in are only available for firms participated in divestiture events from SDC.

Fundamentally, there are almost no differences in the number of observations as well as the resultant CARs between the two samples.

When comparing CARs throughout different event windows for all and non-core divestitures as in model (1) and (2), respectively, announcements of bank divestiture induce on average significantly positive stock market reaction. Based on the 3-day CARs, banks' divestiture announcement increases shareholder returns by 0.4% in all deals and 0.6% in divestitures of non-core unit. My findings on shareholder wealth gains upon bank divestiture announcements contradict those of Slovin, Sushka, and Poloncheck (1991), which report no gains. They argue that the lack of announcement gains is because bank divestitures, unlike those of non-financial firms, convey unfavourable information regarding a bank's capital position and attribute such results to the economic cost of regulation.

Contrarily, restructuring strategies involving both acquisitions and divestitures portray varying impacts on shareholder returns contingent on alternative event windows. Over the 3- and 5-day windows, banks with focusing strategy and diversifying strategy 1 do not experience any abnormal returns, whereas those with diversifying strategy 2 which involves legacy divestiture experience significantly negative returns. However, during a longer event window estimated over 11 days, two of the former strategies are associated with negative CARs while the diversifying strategy insignificantly influences returns. Univariate estimations do not yield persistent results and there is no significant difference in announcement returns between focusing and diversifying strategies. Consequently, I estimate the impact of these strategies on announcement returns in multivariate cross-sectional OLS model.

To precisely estimate the impact of each strategy on CARs, I create three-way interaction variables as in equation (3) in the methodology section. In this analysis, I focus on diversified banks since divestiture of non-core unit with focusing strategy can only be implemented by a firm operating in more than one industry. Thus, I impose the same condition for banks implementing different strategies as well. These variables are used to test *Hypothesis 3* which is deduced based on the neoclassical theory.

Studies using this theory find that firms with increasing performance are more likely to specialize in their core business, whereas those with declining productivity are more incline to diversify. Estimated focusing premium and diversification discount around divestiture announcements are, therefore, caused by this endogenous selection bias; in which the valuation of assets is the reflection of divesting firms' ex-ante performance. Furthermore, Matsusaka (2001) states that even with a value-maximizing motive, firms implementing diversifying strategy could underperform specialized firms because of the efficiency cost and implicitly suboptimal match. He also adds that legacy divestiture can result in significant value reduction due to the core asset's historical interdependency with the rest of the businesses (Feldman, 2014).

The results are reported in Table 3. 7. Consistent with the *Hypothesis 3*, divestiture of core unit is negatively associated with the announcement returns with an average of 0.5% reduction in shareholder value. I also find that focusing strategy in model (2) (interaction between non-core divestiture and related merger with diversified bank) significantly increases announcement returns by an average of 2.2% while diversifying strategy in model (4) (interaction between core divestiture and unrelated merger with diversified bank) which involves legacy divestiture significantly and negatively affects stock returns with an average of 1.4% reduction in value. However, diversifying strategy with divestiture of non-core asset and unrelated merger in model (3) has an insignificant impact on valuation. Substituting the event window with 11-day CARs does not change the results.

Additionally, in untabulated analysis, I interact these variables with the relative size variable since larger divestments can have stronger impact on the returns while small deals may have no influence. I document strong size effect as the results show not only that the relative size is significantly and positively associated with CAR, but also that diversifying strategy involving divestiture of non-core asset increase returns of banks. Further, neither legacy divestiture, nor diversifying mergers with divestiture of core asset are linked to discount in firm value after controlling relative size.

3.6.5 Long-term Performance

Short-term returns echo revaluation of a firm based on its prospective performance with the strategy it is devising. To identify equity performance of an investment in divesting banks for a longer holding period though, I estimate Buy-and-Hold Abnormal Return (BHAR). Table 3. 8 exhibits 12-, 24-, and 36-month BHARs along with standard and bootstrapped *p*-value following Mitchell and Stafford (2000). Panel A, B, C, and D display bank BHARs on all divestitures, divestitures with focusing strategy, diversifying strategy 1, and diversifying strategy 2, respectively. BHARs are presented in percentages. Overall, there is some evidence that bank divestitures outperform their industry benchmarks within 36 months by 6.7% for equal-weighted (EW) reutrns and 3.4% for value-weighted (VW) returns. Banks with focusing strategy are on average associated with positive returns, however, bootstrapped *p*-values are statistically insignificant. Banks with diversifying strategy 1 underperform based only on VW returns, but the *p*-values are inconsistent between standard and bootstrapped. The long-term performance of banks with diversifying strategy 2 do not significantly differ from that of their benchmarks.

Overall, the BHAR estimation exhibits inconsistent results making it difficult to conclude that banks with divestitures or other restructuring strategies perform differently from their benchmarks in the long-run. More importantly, the results indicate that any diversification discount banks experience during the announcement period dissipates in the long-term. This implies that banks which previously have experienced underperformance and financial distress eventually achieve comparable performance through revenue diversification. Likewise, premiums related to focusing strategy also neutralize in the long-term.

I additionally perform calendar-time regression analyses of portfolios formed on banks with divestitures to account for any cross-correlation present in BHARs. Table 3. 9 reports the time-series regression results. Returns are presented in percentages. I estimate 12 to 36 months returns, and the alpha represents the excess returns of the monthly portfolio. Both EW and VW returns display statistically

insignificant mean abnormal returns implying compatible performance of divestors with that of their benchmarks over the long-run. I also separately measure calendar-time portfolios formed on banks with focusing and diversifying strategies. However, I only report the results from all divestiture activities because I do not have enough observations to measure some of the portfolio returns, and for those that are available, alpha was statistically indifferent[75]. Based on the results from both BHAR and CTPR methods, I confirm that the *Hypothesis 4* is true and conclude that divestitures help banks remain competitive by matching their performance to that of their benchmarks in the long-run.

3.7 Conclusion

In this study, I investigate motives of divesting banks and their performance. Due to the nature of bank divestitures often accompanied by contemporaneous mergers, I also consider banks which undertake acquisitions along with divestitures. I define strategies involving both transactions as focusing and diversifying strategy depending on the change in corporate scope these transactions effectuate. I then study strategic directions divesting banks frequently take as well as implications these strategies have on their divestiture performance.

In designing estimation models and translating the results, I apply the neoclassical theory and the resource-based view which take value-maximizing view of managerial motive in scope-changing decisions. My view on the managerial motive deviates from the agency theory which limits the role of divestiture to eliminating agency problems in diversified firms and alleviating diversification discount. As the agency view conveys questionable assumptions that have been empirically contested, I empirically examine motives and performance of bank divestiture based on the other theories mentioned above.

[75] I do not have enough observations for the 12-month portfolio from diversifying strategy 1 and for all the portfolios from diversifying strategy 2. Besides, returns from the focusing and diversifying strategy are not significantly different.

I begin by analysing previously undocumented divestiture motives based on bank-specific characteristics such as operating inefficiency, financial distress, and profitability. Similar to divestitures of non-financial firms, banks are motivated to divest when experiencing financial pressure and operating inefficacy. Furthermore, consistent with the resource-based view, banks with positive performance gap are highly likely to use divestitures to reconfigure their resources and boost their growing business.

To confirm the inapplicability of the agency theory on diversification discount, I additionally analyse the relation between the level of diversification of a bank and its choice of restructuring strategies. As opposed to the agency view on diversification, I find that the more the bank is diversified, the more it is likely to undertake focusing strategy and the less it is likely to diversify. I also find that banks with increasing performance and loan growth rate tend to focus on their growing business rather than diversifying. However, those with operating inefficiency and financial distress are inclined to diversify their revenue streams to a different industry.

My findings in general do not support the agency theory in which large and diversified firms with additional cash flows tend to use further diversification to build an empire and strengthen managerial control over the firm. I get more persistent results from the neoclassical theory and the resource-based view, in which banks with a good match (e.g., positive performance gap and increasing loan growth) specialize in the existing sector, but those with a poor match (e.g., financial distress and operating inefficiency) diversify to find a better match.

In measuring divestiture performance of banks, I first gauge the overall bank divestiture performance using CARs with multiple windows. Divestiture announcements overall induce positive investor reactions, so does divestiture of non-core unit. As for those involving acquisitions to change corporate scope, focusing strategy improves CARs, whereas the diversifying strategy has a negative impact on CARs.

In the long-run, there is weak evidence that divestitures overall help investors gain significantly within 36 months according to buy-and-hold abnormal returns

(BHARs). However, both BHAR and calendar-time regression results confirm that irrespective of the strategy between focusing and diversification, long-term equity performance of banks does not differ from their benchmarks. Therefore, I conclude that divesting banks or banks with different strategies on average remain competitive with their industry peers in the long-term.

My findings contribute to the divestiture literature by providing new evidence regarding banks' divestiture motives and performance. From the theoretical perspective, I add to the literature of neoclassical theory and the resource-based view by providing empirical evidence on the value-maximizing managerial motive and the sequential approach to corporate decisions involving focusing and diversifying strategies.

Chapter 4

The Role of Divestiture during Periods of Economic Crisis

4.1 Introduction

Corporate turnaround strategies during periods of economic crisis not only determine survivor of a distressed firm, but also define its market positioning post-crisis. The utmost lesson learned from the 2008 global financial crisis is that firms facing distress during the economic downturn should adopt strategies which allow financial flexibility[76] for a prolonged period of recession beyond sidestepping a risk of default. In the midst of Coronavirus pandemic, top managers are tasked to make strategic decisions that can help overcome unprecedented financial distress. Astonishingly, to the best of my knowledge, no study has researched on an effective long-term turnaround strategy for firms facing financial difficulty ignited by the economic crisis. Most studies examining crisis-related restructurings focus on retrenchment[77] strategies with no evidence of long-run recovery and profitability.

[76] Financial flexibility is a term referring to the capability of a firm to react to an unanticipated event or to invest in a valuable project when it becomes available (Denis, 2011).
[77] Retrenchment refers to the reduction of costs or spending in response to economic difficulty.

More strikingly, I discover that the lack of research on effective turnaround strategies for economy-wide distress is attributable to the theoretical gap in empirical studies that do not demarcate the nature of those strategies.

According to the prior literature, there are two types of turnaround strategies that are executed by distressed firms: strategic reorientation[78] and retrenchment (Robbins and Pearce, 1992; Barker and Duhaime, 1997) and four types of relevant restructurings carried out to support those strategies: asset, managerial, operational, and financial restructuring (Sudarsanam and Lai, 2001; Koh et al., 2015). Asset and managerial restructuring are designed to pursue strategic reorientation which, by its nature, has long-lasting effects on firm performance. Precisely, asset restructuring involves major reconfiguration of a firm's portfolio through divestitures or acquisitions of a business unit[79] (Sudarsanam and Lai, 2001). Managerial restructuring is typically pursued to attain a radical change in incumbent management practices by the top managers[80]. Consequently, these two restructuring measures are inevitably progressive and foster the ensuing firm's strategic repositioning for several years to follow.

On the other hand, operational[81] and financial restructuring[82] are retrenchment strategies devised to increase short-term efficiency and cash flow. Conventionally, firms immediately react to economic distress by enacting retrenchment measures by cutting costs and reserving cash (Lang, Poulsen, and Stulz, 1995; Andrade and Kaplan, 1998; Zhou, Li, and Sveinar, 2011)[83]. Less acknowledged is that those

[78] Strategic reorientation occurs when firms change the existing strategy to gain competitive advantage corresponding to their declining market position and to enable continuing growth and profitability.
[79] Asset restructuring is achieved through the change in asset composition by purchasing a business unit to enter a new industry, expand or reduce the scale of existing business, or exit from an operating industry. The primary mechanism of asset restructuring includes mergers and acquisitions and divestitures.
[80] As managerial restructuring entails radical change in strategies used by incumbent managers, it involves top management turnovers.
[81] Operational restructuring includes investment reduction, COGS reduction, fixed asset reduction, and layoffs.
[82] Financial restructuring includes dividend cut or omission intended to preserve cash. It also includes debt or equity issue for raising capital to meet debt obligations and support continued operation.
[83] My sample statistics present supporting evidence to such claims. During the fiscal year of 2007/08 financial crisis, only 8.8% of the sample firms undertake divestments and 9.9% take management

measures are for firms with a strong strategic positioning in their industry expecting timely cyclical upturns (O'Neill, 1986). Economic crisis, however, is a highly volatile exogenous shock which requires firms to quickly adapt to shifting external environment to avoid elongated performance stagnation. This means sticking to contraction measures for a lengthy recessionary period is detrimental to firms' growth as those impede investments. Empirical evidence shows that those who withheld cash and focused on cost-cutting tactics underperformed firms with persistent investment after the 2008 financial crisis (Gulati, Nohria, Wohlgezogen, 2010; Mann and Byun, 2017).

Theoretical insights provided by the turnaround strategy literature indicate that investment potential determines distressed firms' long-run growth and profitability. Further intuition on declining economy posits that successful turnaround requires a strategy which allows firms to secure financing without having to increase leverage and sacrifice investment opportunities for valuable projects. The literature on asset restructuring nominates a strategy which exactly fulfil such purposes based on the financing hypothesis; financially constrained firms and firms with declining performance divest underperforming assets to resolve distress and support continued investment in the remaining divisions (Dittmar and Shivdasani, 2003; Ahn and Denis, 2004; Denis and Shome, 2005; Kalay, Singhal, and Tashjian, 2007). Further, a recent study by Finlay et al. (2018) suggests that divestiture is a useful strategy to be undertaken by financially distressed firms during economy-wide distress. They find that divestiture announcements during the economic crises are positively associated with returns of distressed firms due to its financing benefits which outweigh potential discounts in asset values under fire sale conditions.[84]

Despite its financing benefits, it has been argued that divestiture is on average insufficiently exercised relative to shareholders' optimum due to the agency costs of managerial discretion. However, external pressure such as financial constraint or recessionary condition forces firms to undertake divestiture to resolve distress

turnover. Majority of firms use retrenchment strategies such as investment reduction (57.6%), fixed asset reduction (24.7%), layoffs (17.7%), and debt issue (28.9%).

[84] Fire sale indicates selling assets at severe discounts. Fire sale conditions are defined by the increase in distressed firms, external market instability, and shortage of natural buyers.

(Wruck, 1990; Boot, 1992; Alexandrou and Sudarsanam, 2001). My conjecture is that economic crises provide firms with a unique opportunity to defeat managerial discretion and review their strategic and structural inefficiencies, pressuring them into reconfiguring their asset portfolio. External financing frictions triggered by depression can also encourage managers to dispose unfit assets and, instead, invest their attention and capital in more competent assets. Therefore, under the financing hypothesis, divestiture seems to be a vital strategy to be undertaken by financially distressed firms during the crises as it allows firms to liquidate underperforming assets to generate funds and invest in more profitable segments.

To corroborate these conjectures based on the financing hypothesis, I examine the impact of divestitures on firms' long-term operating performance in comparison with that of other restructuring strategies during the 2008 financial crisis. Specifically, I assess whether financially distressed firms engaging in divestitures resolve distress condition and sustain more competitive performance in the post-crisis market as opposed to non-divestors who rely on other restructuring measures such as cost reduction and debt or equity issue[85].

Long-term operating performance is estimated based on the matched firm adjusted median OIBD (the ratio of operating income before depreciation plus interest income over the book value of total assets) and ROA (the ratio of net income over the book value of total assets) over the 3-year period subsequent to divestiture[86] as well as multivariate quantile (median) regression analysis. In both measures, I find that divesting firms significantly outperform non-divesting counterparts. The improvement in performance is much greater when divestiture is undertaken by financially distressed firms than by non-distressed firms with an average of 3.6 to 12.4% excess ROA. Furthermore, the joint analyses of multiple strategies show that conjoining divestitures with other restructurings create synergies and have positive effects on the operating performance. In particular, the combination between divestiture and managerial restructuring generates the highest

[85] Cost reduction measures hamper investments, and alternative financing measures such as debt and equity issue can be very costly and entail the risk of increasing leverage and default.
[86] I refer to Loughran and Ritter (1997) and Prezas and Simonyan (2015) for this methodology.

returns. On the contrary, firms undertaking managerial restructuring without divestiture do not improve their operating performance and those with retrenchment strategies trigger long-term performance decline.

I further analyze the effectiveness of these turnaround strategies on the recovery of firms from financial distress using the change in Z-score[87] (Altman, 1968). The results show that operational restructuring exacerbates distress condition and financial restructuring does not have significant impact on resolving distress. Conversely, divesting firms exhibit a strong resilience from distress with 40.1 to 59.9% increase in Z-score over the 3 years after the restructuring.

These findings are consistent with the financing hypothesis and imply that divestiture not only resolve financial distress, but also enable performance turnaround through investment in retained segments. For robustness, I compare the leverage and segment investment ratio of divesting firms with those of non-divesting firms. The results show that one year prior to divestiture, divesting firms have higher leverage than both non-divestors and firms with financial restructuring. Their leverage ratio, however, decreases by 0.6% post-divestiture whereas that of non-divestors, especially those which undertake financial restructuring, significantly increases by 5.6%. This implies that retrenchment strategy is not effective at resolving financial distress, but divestiture helps firms raise capital without escalating leverage. Likewise, the analysis on the segment investment ratio[88] confirms that divesting firms maintain investment ratio that is comparable to the pre-divestiture level. Conversely, non-divesting firms and firms which implement operational restructuring significantly diminish investment.

These findings confirm that strategic reorientation through asset restructuring takes a critical role in fuelling growth for firms under economic distress while management turnover or retrenchment alone cannot facilitate a sustainable turnaround. My findings affirm Barker and Duhaime (1997)'s theory that a

[87] Z-score measures the probability of default and is estimated based on four key financial ratios that represent a firm's financial health and profitability.

[88] Investment ratio is computed as capital expenditures divided by sales. Divesting firms' segment investment ratio was generated using retained segments only following Dittmar and Shivdasani (2003) to eliminate the influence of divested unit on the firm's overall investment policy in case it was capital-intensive.

successful turnaround depends on a firm's ability to modify its strategy, structure, and ideology rather than on short-term efficiency enhancements or cost-cutting tactics. They highlight that retrenchment is not the straight solution to turnaround, and it could further the decline if used poorly. My results are also similar to those of Denis and Kruse (2000) who find cost reductions ineffectual for turnaround and attribute most improvements in operating performance to asset restructuring.

Despite its clear financing advantages, however, divestiture is less frequently implemented during the crises. The most plausible reason for such inactivity can be found in the fire sale literature. Prior studies suggest that illiquid market condition during the economic downturn can potentially catalyse fire sales and discounts in asset values (Shleifer and Vishny, 1992, 2011). While this has been proven true for industry-wide distress, no evidence has been documented regarding the influence of economic instability on distressed asset sales[89]. Hence, whether divestitures are indeed subject to fire sale discounts during the financial crisis and whether the reduction in asset value undercuts their financing benefits require further examination.

I explore the possibility of fire sale discounts by measuring whether divestiture announcements result in shareholder value destruction using 3-day cumulative abnormal returns surrounding the divestiture announcement date. For both distressed and non-distressed firms, no sign of fire sale discounts is observed as distressed firms' announcement returns are significantly positive. Moreover, according to the OLS regression and Heckman's two-stage analysis[90], the returns between distressed and non-distressed firms are indifferent. My findings provide strong support for the financing hypothesis[91] since divestiture announcements by distressed firms do not induce fire sale discounts and the financing benefit overwrites potential discounts from suboptimal asset sales to non-industry buyers.

[89] Finlay, Marshall, and McColgan (2018) find inconsistent evidence to the fire sale theory during two different periods of economic crisis.
[90] I use Heckman's endogeneity correction model to control for the selection bias in divestiture decision.
[91] Any potential discounts from asset sales are compensated by the external financing benefits enabled by non-industry buyers who pay higher price than do industry buyers who are negatively affected by the economic distress.

My findings are also consistent with Finlay et al. (2018) who argue that non-industry buyers unaffected by the economic condition pay higher price that exceeds the expected cost of financial distress from the economy-wide distress. Consistent with their argument, my statistics show that 63% of assets during this period are divested to non-industry acquirers unlike in the growing economy [92], and unconstrained sellers have higher propensity to do so[93].

This study contributes to the corporate turnaround literature by providing the first empirical evidence as to the role and effectiveness of asset restructurings implemented during a recession. I construe that firms initiating strategic reorientation and optimize their asset portfolio through divestiture corresponding to the changing market dynamics gain competitive advantage against their industry counterparts. Such an intuition is buttressed by the improvement in long-term operating performance of firms with divestiture strategy.

This research also adds to the turnaround literature by considering the effect of economic crisis on distressed asset sales. So far, studies on divestiture as a turnaround strategy were performed on the firm-level distress in which market illiquidity was not a determinant of the asset value; especially, divestitures have been undermined in crisis-related turnaround studies because of the pervasive notion of liquidity discounts. Thus, distressed asset sales lacked theoretical implications and empirical validations as a suitable turnaround strategy in depressed economy. The evidence provided in this study suggests that the fire sale theory is inapplicable to asset sales in periods of economic crisis. Positive stock returns upon divestiture announcements imply that enough liquidity is provided by unconstrained non-industry buyers and assets are rather fairly priced.

Lastly, this research reiterates that firms need to base their choice of crisis-driven strategy upon its long-term effects as over-pursuing retrenchment strategies can be short-sighted. I believe that evaluating effective long-term turnaround

[92] In the growing economy, more assets are divested to industry buyers than to non-industry buyers.
[93] Unconstrained buyers have less incentive to sell assets to non-industry buyers if the fire sale theory were true and if non-industry buyers require massive discounts on divested assets. The fact that non-distressed firms sold more assets to non-industry buyers than did distressed firms during the crisis support the financing theory over the fire sale theory.

strategies can be particularly resourceful and timely with the ongoing COVID-19 pandemic and uncertain periods of recession ahead.

The rest of the paper is organized as follows. Section 4.2 is literature review. Section 4.3 deliberates hypotheses based on the relevant literature. Section 4.4 depicts data and methodology. Section 4.5 presents empirical results, and Section 4.6 concludes.

4.2 Literature review

Among diverse perspectives, divestitures have principally been studied in the context of bankruptcy resolution for financially distressed firms. Gilson, John, and Lang (1990) indicate that firms are pressured to divest assets by banks or creditors as part of debt restructuring plans or Chapter 11[94] to repay debts and avoid defaults. Whilst the literature document that asset liquidations are the main mechanism through which firms foil defaults and massive scale of debt overhang (Maksimovic and Phillips, 2002; Gilson, 2012), the liquidation value of the divested unit remains largely undetermined to date. The unresolved paradox primarily aligns with the indirect costs of asset sales at prices below going-concern value when sellers are under financial distress (Kalay, Singhal, and Tashjian, 2007). Verdicts suggest that Chapter 11 can be very costly for firms with relatively high going-concern value, especially with greater proportion of intangible or firm-specific assets (Gilson et al., 1990)[95]. Divesting firms with firm-specific assets are forced to offer hefty discounts as specialist buyers are harder to find, making those assets less liquid. A series of studies substantiate the discounts in sellers' liquidation value. Hotchkiss and Mooradian (1998) find that firms acquiring assets through Chapter 11 exhibit significantly positive announcement returns and improvement in operating

[94] Chapter 11 is a form of bankruptcy through which companies reorganize debts and assets to avoid default and recoup the business.
[95] Thus, firms with high going-concern value and fewer lenders are more likely to succeed in debt restructuring through private renegotiation outside of Chapter 11.

performance because they purchase quality assets from bankrupt targets at substantial discounts relative to those of nonbankrupt targets[96]. Similarly, Pulvino (1998) reports that liquid assets of distressed airline companies are sold at up to 46% discount to the average market value.

The secondary issue with empirical inconsistency in asset liquidation value lies with the managerial use of the sales proceeds. Whether to retain the proceeds or to distribute to creditors apparently determines the liquidated asset value as well as the performance of the seller's remaining business. Some scholars find negative implications on debt repayments. Brown, James, and Mooradian (1994) find that distribution of asset sales proceeds to creditors has disproportionate impact on announcement returns between bondholders and equityholders. Since debt repayments terminate equityholders' call option on the divested asset, shareholders experience lower returns during the divestiture announcement and transfer wealth gains to bondholders. Part of the discounts in announcement returns with debt repayments are attributable to opportunity costs associated with potential investments when the sales proceeds are retained alternatively.

Yet, the idea of retaining proceeds encounters likely challenges by contradictory findings. Lang, Poulsen, and Stulz (1995) report that the value of the divesting firm is discounted when the sales proceeds are retained due to the agency costs of managerial discretion. The trade-offs of retaining proceeds are in between growth opportunities with increased investments and the agency costs of overinvestments. Proponents of this idea congruently argue that the additional cash obtained from divestitures leads to managerial entrenchment and empire building (Lang, Poulsen, and Stulz, 1995: Datta and Iskandar-Datta, 1996; Bates, 2005). Therefore, they believe that the asset liquidation value increases with debt repayments which eliminate the potential misuse of extra cash based on managerial discretion.

The final element that triggers discounts in asset liquidation value is market illiquidity, examined within a separate chapter of divestiture literature. This is more

[96] In comparison with the prices paid to matched-nonbankrupt targets, the estimated discount is 45% on average.

relevant to my research as I am trying to measure the relation between economic instability and divestiture performance. Irrespective of divesting firms' financial status or the use of proceeds, studies investigating dilution of asset value in corporate divestitures collectively illustrate that assets are priced according to the market condition (Shleifer and Vishny, 1992; Maksimovic and Phillips, 2002; Schlingemanna, Stulz, and Walkling, 2002). Shleifer and Vishny (1992) inform that the illiquid market values assets at a lower price than their best use. To elaborate, when industry buyers, who suffer from the same financial constraints as divesting firms, cannot afford to acquire the divested assets, the purchase opportunities are shifted to non-industry buyers. Closest examples are provided by Pulvino (1998) who demonstrates that constrained airlines are more likely to sell assets to industry outsiders during the market downturn. However, non-industry buyers may face expensive costs for acquiring and managing the assets because they are more inclined to overpay for difficult-to-value assets and hire specialists to run an unrelated business at additional expenses. This discrepancy in acquisition costs between a non-industry buyer and the highest value user drives the asset prices below their fundamental valuation. Firms with alternative ways to deal with financial distress, therefore, are less likely to divest in illiquid market condition. Asquith, Gertner, and Scharfstein (1994) denote that asset sales are integral means of avoiding Chapter 11 but are shunned in distressed and highly leveraged industries. Maksimovic and Phillips (2002) also mention that industry conditions are much more influential in determining an asset price than the efficiency of Chapter 11.

The importance of market liquidity in asset transactions is detailed by Schlingemanna, Stulz, and Walkling (2002) who theorize how assets are valued depending on asset liquidity. A liquid market characterized by larger volume of transactions offers more buyers, in which competitions by several buyers help assets valued at prices close to their present value of cash flows. Meanwhile, less buyers are available in an illiquid market where sellers are forced to offer discounts to attract a buyer. Hence, asset liquidity explains firms' decision to divest or retain and internally restructure a segment. One of their findings show that firms rather

divest a business unit which operates in a more liquid market than divesting their worst performing unit in an illiquid market.

So, what happens if firms still divest assets in an illiquid market? Shleifer and Vishny (2011) respond to this question in their subsequent paper by linking market illiquidity to fire sales that supposedly impose further systematic risks on the financial market. It begins with a distressed firm selling an asset at a fire sale price because not enough industry buyers are available in the market. This fire sale can lower the value of similar assets possessed by other firms as well. As the market price of those assets falls, firms have to provide some cash back or more collateral to their lenders to maintain loans and avoid liquidation of their collateral. This may prompt cascades of financial distress on these firms and deteriorate the overall firm values in the market. They describe that the recent financial crisis is a classic example of market illiquidity led to fire sales and further destabilization of the financial market. Since fire sales deepen mispricing during the crisis[97], banks are discouraged to lend, reduce their balance sheets, and start hoarding cash. The decline of external financing as a result of cash hoarding by banks reduces corporate investment and resulting output, thereby expediting depression. There is evidence that real investment suffered during the financial crisis because extra cash banks have were invested in securities rather than in lending (He, Kang, and Krishnamurthy, 2010; Ivashina and Scharfstein, 2010)[98].

Previous literature leading up to the immediate aftermath of the financial crisis in general perceives asset liquidations as a value destructive strategy to implement under fire sale conditions, explaining why there are less divestitures during the market downturn. However, a recent study by Finlay et al. (2018) discovers adverse outcomes on corporate divestitures during overlapping periods of firm and

[97] Mitchell and Pulvino (2010) observe extreme mispricing during the pick of the 2008 financial crisis.

[98] Similar examples are provided by Brunnermeier and Pedersen (2009) who use the limited arbitrage theory applicable to financial assets to explain how fire sales lead to collapse of the financial system; The fall of security prices increases margins and haircuts on collateral, so firms' ability to arrange collateral and borrow diminishes, and lenders liquidate collateral at fire sale prices. As this condition continues, arbitrageurs start selling underpriced securities and increase mispricing, resulting in collapse of both prices and market liquidity.

economic distress. In spite of fire sale conditions during the financial crisis based on the increase in distressed firms, external market instability, and shortage of natural buyers, they find that divesting firms' shareholders experience remarkable financial benefits with positive announcement returns. Supported by the financing hypothesis, these gains are enabled by non-industry buyers who are financially unconstrained. Two possibilities are suggested for their findings: i) economic distress is imperfectly correlated with some industries and the availability of unconstrained non-specialist buyers, ii) prior studies may have understated the financing benefits and overstated the fire sale costs of divestitures for overlapping distress conditions. The second point directly contradicts the fire sale hypothesis where non-specialist acquirers demand major discounts on divested assets in an illiquid market (Shleifer and Vishny, 1992, 2011) and implies that they offer better price for distressed assets during the economic crisis. Finlay et al. (2018) provide competitive argument here. Firstly, the value of divested assets can increase if bidding competition by non-industry buyers increases the price. Secondly, unlike industry-wide distress which construes fire sales as specific and negative information about sellers' asset value, economic distress is not firm-specific. Thus, valuations upon divestiture announcements are considered new information on the financing benefits that overtake the costs of distress triggered by the bad economy (Borisova, John, and Salotti, 2013). These findings turn my next focus onto the advantages of divestitures for distressed firms as a means of turnaround.

Despite the noticeable discounts, studies measuring the subsequent performance of the divesting firms discover that the net financing benefits on continued operation offset the bankruptcy costs of discounted asset value. The benefits associated with divestitures are not limited to immediate cash flow which allows financial flexibility to repay debts and lower risk of default. Divestment is also a significant source of funding for investments (Jensen and Ruback, 1983; Jarrell, Brackley, and Netter, 1988; Hovakimian and Titman, 2006; Arnold, Hackbarth, and Puhan, 2018) and a tool to increase investment efficiency in the remaining divisions (Dittmar and Shivdasani, 2003; Ahn and Denis, 2004). Operational gains and successful turnaround are reported for firms that improve

investments using liquidated assets. Kalay, Singhal, and Tashjian (2007) observe increase in operating performance following Chapter 11 filings through asset disposal. Lasfer, Sudarsanam, and Taff (1996) find that asset sell-offs by financially distressed firms are associated with much higher returns than those by healthy firms, owing to the efficient lender monitoring and resolution of distress. While reduction in bank lending channel reduced investment during the crisis (Stein, 2010), firms reinforcing investments rather than retrenchment have brought successful turnaround and better performance after recession (Srinivasan, Rangaswamy, Lilien, 2005; Gulati, Nohria, Wohlgezogen, 2010; Mann and Byun, 2017).

The financing benefits of divestitures are also pronounced for highly levered firms within illiquid market. Shleifer and Vishny (1992) pinpoints that regardless of the discounts in asset value, liquidation can be less costly than alternative methods of financing such as debt rescheduling or new equity issue. Firms resort to divestitures over alternative financing options [99] particularly when there are frictions in external financing and when leverage is relatively high (Denis and Shome, 2005; Arnold, Hackbarth, and Puhan, 2018). These empirical findings are anticipated by Jensen (1989) and Ofek (1993) who uncover positive correlation between highly levered firms and their propensity to liquidate assets to repay debt. Studies further demonstrate that firms with a higher leverage ratio achieve greater improvements in operating performance after liquidation (Kalay, Singhal, and Tashjian, 2007) as debt is an instrument to disciplining management and averting entrenchment (Krishnaswami and Subramaniam, 1999; Datta, Iskandar-Datta, and Patel, 1999). Thus, firms with higher lender monitoring are more likely to increase transaction value (Datta, Iskandar-Datta, and Raman, 2003).

Given the financial and operational benefits divestitures bring to firms, it is rather unclear why most firms wait to divest until they face some form of internal or external financing trouble? To answer this question, next set of literature cope with managerial dysfunction and conflict of interest surrounding divestiture decision. Wruck (1990) argues that financial distress provides managers an

[99] Alternative financings could be extending line of credit from banks or issuing corporate debts.

opportunity to free resources and transfer those to higher-valued users. Resultant outcomes indicate that strategic and structural changes motivated by distress conditions create economic value for firms involved in the transaction, but such an organizational transformation is less likely to occur in non-distressed firms. Corroborating this theory, divestures are normally followed by significant performance declines and financial distress (Alexander, Benson, and Kampmeyer, 1984; Jain, 1985; Montgomery and Thomas, 1988; John and Ofek, 1995). Montgomery and Thomas (1988) add that relatively poor performance to the industry counterparts is the key determinant of divestiture and that firms are unlikely to implement divestiture while they are competitive or excelling in their primary business. They conclude that managers reserve divestment until they exhaust options. Boot (1992) blames the delays in divestiture decision on unfit managers who are less willing to correct their mistakes on underperformance until the sign of distress is publicly flaunted. He contends that skilled managers make more timely divestitures that are value-maximizing. Regrettably, there are insufficient divestitures on average relative to the shareholders' optimum due to conflict of interest and information asymmetry between managers and shareholders.

In this section, I have uncovered the elements involving corporate divestiture decisions and the sensitivity of liquidation value to the ongoing performance of a firm, use of proceeds, and market liquidity. I take those insights from the prior literature into building important hypotheses for this research in the following section.

4.3 Hypotheses

In deriving the hypothesis on long-term performance of divestitures during periods of economic crisis, I have to gauge the dependability of the mainstream fire sale theory. The fire sale theory envisages that economic instability dissuades firms from divesting as divestors may encounter massive discounts in their asset value (Shleifer and Vishny, 1992, 2011). Contrary to this earlier theory though, a recent

empirical study by Finlay et al. (2018) finds positive deal outcomes on divestiture announcements over two distinctive periods of economic crisis. Finlay et al. unravel why the fire sale theory on asset valuation is not applicable to divestitures implemented during economy-wide distress. Assets sold in an illiquid industry reveal specific and negative information about the divestor's financial situation as well as the price of similar assets. The investor perception on the riskiness of those assets widens mispricing of overall assets in the distressed industry. Conversely, economic crisis affects virtually all firms with known difficulties in accessing external capital. Hence, assets are valued irrelevantly to a certain industry condition. Such a distinction makes asset liquidation during economic crisis less costly than that during industry-wide distress.

They also examine the financing hypothesis and suggest that prior studies might have underestimated the financing benefits that non-industry buyers can provide. Divesting firms may have to offer some liquidity discounts on their assets, but the financing benefits offset any loss from the discounts by reducing expected costs of financial distress. Relatedly, Ang and Mauck (2011) find that merger premium paid to distressed targets during the financial crisis is not very different from that paid during non-crisis periods. They quote that discounts are not as much since the benchmark for the purchase price is based on the 52-week high that is believed to be the divested asset's fundamental value once the market recovers.

Alexandrou and Sudarsanam (2001) obtain a similar outcome as Finlay et al., but they further observe that firms announcing divestments during recession gain higher abnormal returns than those divesting in the growing economy. They argue that the recessionary condition pressures firms to undertake a long-overdue restructuring that they have been adjourning. Their argument corresponds to the agency theory of managerial discretion; external financing frictions triggered by the economic crisis pressure financially constrained firms to dispose unfit assets to their strategy and reconfigure their portfolio. The agency costs of managerial discretion has been an intuitive theory promoted by studies on corporate divestiture decision, as significant proportion of divestitures are carried out only after discernible performance decline and financial distress. Wruck (1990) and Boot (1992)

emphasize that in general, there is not enough corporate divestitures relative to the shareholders' optimum because managers do not deal with the underperforming unit as long as it is overshadowed by other profitable businesses. Alexandrou and Sudarsanam (2001) believe that economic instability forces those managers to finally take action.

Since several empirical findings renounce the applicability of fire sale theory on divestitures during crisis periods, let me assume that firms actually pursue divestiture strategically to reconfigure their portfolio and resolve financial distress. Let me also assume that there are unconstrained buyers who acquire assets at fair price. Would this strategic divestiture help declining firms achieve successful turnaround during economic downturn? The turnaround literature offers assuring possibility for long-term improvement in operating performance.

Divestiture along with other asset restructurings are often studied in corporate turnaround literature as a dynamic value-maximizing strategy and is known to aid strategic reorientation of firms with declining performance. Declining firms are required to regain competitive advantage corresponding to an evolving environment (Hedberg, Nystrom, and Starbuck, 1976; Starbuck, Greve, and Hedberg, 1978). Gaining competitive advantage takes idiosyncratic attributes such as assets, capabilities, and value creating strategies (Barney, 1991). Consistent with this turnaround theory, divestitures allow managerial attention and capital to be invested in a firm's competent assets and increase divisional investment efficiency (Dittmar and Shivdasani, 2003; Ahn and Denis, 2004; Vidal and Mitchell, 2015).

For example, divestitures that increase focus on their profitable core-assets improve long-term operating performance (John and Ofek, 1995; Desai and Jain, 1999). Undervalued multi-divisional firms with higher information asymmetry on their divisional cash flows use divestitures to unlock the value of those assets and raise capital, which leads to positive stock market reaction (Nanda and Narayanan, 1998). Divesting firms receive positive revaluation when they reorient strategy to correct their underperformance relative to their competitors (Montgomery and Thomas, 1988; Barker and Duhaime, 1997). Firms also sell-off assets when they underperform relative to their potential and when the market sentiments are

pessimistic (Prezas and Simonyan, 2015); after divestiture, sellers improve both their long-term operating performance and stock returns.

For additional assurance, I investigate how divestitures benefit financially constrained firms with external financing frictions given that economic crisis suspends the external credit market. Studies show that divestitures are particularly preferred by highly levered firms experiencing difficulty in accessing external capital (Denis and Shome, 2005; Arnold, Hackbarth, and Puhan, 2018). Asset sales implemented to repay debt and lower leverage significantly increase announcement returns (Lang, Poulsen, and Stulz, 1995; Krishnaswami and Subramaniam, 1999; Datta, Iskandar-Datta, and Raman, 2003) and operating performance (Kalay, Singhal, and Tashjian, 2007). This value creation in asset sales is attributable to resolution of financial distress and efficient lender monitoring on discrete managers. Thus, divestitures by highly levered firms accrue wealth gains to both equityholders and bondholders (Clayton and Reisel, 2013).

Moreover, divestiture enables financial flexibility to invest in valuable projects when external financing is unavailable (Ahn and Denis, 2004; Hovakimian and Titman, 2006; Arnold, Hackbarth, and Puhan, 2018). Empirical evidence shows that, during the financial crisis, most banks halted lending which led to a massive decline in corporate investment. Yet, firms which continued to invest in their operations outperformed those hoarded cash and focused on cost-cutting tactics after recession (Gulati, Nohria, Wohlgezogen, 2010; Mann and Byun, 2017). Since cash obtained from asset liquidation relaxes financial constraints and do not require the remaining units to sacrifice investment, divesting firms are more likely to strengthen their strategic positioning over the long run as compared to other constrained firms having to reduce investment.

Overall, studies document that divested assets are fairly valued during the economic crisis and divestitures provide constrained firms with financial flexibilities that can be used to lower leverage and support the continued operation and growth of the remaining assets. Accordingly, I propose the following hypothesis consistent with the financing theory from the prior studies (Dittmar and

Shivdasani, 2003; Ahn and Denis, 2004; Denis and Shome, 2005; Kalay, Singhal, and Tashjian, 2007; Finlay et al., 2018):

Hypothesis 1. Firms undertaking divestiture during the financial crisis experience increase in long-term operating performance.

Similar to asset restructuring, managerial restructuring involves altering strategies from the previous management to revitalize the organization. Wiersema and Bantel (1992) document that in general, replacement of top managers is significantly linked to the change in corporate strategy. Wruck (1990) reports that 52% of distressed firms replace incumbent managers which implies that significant proportion of distress is ascribed to managerial mismanagement. Management turnover is known to be effective in overcoming corporate inertia when it entails amendment of debilitating strategy which causes performance downturn. However, studies under the contingency theory stress that turnaround strategies need to be tailored to match the cause of distress, otherwise, they can have an adverse impact on firm performance (Schendel, Patton, and Riggs, 1976; Hofer, 1980; Maheshwari, 2000). For example, Whitaker (1999) emphasizes that managerial restructuring is an effective strategy for firms suffering distress because of incompetent management, but not for those entering distress as a result of economic crisis. My conjecture is that firm-level distress caused by mismanagement can be assuaged by replacing incumbent managers, but managerial restructuring alone cannot resolve economy-related distress such as constraints in external financing. However, if managerial restructuring is accompanied by transformation of prior strategies which led to underperformance and a means of raising capital, it could accomplish meaningful changes in operating performance. Hence, I expect that managerial restructuring alone cannot improve long-term performance, but it can if conjoined by divestiture strategy.

As opposed to divestiture which involves strategic reorientation, retrenchment strategies concern short-term cash flows. Thus, operational and financial restructuring relying on cost reduction and cash preservation are considered

retrenchment measures. Some studies suggest that retrenchment is used in extremely distressed conditions (Schendel, Patton, and Riggs 1976; Bibeault 1998; Robbins and Pearce, 1992) while others suggest that it is implemented to gain efficiency and stabilize the firm prior to enacting strategic reorientation (Bibeault, 1998; Slatter, 1984). Regardless, the prior literature is sceptical about its long-term viability as a turnaround strategy and concurs that retrenchment is a provisional resolution (Barker and Duhaime, 1997; Denis and Kruse, 2000; Koh et al., 2015). Therefore, for firms resorting to retrenchment strategies without an additional asset restructuring, the implication on their long-term performance is nebulous.

For one, the nature of this strategy is short-term and is not designed to boost growth. For another, economic crisis is an exogenous shock often linked with changes in overall business and corporate dynamics in the economy. Under such unpredictable circumstances, firms are often obligated to reconsider their approach and quickly adjust their resources and strategies according to the changing environment. Retrenched firms may end up with stagnant performance at best or even experience performance decline if used excessively (Barker and Duhaime, 1997). As an evidence, Boyne and Meier (2009) find that over-pursuing cost efficiencies results in unsuccessful turnaround and aggravate performance decline. Furthermore, Koh et al. (2015) argue that distressed firms without alternative ways to raise capital issue equity at severe discounts, leading to insufficient cash flow to reverse the distress. Considering the influence of economic distress on corporate strategy and the nature of what the managerial restructuring and retrenchment strategies are designed for, I propose the following hypothesis:

Hypothesis 2. Firms undertaking other restructuring strategies – managerial, operational, and financial restructuring – without accompanying divestiture during the financial crisis do not improve their long-term operating performance.

There are two reasons why I have to consider the possibility of fire sale discounts on divestiture announcements. First, during recession, the market is illiquid, making it difficult to find a buyer. Thus, the price has to be low enough to

attract a buyer (Shleifer and Vishny, 1992; Schlingemanna, Stulz, and Walkling, 2002; Wang et al., 2009). Second, distressed firms have lower bargaining power, because of their inefficiency and potential risk of default, which causes discounts in asset value (Ang and Mauck, 2011). However, in order for a fire sale to occur, the following conditions have to be also satisfied: divested assets are highly idiosyncratic, industry specialists are also constrained, and non-industry buyers demand heavy discounts in asset value (Shleifer and Vishny, 2011).

Literature is consensus about who provides liquidity for asset transactions during periods of market frictions. Assets are often sold to industry outsiders when the seller's industry is constrained (Shleifer and Vishny, 1992; Pulvino, 1998; Schlingemanna et al., 2002; Finlay et al., 2018). Debatable is the fire sale hypothesis from earlier studies whereby industry outsiders require heavy liquidation discounts in asset price (Shleifer and Vishny, 1992; Pulvino, 1998; Schlingemanna et al., 2002). Unlike the fire sale hypothesis, Finlay et al. (2018) observe no sign of fire sale discounts based on divested assets. Rather, consistent with the financing hypothesis, liquidity provided by non-industry specialists help divesting firms resolve financial distress and obtain positive market valuation during asset sales announcements. They argue that the financing benefits from divestiture overwrite any liquidity discounts that may have been applied to asset valuation. Similarly, Ang and Mauck (2011) report that discounts are perceived only when the offer price is compared to the the 52-week high and targets are still sold at premium to their current market value.

The existing evidence suggests no significant discount for divested assets and implies that divestiture provides financing benefits to constrained firms during periods of economic downturn. Therefore, I propose the following hypothesis:

Hypothesis 3. Divestiture announcements by distressed firms do not incur fire sale discounts during the financial crisis.

4.4 Data and methodology

4.4.1 Sample collection

My study involves the financial crisis period beginning in the third quarter of 2007 and ending in the first quarter of 2009 (Ben-David, Franzoni, and Moussawi, 2012). This period is within the fiscal year of 2007 and 2008 in the Compustat annual data, which is equivalent to June 2007 through May 2009 in calendar time. Therefore, I obtain accounting data of U.S. public firms from the Compustat annual database over this period. I restrict the sample to industrial firms traded in NYSE, AMEX, and Nasdaq. I also require that firms included in my sample have financial information available to generate Z-score, a measure of financial distress, beginning from two years before the crisis to three years after a divestiture for divesting firms or three years after the crisis for non-divesting firms. Upon imposing those conditions, the sample has 6,822 firm-year observations for the fiscal year of 2007 and 2008. Companies meeting these criteria have non-missing financial information over fiscal years between 2005 and 2012, which I use to generate pre-crisis distress condition and post-divestiture long-term operating performance. Data on divestitures is collected from the SDC Mergers & Acquisitions database. I only include completed deals and public firms with available accounting data. These criteria leave me with 800 divestiture transactions over the period of financial crisis. The sample of managerial restructurings is obtained from the S&P Executive Compensation database, and the data on equity prices is collected from CRSP.

4.4.2 Financial distress and restructuring strategies

In defining financial distress, I distinguish firms between those experience distress during the crisis as well as the pre-crisis period and those enter distress only after the crisis begins. The reason why I distinguish the two is because the prior study (O'Neill, 1986b) suggests that firms with strong strategic positioning without an exogenous shock may opt for retrenchment strategies rather than strategic

reorientation while waiting for cyclical upturns. However, economic distress has long-lasting impacts on firms' recovery even after the crisis is over due to subsequent recessions, making it arduous to identify which strategies are effective for recovery. Accordingly, I generate the *distress 1* variable with all distressed firms during the crisis regardless of their pre-crisis status and the *distress 2* variable with firms entering a distress condition only after the crisis begins, but not within two years prior to the crisis.

There are several ways to measure financial distress, but I use Altman's Z-score Bankruptcy Model (Altman, 1968) to determine whether a firm is distressed, as it is a widely adopted methodology in empirical research with high precision of predicting defaults (Graham, 2000; Coles, Daniel, and Naveen, 2006; Bhagat and Bolton, 2008; Lemmon, Roberts, and Zender, 2008). Among variations of Z-score formulae based on the industry and a firm's public status, I use the formula which can also be applied to non-manufacturer industrial firms as follows:

$$Z = 6.56T_1 + 3.26T_2 + 6.72T_3 + 1.05T_4$$

where T_1 = (Current Assets-Current Liabilities) / Total Assets
T_2 = Retained Earnings / Total Assets
T_3 = Earnings Before Interest and Taxes / Total Assets
T_4 = Book Value of Equity / Total Liabilities.

Based on the Z-scores computed using the formula, a firm with Z-score less than 1.1 is considered financially distressed. I present how many firms in my sample were distressed during the financial crisis in Table 4. 1. The table shows that approximately 30% (2,010 firm-year observations) of the firms in the sample were distressed during FY 2007/08. Moreover, 9% (615 firm-year observations) of the sample and about a third of distressed firms fell into distress only subsequent to the beginning of the financial crisis.

Using the sample and *distress 1* and *distress 2* subsamples, I examine the frequency of restructuring strategies performed by firms during the crisis period.

Restructuring strategies, often referred to as turnaround strategies for financially distress firms, fall largely into four categories: asset, managerial, operational, and financial restructuring (Kang and Shivdasani, 1997; Zhou, Li, and Svejnar, 2011; Koh et al., 2015; Finlay et al., 2018). Asset restructuring involves divestments of a partial or full business unit, spin-offs, leveraged/management/institutional buyouts, and sale and leaseback. Managerial restructuring retains replacement of top-tier managements such as the CEO and managing director. Following Bhagat and Bolton (2008) and Atanassov and Kim (2009), I define management turnover if the CEO or manager leaves the firm in year t or year t+1 for reasons besides death or retirement. Both asset and managerial restructuring strategies are known to have long-term effects on firm performance and are used to engineer portfolio reconfiguration and strategic reorientation under a new management, respectively.

Conversely, operational restructuring is a short-term measure designed to tackle an imminent threat to default (Slatter 1984; Gowen and Leonard 1986) and regain efficiency, sometimes as prerequisites to strategic reorientation (Pearce, 1982; Bibeault, 1998; Robins and Pearce II, 1993). Operational restructuring in this study comprises of investment reduction, COGS reduction, fixed asset reduction, and layoffs. Financial restructuring in periods of economic distress is executed to prevent defaults and reserve cash, similar to operational restructuring. Ivashina and Scharfstein (2010) report that banks significantly contracted corporate lending during the financial crisis. Firms with limited credit-line should have naturally resorted to dividend cut or omission and debt or equity issue. Definition of those restructuring strategies are available in Panel A of Appendix *C*.

Table 4. 2 exhibits the number of firm-year observations as well as the percentage of each restructuring strategy to the total number of observations in the sample during the financial crisis. Panel A includes all firms in the sample and shows that 8.8% of them took divestitures (asset restructuring strategy). Management turnover was implemented by 9.9% of the firms and of those firms, 16.6% contemporaneously undertook divestitures. Operational restructuring was on average more frequently utilized than divestiture or managerial restructuring. Investment reduction (57.6%) was the most frequently implemented followed by

fixed asset reduction (24.7%) and layoffs (17.65%). COGS reduction (4.8%) was the least popular strategy. Approximately 9 to 13.5% of the firms with operational restructuring also announced divestiture. Among financial restructuring strategies, debt issue (28.9%) was the most widely implemented followed by equity issue (15.27%) and dividend cut or omission (10.0%). Between 7.4 and 10.2% of the firms with financial restructuring undertook divestments. Those statistics indicate that retrenchment strategies and investment cuts are primary responses to the economic crisis and divestitures and managerial restructurings are comparably less.

Panel B and Panel C of Table 4. 2 include distressed firms only. Overall frequency of each strategy is similar to the all-firms sample, but distressed firms engaged in slightly more divestitures with firms in distress 2 subsample (11.5%) having higher frequency than firms in distress 1 subsample (9.6%). Moreover, distressed firms displayed greater propensity to layoff (28.5% - 32.0%) and raise capital through debt (30.3% - 39.3%) or equity issue (24.0% - 29.2%). Distressed firms also undertook divestiture more commonly along with management turnover (21.6% - 30%) than non-distressed firms.

Overall, consistent with Finlay et al. (2018), divestments were employed relatively less than other restructuring strategies during the financial crisis. They reckon that asset sales are negatively affected by economic downturn due to lack of buyers and market illiquidity and more firms espouse retrenchment strategies.

4.4.3 Summary statistics

I present summary statistics of distressed firms (1) and non-distressed firms (2) in Table 4. 3. Panel A exhibits firm characteristics of all listed firms in COMPUSTAT (panel data with firm-year observations) with available financial information between two years prior to the crisis and three years after a divestiture (after the crisis) for divesting firms (for non-divesting firms). Definition of control variables is available in Panel B of Appendix *C*. The level of significance in mean and median difference is estimated using parametric t-test and Wilcoxon signed-rank (rank-sum) test, respectively.

Consistent with the prior literature, the probability of divestiture is slightly higher for distressed firms than non-distressed firms but is statistically indifferent during the crisis. In comparison of firm characteristics, the financial crisis seems to have affected smaller firms more severely than larger firms as the sample of distressed firms are significantly smaller in size than that of non-distressed firms. Distressed firms are also more levered and less profitable than non-distressed firms based on the higher leverage ratio and negative cash flows. Ironically, distressed firms are more liquid than non-distressed firms. According to Tobin's Q, distressed firms have on average higher market value relative to their intrinsic value than non-distressed firms do, but the median value is statistically indifferent. The book-to-market ratio implies that value firms with higher book value are less likely to be distressed given those with higher market value will be more negatively affected by the collapse of market price. Those variables will be used as control variables later in the analysis of long-term operating performance.

Panel B displays firm and deal characteristics of listed companies announced divestiture during the financial crisis with available accounting data. Similar to the sample statistics in Panel A which include non-divesting firms, this cross-sectional sample shows that asset size of distressed firms is significantly smaller than that of non-distressed firms. Following Pulvino (1998) and Finlay et al. (2018), I create the low debt capacity (LDC) variable which identifies firms with higher leverage and lower liquidity within their industry. LDC is a dummy equal to one if a firm has book leverage higher than the industry median while its current ratio is lower than the industry median. Industry median is generated using CRSP US common stocks classified based on Fama-French's 48 industries[100]. The mean difference test indicates that distressed firms have significantly lower debt capacity than non-distressed firms. This variable is used in the selection stage of the two-step bias correction model later.

As compared to non-distressed divestors, distressed divestors are less profitable with lower cash flows, and their market value is higher relative to their

[100] Each firm in the sample is assigned with a corresponding industry median on the matching date based on Fama-French 48 industry classification.

intrinsic value based on Tobin's Q. The median value for liquidity, book-to-market, and run-up are not significantly different between distressed and non-distressed divestors.

I also compare cumulative abnormal returns (CARs) measured by 3-day (-1, +1) event window surrounding the divestiture announcement date. Abnormal returns are computed by deducting benchmark portfolio returns [101] from the divesting firm's stock returns. Based on the mean and median difference measures, CAR is indifferent between distressed and non-distressed firms. I estimate divestiture announcement returns using CAR later in the cross-sectional regression model.

Finlay et al. (2018) argue that firms are more likely to sell core assets due to financing difficulty during periods of economic crisis. Likewise, my sample shows that divestitures during the crisis frequently involve sales of core assets; distressed firms divest higher proportion of core assets while non-distressed firms divest more non-core assets. In terms of industry relatedness of buyers, both distressed and non-distressed firms are more likely to sell their assets to unrelated buyers, but interestingly non-distressed firms have higher propensity to do so. This has a crucial implication regarding the validity of the fire sale theory because if it were true, unconstrained firms have less incentive to sell assets to non-industry buyers at critical discounts which can deteriorate their firm value. They would rather choose alternative financing methods. However, the fact that unconstrained firms are actually more willing to divest to industry outsiders indicate that the financing benefits of divestiture during recession are greater than the liquidity discounts. I will re-examine the fire sale theory as well as the financing hypothesis later in the empirical results section using the divestiture announcement return analysis.

4.5 Empirical results

[101] Benchmark returns are estimated using market model over 250 days beginning -295 days prior to the announcement.

4.5.1 Long-term operating performance of firms with divestiture

In this section, I estimate long-term operating performance of firms undertaken divestitures during the crisis period. For the measure of operating performance, I use OIBD, operating income before depreciation plus interest income divided by the book value of total assets, and ROA, net income (loss) divided by the book value of total assets, following Prezas and Simonyan (2015). I adopt the methodology used in the event study by Loughran and Ritter (1997) and adjust each divesting firm's performance with that of a matched firm. The matching procedure is as follows: i) each divesting firm is matched with a firm which has not divested for the 6 years surrounding the year of divestiture (-3, +3), ii) the matching firm is from the same industry as the divesting firm based on the first 2-digit SIC code, iii) the size of the matching firm based on the book value of total assets at the end of the fiscal year prior to the divestiture announcement is between 25 and 200% of the divesting firm's size, and iv) the matching firm has the closest OIBD to that of the divesting firm. If no matching firm is found with these criteria, I withdraw the industry requirement and apply size criterion between 90 and 110% of the divesting firm and closest but higher OIBD ratio.

Table 4. 4 presents the changes in median operating performance of divesting firms and of matched firms. The change in operating performance was measured from the fiscal year prior to divestiture to the year of divestiture (year -1 to 0), one year after divestiture (year -1 to 1), two years after divestiture (year -1 to 2), three years after divestiture (-1 to 3), and average of year 1, 2, and 3 after divestiture (year -1 to average 1, 2, 3). Panel A of Table 4. 4 shows that firms undertaken divestitures during the crisis outperform their non-divestor benchmark post-divestiture in years 1 and 2 as compared to year -1. More importantly, divesting firms' ROA is considerably higher than that of their benchmarks in all post-divestiture years.

For the distressed sample in Panel B of Table 4. 4, divesting firms not only elevate operating performance over the years, but also significantly outperform matched firms by 1.3% in OIBD and 5.8% in ROA for the average 3-year period

post-divestiture. Firms entering distress only after the crisis (distress 2 subsample) in Panel C of Table 4. 4 also experience substantial increase in post-divestiture performance with an average matched-firm adjusted ROA of 6.0% over the 3 years. The results reveal that asset restructuring in general is more effective for distressed firms than for non-distressed firms on improving operating performance. Furthermore, firms experiencing distress due to the economic crisis can notably improve future performance through divestitures. Overall, the results are consistent with the *Hypothesis 1*.

Next, I measure operating performance of companies which implement a divestiture along with other restructuring strategies. Earlier in Table 2, I observed the frequency of complementary strategies and discovered that managerial restructuring is more frequently accompanied by divestiture than other restructuring strategies. In Table 4. 5, I combine individual strategies presented in Table 2 under a bigger restructuring category and evaluate corresponding operating performance based on those complimentary strategies.

Panel A of Table 4. 5 displays the performance of divesting firms which also undertake managerial restructuring. This combined strategy involves dynamic strategic reorientation as the new management is more likely to change strategic direction and contemporaneously reconfigure their business portfolio through asset restructuring. The results show that such an intrepid strategic change during the crisis has a positive impact on the restructuring firm's long-term operating performance. Firms with this strategy experience 0.8% increase in matched firm-adjusted OIBD in year 2 and 3.7% increase in ROA over the 3-year period (those returns are significant at the 1% level).

Divesting firms with retrenchment strategies such as operational restructuring and financial restructuring in Panel B and Panel C of Table 4. 5, respectively, also significantly improve operating performance, but the improvement is not as large as when incorporating managerial restructuring.

4.5.2 Multivariate quantile regression analysis of post-divestiture operating performance

In this section, I estimate the post-divestiture operating performance in multivariate quantile (median) regression model using the control variables in Table 4. 3. I use median comparison in my regression analysis instead of mean value due to the strong presence of outliers in operating performance. Quantile regression is more robust to extreme values and is more efficient than OLS for non-normal errors (Healy, Palepu, and Ruback, 1992; Barber and Lyon, 1996; Loughran and Ritter, 1997; Lee and Li, 2012; Prezas and Simonyan, 2015).

Table 4. 6 exhibits the results. The dependent variable is the change in ROA and OIBD from year -1 to year 1, 2, and 3. The variable of interest in this table is *divest* which is a dummy equal to one if a firm makes a divestiture announcement in the fiscal year of 2007/08. The sample in Panel A includes all firms. Consistent with the matched firm-adjusted performance estimations in Table 4. 4, divesting firms realize significantly greater improvements in operating performance for subsequent periods than firms which do not divest. The coefficient estimates of the divest dummy are all significantly positive, excluding the change in OIBD one-year post-divestiture. The median ROA of divesting firms in excess of non-divestors' ranges from 1.4 to 1.9% over the 3 years after divestiture. Panel B only includes the *distress 1* sample. The regression results indicate that distressed firms perform significantly better after divestiture as compared to those which do not divest. Divestors are associated with a median ROA of 3.6 to 5.0%. Further, firms entering distress with the beginning of the financial crisis (*distress 2* sample) in panel C realize even higher improvements in their post-divestiture operating performance, implying firms affected by the economy-wide distress can significantly benefit from the divestiture strategy.

Control variables also exhibit significant correlations with the change in operating performance. Firm size in general has significantly negative impact on performance, particularly in the *distress 1* sample. The leverage ratio is positively associated with operating performance in the *all-firms* sample. This finding is

consistent with the theory on levered firms which have more incentives to improve their output as creditors strictly monitor their activities and performance (Hirshleifer and Thakor, 1989; Harris and Raviv, 1990; Stulz, 1990; Gompers, 1995). However, it has negative effects on distressed firms' performance. Jensen (1989) and Ofek (1993) further explain that highly levered firms react to performance decline more promptly than do those with lower leverage and actively engage in asset, operational, and financial restructurings to avoid default (Harris and Raviv, 1991).

The liquidity and cash flow ratios, on the other hand, are negatively associated with performance as cash holdings tend to invoke agency problem (Lang, Stulz, and Walkling, 1991; Almeida, Campello, and Weisbach, 2002; Dittmar, Mahrt-Smith, and Servaes, 2003). However, the agency effect of cash flows dissipates in regressions of distressed samples. Tobin's Q has a positive correlation with operating performance indicating that the market value of assets is an integral part of firms' ongoing operating performance. Similarly, Book-to-market value indicates that a firm's equity performance affects its operating performance.

I further compare the performance of divesting firms which use complimentary restructuring strategies in Table 4. 7. Overall, combinations of other restructuring strategies with divestiture magnify positive impact on operating performance. As shown in Panel A, the largest synergy comes from the combination of divestiture with managerial restructuring (MR) resulting in a medium excess ROA of 3.3 to 4.1%. Operational restructuring (OR) in Panel B and financial restructuring (FR) in Panel C also compliment post-divestiture performance and significantly enhance operating performance in all 3-year periods.

Additionally, I investigate whether other restructuring strategies without divestiture increase operating performance. Table 4. 8 presents the results. Managerial restructuring has no significant impact on the firm performance, except in year 3 with 0.6% increase in ROA. Contrarily, firms implementing operational or financial restructuring without divestiture experience significantly negative performance in all 3 years following the restructuring. Consistent with the

Hypothesis 2, these findings confirm that retrenchment strategies are not adequate for facilitating long-term performance recovery.

4.5.3 Effectiveness of divestiture in recovering from financial distress

In the previous section, I learned that firms undertaking divestiture in conjunction with other restructuring strategies during the crisis improve long-term operating performance, but managerial restructuring alone is not as effective and retrenchment strategies without divestiture causes performance decline. However, I do not know for certain whether the performance decline in firms with retrenchment strategies can be explained by their focus on preserving business and resolving financial distress, rather than taking strategic reorientation which may look risky with economic uncertainty for risk-averse managers. This is especially the case with firms fearing to divest their assets at severe discounts in an illiquid market. If their objectives were only to improve distress condition and immediate cash flows, firms implementing retrenchment strategies should effectively diminish financial distress in following periods subsequent to the restructuring.

To find out if those alternative objectives can explain the use of retrenchment strategies, I examine the effectiveness of each category of restructuring strategy in recovering from financial distress using the quantile regression analysis. In this analysis, I only include distressed firms (*distress 1* subsample). The dependent variable is the change in Z-score from year -1 to 1, 2, and 3 years after the restructuring[102]. Panel A of Table 4. 9 shows the change in Z-score for divesting firms, indicating that divestors significantly improve their financial condition over the course of 3 years following divestiture. The improvements are massive at 40.1 to 59.2%.

On the contrary, firms with managerial restructurings (MR)[103] in Panel B experience increase in distress by 45.0% in year 1 and 50.6% in year 3. Whitaker

[102] I refer to Sudarsanam and Lai (2001) in construction of this variable.
[103] I exclude firms which combine managerial restructuring with divestiture from the sample to eliminate the influence of divestiture on the recovery.

(1999) suggests that turnaround cannot be successfully achieved by replacing top-tier managers when the cause of a distress is not due to the mismanagement of incumbent managers but due to the economic crisis. My finding concurs with his argument and alludes that managerial restructuring is ineffective in resolving financial distress aggravated by the economic crisis.

Unlike the alternative objectives of retrenchment strategies I have suggested earlier, Panel C shows that the distress condition is exacerbated when firms undertake operational restructurings (OR) without divestiture. OR is proven to have negative effects on long-term operating performance based on my previous finding. This additional finding signifies that retrenchment measures are not useful at resolving financial distress, either. Likewise, Panel D indicates that financial restructurings (FR) have no significant influence on the distressed firms' financial recovery. The overall findings suggest that divestiture is more effective than other restructuring strategies in both improving long-term operating performance and alleviating financial distress.

My findings demand some acknowledgements as to why divestiture is the only and most effective long-term turnaround strategy for firms experiencing overlapping conditions of firm-level and economy-wide distress. I draw answers to this query from multiple theories related to divestitures based on the prior literature. Divestiture is part of asset restructuring designed to foster a firm's strategic reorientation. It is particularly useful when firms aim to reverse their declining performance compared to their industry counterparts. Periods of financial crisis with fast-changing economic environment and declining market productivity are when firms need to refine their corporate strategies and increase efficiency in the use of their assets and resources. The utmost priority is to liquidate any inefficient assets and use it toward financing more valuable assets and maintain investment equivalent to the pre-crisis level. This is also when managerial discretion in firms with the agency problem will not deter firms from pursuing a long-overdue asset restructuring.

Most importantly, given the overwhelming market frictions in crisis periods, funds raised from divestitures can be used to finance projects, control leverage, and

maintain investment for the remaining divisions. Thus, the financing theory is absolutely pertinent to this study. To substantiate the financing benefits of divestiture, I estimate how the leverage and segment investment ratio change between a fiscal year before and after the divestiture. I also perform the same analysis for non-divesting firms for comparison. The leverage ratio for divesting firms is computed as total debt divided by the book value of total assets. The segment investment ratio is estimated by capital expenditures as a proportion of sales using the data obtained from the Compustat Historical Segments file. Following Dittmar and Shivdasani (2003), divesting firms' segment investment ratio was generated using retained segments only to eliminate the influence of divested unit on the firm's overall investment policy in case it was capital-intensive.

The results are reported in Table 4. *10*. Panel A of Table 4. *10* shows that leverage of non-divesting firms significantly increases during the crisis while that of divesting firms does not. Especially, those with financial restructuring increase leverage by 5.6%, which is a stark contrast to 0.6% decrease in leverage for divesting firms[104]. Divesting firms are more levered one year prior to divestiture though, which indicates that highly levered firms are more likely to divest.

As for the investment policy in Panel B of Table 4. *10*, divesting firms maintain similar level of investment in their remaining divisions as the segment investment ratio is indifferent before and after divestiture. However, non-divesting firms, especially firms with operational restructuring, significantly decrease investment. Being able to maintain investment is the key to long-term performance recovery. My findings on these additional tests demonstrate why firms with divestiture strategy effectively resolve financial distress and improve long-term operating performance.

4.5.4 Cross-sectional analysis of divestiture announcement returns

[104] The mean difference tests show qualitatively indifferent results from the median difference tests.

Under normal circumstances, the literature unanimously documents that divestitures by healthy firms increase the value of remaining assets, especially when the seller disposes an underperforming non-core unit. Further documentations specify that the premium valuations around divestiture announcement reflect anticipated performance improvements in the long run (John and Ofek, 1995; Daley, Mehrotra, Sivakumar, 1997; Maksimovic and Phillips, 2001; Dittmar and Shivdasani, 2003). However, theories suggest that in case of distressed firms during periods of economic crisis, divestments may be subject to fire sale discounts presumably due to insufficient number of buyers and lower expected cash flows (Shleifer and Vishny, 1992, 2011). Moreover, mixed findings on the divestiture performance of financially distressed firms makes it harder to predict how divested assets are valued during recession.

Fire sale literature indicates that the market for corporate asset sales during industry and economy-wide distress is illiquid because specialist buyers are as constrained as their distressed industry sellers. Thus, assets are often sold to unrelated buyers from the seller's industry (Pulvino, 1998; Acharya, Bharath, and Srinivasan, 2007). In general, unrelated buyers are more likely to use divested assets suboptimally than do related buyers and incur extra costs to value and manage an unfamiliar asset. To compensate for these additional expenses, the fire sale theory indicates that non-industry acquirers are likely to demand a huge discount on the asset value. Recent studies, however, show benefits of selling assets to unrelated buyers during the economic crisis (Borisova, John, and Salotti, 2013; Finaly et al., 2018). They describe non-industry buyers that are financially unconstrained can pay higher price that can outweigh the costs of distress and help divesting firms avoid fire sale discounts. Indeed, I observe in my sample statistics that more assets are acquired by unrelated buyers than by industry buyers.

Ang and Mauck (2011) denote that if fire sale discounts are present, distressed assets would be sold at greater discounts than non-distressed assets. In order to investigate whether asset liquidation by distressed firms lead to fire sale discounts and negatively affect shareholder value during the crisis, I compare cumulative abnormal returns (CARs) of distressed and non-distressed firms surrounding

divestiture announcements[105]. I use the cross-sectional divestiture transaction data obtained from SDC for this experimentation. Table 4. 11 shows the results of univariate analyses of CARs as well as the mean difference tests between distressed and non-distressed firms. I first measure the returns for all firms in my sample and then partition the sample based on the relatedness of the divested unit to the parent's and buyer's industry.

The results indicate that distressed firms experience significantly positive announcement effects. The average excess returns are 1.7% for all divestitures, 1.8% for divestitures of non-core unit, and 2.7% for divestitures to a related buyer. Announcement returns are also positive for the sale of core assets (1.7%) and sale to an unrelated buyer (0.9%) but are statistically insignificant. This finding suggests a contrasting implication to the fire sale theory in which announcements of asset sales during economic downturn led to negative shareholder returns because of a large discount in the divested asset value. Positive stock returns around divestiture announcements rather imply that the financing benefits are perceived to be greater than any liquidity discounts that are applied to the divested asset because of the divesting firm's weaker bargaining position. Non-distressed firms also realize significantly positive announcement returns, but their returns are statistically indifferent from those of distressed firms.

I further explore the fire sale theory in multivariate OLS regression model using the control variables from Panel B of Table 4. 3. Again, the dependent variable is 3-day CAR, and the key independent variables are *distress 1* (a dummy equal to one if a firm is distressed) and *distress 2* (a dummy equal to one if a firm enters distress only with the beginning of the financial crisis). In this regression, I control for the industry fixed effects using Fama-French's 48 industry classification and use robust standard errors.

I report the results in Table 4. 12. Consistent with the findings from the univariate analysis, divestiture announcements of distressed firms do not reflect fire

[105] Over 99% of the divested assets are subsidiaries, and information on stock price or premium of these units is unavailable in the SDC database. Therefore, I cannot estimate deal premium for divestitures. Instead, I measure announcement returns to indirectly see whether divested assets are traded at discounts. If so, announcement returns will be negative.

sale discounts as coefficients of the distress 1 dummy are not significantly negative throughout all regression analyses. Moreover, there is a weak evidence that divestiture announcements by firms in the distress 2 sample result in significantly positive abnormal returns at 2.7% for all divestitures and 5.1% for divestitures to related buyers. My findings indicate that distressed firms do not underperform non-distressed firms and hence, consistent with the *Hypothesis 3*, the fire sale theory is inapplicable to divestitures implemented during the crisis period.

Divestiture decisions are not randomly made but rather are forced by creditors in distressed firms or are voluntarily undertaken corresponding to the characteristics of firms or their strategies. For example, distressed firms with higher leverage and lack of external sources of financing are more likely to be forced to divest their assets. However, many firms, especially those that are not in highly regulated industries, also choose to divest voluntarily to reorganize their assets and boost efficiency and profitability. These non-random choices of divestiture cause selection bias which cannot be addressed in OLS model. In this study, I use Heckman (1979)'s two-step model to control for the selection bias as in Table 4. 13.

For each sample[106], in the selection stage, I perform probit regression analysis with the *divest* dummy as dependent variable. I then measure whether distressed firms are more likely to divest during the financial crisis using the *distress* dummy (equal to one if a firm is distressed). In this stage, I also include the low debt capacity (LCD) variable which identifies firms with higher leverage and lower liquidity than the industry median. The inverse mills ratio (LAMBDA)[107] generated in this stage is applied to the second stage regression.

The first stage regression results show that financially distressed firms and firms with low debt capacity are more likely to divest their assets. Further, size and market value of assets or equity are significant factors that influence divestiture decision. Larger firms are more likely to divest, while firms with higher market

[106] Same as in Table 11, I estimate the correction model using a sample of all divestitures, divestiture of core unit, divestiture of non-core unit, related buyer, and unrelated buyer.
[107] LAMBDA is unobservable bias which is not captured by the rest of the control variables in the selection model. I control selection bias by including this variable in the second stage regression.

value of assets or equity as compared to their fundamental value are less likely to divest as the market value of their assets is diluted. Firms with more cash flows are also less likely to engage in divestiture as they might be less constrained. Overall, financial constraint is the primary motive to divest during the financial crisis.

The dependent variable in the second stage regression model is cumulative abnormal return (CAR) around the divestiture announcement date. The coefficients for LAMBDA are insignificant throughout all regression models, indicating that my initial results from the OLS estimations are not biased by the unobservable factors which affect divestiture decisions.

Collectively, consistent with Finlay et al. (2018), the measure of CARs around divestiture announcements during the financial crisis suggests no sign of discount in firm value based on the fire sale effect.

4.6 Conclusion

While divestiture has taken an extensive chapter of the corporate finance literature, its importance during the economic crisis has been understated. I postulate that it is because of the fire sale theory that extends the notion of liquidity discounts on assets divested by distressed firms. The lack of other theoretical considerations in empirical studies on the role of divestiture is another reason why divestiture has not been studied as an important restructuring measure that involves long-term strategic reorientation. Particularly, crisis-related studies focus more on retrenchment strategies which in reality are more effective at improving short-term efficiency and cash flows. My study fills this research gap and articulate the effectiveness of divestiture on the long-term performance of firms experiencing financial distress during the economic crisis.

Using the sample of firms which announce divestiture during the financial crisis, I find that divesting firms significantly improve their long-term operating performance compared to non-divesting firms and lessen financial distress over the 3-year periods post-divestiture. Other restructuring strategies such as managerial,

operational, and financial restructuring are also effective when implemented along with a divestiture but are not when they are taken alone. Further, I find that retrenchment strategies which limit investments are associated with performance decline.

During this period, I observe that more assets are sold to non-industry buyers as industry buyers might also be financially constrained as the fire sale theory suggests. The fire sale theory states that buyers from a similar industry to the distressed sellers are more likely to be constrained as well, hence, more asset sales are liquidated to non-industry buyers at greater discounts. However, I discover that non-distressed firms have higher propensity to sell their assets to non-industry acquirers than distressed firms do. Considering unconstrained buyers have less incentive to liquidate their assets at huge discounts by involving non-specialist buyers, I additionally examine the validity of the fire sale theory using divestiture announcement returns. My results imply that divestiture announcements by distressed firms have positive effects on the divesting firms' shareholder returns, rendering no evidence of fire sale discounts. The returns are also indifferent between distressed and non-distressed firms.

In a departure from mainstream crisis-related studies which focus on the fire sale theory or most frequently implemented corporate strategies (retrenchment measures), I revisit the role of divestiture based on the strategic reorientation theory and the financing theory. The evidence I provide in this paper enlighten that divestiture is an integral source of financing and an effective long-term turnaround strategy that can be integrated into corporate strategies in periods of economic turmoil.

Chapter 5

Conclusions and Further Research

5.1. Summary and Conclusions

This thesis investigates topics related to mergers and acquisitions and divestitures. Chapter 2 evaluates the quality of boutique financial advisors in M&A. Boutique investment banks started as intermediaries serving small to middle market clients have grown to advise larger share of M&A transactions over the past decade. Their growing reputation and market share have intrigued research firms and corporate financiers tracking M&A activities, yet they have received less empirical attention. This chapter reveals which factors have contributed to their growing reputation. According to the analysis of announcement returns, boutique advisors generate higher wealth gains for shareholders of acquiring firms than do full-service banks, particularly in deals with higher information asymmetry. These deals include private target deals, cross-industry acquisitions, and deals involving bidders without prior acquisition experience in the target industry. Significant outperformance in such deals indicates that boutique advisors can identify better targets and provide the acquiring firm with greater bargaining power. This also implies that their dedication on designated industries allows them to accumulate experiences and expertise that could supersede those of full-service banks operating in broader industries. These findings explain the increasing demand for boutique

advisors in large-scale cross-industry mergers as well as their concentration on sectors with large volume of M&As such as the technology, energy, healthcare, and financial industry.

Chapter 3 studies divestiture of banks based on theories previously underexplored in divestiture studies. Banks have been excluded from the sample of divestiture studies for the industry is highly regulated, thus, less is known about how banks use divestiture to reconfigure their asset portfolio and its subsequent impact on performance. Separately examining bank holding companies yields empirical benefits. These benefits include a control for unobservable industry-specific factors such as regulations and unique risks associated with banks as well as the estimation of the sector previously left out. This chapter begins with discovering previously unannounced motives of bank divestitures. In their study, Slovin, Sushka, and Poloncheck (1991) argue that bank divestitures are mostly required by regulatory capital requirement. This argument defines divestiture as an involuntary restructuring forced by regulation rather than a strategic decision coordinated by banks to enhance productivity and performance. However, this study finds alternative motives for divestiture of banks such as operating inefficiency, financial distress, and change in performance. Further investigation on banks' use of divestiture in dynamic asset restructuring shows that banks use both acquisitions and divestitures to change their business scope between focusing and diversification: banks use focusing strategy when they experience increasing performance and loan growth but use diversifying strategy when they experience performance decline and financial distress. These findings imply that divestiture is not always involuntarily forced by the regulatory capital requirement or antitrust policy with a merger plan but is a prudently planned part of dynamic asset restructuring in many cases.

Chapter 4 is inspired by the current economic environment with the ongoing Coronavirus pandemic. Many firms are struggling with the unprecedented economic distress and ensuing external financing frictions resulting in a series of defaults. In the process of coping with turnaround mechanisms for financially distressed firms, I decided to measure which corporate turnaround strategies are

effective for firms entering distress as a result of the economic crisis. The closest economic condition is represented by the 2007/08 global financial crisis. Based on financially distressed firms during this period, I compare long-term operating performance of firms employing different turnaround strategies including operational, financial, managerial, and asset restructuring. The results show that asset restructuring through divestiture is the most effective strategy to improve long-term operating performance. This is because the proceeds from divestiture can be used to finance valuable projects, maintain pre-crisis level of investment in the remaining divisions, and repay debt to lower leverage. Further, contrasting to the fire sale theory, this study shows that asset liquidation provides financing benefits which outweigh any potential liquidity discounts inflicted by the market condition. Combining divestitures with other strategies, especially management restructuring, also improves performance. However, managerial restructuring or retrenchment strategies alone cannot turnaround declining performance and even exacerbate financial distress. This is because these strategies are designed to cut costs to increase short-term cash flow but deter investment and growth. The insights provided in this study are timely and practical as the knowledge can be applied to corporate strategy for firms currently experiencing financial difficulty due to the economic condition.

5.2. Suggestions for Further Research

Each chapter inspires further research questions that could lead to different research topics.

Boutique Financial Intermediaries in Public Acquisitions

In Chapter 2, I have highlighted that boutique financial advisors are essential in M&As involving high level of information asymmetry that require specific sector knowledge and due diligence skills. While this has been supported by superior

performance of acquiring firms that are advised by boutique investment banks compared to those involving full-service advisors in such transactions, their role in public deals is less clear. This makes me wonder how boutique advisors differentiate their expertise from full-service firms in acquisitions of public targets. The known factor is that most large-scale public deals require a fairness opinion and boutique advisors are often hired to evaluate the fairness of the offer price for shareholders of the acquiring firm.

The fairness opinion is one of the most important part of a merger process, for which investment banks in charge receive premium fee. However, producing a fairness opinion entails complexity and risk. First, it requires high level of valuation skill as the acquiring firm and its shareholders base their decision to proceed with the deal upon the fairness opinion. It can also be used as a defence if shareholders unsatisfied with the acquisition file a lawsuit against the managers later. Hence, it has to be exclusive and identify any issues in the agreement that needs to be addressed to the shareholders. Further, it involves high level of time pressure as it happens in the middle of the negotiation process between the buyer and the seller. Thus, investigating what proportion of public deals in the takeover market involve boutique advisors to provide a fairness opinion and how it affects acquisition performance could yield interesting discoveries.

Divestiture in dynamic asset restructuring of non-financial industry

In Chapter 3, divestiture was evaluated as part of dynamic asset restructuring in banks. In departure from the agency theory, this study adopts alternative theories such as the neoclassical theory and the resource-based view. These theories perceive focusing and diversifying strategy as inevitable choices firms sequentially make depending on their business cycle. While the focus of this study remained in the banking sector, it could be also extended to a larger sample study which include all industries with the available mergers and divestitures transaction data.

Prior studies in divestiture literature are limited to estimating the effectiveness of focusing strategy on alleviating diversification discount and justifying the agency

theory. However, this theory has been defeated by several studies which find that diversifying decisions are made not by managerial entrenchment motive, but by declining performance and productivity. Even so, divestiture-related studies are still recycling the agency theory to date and have not included profit maximization as an alternative motive for diversification. Therefore, examining this alternative hypothesis could provide important implications on what exactly motivates firms to change their business scope between focusing and diversification using divestiture as a reconfiguring mechanism.

Comparison of turnaround strategies during periods of growth vs. recession

Chapter 4 examines long-term effectiveness of turnaround strategies with a focus on divestiture during the economic crisis. While divestiture alone or along with other restructuring strategies appears to improve long-term operating performance of financially distressed firms during recession, managerial restructuring and other retrenchment strategies are proven not. However, considering economy-wide distress may have a strong and unique impact on corporate turnaround strategy and ensuing performance, the results may be different during periods of economic growth.

This is primarily because obtaining capital is less difficult in a liquid market than in an illiquid market, which gives firms with more flexible alternatives for funding than liquidating assets that may still be useful once the firm recovers from distress. For example, restructuring debt or extending a line of credit can be easier in the growing economy. Further, retrenchments may be a better alternative to managerial or asset restructuring if distressed firms are simply dealing with operational inefficiency. In this case, reducing costs and expenses and increasing short-term cash flows may be enough to overcome financial distress and improve operating performance. Comparing which strategy is suitable for a given market condition can be informative in determining which turnaround strategy financially distressed firms need to undertake.

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Tables and Figures

Table 2. 1 Descriptive Summary Statistics

This table describes summary statistics for a sample of U.S. Mergers & Acquisitions from January 1, 2000 to December 31, 2016, which involve a financial advisor on the acquirer side. The table contains the number of observations denoted as N, the mean, and the median for (1) all sample as well as (2) boutique and (3) full-service sample. Descriptions on the selected variables are available in Appendix *A*. The last column presents mean difference tests between (2) boutique advisor group and (3) full-service group for each variable. *Bidder size* and *deal value* are in US $ million. M&A transaction data are obtained from the Thomson Reuters SDC Mergers and Acquisitions Database. Stock price data are acquired from CRSP. Merging firms' accounting data for financial ratios are from COMPUSTAT.

	All Sample (1)			Boutique (2)			Full-service (3)			Mean Difference
	N	Mean	Median	N	Mean	Median	N	Mean	Median	(2) - (3)
Bidder Size	4991	12004.420	1478.700	1844	6480.808	556.808	3147	15241.007	2701.047	-8760.199***
Book to Market	4431	0.495	0.425	1601	0.551	0.501	2830	0.463	0.386	0.087***
Run-up	4778	-0.014	-0.000	1792	-0.006	-0.003	2986	-0.019	0.002	0.013
Volatility	4778	0.027	0.021	1792	0.027	0.020	2986	0.026	0.021	0.001
Leverage	4445	0.201	0.162	1602	0.157	0.109	2843	0.226	0.197	-0.069***
Liquidity	3399	1.051	0.498	1014	1.274	0.599	2385	0.956	0.436	0.319***
Deal Value	5010	1609.302	255.130	1848	724.484	95.128	3162	2126.425	430.395	-1401.941***
Relative Size	4991	0.436	0.180	1844	0.407	0.179	3147	0.452	0.181	-0.045
Public Deals	5010	0.399	-	1848	0.378	-	3162	0.411	-	-0.034*
Private Deals	5010	0.601	-	1848	0.622	-	3162	0.589	-	0.034*
Diversifying Deals	5010	0.339	-	1848	0.317	-	3162	0.352	-	-0.035*
Hostile Deals	5010	0.016	-	1848	0.011	-	3162	0.020	-	-0.009*
Tender Offers	5010	0.056	-	1848	0.032	-	3162	0.071	-	-0.039***
All Cash	5010	0.314	-	1848	0.260	-	3162	0.346	-	-0.086***
All Stock	5010	0.182	-	1848	0.207	-	3162	0.168	-	0.040***
Mixed Payments	5010	0.503	-	1848	0.532	-	3162	0.486	-	0.046**
Premium	1847	49.127	38.312	615	50.807	39.651	1232	48.289	37.636	2.519
CAR	4936	0.005	0.001	1828	0.008	0.002	3108	0.004	0.001	0.004

Table 2. 2 Cross-sectional OLS Regression Analysis: Bidder CARs

This table presents OLS regression analysis for a sample of U.S. M&A transactions performed by public bidders acquiring public and private targets over the announcement period 2000 to 2016. The dependent variable is bidder CAR (-1, +1) surrounding the announcement date, and control variables are selected based on the firm and deal characteristics. The definition of control variables is available in Appendix *A*. Specification (1), (2), and (3) denote all, public, and private acquisitions, respectively. Regressions are controlled for year fixed effects and industry fixed effects. *P*-values are reported in parentheses below the coefficients. ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

	All	Public	Private
	(1)	(2)	(3)
Boutique	0.008**	-0.005	0.014***
	(0.048)	(0.567)	(0.003)
Bidder size	-0.003*	-0.005**	0.000
	(0.073)	(0.026)	(0.991)
Book to market	-0.017**	-0.003	-0.017**
	(0.020)	(0.851)	(0.038)
Run-up	0.020*	0.025	0.021*
	(0.051)	(0.191)	(0.084)
Volatility	0.046	-0.252	0.024
	(0.833)	(0.537)	(0.927)
Public Deals	-0.028***	-	-
	(0.000)		
All stock deals	-0.016**	-0.024***	0.003
	(0.027)	(0.008)	(0.790)
Relative size	0.003*	-0.012***	0.011***
	(0.094)	(0.000)	(0.000)
Diversifying deals	-0.007**	-0.005	-0.011**
	(0.044)	(0.422)	(0.016)
Tender offers	0.010*	0.002	
	(0.085)	(0.672)	
Hostile deals	0.011	0.017	
	(0.238)	(0.112)	
Leverage	0.028***	0.030	0.022*
	(0.007)	(0.146)	(0.059)
Liquidity	-0.001	-0.003	-0.002
	(0.467)	(0.319)	(0.375)
Premium		-0.000***	
		(0.001)	
Constant	0.046**	0.023	0.057**
	(0.016)	(0.500)	(0.018)
Observations	2,938	933	1,940
Adjusted R-squared	0.054	0.115	0.037
Industry FE	YES	YES	YES
Year FE	YES	YES	YES

Table 2. 3 Heckman's Two-Step (IMR) Analysis

This table presents Heckman's two-step analysis for a sample of M&A transactions performed by public bidders acquiring public and private targets over the announcement period 2000 to 2016. The sample is separated into all, public, and private acquisitions. For each type of deals, the table includes two regression models: (1) probit regression for the advisor selection, where the dependent variable is a dummy equal to one if the advisor is boutique and zero if the advisor is full-service, and (2) OLS regression for deal outcome, where the dependent variable is 3-day bidder CARs. In the selection stage, I include an instrumental variable, *prior advisor*, which equals to one if the bank and the acquirer have prior relationship and zero otherwise. *Inverse mills ratio* (*IMR*) is added in the outcome stage regression to determine whether there is selection bias in the model. The definition of other control variables is available in Appendix *A*. Regressions are controlled for year fixed effects and industry fixed effects. *P*-values are reported in parentheses below the coefficients. ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

	All		Public		Private	
	Selection	Outcome	Selection	Outcome	Selection	Outcome
Prior advisor	0.226***		0.296*		0.195*	
	(0.008)		(0.066)		(0.058)	
Bidder size	-0.456***	-0.001	-0.405***	-0.012	-0.493***	-0.001
	(0.000)	(0.866)	(0.000)	(0.208)	(0.000)	(0.885)
Book to market	-0.270***	-0.016**	-0.426**	-0.019	-0.215**	-0.017**
	(0.003)	(0.018)	(0.020)	(0.171)	(0.048)	(0.026)
Run-up	0.005	0.020***	-0.515**	0.016	0.182	0.021**
	(0.962)	(0.003)	(0.025)	(0.347)	(0.172)	(0.016)
Volatility	-1.113	0.050	2.268	0.044	-2.764	0.010
	(0.657)	(0.746)	(0.621)	(0.866)	(0.365)	(0.958)
Public Deals	0.010	-0.028***				
	(0.877)	(0.000)				
All stock deals	0.104	-0.017***	0.285**	-0.022**	0.010	0.003
	(0.252)	(0.003)	(0.035)	(0.030)	(0.940)	(0.697)
Relative size	-0.372***	0.004	-0.368***	-0.016*	-0.386***	0.010
	(0.000)	(0.473)	(0.000)	(0.085)	(0.000)	(0.162)
Diversifying deals	0.101*	-0.008**	0.213*	-0.003	0.069	-0.010**
	(0.085)	(0.046)	(0.062)	(0.717)	(0.324)	(0.023)
Tender offers		0.010		-0.002		-0.157*
		(0.169)		(0.767)		(0.074)
Hostile deals	0.216	0.011	0.385	0.026		
	(0.389)	(0.386)	(0.134)	(0.100)		
Leverage	-0.637***	0.030**	-0.506	0.029	-0.680***	0.020
	(0.000)	(0.022)	(0.121)	(0.173)	(0.001)	(0.225)
Liquidity	0.015	-0.001	0.041	-0.003	0.018	-0.002
	(0.464)	(0.342)	(0.339)	(0.283)	(0.452)	(0.271)
Inverse Mills Ratio		-0.007		0.020		-0.002
		(0.710)		(0.514)		(0.926)
Constant	2.310***	0.049**	2.118***	0.030	2.528***	0.073**
	(0.000)	(0.036)	(0.000)	(0.433)	(0.000)	(0.016)
Observations	2,938	2,938	998	998	1,939	1,939
Pseudo R2 (Adj. R2)	0.201	0.053	0.198	0.089	0.200	0.034
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES

Table 2. 4 Propensity Score Matching (PSM): Boutique vs. Full-service

This table exhibits the results from the Propensity Score Matching for a sample of U.S. domestic M&As over the period 2000 to 2016. The bidder is public while the target includes both public and private firms. Panel A reports logit regression results in which the dependent variable is a dummy indicating the choice of boutique over full-service bank. The definition of control variables is available in Appendix *A*. Propensity scores are computed based on the set of covariates presented in this table. Panel B displays difference in mean bidder CARs between treated (boutique) and control (full-service) group measured by the Average Treatment Effect on the Treated (ATT). Selected deals for the treated and control group are matched based on different matching methods: one-to-one Nearest Neighbour matching, five Nearest Neighbour matching, and Gaussian Kernel matching. *P*-values are reported in parentheses below the coefficients. ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A. Logit regression: Choice of boutique advisor			
	All	Public	Private
Bidder size	-0.450***	-0.395***	-0.489***
	(0.000)	(0.000)	(0.000)
Book to market	-0.253***	-0.405**	-0.201*
	(0.006)	(0.026)	(0.064)
Run-up	0.010	-0.512**	0.187
	(0.931)	(0.025)	(0.161)
Volatility	-1.019	2.257	-2.661
	(0.684)	(0.622)	(0.383)
Public Deals	0.010		
	(0.883)		
All stock deals	0.102	0.286**	0.008
	(0.260)	(0.034)	(0.953)
Relative size	-0.376***	-0.371***	-0.390***
	(0.000)	(0.000)	(0.000)
Diversifying deals	0.098*	0.200*	0.069
	(0.094)	(0.078)	(0.322)
Hostile deals	0.219	0.390	
	(0.381)	(0.127)	
Leverage	-0.611***	-0.503	-0.651***
	(0.000)	(0.123)	(0.001)
Liquidity	0.013	0.040	0.016
	(0.516)	(0.357)	(0.496)
Constant	2.240***	2.020***	2.470***
	(0.000)	(0.000)	(0.000)
Observations	2,938	998	1,939
Pseudo R2	0.199	0.194	0.198
Industry FE	YES	YES	YES
Year FE	YES	YES	YES
Panel B. Boutique client CARs based on PSM			
	One-to-one	5 Nearest	Gaussian Kernel
All	0.020***	0.013***	0.014**
	(0.003)	(0.008)	(0.029)
Public	0.005	-0.006	-0.003
	(0.734)	(0.610)	(0.742)
Private	0.014**	0.017**	0.013**
	(0.046)	(0.019)	(0.029)

Table 2. 5 Long-term Abnormal Returns: Bidder BHARs

This table presents OLS regression analysis for a sample of U.S. M&A transactions performed by public bidders acquiring public and private targets over the announcement period 2000 to 2016. The dependent variable is bidder BHAR over the 12-and 24-month period starting from the announcement date. BHARs are compounded returns of an acquiring firm over the estimation period adjusted by a matching benchmark portfolio from Fama-French's 25 equally-weighted size and book-to-market portfolios:

$$BHAR_i = \prod_{t=1}^{T}[1 + R_{i,t}] - \prod_{t=1}^{T}[1 + R_{benchmark,t}],$$

where $R_{i,t}$ is compounded returns of a sample firm I, and $R_{benchmark,t}$ is returns of a corresponding benchmark portfolio which falls into the same size/book-to-market decile as the sample firm. Control variables are selected based on the firm and deal characteristics. The definition of control variables is available in Appendix *A*. Regressions are controlled for year fixed effects and industry fixed effects. *P*-values are reported in parentheses below the coefficients. ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

	All Deals		Public Deals		Private Deals	
	12 Month	24 Month	12 Month	24 Month	12 Month	24 Month
Boutique	0.040*	0.078**	-0.047	-0.098	0.074***	0.161***
	(0.081)	(0.038)	(0.266)	(0.140)	(0.007)	(0.000)
Run-up	0.053	0.097	-0.029	0.108	0.087	0.089
	(0.279)	(0.243)	(0.740)	(0.497)	(0.142)	(0.358)
Public Deals	-0.012	0.013				
	(0.600)	(0.720)				
All stock deals	-0.075**	-0.116**	-0.092**	-0.130*	-0.051	-0.101
	(0.022)	(0.031)	(0.030)	(0.070)	(0.306)	(0.215)
Relative size	0.024***	0.029**	0.001	0.016	0.037***	0.039**
	(0.002)	(0.020)	(0.905)	(0.376)	(0.000)	(0.021)
Diversifying deals	-0.035*	-0.040	-0.016	-0.026	-0.040	-0.050
	(0.084)	(0.210)	(0.614)	(0.615)	(0.123)	(0.224)
Tender offers	0.007	-0.033	-0.031	-0.084		
	(0.849)	(0.578)	(0.405)	(0.175)		
Hostile deals	0.027	-0.066	0.069	-0.025	-0.014	-0.160
	(0.718)	(0.533)	(0.380)	(0.838)	(0.808)	(0.157)
Leverage	0.176***	0.254**	0.025	0.055	0.277***	0.425***
	(0.005)	(0.021)	(0.794)	(0.762)	(0.001)	(0.002)
Liquidity	-0.036***	-0.036***	-0.027*	-0.034	-0.039***	-0.040***
	(0.000)	(0.002)	(0.065)	(0.190)	(0.000)	(0.003)
Constant	0.002	0.098	0.085	0.279**	-0.047	0.014
	(0.966)	(0.254)	(0.326)	(0.036)	(0.503)	(0.907)
Observations	2,157	1,608	765	588	1,392	1,020
Adjusted R-squared	0.041	0.034	0.007	0.003	0.058	0.057
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES

Table 2. 6 Long-term Abnormal Returns: Bidder CTPRs

This table presents time-series regression analysis of calendar time portfolio returns formed on a sample of U.S. firms which announced M&A during the period 2000 to 2016. Portfolios are rebalanced each month with additional firms which participate in the event in that month and firms which exit the portfolio at the end of the 12- or 24-month period. The monthly portfolio returns are regressed against Fama-French (1993) and Carhart (1997) factors as in the equation below:

$$R_{p(boutique),t} - R_{p(full-service),t} = \alpha_p + b_p(R_{m,t} - R_{f,t}) + s_p SMB_t + h_p HML_t + u_p UMD_t + e_{p,t}.$$

,where $R_{p(boutique),t} - R_{p(full-service),t}$ is a zero-investment portfolio estimated by the monthly boutique portfolio returns in excess of the full-service portfolio returns, $R_{m,t} - R_{f,t}$ is the market excess return, SMB is the difference between small and large stock portfolios, HML is the difference between high and low book-to-market equity stock portfolios, and UMD is the difference between winners and losers stock portfolios. The intercept, α_p estimates boutique portfolio's monthly abnormal return. Panel A exhibits all deals, panel B exhibits public deals, and panel C exhibits private deals. I include both equal-weighted (EW) and value-weighted (EW) portfolio returns. *P*-values are reported in parentheses below the coefficients. ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

	12 Months		24 Months	
Panel A. All Deals	EW	VW	EW	VW
Alpha	0.003	0.006**	0.003*	0.006**
	(0.130)	(0.048)	(0.064)	(0.042)
RMRF	-0.183***	-0.232***	-0.119***	-0.159**
	(0.000)	(0.008)	(0.004)	(0.043)
SMB	0.075	0.059	-0.022	-0.228*
	(0.537)	(0.695)	(0.844)	(0.056)
HML	0.037	-0.056	0.098	-0.094
	(0.570)	(0.676)	(0.144)	(0.438)
UMD	0.067	-0.315***	0.003	-0.187**
	(0.182)	(0.000)	(0.956)	(0.044)
Calendar Month	215	215	226	226
Adjusted R-squared	0.118	0.104	0.059	0.087
Panel B. Public Deals				
Alpha	-0.005**	-0.002	-0.003	0.004
	(0.019)	(0.630)	(0.231)	(0.250)
RMRF	-0.301***	-0.057	-0.301***	-0.173*
	(0.000)	(0.591)	(0.000)	(0.092)
SMB	0.048	0.187	0.004	-0.188
	(0.705)	(0.257)	(0.975)	(0.203)
HML	0.400***	0.393**	0.231**	0.019
	(0.000)	(0.041)	(0.029)	(0.911)
UMD	-0.061	-0.389***	-0.126	-0.242**
	(0.453)	(0.000)	(0.185)	(0.038)
Calendar Month	214	214	225	225
Adjusted R-squared	0.207	0.174	0.157	0.067
Panel C. Private Deals				
Alpha	0.007***	0.010***	0.006***	0.005
	(0.006)	(0.008)	(0.010)	(0.178)
RMRF	-0.089	-0.199	-0.014	0.007
	(0.213)	(0.106)	(0.843)	(0.946)
SMB	-0.011	0.407*	-0.135	0.187
	(0.949)	(0.086)	(0.465)	(0.340)
HML	-0.134	-0.483**	0.073	-0.349**
	(0.151)	(0.011)	(0.487)	(0.020)
UMD	0.127*	-0.057	0.093	0.000
	(0.050)	(0.616)	(0.294)	(0.998)
Calendar Month	214	214	226	226
Adjusted R-squared	0.062	0.138	0.025	0.059

Table 2. 7 Propensity Score Matching (PSM): Cross-industry M&As

This table exhibits the results from the Propensity Score Matching performed on cross- and same-industry deals for a sample of U.S. domestic M&As over the period 2000 to 2016. The bidder is public while the target includes both public and private firms. Panel A reports logit regression results in which the dependent variable is a dummy indicating the choice of boutique over full-service bank. *Cross-industry* is defined as deals in which a bidder operates in a different industry from its target based on the first 3-digit SIC code. *Industry peers* is average use of boutique advisors by industry peers computed as the number of boutiques hired by a bidder's industry peers (based on the same 3-digit SIC code) during the last one year prior to the announcement date over the total number of advisors employed by the same group of peers during the same period. The definition of other control variables is available in Appendix *A*. Propensity scores are computed based on the set of covariates presented in this table. Panel B displays difference in mean bidder CARs between treated (boutique) and control (full-service) group measured by the Average Treatment Effect on the Treated (ATT). Selected deals for the treated and control group are matched based on different matching methods: one-to-one Nearest Neighbour matching, five Nearest Neighbour matching, and Gaussian Kernel matching. *P*-values are reported in parentheses below the coefficients. ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A. Logit estimation results: Choice of boutique advisor		
	Cross-industry	Same industry
Bidder size	-0.472***	-0.451***
	(0.000)	(0.000)
Book to market	-0.402***	-0.211
	(0.003)	(0.127)
Run-up	0.111	-0.076
	(0.558)	(0.621)
Volatility	-1.086	-1.632
	(0.787)	(0.663)
Public Deals	0.013	0.009
	(0.893)	(0.932)
All stock deals	0.095	0.124
	(0.494)	(0.335)
Relative size	-0.361***	-0.410***
	(0.000)	(0.000)
Hostile deals	-0.184	0.370
	(0.625)	(0.149)
Leverage	-0.528**	-0.412
	(0.044)	(0.138)
Liquidity	0.005	0.029
	(0.891)	(0.337)
Industry peers	0.517***	0.094
	(0.001)	(0.641)
Constant	2.602***	2.089***
	(0.000)	(0.000)
Observations	1,366	1,508
Pseudo R2	0.207	0.216
Industry FE	YES	YES
Year FE	YES	YES

Panel B. Boutique client CARs based on PSM			
	One-to-one	5 Nearest	Gaussian Kernel
Cross-industry	0.010	0.015*	0.016**
	(0.347)	(0.078)	(0.039)
Same industry	0.014	0.012	0.013
	(0.181)	(0.198)	(0.137)

Table 2. 8 Propensity Score Matching (PSM): Without Prior Experience

This table exhibits the results from the Propensity Score Matching performed on acquisitions with and without prior experience for a sample of U.S. domestic M&As over the period 2000 to 2016. The bidder is public while the target includes both public and private firms. Panel A reports logit regression results in which the dependent variable is a dummy indicating the choice of boutique over full-service bank. *Without prior experience* is defined as the number of acquisitions that a bidder has undertaken in the same 3-digit SIC industry as the current target during the last 3 years prior to the announcement date. If this is zero, it is considered without prior experience whereas greater than zero is classified as with prior experience. *Industry peers* is average use of boutique advisors by industry peers computed as the number of boutiques hired by a bidder's industry peers (based on the same 3-digit SIC code) during the last one year prior to the announcement date over the total number of advisors employed by the same group of peers during the same period. The definition of other control variables is available in Appendix *A*. Propensity scores are computed based on the set of covariates presented in this table. Panel B displays difference in mean bidder CARs between treated (boutique) and control (full-service) group measured by the Average Treatment Effect on the Treated (ATT). Selected deals for the treated and control group are matched based on different matching methods: one-to-one Nearest Neighbour matching, five Nearest Neighbour matching, and Gaussian Kernel matching. *P*-values are reported in parentheses below the coefficients. ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A. Logit estimation results: Choice of boutique advisor		
	Without Prior Experience	With Prior Experience
Bidder size	-0.437***	-0.553***
	(0.000)	(0.000)
Book to market	-0.255**	-0.460
	(0.014)	(0.121)
Run-up	0.006	-0.021
	(0.960)	(0.956)
Volatility	-0.894	7.455
	(0.753)	(0.505)
Public Deals	-0.045	0.246
	(0.540)	(0.296)
All stock deals	0.075	0.243
	(0.437)	(0.421)
Relative size	-0.366***	-0.475***
	(0.000)	(0.000)
Diversifying deals	0.152**	-0.570**
	(0.018)	(0.013)
Hostile deals	0.142	0.378
	(0.550)	(0.427)
Leverage	-0.597***	-0.141
	(0.003)	(0.811)
Liquidity	0.027	-0.237**
	(0.249)	(0.033)
Industry peers	0.347**	-0.122
	(0.011)	(0.788)
Constant	2.205***	2.473**
	(0.000)	(0.026)
Observations	2,406	455
Pseudo R2	0.197	0.300
Industry FE	YES	YES
Year FE	YES	YES

Panel B. Boutique client CARs based on PSM			
	One-to-one	5 Nearest	Gaussian Kernel
Without Prior Experience	0.012	0.013**	0.016***
	(0.162)	(0.037)	(0.006)
With Prior Experience	0.007	-0.003	0.003
	(0.691)	(0.869)	(0.844)

Table 3. 1 Number of Completed Divestitures from the SDC Mergers & Acquisitions Database

year	All Industries	Financial Services	Banks	Bank Divestiture as a Percentage of All Industries	Bank Divestiture as a Percentage of Financial Services Industry
1980	5	0	0	0.00%	0.00%
1981	110	17	2	1.82%	11.76%
1982	329	52	16	4.86%	30.77%
1983	719	98	33	4.59%	33.67%
1984	782	139	55	7.03%	39.57%
1985	634	98	42	6.62%	42.86%
1986	897	141	49	5.46%	34.75%
1987	764	140	38	4.97%	27.14%
1988	973	205	77	7.91%	37.56%
1989	1,279	264	130	10.16%	49.24%
1990	1,414	398	257	18.18%	64.57%
1991	1,436	431	267	18.59%	61.95%
1992	1,488	396	219	14.72%	55.30%
1993	1,733	398	189	10.91%	47.49%
1994	1,832	421	238	12.99%	56.53%
1995	2,085	537	281	13.48%	52.33%
1996	2,265	446	184	8.12%	41.26%
1997	2,277	496	140	6.15%	28.23%
1998	2,303	526	124	5.38%	23.57%
1999	2,008	436	104	5.18%	23.85%
2000	1,910	386	96	5.03%	24.87%
2001	1,788	378	114	6.38%	30.16%
2002	1,840	376	94	5.11%	25.00%
2003	2,047	484	102	4.98%	21.07%
2004	2,011	516	112	5.57%	21.71%
2005	2,149	611	103	4.79%	16.86%
2006	2,233	659	101	4.52%	15.33%
2007	2,210	692	101	4.57%	14.60%
2008	1,863	544	94	5.05%	17.28%
2009	1,711	510	139	8.12%	27.25%
2010	1,718	641	154	8.96%	24.02%
2011	1,786	679	131	7.33%	19.29%
2012	1,954	819	117	5.99%	14.29%
2013	1,940	751	108	5.57%	14.38%
2014	2,005	846	121	6.03%	14.30%
2015	1,867	772	88	4.71%	11.40%
2016	2,004	915	80	3.99%	8.74%
2017	2,205	1,096	107	4.85%	9.76%
2018	1,809	895	65	3.59%	7.26%
2019	1,262	721	52	4.12%	7.21%
Total	63,645	18,930	4,524	7.11%	23.90%

Table 3. 2 Summary Statistics

Panel A presents the summary statistics of the unbalanced panel data (number of banks included in the sample fluctuate each year) used to analyse divestiture decision of banks. This sample includes all banks which has or has not divested over the period 1980 and 2019. Each bank has only one firm-year observation whether it has divested more than once or whether it has not divested. Divestors are the public U.S. domestic banks. *N* represents the total number of observations for each variable. Panel B displays the summary statistics of (1) divestor and (2) non-divestor sample. Non-divestors are defined as those which have not divested in a given year. For divestors, all accounting variables excluding the loan growth and acquisition variable are generated at the end of the fiscal year prior to the divestiture announcement. The difference in means and medians between the two samples are measured using t-tests and non-parametric Wilcoxon rank-sum tests, respectively. *P*-values are reported in parentheses below the coefficients. ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively. Panel C reports the summary statistics of the cross-sectional data with all divestiture transactions with available accounting data for the event study analyses, which means a bank can have several firm-year observations within a year unlike the panel data in Panel A. This sample includes only firms with divestiture transaction events. The definition of all variables is available in Appendix B. Market value is adjusted for inflation. Values are in *US $ million*. All the continuous variables are winsorized at the 1% level.

Panel A Summary Statistics for the Divestiture Decision

Model Variable	N	Mean	Std	5th	25th	50th	75th	95th
Size	23819	25098.4	112279.3	138.1	438.2	1125.6	4167.6	84785.6
Inefficiency	19034	0.421	0.099	0.267	0.358	0.414	0.475	0.593
Operating inefficiency	19530	0.029	0.012	0.015	0.022	0.027	0.033	0.050
Liquidity	23202	0.266	0.123	0.090	0.176	0.252	0.337	0.493
Leverage	23763	0.092	0.038	0.043	0.068	0.087	0.107	0.163
Capital	18911	11.901	3.841	6.620	9.380	11.430	13.700	18.900
Default risk	19324	0.012	0.015	0.001	0.003	0.006	0.013	0.043
Market-to-book	19571	1.326	0.688	0.364	0.878	1.218	1.660	2.634
Loan growth	17383	0.454	0.563	-0.187	0.120	0.325	0.639	1.542
ROA	23805	0.007	0.008	-0.006	0.005	0.008	0.011	0.016
ROE	23789	0.079	0.112	-0.066	0.056	0.096	0.132	0.185
Net interest margin	19296	3.798	0.948	2.300	3.220	3.720	4.310	5.460
Acquisition	27179	0.326	0.469	-	-	-	-	-

Panel B Summary Statistics of Divestor vs. Non-divestor

	Divestor (1)			Non-divestor (2)			Mean difference	Median difference
	N	Mean	50th	N	Mean	50th	(1) - (2)	(1) - (2)
Size	1099	71937	7711	22720	22832	1052	49104.313***	6658.757***
Inefficiency	771	0.419	0.406	18263	0.421	0.415	-0.002	-0.009*
Operating inefficiency	773	0.034	0.031	18757	0.029	0.027	0.004***	0.004***
Liquidity	1066	0.254	0.245	22136	0.266	0.253	-0.012**	-0.008**
Leverage	1098	0.080	0.079	22665	0.092	0.087	-0.012***	-0.008***
Capital	863	10.494	10.390	18048	11.969	11.500	-1.475***	-1.110***
Default risk	884	0.013	0.006	18440	0.012	0.006	0.002***	0.000***
Market-to-book	1047	1.419	1.287	18524	1.321	1.213	0.098***	0.074***
Loan growth	960	0.435	0.303	16423	0.455	0.326	-0.020	-0.023***
ROA	1099	0.005	0.008	22706	0.007	0.008	-0.003***	0.000
ROE	1098	0.054	0.100	22691	0.080	0.096	-0.026***	0.004*
Net interest margin	886	3.710	3.680	18410	3.803	3.720	-0.093**	-0.040*
Acquisition	1149	0.682	-	26030	0.247	-	0.381***	-

Panel C Summary Statistics of Divestiture Transactions for the Event Study Analyses

	N	Mean	Std	50th
Market value	1599	35710.134	70710.377	3358.630
Tobin's Q	1543	1.052	0.071	1.035
Total assets	1545	282277.589	617232.642	24698.952
Deal value	426	261.41	571.697	56.255
Relative size	425	0.147	0.356	0.027
Public target	1603	0.011	0.105	-
Private target	1603	0.003	0.056	-
Subsidiary target	1603	0.979	0.142	-
Non-core unit	1603	0.699	0.459	-
Core unit	1603	0.301	0.459	-
Related merger	520	0.598	0.491	-
Unrelated merger	520	0.402	0.491	-
State	1603	0.455	0.498	-
Divestiture experience	1603	0.889	1.004	0.693
% Cash payment	228	93.567	19.433	100.000
Runup	1594	0.008	0.205	-0.002

Table 3. 3 Fixed-effect Probability Model: Determinants of Divestiture

This table measures the relation between firm characteristics and banks' decision to divest based on equation (1). The dependent variable is a dummy equal to one if a bank divests in a given year, and zero otherwise. *Positive performance gap* is the value of the Historical aspiration gap if the gap is positive, and zero otherwise. *Negative performance gap* is the absolute value of the Historical aspiration gap if the gap is negative, and zero otherwise. Historical aspiration gap is calculated as the difference between a bank's ROA_{t-1} and the average of $ROA_{t-2}, ROA_{t-3}, ROA_{t-4}$ as in equation (2). *Size* is the natural log of the book value of total assets. *Operating inefficiency* is the total noninterest expense over the book value of total assets. *Liquidity* is sum of cash and due from banks total and investment securities over the book value of total assets. *Leverage* is the book value of total common equity over the book value of total assets. *Capital* is a risk-adjusted tier 1 capital ratio. *Default risk* is nonperforming assets over the book value of total assets. *Market-to-book* is the market value of equity over the book value of equity. *Loan growth* is an average percentage growth in bank loans over the past three years. *ROA* is net income over the book value of total assets. *Acquisition* is equal to one if a bank has acquired another firm between $year_{t-3}$ and $year_{t+1}$. All the continuous variables are winsorized at the 1% level excluding the Size variable. The control variables are defined in Appendix B. Regressions are controlled for year fixed effects and firm fixed effects. Standard errors are adjusted for heteroskedasticity and firm clustering. *P*-values are reported in parentheses below the coefficients. ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

Dependent variable:	Divest vs. Non-divest			
	(1)	(2)	(3)	(4)
Positive performance gap			1.4708**	
			(0.0283)	
Negative performance gap				-0.0006
				(0.9992)
Size	0.0517***	0.0392***	0.0560***	0.0517***
	(0.0000)	(0.0001)	(0.0000)	(0.0000)
Operating inefficiency		1.6401***		
		(0.0027)		
Liquidity	-0.0279	-0.0069	-0.0180	-0.0279
	(0.4433)	(0.8571)	(0.6446)	(0.4433)
Leverage	0.0143	-0.2035	-0.0191	0.0143
	(0.9127)	(0.1956)	(0.8942)	(0.9137)
Capital		0.0002		
		(0.8532)		
Default risk		0.4694*		
		(0.0715)		
Market-to-book	-0.0107	-0.0165**	-0.0071	-0.0107
	(0.1398)	(0.0211)	(0.3640)	(0.1407)
Loan growth	-0.0116**	0.0001	-0.0127**	-0.0116**
	(0.0309)	(0.9895)	(0.0457)	(0.0331)
ROA	-2.5574***	-1.3953**	-2.8647***	-2.5575***
	(0.0000)	(0.0109)	(0.0000)	(0.0000)
Acquisition	0.0372***	0.0154*	0.0410***	0.0372***
	(0.0000)	(0.0551)	(0.0000)	(0.0000)
Constant	-0.4646***	-0.1895**	-0.4627***	-0.4646***
	(0.0000)	(0.0457)	(0.0000)	(0.0000)
Observations	15,252	11,410	13,347	15,252
Number of firms	1,582	1,376	1,432	1,582
Within Adj.R-squared	0.0708	0.0194	0.0590	0.0707
Firm FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Table 3. 4 Fixed-effect Probability Model: Change in Corporate Scope through Mergers & Divestitures

This table shows the relation between firm characteristics and banks' decision to change their corporate scope. The dependent variable is a dummy indicating banks' choice between focusing and diversifying strategy. Specifically, *focusing strategy* is equal to one if a bank increases its focus by divesting an unrelated asset in a given year and acquiring a related business over the five-year period (-3, +1) surrounding the year of divestiture. *Diversifying strategy* is equal to one if a bank either acquires an unrelated business over the five years or concurrently divests assets in a given year. *Positive performance gap* is the value of the Historical aspiration gap if the gap is positive, and zero otherwise. *Negative performance gap* is the absolute value of the Historical aspiration gap if the gap is negative, and zero otherwise. Historical aspiration gap is calculated as the difference between a bank's ROA_{t-1} and the average of $ROA_{t-2}, ROA_{t-3}, ROA_{t-4}$ as in equation (2). *Size* is the natural log of the book value of total assets. *Liquidity* is sum of cash and due from banks total and investment securities over the book value of total assets. *Leverage* is the book value of total common equity over the book value of total assets. *Market-to-book* is the market value of equity over the book value of equity. *Loan growth* is an average percentage growth in bank loans over the past three years. *ROA* is net income over the book value of total assets. All the continuous variables are winsorized at the 1% level excluding the Size variable. The control variables are defined in Appendix B. Regressions are controlled for year fixed effects and firm fixed effects. Standard errors are adjusted for heteroskedasticity and firm clustering. *P*-values are reported in parentheses below the coefficients. ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

Dependent Variable:	Focusing Strategy (1)	Diversifying Strategy (2)	Focusing Strategy (3)	Diversifying Strategy (4)
Positive performance gap	6.1859*	-6.1056**		
	(0.0536)	(0.0444)		
Negative performance gap			-1.9888	0.0409
			(0.1744)	(0.9797)
Size	0.0366	-0.0069	0.0298	-0.0034
	(0.4514)	(0.8862)	(0.5097)	(0.9406)
Liquidity	-0.0543	-0.1681	-0.0175	-0.1903
	(0.7800)	(0.3431)	(0.9266)	(0.2826)
Leverage	-0.0939	-0.2830	-0.0047	-0.3484
	(0.9171)	(0.7529)	(0.9957)	(0.6911)
Market-to-book	0.0485*	-0.0558**	0.0462*	-0.0542**
	(0.0848)	(0.0224)	(0.0789)	(0.0188)
Loan growth	0.0398**	-0.0517**	0.0314*	-0.0413**
	(0.0405)	(0.0111)	(0.0846)	(0.0322)
ROA	-3.2619*	2.5185*	-3.2434*	2.2567
	(0.0649)	(0.0858)	(0.0635)	(0.1081)
Constant	-0.4380	1.3339***	-0.3998	1.2962***
	(0.2074)	(0.0001)	(0.1880)	(0.0000)
Observations	1,934	1,934	2,091	2,091
Number of firms	376	376	386	386
Within Adj.R-squared	0.0933	0.1420	0.0930	0.1352
Firm FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Table 3. 5 Logistics Regression: Cross-sectional Analysis of Bank Mergers & Divestitures

This table estimates correlation between banks' characteristics and the choice of restructuring strategy using the cross-sectional transaction-level data. The dependent variable for each model is as follows: (1) *Non-core unit* is a dummy equal to one if a bank divests non-core unit, (2) *Focusing strategy* is a dummy equal to one if a bank implements a divestiture of non-core unit & acquisition of related business, (3) *Diversifying strategy 1* is a dummy equal to one if a bank implements a divestiture of non-core unit & acquisition of unrelated business, and (4) *Diversifying strategy 2* is a dummy equal to one if a bank implements a divestiture of core unit & acquisition of unrelated business. *Diversification level* is the number of sectors in which a bank operates in measured using the first 2-digit SIC codes. *Size* is the natural log of the book value of total assets. *Operating inefficiency* is the total noninterest expense over the book value of total assets. *Liquidity* is sum of cash and due from banks total and investment securities over the book value of total assets. *Leverage* is the book value of total common equity over the book value of total assets. *Capital* is a risk-adjusted tier 1 capital ratio. *Default risk* is nonperforming assets over the book value of total assets. *Tobin's Q* is the market value of total assets (book value of total assets minus book value of total common equity plus market value of equity) over the book value of total assets. *Loan growth* is an average percentage growth in bank loans over the past three years. *ROA* is net income over the book value of total assets. *Acquisition* is equal to one if a bank has acquired another firm between $year_{t-3}$ and $year_{t+1}$. All the continuous variables are winsorized at the 1% level excluding the Size variable. The control variables are defined in Appendix B. Regressions are controlled for year fixed effects. Standard errors are adjusted for divesting bank clustering. *P*-values are reported in parentheses below the coefficients. ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

Dependent Variable:	Non-core Unit	Focusing Strategy	Diversifying Strategy 1	Diversifying Strategy 2
	(1)	(2)	(3)	(4)
Diversification level	0.217	0.920***	-0.831***	-0.768
	(0.180)	(0.003)	(0.000)	(0.197)
Size	-0.021	-1.018***	1.224***	0.248
	(0.876)	(0.000)	(0.000)	(0.642)
Operating inefficiency	18.400	-14.293	68.046***	162.924**
	(0.444)	(0.727)	(0.006)	(0.042)
Liquidity	3.105	-2.621	0.073	-14.377
	(0.294)	(0.589)	(0.986)	(0.191)
Leverage	-16.078	-10.479	-26.870*	55.000*
	(0.131)	(0.678)	(0.081)	(0.092)
Capital	-0.060	-0.409	0.439**	-3.715***
	(0.618)	(0.177)	(0.024)	(0.000)
Default risk	5.318	79.680	103.044	-1,541.323**
	(0.874)	(0.406)	(0.123)	(0.015)
Tobin's Q	1.307	8.315	9.687**	-10.359
	(0.646)	(0.158)	(0.046)	(0.322)
Loan growth	-0.055	0.718***	-0.036	-4.219***
	(0.750)	(0.006)	(0.909)	(0.009)
ROA	1.770	-48.015	17.791	186.156
	(0.956)	(0.705)	(0.710)	(0.104)
Acquisition	0.610			
	(0.177)			
Constant	-1.950	4.341	-29.140***	51.619***
	(0.550)	(0.497)	(0.000)	(0.006)
Observations	576	344	295	158
Pseudo R-squared	0.192	0.394	0.304	0.309
Year FE	YES	YES	YES	YES

Table 3. 6 Cumulative Abnormal Returns (CARs) on the Divestiture Announcements

This table exhibits abnormal returns during the divestiture announcements for 3-day, 5-day, and 11-day event windows using the sample of bank divestitures that are completed between 1981 and 2019. CAR is the divestor's stock return minus the benchmark portfolio return over the event window. The benchmark is estimated using market model over the period beginning -295 days and ending -45 days before the announcement. Abnormal returns are measured for (1) all divestitures, (2) divestitures of non-core unit, (3) divestitures of non-core unit & acquisitions of related business (focusing strategy), (4) divestitures of non-core unit & acquisitions of unrelated business (diversifying strategy 1), and (5) divestitures of core unit & acquisitions of unrelated business (diversifying strategy 2). Panel A includes all banks and Panel B only includes diversified banks (banks with more than one operating sector) in the sample. CARs are winsorized at the 1% level. Standard errors are adjusted for divesting bank clustering. *P*-values are reported in parentheses below the coefficients. ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A: All Banks					
	All	Non-core Unit	Focusing Strategy	Diversifying Strategy 1	Diversifying Strategy 2
Window	(1)	(2)	(3)	(4)	(5)
[-1, 1]	0.004***	0.006***	0.001	0.001	-0.012***
	(0.000)	(0.000)	(0.592)	(0.482)	(0.007)
[-2, 2]	0.004***	0.004***	-0.001	-0.000	-0.008*
	(0.002)	(0.002)	(0.784)	(0.934)	(0.081)
[-5, 5]	0.006***	0.004*	-0.007*	-0.005**	-0.011
	(0.006)	(0.082)	(0.098)	(0.035)	(0.252)
Observations	1,594	1,115	200	159	67
Panel B: Diversified Banks					
[-1, 1]	0.004***	0.005***	0.001	0.001	-0.012**
	(0.001)	(0.000)	(0.594)	(0.418)	(0.014)
[-2, 2]	0.004***	0.004***	-0.001	0.000	-0.008
	(0.004)	(0.003)	(0.792)	(0.925)	(0.111)
[-5, 5]	0.005**	0.003	-0.007*	-0.005**	-0.009
	(0.023)	(0.177)	(0.082)	(0.042)	(0.370)
Observations	1,515	1,075	196	157	64

Table 3. 7 OLS Regression: The Effect of Restructuring Strategies on Announcement Returns

This table displays the perception of investors on the (1) divestiture of core unit, (2) focusing strategy, (3) diversifying strategy 1, and (4) diversifying strategy 2 measured by the 3-way interaction variables. The dependent variable is CAR [-1, +1]. *Core unit* is a dummy equal to one if a divesting bank's primary 4-digit SIC code is the same as that of its divested unit. *Diversified bank* is a dummy equal to one if a divesting bank operates in more than one industry defined by the number of different first 2-digit SIC codes. *Non-core unit* is a dummy equal to one if a divesting bank's primary 4-digit SIC code is different from that of its divested unit. *Related merger* is a dummy equal to one if a divesting bank has acquired a firm with the same first 2-digit SIC code during the period 3 years prior to and 1 year after divestiture announcement. *Unrelated merger* is a dummy equal to one if a divesting bank has acquired a firm from an industry with a different first 2-digit SIC code during the period 3 years prior to and 1 year after divestiture announcement. *Divestiture experience* is the natural log of one plus divesting bank's number of divestiture experience over the last 3 years before the divestiture announcement. *Size* is the natural log of the book value of total assets. *Operating inefficiency* is the total noninterest expense over the book value of total assets. *State* is a dummy equal to one if a buyer is located in the same state as its seller's divested unit. *Liquidity* is sum of cash and due from banks total and investment securities over the book value of total assets. *Capital* is a risk-adjusted tier 1 capital ratio. *Tobin's Q* is the market value of total assets (book value of total assets minus book value of total common equity plus market value of equity) over the book value of total assets. *Runup* is value-weighted excess returns adjusted for market returns during the 200-day period (-205, -6) prior to divestiture announcement. All the continuous variables and CARs are winsorized at the 1% level excluding the Size variable. The control variables are defined in Appendix B. Regressions are controlled for year fixed effects. Standard errors are adjusted for divesting bank clustering. *P*-values are reported in parentheses below the coefficients. ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

Dependent Variable: CAR [-1, 1]				
	(1)	(2)	(3)	(4)
Core unit	-0.0047**			
	(0.0458)			
Diversified bank*Non-core unit*Related merger		0.0219***		
		(0.0000)		
Diversified bank*Non-core unit*Unrelated merger			0.0087	
			(0.5906)	
Diversified bank*Core unit*Unrelated merger				-0.0143**
				(0.0474)
Divestiture experience	0.0034**	0.0012	0.0012	0.0012
	(0.0263)	(0.6089)	(0.6089)	(0.6089)
Size	-0.0033***	-0.0003	-0.0003	-0.0003
	(0.0001)	(0.8223)	(0.8223)	(0.8223)
State	-0.0003	0.0032	0.0032	0.0032
	(0.9024)	(0.2440)	(0.2440)	(0.2440)
Liquidity	-0.0041	-0.0128	-0.0128	-0.0128
	(0.6942)	(0.3338)	(0.3338)	(0.3338)
Leverage	-0.0677	-0.0443	-0.0443	-0.0443
	(0.2807)	(0.6973)	(0.6973)	(0.6973)
Tobin's Q	0.0044	0.0368	0.0368	0.0368
	(0.8255)	(0.1313)	(0.1313)	(0.1313)
Runup	0.0181**	0.0070	0.0070	0.0070
	(0.0179)	(0.6116)	(0.6116)	(0.6116)
Constant	0.0316	-0.0849***	-0.0705**	-0.0625***
	(0.1098)	(0.0007)	(0.0102)	(0.0084)
Observations	1,515	610	610	610
Adjusted R-squared	0.0449	0.0351	0.0351	0.0351
Year FE	YES	YES	YES	YES

Table 3. 8 Long-term Stock Performance based on Buy-and-Hold Abnormal Returns (BHARs)

This table presents average BHARs for banks which performed divestitures. Returns of divesting banks are compounded for 12, 24, and 36 months the month after the completion of divestments. To get BHARs, I compute the average of the banks' compound returns and subtract the average compound returns of their benchmarks as follows:

$$BHAR_i = \prod_{t=1}^{T}[1 + R_{i,t}] - \prod_{t=1}^{T}[1 + R_{benchmark,t}],$$

where $R_{i,t}$ is compounded returns of a sample firm i, and $R_{benchmark,t}$ is Fama-French's 25 benchmark portfolio returns. Benchmarks are generated by matching size/book-to-market breakpoints (BM) of all the NYSE listed banks. The size variable is the price on the last trading date of the month multiplied by the number of shares outstanding at the end of the divestiture completion month. The BM variable is computed as the book value of equity from Compustat bank fundamentals annual at the fiscal year ending prior to the divestiture effective date over the market value of equity. Both equal-weighted (EW) and value-weighted (VW) returns are reported. The weights in VW returns are computed using the market value of equity at the divestiture completion month, scaled by the level of the CRSP VW market index in the same month. I calculate both standard two-sided *p*-values and bootstrapped *p*-values following Mitchell and Stafford (2000). Bootstrapped *p*-values are calculated by generating BHARs for 1,000 pseudo-samples which contain random banks with the same size/BM category as the sample firms. The *p*-value is the proportion of BHARs from 1,000 pseudo-samples that are greater than the BHAR of the event sample. All returns are expressed as percentages.

Buy-and-Hold Abnormal Returns (BHARs)						
		Equal-Weighted			Value-Weighted	
Month	BHAR	Standard *p*-Value	Bootstrap *p*-Value	BHAR	Standard *p*-Value	Bootstrap *p*-Value
Panel A: All Divestitures						
12	-1.262	0.304	0.007	-2.748	0.000	1.000
24	1.672	0.396	0.736	-0.134	0.906	0.989
36	6.698	0.007	0.031	3.412	0.019	0.586
Panel B: Focusing Strategy						
12	2.094	0.360	0.847	-1.119	0.548	0.003
24	11.664	0.010	0.293	1.205	0.705	0.966
36	21.099	0.000	0.193	11.531	0.009	0.805
Panel C: Diversifying Strategy 1						
12	-2.664	0.275	1.000	-4.709	0.037	0.001
24	-1.828	0.596	1.000	-1.690	0.545	0.004
36	1.547	0.783	1.000	-1.328	0.720	0.003
Panel D: Diversifying Strategy 2						
12	-2.475	0.561	0.562	-0.445	0.899	0.145
24	-5.299	0.563	0.524	3.935	0.625	0.422
36	-7.138	0.432	0.691	1.463	0.824	0.306

Table 3. 9 Long-term Stock Performance based on Calendar-Time Portfolio Regressions

This table presents calendar-time regressions of portfolios formed on banks with divestitures. Panel A, Panel B, and Panel C report time-series regressions of 12, 24, and 36 month returns, respectively. Each month over the sample period, I form monthly portfolios with banks which enters the event within the previous 12, 24, and 36 months. Portfolios are rebalanced every month by including banks which enter the event in that month and excluding banks which reach the end of their holding period. I compute both EW and VW portfolio returns in which the value weights are the sample firm's market value of equity at the divestiture completion month, scaled by the level of the CRSP VW market index in the same month. The portfolio excess returns are calculated by deducting risk-free rate within the same month and then regressed against Fama and French (1993) and Carhart (1997) factors as in the following equation:

$$R_{p,t} - R_{f,t} = \alpha_p + b_p(R_{m,t} - R_{f,t}) + s_p SMB_t + h_p HML_t + u_p UMD_t + e_{p,t}.$$

where $R_{m,t} - R_{f,t}$ is the market excess return, SMB is the difference between small and large stock portfolios, HML is the difference between high and low book-to-market equity stock portfolios, and UMD is the difference between winners and losers stock portfolios. The intercept, α_p estimates average monthly abnormal returns of the event portfolios. Standard errors are adjusted for heteroskedasticity. All returns are expressed as percentages.

	Equal-Weighted		Value-Weighted	
	Estimate	*p*-Value	Estimate	*p*-Value
Panel A: 12 Month				
Alpha	0.021	0.925	-0.130	0.570
Mktret	1.012	0.000	1.263	0.000
Smb	0.334	0.000	-0.187	0.014
Hml	1.062	0.000	1.015	0.000
Umd	-0.146	0.003	-0.210	0.000
Adj. R-squared	0.595		0.647	
Panel B: 24 Month				
Alpha	-0.060	0.770	-0.147	0.491
Mktret	1.035	0.000	1.275	0.000
Smb	0.311	0.000	-0.164	0.022
Hml	1.061	0.000	1.032	0.000
Umd	-0.103	0.028	-0.181	0.000
Adj. R-squared	0.613		0.666	
Panel C: 36 Month				
Alpha	-0.055	0.774	-0.175	0.407
Mktret	1.043	0.000	1.295	0.000
Smb	0.277	0.000	-0.167	0.019
Hml	1.028	0.000	1.049	0.000
Umd	-0.109	0.013	-0.193	0.000
Adj. R-squared	0.641		0.674	

Table 4. 1 Distressed firms based on the Z-score during the financial crisis (FY 2007/08)

Distress 1 is a dummy equal to one if a firm is distressed based on its Z-score during the financial crisis. *Distress 2* is a dummy equal to one if a firm enters a distress condition during the financial crisis, but not within two years prior to the crisis. *No distress* is a dummy equal to one if a firm is not distressed during the financial crisis based on its Z-score.

	Firm-year observation	% of total
Distress 1	2,010	29.46%
Distress 2	615	9.01%
No distress	4,812	70.54%
Total	6,822	

Table 4. 2 Frequency of restructuring strategies performed during the financial crisis (FY 2007/08)

Restructuring strategy	**N**	**% of total**	**Restructuring strategy**	**N**	**% of strategy**
Panel A All firms			Panel A All firms		
Divestiture	600	8.80%			
Management turnover	676	9.91%	Divestiture/Management turnover	112	16.57%
Investment reduction	3,927	57.56%	Divestiture/Investment reduction	344	8.76%
COGS reduction	324	4.75%	Divestiture/COGS reduction	29	8.95%
Fixed asset reduction	1,687	24.73%	Divestiture/Fixed asset reduction	167	9.90%
Layoffs	1,204	17.65%	Divestiture/Layoffs	163	13.54%
Dividend cut/omission	683	10.01%	Divestiture/Dividend cut or omission	56	8.20%
Debt issue	1,895	28.93%	Divestiture/Debt issue	193	10.18%
Equity issue	950	15.27%	Divestiture/Equity issue	70	7.37%
Panel B Distress 1 subsample			Panel B Distress 1 subsample		
Divestiture	192	9.55%			
Management turnover	148	7.36%	Divestiture/Management turnover	32	21.62%
Investment reduction	1,109	55.17%	Divestiture/Investment reduction	108	9.74%
COGS reduction	93	4.63%	Divestiture/COGS reduction	8	8.60%
Fixed asset reduction	829	41.24%	Divestiture/Fixed asset reduction	80	9.65%
Layoffs	572	28.46%	Divestiture/Layoffs	78	13.64%
Dividend cut/omission	219	10.90%	Divestiture/Dividend cut or omission	18	8.22%
Debt issue	592	30.34%	Divestiture/Debt issue	67	11.32%
Equity issue	499	29.23%	Divestiture/Equity issue	38	7.62%
Panel C Distress 2 subsample			Panel C Distress 2 subsample		
Divestiture	48	11.46%			
Management turnover	40	9.55%	Divestiture/Management turnover	12	30.00%
Investment reduction	219	52.27%	Divestiture/Investment reduction	23	10.50%
COGS reduction	18	4.30%	Divestiture/COGS reduction	1	5.56%
Fixed asset reduction	180	42.96%	Divestiture/Fixed asset reduction	24	13.33%
Layoffs	134	31.98%	Divestiture/Layoffs	21	15.67%
Dividend cut/omission	73	17.42%	Divestiture/Dividend cut or omission	7	9.59%
Debt issue	158	39.30%	Divestiture/Debt issue	18	11.39%
Equity issue	91	24.01%	Divestiture/Equity issue	8	8.79%

Table 4. 3 Summary statistics (FY 2007/08)

This table presents summary statistics of distressed (1) and non-distressed firms (2) during the financial crisis. Panel A is panel data obtained from COMPUSTAT for the fiscal year of 2007/08. The sample includes all public firms with available financial information to generate Z-score and define the distress condition. *Divest* is a dummy equal to one if a firm makes a divestiture announcement during the crisis period and zero, otherwise. *Size* is the natural log of the book value of total assets. *Leverage* is the ratio of long-term debt plus short-term debt divided by the book value of total assets. *Liquidity* is the ratio of cash and short-term investments divided by the book value of total assets. *Cash flow* is the ratio of operating income before depreciation, interest, and taxes over the book value of total assets. *Tobin's Q* is the ratio of the book value of total assets minus book value of common equity plus the market value of common equity divided by the book value of total assets. *Book-to-market* is the ratio of the book value of equity plus deferred taxes and investment tax credit minus preferred stock divided by the market value of equity. Panel B is cross-sectional data obtained from SDC with all divestitures announced during the fiscal year of 2007/08. The sample only includes public firms with available financial information to generate the control variables. *LDC* is a dummy equal to one if a firm has a leverage ratio[108] higher than the industry median and a current ratio[109] lower than the industry median. Industry medians are computed based on CRSP US Common Stocks with Fama-French 48 industry classification. *Run-up* is a divesting firm's market-adjusted value-weighted excess returns measured over the 200-day period (-205, -6) prior to the divestiture announcement. *CAR* is measured by 3-day (-1, +1) event window surrounding the divestiture announcement date. *Core unit* is a dummy equal to one if a divesting firm's primary 4-digit SIC code is the same as that of its divested unit. *Non-core unit* is a dummy equal to one if a divesting firm's primary 4-digit SIC code is different from that of its divested unit. *Related buyer* is a dummy equal to one if the primary 4-digit SIC code of the buyer is identical with that of the seller's divested unit. *Unrelated buyer* is a dummy equal to one if the primary 4-digit SIC code of the buyer is different from that of the seller's divested unit. All accounting ratios are generated at the end of the fiscal year prior to a divestiture announcement and winsorized at the 1%. All variables are defined in Panel B of Appendix C. The level of significance in mean and median difference is based on parametric t-test and Wilcoxon signed-rank (rank-sum) test, respectively. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	Distress firms (1)			Non-distress firms (2)			Mean difference	Median difference
	N	Mean	50th	N	Mean	50th	(1) - (2)	(1) - (2)
Panel A: Firm-year data of all listed firms with available financial information for the fiscal year between 2005 and 2012 (COMPUSTAT)								
Divest	2,010	0.096	-	4,812	0.085	-	0.011	0.000
Size	2,010	5.329	4.909	4,812	6.603	6.538	-1.274***	-1.629***
Leverage	2,010	0.305	0.276	4,804	0.173	0.142	0.132***	0.134***
Liquidity	2,010	0.264	0.141	4,812	0.188	0.111	0.076***	0.030***
Cash Flow	1,867	-0.165	-0.016	4,452	0.089	0.091	-0.254***	-0.107***
Tobin's Q	2,008	1.986	1.328	4,807	1.758	1.411	0.228***	-0.083
Book-to-market	1,729	1.491	0.567	4,780	1.497	0.599	-0.005	-0.032***
Panel B: Cross-sectional firm and deal characteristics for firms announced divestiture during the crisis period (SDC)								
Size	252	6.464	6.397	548	8.101	8.092	-1.636***	-1.695***
LDC	252	0.786	-	548	0.630	-	0.156***	-
Liquidity	252	0.166	0.069	548	0.118	0.062	0.048***	0.007
Cash Flow	239	-0.080	0.027	519	0.089	0.091	-0.169***	-0.064***
Tobin's Q	252	1.593	1.217	547	1.554	1.378	0.039	-0.161**
Book-to-market	219	1.052	0.601	545	0.744	0.545	0.308***	0.056
Run-up	249	0.062	0.020	531	0.030	0.009	0.031	0.011
CAR (-1, +1)	249	0.017	0.011	531	0.013	0.004	0.004	0.007
Core unit	251	0.518	-	548	0.400	-	0.118**	-
Non-core unit	251	0.482	-	548	0.600	-	-0.118**	-
Related buyer	251	0.466	-	543	0.326	-	0.140***	-
Unrelated buyer	251	0.534	-	543	0.674	-	-0.140***	-

[108] Leverage ratio is measured by long-term debt plus short-term debt divided by the book value of total assets.

[109] Current ratio is measured by current assets divided by current liabilities.

Table 4. 4 Change in post-divestiture operating performance

Panel A, Panel B, and Panel C exhibit performance of divesting firms in the all-firms sample and distress 1 and distress 2 subsamples, respectively. I present two operating performance measures: *OIBD/Assets* (operating income before depreciation plus interest income over the book value of total assets) and *ROA* (net income over the book value of total assets). *N* is the number of divesting and matched firm observations. Column 3 and 4 are median changes in operating performance for divesting firms and matched firms, respectively. The matching firm is assigned to each divesting firm based on the following algorithm: i) each divesting firm is matched with a firm which has not divested for the 6 years surrounding the year of divestiture (-3, +3), ii) the matching firm is from the same industry as the divesting firm based on the first 2-digit SIC code, iii) the size of the matching firm based on the book value of total assets at the end of the fiscal year prior to the divestiture announcement is between 25 and 200% of the divesting firm's size, and iv) the matching firm has the closest OIBD to that of the divesting firm. If no matching firm is found with these criteria, I withdraw the industry requirement and apply size criterion between 90 and 110% of the divesting firm and closest but higher OIBD ratio. Median difference is calculated by deducting matched firms' performance from that of divesting firms to generate matched firm-adjusted performance. Significance levels are computed using the Wilcoxon signed-rank (rank-sum) test for the median performance. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Performance measures	N	Divesting firms	Matched firms	Median difference	*p*-value
Panel A All firms					
OIBD/Assets					
Year -1 to 0	451	-0.003	-0.003	0.000	0.684
Year -1 to 1	453	-0.007	-0.010	0.003**	0.028
Year -1 to 2	447	-0.002	-0.011	0.009***	0.000
Year -1 to 3	431	0.003	-0.005	0.008	0.114
Year -1 to average 1, 2, 3	431	-0.002	-0.009	0.007***	0.001
ROA					
Year -1 to 0	451	-0.005	-0.009	0.004***	0.007
Year -1 to 1	453	-0.001	-0.022	0.021***	0.000
Year -1 to 2	447	0.007	-0.019	0.026***	0.000
Year -1 to 3	431	0.007	-0.004	0.011***	0.000
Year -1 to average 1, 2, 3	431	0.000	-0.017	0.017***	0.000
Panel B Distress 1 subsample					
OIBD/Assets					
Year -1 to 0	120	0.002	-0.003	0.005	0.183
Year -1 to 1	121	0.012	-0.005	0.017**	0.012
Year -1 to 2	118	0.020	-0.002	0.022***	0.002
Year -1 to 3	113	0.019	0.007	0.012	0.232
Year -1 to average 1, 2, 3	113	0.013	0.000	0.013***	0.009
ROA					
Year -1 to 0	120	0.011	-0.013	0.024***	0.000
Year -1 to 1	121	0.029	-0.015	0.044***	0.000
Year -1 to 2	118	0.069	-0.006	0.075***	0.000
Year -1 to 3	113	0.045	0.008	0.037***	0.000
Year -1 to average 1, 2, 3	113	0.049	-0.009	0.058***	0.000
Panel C Distress 2 subsample					
OIBD/Assets					
Year -1 to 0	44	-0.010	-0.001	-0.009	0.762
Year -1 to 1	44	0.024	0.011	0.013*	0.082
Year -1 to 2	44	0.051	0.002	0.049***	0.004
Year -1 to 3	43	0.029	0.007	0.022	0.134
Year -1 to average 1, 2, 3	43	0.020	0.008	0.012**	0.034
ROA					
Year -1 to 0	44	0.004	-0.019	0.023	0.123
Year -1 to 1	44	0.091	-0.022	0.113***	0.000
Year -1 to 2	44	0.065	-0.023	0.088***	0.000
Year -1 to 3	43	0.071	-0.003	0.074***	0.000
Year -1 to average 1, 2, 3	43	0.039	-0.021	0.060***	0.000

Table 4. 5 Change in operating performance for divesting firms with other restructurings

Panel A, Panel B, and Panel C exhibit performance of divesting firms which accompany managerial restructuring, operational restructuring, and financial restructuring, respectively. The definition of each restructuring strategy is available in Panel A of Appendix A. I present two operating performance measures: *OIBD/Assets* (operating income before depreciation plus interest income over the book value of total assets) and *ROA* (net income over the book value of total assets). *N* is the number of divesting and matched firm observations. Column 3 and 4 are median changes in operating performance for divesting firms and matched firms, respectively. The matching firm is assigned to each divesting firm based on the following algorithm: i) each divesting firm is matched with a firm which has not divested for the 6 years surrounding the year of divestiture (-3, +3), ii) the matching firm is from the same industry as the divesting firm based on the first 2-digit SIC code, iii) the size of the matching firm based on the book value of total assets at the end of the fiscal year prior to the divestiture announcement is between 25 and 200% of the divesting firm's size, and iv) the matching firm has the closest OIBD to that of the divesting firm. If no matching firm is found with these criteria, I withdraw the industry requirement and apply size criterion between 90 and 110% of the divesting firm and closest but higher OIBD ratio. Median difference is calculated by deducting matched firms' performance from that of divesting firms to generate matched firm-adjusted performance. Significance levels are computed using the Wilcoxon signed-rank (rank-sum) test for the median performance. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Performance measures	N	Divesting firms	Matched firms	Median difference	*p*-value
Panel A Managerial restructuring					
OIBD/Assets					
Year -1 to 0	93	0.005	-0.008	0.013**	0.040
Year -1 to 1	94	-0.001	-0.014	0.013*	0.052
Year -1 to 2	94	0.000	-0.008	0.008***	0.001
Year -1 to 3	91	0.008	-0.002	0.010	0.375
Year -1 to average 1, 2, 3	91	0.002	-0.008	0.010**	0.038
ROA					
Year -1 to 0	93	-0.008	-0.007	-0.001	0.402
Year -1 to 1	94	0.021	-0.031	0.052***	0.000
Year -1 to 2	94	0.040	-0.020	0.060***	0.000
Year -1 to 3	91	0.029	0.003	0.026***	0.001
Year -1 to average 1, 2, 3	91	0.013	-0.024	0.037***	0.000
Panel B Operational restructuring					
OIBD/Assets					
Year -1 to 0	344	-0.005	-0.003	-0.002	0.530
Year -1 to 1	345	-0.006	-0.007	0.001**	0.049
Year -1 to 2	341	-0.001	-0.009	0.008***	0.000
Year -1 to 3	327	0.004	-0.002	0.006	0.327
Year -1 to average 1, 2, 3	327	-0.001	-0.007	0.006***	0.008
ROA					
Year -1 to 0	344	-0.004	-0.009	0.005**	0.032
Year -1 to 1	345	0.001	-0.024	0.025***	0.000
Year -1 to 2	341	0.010	-0.018	0.028***	0.000
Year -1 to 3	327	0.010	-0.003	0.013***	0.000
Year -1 to average 1, 2, 3	327	0.002	-0.015	0.017***	0.000
Panel C Financial restructuring					
OIBD/Assets					
Year -1 to 0	197	-0.006	-0.006	0.000	0.765
Year -1 to 1	197	-0.004	-0.017	0.013***	0.001
Year -1 to 2	194	0.004	-0.011	0.015***	0.000
Year -1 to 3	185	0.007	-0.005	0.012**	0.031
Year -1 to average 1, 2, 3	185	0.001	-0.009	0.010***	0.000
ROA					
Year -1 to 0	197	-0.011	-0.013	0.002	0.419
Year -1 to 1	197	0.000	-0.031	0.031***	0.000
Year -1 to 2	194	0.003	-0.022	0.025***	0.000
Year -1 to 3	185	0.006	-0.006	0.012***	0.000
Year -1 to average 1, 2, 3	185	-0.002	-0.017	0.015***	0.000

Table 4. 6 Quantile (median) regressions of post-divestiture operating performance

Panel A, Panel B, and Panel C compare the operating performance of divesting firms vs. non-divesting firms using the all-firms sample and distress 1 and distress 2 subsamples, respectively. Dependent variables include the change in ROA and OIBD from year -1 to year 1, 2, and 3. Year -1 is the fiscal year prior to the divestiture announcement for divesting firms. The key independent variable is *divest* which is a dummy equal to one if a firm makes a divestiture announcement during the crisis period and zero, otherwise. *Size* is the natural log of the book value of total assets. *Leverage* is the ratio of long-term debt plus short-term debt divided by the book value of total assets. *Liquidity* is the ratio of cash and short-term investments divided by the book value of total assets. *Cash flow* is the ratio of operating income before depreciation, interest, and taxes over the book value of total assets. *Tobin's Q* is the ratio of the book value of total assets minus book value of common equity plus the market value of common equity divided by the book value of total assets. *Book-to-market* is the ratio of the book value of equity plus deferred taxes and investment tax credit minus preferred stock divided by the market value of equity. All accounting ratios are generated at the end of the fiscal year prior to a divestiture announcement and winsorized at the 1%. All variables are defined in Panel B of Appendix C. *p*-values are reported in parenthesis. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Panel A: All firms						
Dependent variable:	ΔROA_{t+1}	ΔROA_{t+2}	ΔROA_{t+3}	$\Delta OIBD_{t+1}$	$\Delta OIBD_{t+2}$	$\Delta OIBD_{t+3}$
	(1)	(2)	(3)	(4)	(5)	(6)
Divest	0.0193***	0.0171***	0.0138***	0.0013	0.0085***	0.0063***
	(0.0000)	(0.0000)	(0.0000)	(0.6250)	(0.0000)	(0.0037)
Size	0.0010**	-0.0002	-0.0007**	0.0003	-0.0003	-0.0006*
	(0.0250)	(0.5718)	(0.0318)	(0.5013)	(0.3383)	(0.0905)
Leverage	0.0220***	0.0266***	0.0149***	0.0323***	0.0367***	0.0274***
	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Liquidity	-0.0401***	-0.0371***	-0.0332***	-0.0363***	-0.0257***	-0.0119
	(0.0000)	(0.0001)	(0.0002)	(0.0001)	(0.0013)	(0.2142)
Cash Flow	0.0618***	-0.0537***	-0.1271***	0.0347***	-0.1157***	-0.1401***
	(0.0000)	(0.0001)	(0.0000)	(0.0053)	(0.0000)	(0.0000)
Tobin's Q	0.0108***	0.0050***	0.0055***	0.0087***	0.0071***	0.0041***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0005)
Book-to-market	-0.0003	0.0000	0.0001	-0.0006**	-0.0002*	-0.0005***
	(0.2581)	(0.9224)	(0.1605)	(0.0305)	(0.0502)	(0.0000)
Constant	-0.0520***	-0.0192***	-0.0008	-0.0317***	-0.0177***	-0.0023
	(0.0000)	(0.0000)	(0.8267)	(0.0000)	(0.0000)	(0.5464)
Observations	5,512	5,159	4,829	5,508	5,158	4,827
Pseudo R-squared	0.0160	0.00735	0.0108	0.0154	0.0136	0.0199
Panel B: Distress 1						
Divest	0.0498***	0.0453**	0.0361***	0.0031	0.0096**	0.0004
	(0.0067)	(0.0384)	(0.0002)	(0.5237)	(0.0485)	(0.9177)
Size	-0.0011	-0.0033***	-0.0047***	-0.0042***	-0.0057***	-0.0046***
	(0.3097)	(0.0087)	(0.0003)	(0.0000)	(0.0000)	(0.0000)
Leverage	-0.0297**	-0.0136	-0.0395***	-0.0085	-0.0123	0.0130
	(0.0170)	(0.2440)	(0.0020)	(0.4018)	(0.2780)	(0.1950)
Liquidity	-0.0599	0.0221	0.0007	-0.0308	-0.0290	-0.0029
	(0.1073)	(0.6156)	(0.9867)	(0.2704)	(0.3634)	(0.9417)
Cash Flow	0.1644***	0.0316	0.0132	0.1607***	0.0084	-0.0326
	(0.0000)	(0.4626)	(0.7699)	(0.0000)	(0.8109)	(0.3381)
Tobin's Q	0.0168***	0.0113	0.0160*	0.0141***	0.0157**	0.0117
	(0.0013)	(0.1606)	(0.0889)	(0.0000)	(0.0117)	(0.1415)
Book-to-market	-0.0006***	0.0000	-0.0004	-0.0006	-0.0001	-0.0007***
	(0.0003)	(0.9770)	(0.2260)	(0.2294)	(0.6677)	(0.0002)
Constant	-0.0168	0.0139	0.0401**	0.0172*	0.0382***	0.0309**
	(0.2282)	(0.4156)	(0.0304)	(0.0924)	(0.0048)	(0.0334)
Observations	1,346	1,177	1,064	1,344	1,177	1,064
Pseudo R-squared	0.0234	0.00676	0.0127	0.0307	0.0157	0.0161
Panel C: Distress 2						

Divest	0.1237**	0.0787***	0.0711**	0.0276**	0.0554***	0.0183
	(0.0132)	(0.0047)	(0.0401)	(0.0188)	(0.0018)	(0.2578)
Size	0.0041	0.0003	-0.0031	0.0001	-0.0030	-0.0053**
	(0.4614)	(0.8702)	(0.1574)	(0.9516)	(0.1329)	(0.0174)
Leverage	0.1071**	0.0285	-0.0097	0.0161	-0.0152	0.0196
	(0.0120)	(0.2209)	(0.6602)	(0.4399)	(0.4714)	(0.3967)
Liquidity	-0.2121**	-0.0851	0.0002	-0.1699***	-0.1579**	0.0087
	(0.0335)	(0.2164)	(0.9985)	(0.0020)	(0.0137)	(0.8978)
Cash Flow	-0.0058	-0.0538	0.0646	0.0330	-0.0709	0.0157
	(0.9380)	(0.2344)	(0.2228)	(0.4956)	(0.1513)	(0.6964)
Tobin's Q	0.0104*	0.0021	-0.0057	-0.0024	0.0089	-0.0026
	(0.0968)	(0.7772)	(0.2539)	(0.7499)	(0.2730)	(0.6739)
Book-to-market	0.0016	0.0008	0.0002	-0.0002	0.0004	-0.0001
	(0.3149)	(0.2442)	(0.7985)	(0.9169)	(0.6045)	(0.7249)
Constant	-0.1322***	-0.0284	0.0234	-0.0089	0.0236	0.0366
	(0.0074)	(0.2945)	(0.3563)	(0.7014)	(0.3335)	(0.1386)
Observations	505	454	416	505	454	416
Pseudo R-squared	0.0572	0.0215	0.0189	0.0424	0.0172	0.00843

Table 4. 7 Quantile (median) regressions on operating performance of divesting firms with other restructurings

This table presents regression results on the effectiveness of combined strategies between divestiture and other restructurings. Dependent variables include the change in ROA and OIBD from year -1 to year 1, 2, and 3. Year -1 is the fiscal year prior to the divestiture announcement for divesting firms. *Divest * MR* is a dummy equal to one if a firm undertakes both divestiture and managerial restructuring. *Divest * OR* is a dummy equal to one if a firm undertakes both divestiture and operational restructuring. *Divest * FR* is a dummy equal to one if a firm undertakes both divestiture and financial restructuring. *Size* is the natural log of the book value of total assets. *Leverage* is the ratio of long-term debt plus short-term debt divided by the book value of total assets. *Liquidity* is the ratio of cash and short-term investments divided by the book value of total assets. *Cash flow* is the ratio of operating income before depreciation, interest, and taxes over the book value of total assets. *Tobin's Q* is the ratio of the book value of total assets minus book value of common equity plus the market value of common equity divided by the book value of total assets. *Book-to-market* is the ratio of the book value of equity plus deferred taxes and investment tax credit minus preferred stock divided by the market value of equity. All accounting ratios are generated at the end of the fiscal year prior to a divestiture announcement and winsorized at the 1%. All variables are defined in Panel B of Appendix C. *p*-values are reported in parenthesis. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Panel A: Firms with divestitures & managerial restructurings (MR)						
Dependent variable:	ΔROA_{t+1}	ΔROA_{t+2}	ΔROA_{t+3}	$\Delta OIBD_{t+1}$	$\Delta OIBD_{t+2}$	$\Delta OIBD_{t+3}$
	(1)	(2)	(3)	(4)	(5)	(6)
Divest * MR	0.0295	0.0410***	0.0331***	0.0114***	0.0153**	0.0150***
	(0.1996)	(0.0086)	(0.0000)	(0.0008)	(0.0257)	(0.0000)
Size	0.0013***	0.0001	-0.0001	0.0004	-0.0002	-0.0003
	(0.0086)	(0.6929)	(0.4464)	(0.3116)	(0.5590)	(0.4279)
Leverage	0.0224***	0.0274***	0.0118***	0.0323***	0.0350***	0.0274***
	(0.0001)	(0.0000)	(0.0003)	(0.0000)	(0.0000)	(0.0000)
Liquidity	-0.0393***	-0.0398***	-0.0339***	-0.0360***	-0.0289***	-0.0129
	(0.0002)	(0.0001)	(0.0000)	(0.0001)	(0.0009)	(0.1951)
Cash Flow	0.0662***	-0.0472***	-0.1310***	0.0398***	-0.1084***	-0.1523***
	(0.0000)	(0.0051)	(0.0000)	(0.0017)	(0.0000)	(0.0000)
Tobin's Q	0.0112***	0.0063***	0.0064***	0.0091***	0.0076***	0.0055***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0001)
Book-to-market	-0.0003	-0.0000	0.0001	-0.0006**	-0.0002**	-0.0005***
	(0.1365)	(0.9243)	(0.3000)	(0.0333)	(0.0119)	(0.0001)
Constant	-0.0553***	-0.0239***	-0.0049**	-0.0337***	-0.0188***	-0.0050
	(0.0000)	(0.0000)	(0.0473)	(0.0000)	(0.0000)	(0.2562)
Observations	5,154	4,831	4,520	5,150	4,830	4,518
Pseudo R-squared	0.0172	0.00705	0.0109	0.0178	0.0124	0.0205
Panel B: Firms with divestitures & operational restructurings (OR)						
Divest * OR	0.0219***	0.0174***	0.0177***	0.0017	0.0096***	0.0077**
	(0.0000)	(0.0000)	(0.0000)	(0.4189)	(0.0002)	(0.0147)
Size	0.0011**	-0.0000	-0.0006**	0.0004	-0.0003	-0.0006
	(0.0172)	(0.8959)	(0.0410)	(0.3097)	(0.4328)	(0.1211)
Leverage	0.0222***	0.0264***	0.0133***	0.0322***	0.0372***	0.0278***
	(0.0000)	(0.0000)	(0.0005)	(0.0000)	(0.0000)	(0.0000)
Liquidity	-0.0394***	-0.0368***	-0.0344***	-0.0357***	-0.0258***	-0.0111
	(0.0000)	(0.0001)	(0.0000)	(0.0001)	(0.0025)	(0.2594)
Cash Flow	0.0635***	-0.0551***	-0.1277***	0.0373***	-0.1156***	-0.1375***
	(0.0000)	(0.0002)	(0.0000)	(0.0021)	(0.0000)	(0.0000)
Tobin's Q	0.0107***	0.0053***	0.0055***	0.0088***	0.0071***	0.0040***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0009)
Book-to-market	-0.0003	0.0000	0.0001	-0.0006**	-0.0002**	-0.0005***
	(0.2553)	(0.8219)	(0.3118)	(0.0238)	(0.0458)	(0.0002)
Constant	-0.0525***	-0.0206***	-0.0007	-0.0328***	-0.0181***	-0.0024
	(0.0000)	(0.0000)	(0.8512)	(0.0000)	(0.0000)	(0.5629)
Observations	5,403	5,057	4,731	5,399	5,056	4,729

Pseudo R-squared	0.0161	0.00673	0.0108	0.0157	0.0133	0.0194
Panel C: Firms with divestitures & financial restructurings (FR)						
Divest * FR	0.0170***	0.0138***	0.0107***	0.0018	0.0125***	0.0123***
	(0.0036)	(0.0021)	(0.0051)	(0.2774)	(0.0001)	(0.0021)
Size	0.0013***	0.0002	-0.0002	0.0003	-0.0003	-0.0006*
	(0.0047)	(0.6541)	(0.3982)	(0.4844)	(0.4068)	(0.0903)
Leverage	0.0201***	0.0254***	0.0123***	0.0322***	0.0338***	0.0279***
	(0.0003)	(0.0000)	(0.0002)	(0.0000)	(0.0000)	(0.0000)
Liquidity	-0.0426***	-0.0413***	-0.0349***	-0.0388***	-0.0301***	-0.0118
	(0.0001)	(0.0000)	(0.0001)	(0.0000)	(0.0003)	(0.2285)
Cash Flow	0.0608***	-0.0482***	-0.1238***	0.0366***	-0.1136***	-0.1358***
	(0.0001)	(0.0012)	(0.0000)	(0.0014)	(0.0000)	(0.0000)
Tobin's Q	0.0113***	0.0056***	0.0056***	0.0091***	0.0077***	0.0048***
	(0.0000)	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0004)
Book-to-market	-0.0003	-0.0000	0.0001	-0.0005*	-0.0002***	-0.0005***
	(0.1265)	(0.8879)	(0.4118)	(0.0797)	(0.0003)	(0.0022)
Constant	-0.0541***	-0.0219***	-0.0035	-0.0322***	-0.0174***	-0.0033
	(0.0000)	(0.0000)	(0.3036)	(0.0000)	(0.0000)	(0.4417)
Observations	5,262	4,926	4,608	5,258	4,925	4,606
Pseudo R-squared	0.0168	0.00640	0.00979	0.0168	0.0132	0.0193

Table 4. 8 Quantile (median) regressions of post-restructuring operating performance

This table presents regression results on the effectiveness of other restructuring strategies without divestiture. Dependent variables include the change in ROA and OIBD from year -1 to year 1, 2, and 3. *MR* is a dummy equal to one if a firm undertakes managerial restructuring (management turnover). *OR* is a dummy equal to one if a firm undertakes operational restructuring (investment reduction, COGS reduction, fixed asset reduction, and layoffs). *FR* is a dummy equal to one if a firm undertakes financial restructuring (dividend cut/omission, debt issue, and equity issue). *Size* is the natural log of the book value of total assets. *Leverage* is the ratio of long-term debt plus short-term debt divided by the book value of total assets. *Liquidity* is the ratio of cash and short-term investments divided by the book value of total assets. *Cash flow* is the ratio of operating income before depreciation, interest, and taxes over the book value of total assets. *Tobin's Q* is the ratio of the book value of total assets minus book value of common equity plus the market value of common equity divided by the book value of total assets. *Book-to-market* is the ratio of the book value of equity plus deferred taxes and investment tax credit minus preferred stock divided by the market value of equity. All accounting ratios are generated at the end of the fiscal year prior to a divestiture announcement and winsorized at the 1%. All variables are defined in Panel B of Appendix C. *p*-values are reported in parenthesis. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Panel A: Firms with managerial restructurings (MR)						
Dependent variable:	ΔROA_{t+1}	ΔROA_{t+2}	ΔROA_{t+3}	$\Delta OIBD_{t+1}$	$\Delta OIBD_{t+2}$	$\Delta OIBD_{t+3}$
	(1)	(2)	(3)	(4)	(5)	(6)
MR	-0.0042	-0.0015	0.0052***	-0.0002	-0.0023	0.0019
	(0.3054)	(0.4139)	(0.0002)	(0.9473)	(0.4252)	(0.3886)
Size	0.0015***	0.0004	-0.0002	0.0002	-0.0002	-0.0003
	(0.0008)	(0.2258)	(0.2161)	(0.6840)	(0.3557)	(0.4733)
Leverage	0.0200***	0.0255***	0.0119***	0.0320***	0.0355***	0.0276***
	(0.0003)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Liquidity	-0.0429***	-0.0408***	-0.0343***	-0.0393***	-0.0287***	-0.0096
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0006)	(0.3314)
Cash Flow	0.0606***	-0.0455***	-0.1248***	0.0354***	-0.1127***	-0.1382***
	(0.0001)	(0.0016)	(0.0000)	(0.0051)	(0.0000)	(0.0000)
Tobin's Q	0.0107***	0.0051***	0.0053***	0.0088***	0.0073***	0.0040***
	(0.0000)	(0.0002)	(0.0000)	(0.0000)	(0.0000)	(0.0023)
Book-to-market	-0.0003	-0.0001***	0.0001	-0.0005*	-0.0003***	-0.0005***
	(0.1577)	(0.0069)	(0.3783)	(0.0924)	(0.0016)	(0.0000)
Constant	-0.0528***	-0.0219***	-0.0028	-0.0308***	-0.0170***	-0.0044
	(0.0000)	(0.0000)	(0.3854)	(0.0000)	(0.0000)	(0.2915)
Observations	5,423	5,072	4,746	5,419	5,071	4,744
Pseudo R-squared	0.0155	0.00540	0.00931	0.0161	0.0124	0.0188
Panel B: Firms with operational restructurings (OR)						
OR	-0.0070***	-0.0049***	-0.0036***	-0.0052***	-0.0066***	-0.0047***
	(0.0000)	(0.0002)	(0.0004)	(0.0012)	(0.0000)	(0.0025)
Size	0.0014***	0.0004	-0.0001	0.0000	-0.0002	-0.0005
	(0.0000)	(0.2189)	(0.6961)	(0.9275)	(0.5219)	(0.2361)
Leverage	0.0198***	0.0237***	0.0109***	0.0306***	0.0338***	0.0276***
	(0.0001)	(0.0000)	(0.0048)	(0.0000)	(0.0000)	(0.0000)
Liquidity	-0.0446***	-0.0399***	-0.0349***	-0.0388***	-0.0280***	-0.0129
	(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0010)	(0.1978)
Cash Flow	0.0606***	-0.0427***	-0.1277***	0.0372***	-0.1071***	-0.1487***
	(0.0000)	(0.0010)	(0.0000)	(0.0049)	(0.0000)	(0.0000)
Tobin's Q	0.0117***	0.0056***	0.0063***	0.0093***	0.0072***	0.0057***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0001)
Book-to-market	-0.0003*	-0.0001**	0.0001	-0.0005**	-0.0003***	-0.0004**
	(0.0539)	(0.0198)	(0.7589)	(0.0404)	(0.0024)	(0.0217)
Constant	-0.0495***	-0.0204***	-0.0022	-0.0270***	-0.0136***	-0.0014
	(0.0000)	(0.0000)	(0.5201)	(0.0000)	(0.0016)	(0.7572)
Observations	5,174	4,846	4,535	5,170	4,845	4,533

Pseudo R-squared	0.0178	0.00599	0.00989	0.0185	0.0125	0.0199
Panel C: Firms with financial restructurings (FR)						
FR	-0.0207***	-0.0170***	-0.0146***	-0.0176***	-0.0145***	-0.0113***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Size	0.0009*	0.0001	-0.0004*	-0.0002	0.0000	-0.0003
	(0.0515)	(0.6676)	(0.0871)	(0.6342)	(0.9357)	(0.3854)
Leverage	0.0368***	0.0335***	0.0181***	0.0397***	0.0414***	0.0320***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Liquidity	-0.0458***	-0.0381***	-0.0350***	-0.0393***	-0.0275***	-0.0151
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0004)	(0.1375)
Cash Flow	0.0529***	-0.0506***	-0.1250***	0.0320**	-0.1058***	-0.1542***
	(0.0001)	(0.0007)	(0.0000)	(0.0183)	(0.0000)	(0.0000)
Tobin's Q	0.0115***	0.0062***	0.0066***	0.0097***	0.0075***	0.0055***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Book-to-market	-0.0002	0.0000	-0.0000	-0.0006***	-0.0004***	-0.0006***
	(0.1776)	(0.8233)	(0.6592)	(0.0001)	(0.0057)	(0.0000)
Constant	-0.0447***	-0.0181***	0.0015	-0.0249***	-0.0163***	-0.0008
	(0.0000)	(0.0000)	(0.6700)	(0.0000)	(0.0000)	(0.8669)
Observations	5,315	4,977	4,658	5,311	4,976	4,656
Pseudo R-squared	0.0210	0.00987	0.0140	0.0233	0.0162	0.0228

Table 4. 9 Effectiveness of divestiture in long-term recovery from financial distress based on the change in Z-score

This table estimates the change in Z-score from year -1 to year 1, 2, and 3 after each restructuring strategy using a sample of distressed firms. *Divest* is a dummy equal to one if a firm makes a divestiture announcement during the crisis period and zero, otherwise. *MR* is a dummy equal to one if a firm undertakes managerial restructuring (management turnover). *OR* is a dummy equal to one if a firm undertakes operational restructuring (investment reduction, COGS reduction, fixed asset reduction, and layoffs). *FR* is a dummy equal to one if a firm undertakes financial restructuring (dividend cut/omission, debt issue, and equity issue). *Size* is the natural log of the book value of total assets. *Leverage* is the ratio of long-term debt plus short-term debt divided by the book value of total assets. *Liquidity* is the ratio of cash and short-term investments divided by the book value of total assets. *Cash flow* is the ratio of operating income before depreciation, interest, and taxes over the book value of total assets. *Tobin's Q* is the ratio of the book value of total assets minus book value of common equity plus the market value of common equity divided by the book value of total assets. *Book-to-market* is the ratio of the book value of equity plus deferred taxes and investment tax credit minus preferred stock divided by the market value of equity. All accounting ratios are generated at the end of the fiscal year prior to a divestiture announcement and winsorized at the 1%. All variables are defined in Panel B of Appendix C. *p*-values are reported in parenthesis. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Panel A: Firms with divestitures (AR)			
Dependent variable:	ΔZ_{t+1}	ΔZ_{t+2}	ΔZ_{t+3}
	(1)	(2)	(3)
Divest	0.5214***	0.4012***	0.5923**
	(0.0006)	(0.0001)	(0.0335)
Size	0.0488*	0.0402	-0.0150
	(0.0600)	(0.2706)	(0.6387)
Leverage	-0.0068	-0.3519	-1.3404***
	(0.9817)	(0.3654)	(0.0014)
Liquidity	-2.6605***	-3.1928**	-2.6477*
	(0.0076)	(0.0322)	(0.0766)
Cash Flow	16.8441***	14.4459***	14.8861***
	(0.0000)	(0.0000)	(0.0000)
Tobin's Q	0.8912***	0.8584***	0.7073***
	(0.0000)	(0.0000)	(0.0000)
Book-to-market	-0.0453***	-0.0302*	-0.0320***
	(0.0000)	(0.0983)	(0.0000)
Constant	-2.6753***	-2.1699***	-1.0001*
	(0.0000)	(0.0001)	(0.0598)
Observations	1,341	1,169	1,057
Pseudo R-squared	0.167	0.101	0.0806
Panel B: Firms with managerial restructurings (MR)			
MR	-0.4496***	-0.2313	-0.5056**
	(0.0096)	(0.5847)	(0.0246)
Size	0.0522*	0.0504	0.0080
	(0.0665)	(0.1376)	(0.8335)
Leverage	0.1765	-0.1808	-1.2528***
	(0.5639)	(0.6160)	(0.0033)
Liquidity	-2.7982***	-3.0909**	-2.3559
	(0.0062)	(0.0378)	(0.1002)
Cash Flow	16.9254***	14.4490***	14.6931***
	(0.0000)	(0.0000)	(0.0000)
Tobin's Q	0.9849***	0.8557***	0.7701***
	(0.0000)	(0.0000)	(0.0000)
Book-to-market	-0.0489***	-0.0331***	-0.0367**
	(0.0000)	(0.0003)	(0.0120)
Constant	-2.8136***	-2.2791***	-1.2376**
	(0.0000)	(0.0000)	(0.0162)
Observations	1,317	1,146	1,034

Pseudo R-squared	0.168	0.101	0.0804
Panel C: Firms with operational restructurings (OR)			
OR	-0.4999***	-0.4048***	0.1031
	(0.0001)	(0.0051)	(0.4698)
Size	0.0542	0.0501	-0.0074
	(0.1643)	(0.2787)	(0.8694)
Leverage	-0.2312	-0.5840	-1.4895***
	(0.5232)	(0.1476)	(0.0012)
Liquidity	-2.6878**	-3.1080*	-2.3252
	(0.0167)	(0.0510)	(0.1356)
Cash Flow	16.9366***	15.6108***	15.7427***
	(0.0000)	(0.0000)	(0.0000)
Tobin's Q	0.9064***	0.9229***	0.7751***
	(0.0000)	(0.0000)	(0.0001)
Book-to-market	-0.0458***	-0.0465***	-0.0285
	(0.0096)	(0.0013)	(0.2242)
Constant	-2.2634***	-1.9410***	-1.2286**
	(0.0000)	(0.0012)	(0.0381)
Observations	1,256	1,095	987
Pseudo R-squared	0.177	0.109	0.0843
Panel D: Firms with financial restructurings (FR)			
FR	-0.0476	-0.1678	0.1306
	(0.7009)	(0.3203)	(0.3651)
Size	0.0522*	0.0402	-0.0223
	(0.0806)	(0.4145)	(0.4135)
Leverage	-0.2654	-0.5016	-1.6900***
	(0.4914)	(0.2908)	(0.0000)
Liquidity	-2.6518**	-2.6956*	-2.4314
	(0.0132)	(0.0862)	(0.1370)
Cash Flow	17.1958***	15.9784***	16.1232***
	(0.0000)	(0.0000)	(0.0000)
Tobin's Q	0.8754***	0.8715***	0.7260***
	(0.0000)	(0.0000)	(0.0007)
Book-to-market	-0.0489***	-0.0390***	-0.0325**
	(0.0028)	(0.0006)	(0.0314)
Constant	-2.5327***	-2.0955***	-0.9566**
	(0.0000)	(0.0005)	(0.0377)
Observations	1,284	1,119	1,010
Pseudo R-squared	0.175	0.109	0.0852

Table 4. 10 Comparison of the leverage and segment investment ratio for divesting vs. non-divesting firms during the financial crisis

This table shows the comparison of mean and median leverage and segment investment ratio. Panel A presents the *leverage ratio* of divesting firms, non-divesting firms, and firms with financial restructuring (FR) in year t-1 and year t+1. *Leverage* is measured by long-term debt plus short-term debt over the book value of total assets. Panel B presents the segment investment ratio of divesting firms, non-divesting firms, and firms with operational restructuring (OR) in year t-1 and year t+1. *Segment investment ratio* is computed as capital expenditures divided by sales using the data obtained from the Compustat Historical Segments file. For divesting firms, I only analyze retained segments to show how the investment policy has changed for the remaining divisions pre- and post-divestiture. The *p*-values are generated using Wilcoxon signed-rank (rank-sum) test.

Panel A. Leverage ratio

	Year t - 1			Year t + 1				
	N	Mean	Median	N	Mean	Median	Median difference	*p*-value
Divesting firms	574	0.264	0.244	530	0.267	0.238	-0.006	0.756
Non-divesting firms	5,798	0.187	0.133	5,307	0.204	0.153	0.020	0.000
Firms with FR	2,874	0.228	0.201	2,708	0.283	0.257	0.056	0.000

Panel B. Segment investment ratio

	Year t - 1			Year t + 1				
	N	Mean	Median	N	Mean	Median	Median difference	*p*-value
Divesting firms	98	0.081	0.034	98	0.076	0.032	-0.002	0.143
Non-divesting firms	4,250	0.125	0.039	3,924	0.092	0.031	-0.008	0.000
Firms with OR	4,989	0.127	0.036	4,621	0.101	0.029	-0.007	0.000

Table 4. 11 Cumulative abnormal returns (CARs) surrounding divestiture announcements during the financial crisis

This table presents univariate analyses of average 3-day (-1, +1) announcement returns for distressed and non-distressed firms. Model (1) includes all divestitures in my sample and model (2), (3), (4), and (5) involve divestitures of core unit, divestitures of non-core unit, related buyer, and unrelated buyer subsamples, respectively. CAR is generated using the divestor's stock return minus the benchmark portfolio return over the event window. Benchmark returns are estimated using the market model over the period beginning -295 days and ending -45 days before the announcement. *p*-values are reported in parenthesis. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

CAR [-1, 1]	All	Core unit	Non-core unit	Related buyer	Unrelated buyer
	(1)	(2)	(3)	(4)	(5)
Distressed firms	0.017**	0.017	0.018*	0.027*	0.009
	(0.029)	(0.166)	(0.064)	(0.058)	(0.234)
Non-distressed firms	0.013***	0.017***	0.011***	0.009	0.015***
	(0.000)	(0.002)	(0.007)	(0.117)	(0.000)
Difference	0.004	-0.000	0.007	0.018	-0.006
	(0.621)	(0.978)	(0.471)	(0.233)	(0.462)

Table 4. 12 Multivariate OLS regressions of divestiture announcement returns during the financial crisis

This table presents multivariate OLS regression analyses of divestiture announcement returns during the financial crisis. Each model specification involves different subsamples: (1) – (2) all divestitures, (3) – (4) divestiture of core unit, (5) – (6) divestiture of non-core unit, (7) – (8) related buyer (industry buyer), and (9) – (10) unrelated buyer (non-industry buyer). The dependent variable is 3-day cumulative abnormal return (CAR) surrounding the divestiture announcement date. *Distress 1* is a dummy equal to one if a firm is distressed based on its Z-score during the financial crisis. *Distress 2* is a dummy equal to one if a firm enters a distress condition during the financial crisis, but not within two years prior to the crisis. *Size* is the natural log of the book value of total assets. *Liquidity* is the ratio of cash and short-term investments divided by the book value of total assets. *Cash flow* is the ratio of operating income before depreciation, interest, and taxes over the book value of total assets. *Tobin's Q* is the ratio of the book value of total assets minus book value of common equity plus the market value of common equity divided by the book value of total assets. *Book-to-market* is the ratio of the book value of equity plus deferred taxes and investment tax credit minus preferred stock divided by the market value of equity. *Run-up* is a divesting firm's market-adjusted value-weighted excess returns measured over the 200-day period (-205, -6) prior to the divestiture announcement. All accounting ratios are generated at the end of the fiscal year prior to a divestiture announcement and winsorized at the 1%. I control for industry fixed effects using Fama-French's 48 industry classification and use robust standard errors in all regression analyses. All variables are defined in Panel B of Appendix C. *p*-values are reported in parenthesis. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

CAR [-1, 1]	All		Core unit		Non-core unit		Related buyer		Unrelated buyer	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distress 1	0.001		-0.003		-0.002		0.005		-0.002	
	(0.908)		(0.864)		(0.887)		(0.738)		(0.794)	
Distress 2		0.027*		0.030		0.013		0.051*		0.008
		(0.071)		(0.143)		(0.531)		(0.054)		(0.560)
Size	-0.003	-0.003	0.001	0.001	-0.003	-0.003	0.000	-0.001	-0.003	-0.003
	(0.251)	(0.224)	(0.819)	(0.790)	(0.212)	(0.193)	(0.966)	(0.845)	(0.175)	(0.191)
Liquidity	-0.038	-0.034	-0.062	-0.052	-0.024	-0.022	-0.027	-0.004	-0.038	-0.038
	(0.195)	(0.250)	(0.168)	(0.247)	(0.557)	(0.582)	(0.583)	(0.935)	(0.254)	(0.256)
Cash flow	-0.027	-0.015	-0.077	-0.062	-0.054	-0.044	-0.069	-0.040	-0.044	-0.036
	(0.510)	(0.694)	(0.172)	(0.235)	(0.168)	(0.269)	(0.156)	(0.396)	(0.366)	(0.423)
Tobin's Q	-0.011**	-0.011**	-0.016**	-0.017**	-0.001	-0.002	-0.013	-0.016**	-0.013*	-0.013*
	(0.039)	(0.025)	(0.041)	(0.026)	(0.837)	(0.797)	(0.114)	(0.045)	(0.056)	(0.056)
Book-to-market	0.002	-0.000	-0.001	-0.003	0.012	0.011	0.003	-0.002	-0.010	-0.010
	(0.820)	(0.977)	(0.933)	(0.726)	(0.429)	(0.476)	(0.775)	(0.853)	(0.323)	(0.317)
Run-up	-0.023	-0.022	-0.005	0.000	-0.044**	-0.044**	-0.028	-0.020	-0.017	-0.017
	(0.114)	(0.137)	(0.825)	(0.998)	(0.046)	(0.042)	(0.302)	(0.443)	(0.253)	(0.251)
Constant	0.067**	0.067**	0.062	0.061	0.042	0.041	0.078*	0.092**	0.080***	0.078**
	(0.020)	(0.021)	(0.261)	(0.268)	(0.143)	(0.145)	(0.075)	(0.034)	(0.010)	(0.014)
Observations	701	701	301	301	399	399	262	262	445	445
Adj. R^2	0.017	0.027	0.050	0.067	0.044	0.046	0.091	0.124	0.039	0.040
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 4. 13 Heckman's two-step model: Selection bias and announcement returns during the financial crisis

This table exhibits results based on Heckman's two-step procedure which involves correction of selection bias. The first step estimates divestiture decision model using probit regression analysis. The dependent variable in the first stage model is *divest*, a dummy equal to one if a firm announces a divestiture during the crisis period and zero, otherwise. The second step involves OLS regression analysis of divestiture performance based on 3-day cumulative abnormal return (CAR) surrounding the divestiture announcements. *Distress* is a dummy equal to one if a firm is distressed based on its Z-score during the financial crisis. *Size* is the natural log of the book value of total assets. *LDC* is a dummy equal to one if a firm has a leverage ratio higher than the industry median and a current ratio lower than the industry median. Industry medians are computed based on CRSP US Common Stocks with Fama-French's 48 industry classification. *Liquidity* is the ratio of cash and short-term investments divided by the book value of total assets. *Cash flow* is the ratio of operating income before depreciation, interest, and taxes over the book value of total assets. *Tobin's Q* is the ratio of the book value of total assets minus book value of common equity plus the market value of common equity divided by the book value of total assets. *Book-to-market* is the ratio of the book value of equity plus deferred taxes and investment tax credit minus preferred stock divided by the market value of equity. *Run-up* is a divesting firm's market-adjusted value-weighted excess returns measured over the 200-day period (-205, -6) prior to the divestiture announcement. *LAMBDA* is unobservable bias which is not captured by the rest of the control variables and is estimated in the selection model. I control for industry fixed effects using Fama-French's 48 industry classification and use robust standard errors in the second stage regression analyses. All variables are defined in Panel B of Appendix C. *p*-values are reported in parenthesis. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	All		Core unit		Non-core unit		Related buyer		Unrelated buyer	
	Divest	CAR	Divest	CAR	Divest	CAR	Divest	CAR	Divest	CAR
Distress	0.172***	0.009	0.164**	-0.007	0.172**	-0.007	0.199**	-0.006	0.132*	-0.013
	(0.006)	(0.508)	(0.039)	(0.743)	(0.026)	(0.769)	(0.014)	(0.848)	(0.079)	(0.402)
Size	0.215***	0.007	0.173***	0.004	0.225***	-0.012	0.160***	-0.010	0.231***	-0.010
	(0.000)	(0.620)	(0.000)	(0.789)	(0.000)	(0.636)	(0.000)	(0.608)	(0.000)	(0.576)
LDC	0.139***		0.178***		0.081		0.134*		0.119**	
	(0.006)		(0.008)		(0.184)		(0.053)		(0.044)	
Liquidity		-0.043		-0.043		-0.015		-0.004		-0.019
		(0.139)		(0.315)		(0.715)		(0.914)		(0.572)
Cash flow	-0.781***	-0.080	-0.838***	-0.075	-0.538**	-0.037	-0.725***	-0.018	-0.724***	-0.036
	(0.000)	(0.216)	(0.000)	(0.414)	(0.011)	(0.634)	(0.001)	(0.847)	(0.000)	(0.631)
Tobin's Q	-0.154***	-0.016	-0.170***	-0.020	-0.136***	0.007	-0.147***	-0.006	-0.151***	-0.006
	(0.000)	(0.154)	(0.000)	(0.183)	(0.000)	(0.676)	(0.000)	(0.767)	(0.000)	(0.638)
Book-to-market	-0.124***	-0.005	-0.085***	-0.008	-0.159***	0.018	-0.075***	0.002	-0.177***	-0.002
	(0.000)	(0.621)	(0.000)	(0.395)	(0.000)	(0.421)	(0.000)	(0.862)	(0.000)	(0.922)
Run-up		-0.019		-0.003		-0.046**		-0.028		-0.012
		(0.215)		(0.888)		(0.035)		(0.318)		(0.420)
LAMBDA		0.052		0.033		-0.052		-0.045		-0.045
		(0.527)		(0.743)		(0.707)		(0.742)		(0.623)
Constant	-2.395***	-0.025	-2.300***	-0.046	-2.478***	0.215	-2.362***	0.263	-2.816***	0.235
	(0.000)	(0.906)	(0.000)	(0.869)	(0.000)	(0.566)	(0.000)	(0.475)	(0.000)	(0.393)
Observations	6,098	700	5,501	301	5,671	398	5,499	255	5,751	439
Pseudo/Adj. R2	0.135	0.067	0.129	0.115	0.137	0.093	0.118	0.179	0.142	0.058
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Figure 2. 1 Bidder Advisor Market Share by the Number of Deals: Boutique vs. Non-boutique

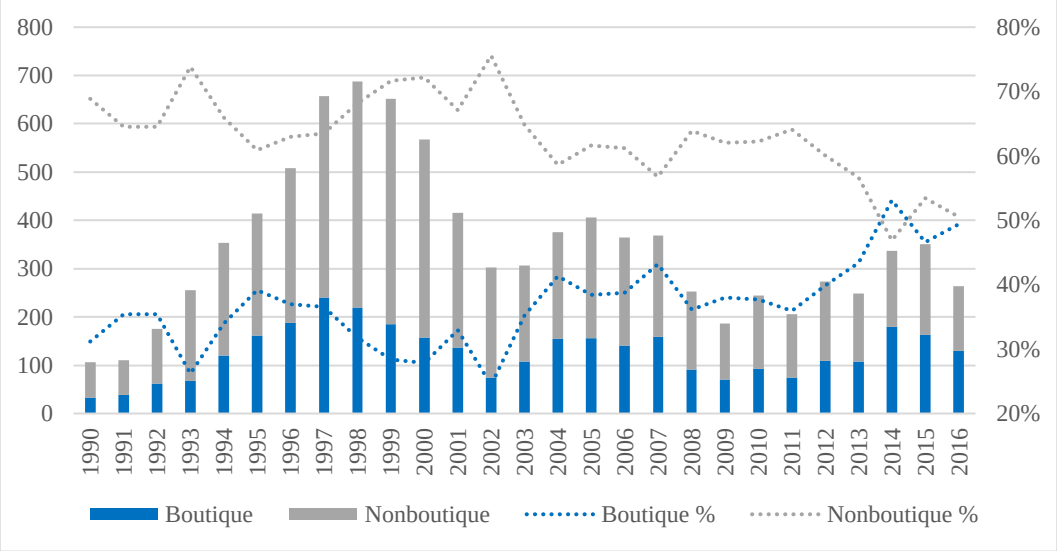


Figure 2. 2 Bidder Advisor Market Share by Deal Value (in billion USD): Boutique vs. Non-boutique

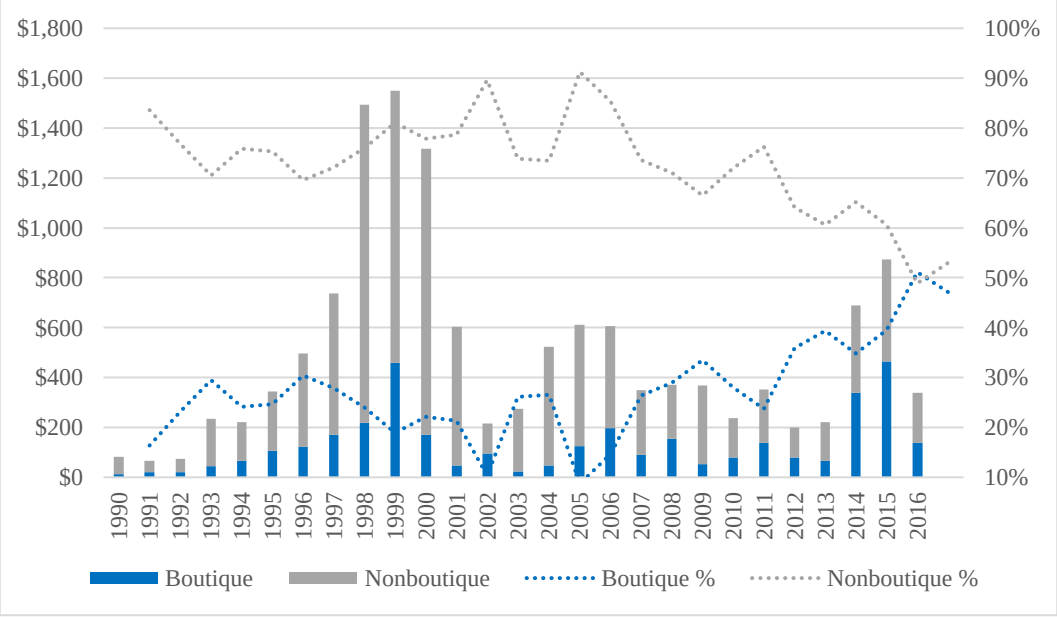
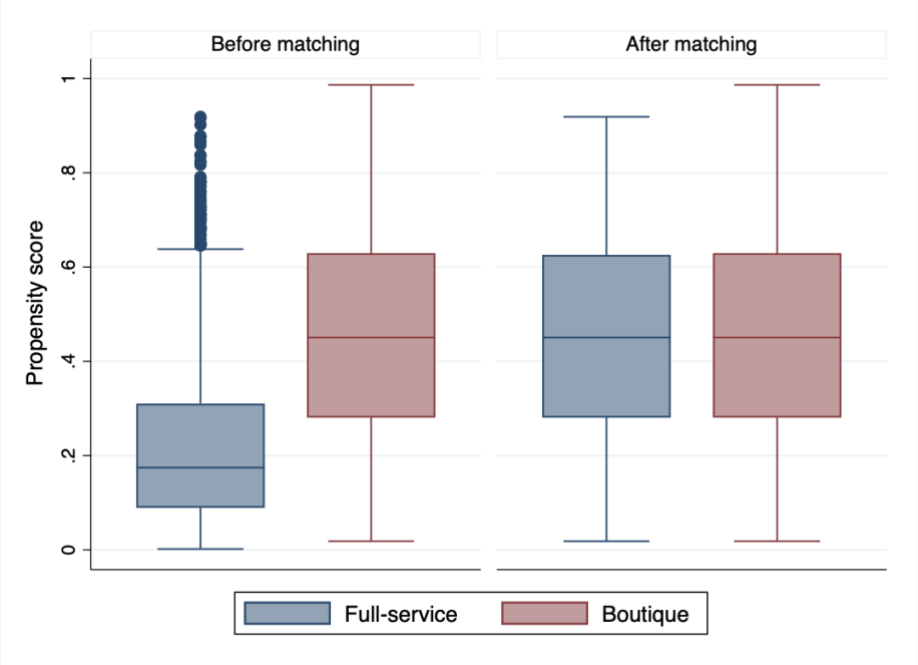
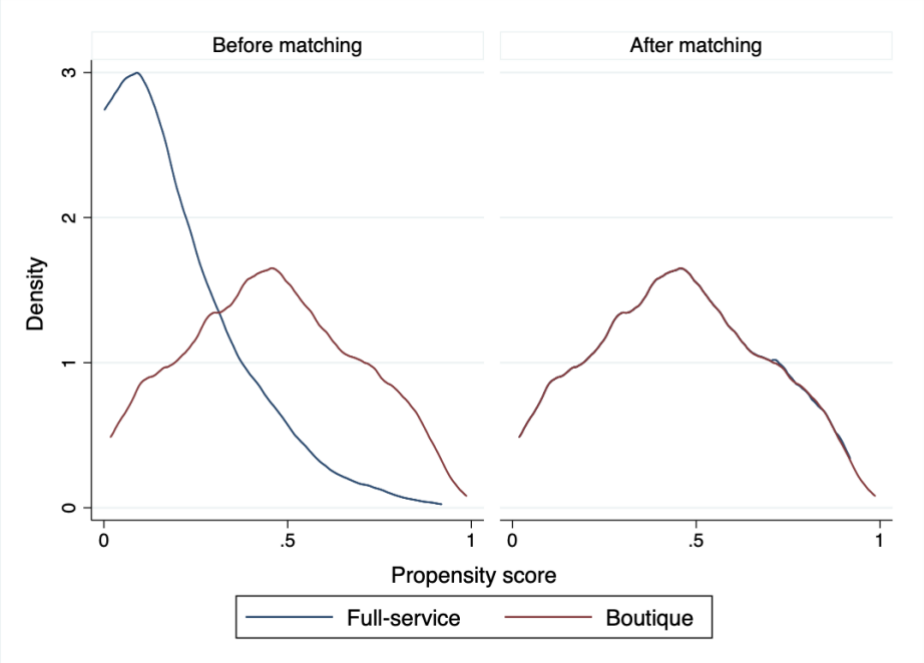


Figure 2. 3 Propensity Score Matching Quality

The following figures display similarity of matched deals between boutique and full-service based on PSM. Both box graph and line chart show that the characteristics of covariates (firm and deal characteristics) in the two groups look very similar after matching.





Appendix

Appendix A Variable Definition

Variable Name	Description
Bidder size	Acquirer market value of equity (US $ million) 4 weeks prior to the acquisition announcement from CRSP.
Book-to-market	Book value of equity at the fiscal year end prior to the announcement (COMPUSTAT) divided by bidder market value of equity 4 weeks prior to the announcement (CRSP).
Run-up	Acquirer's value weighted market-adjusted excess return during the 200-day period (-205, -6) prior to the acquisition announcement (CRSP).
Volatility	Standard deviation of acquirer daily stock returns (market-adjusted) between 205 and 6 days prior to the announcement date from CRSP.
Leverage	Acquirer's total debt divided by total assets at the fiscal year end prior to the announcement from COMPUSTAT.
Liquidity	Acquirer's cash divided by current liabilities at the fiscal year end prior to the announcement from COMPUSTAT.
Deal value	The transaction value in US $ million reported by SDC.
Relative size	Deal value from SDC divided by the bidder's market value of equity 4 weeks prior to the announcement from CRSP.
Tender offers	A dummy which takes the value of one when the acquisition technique includes tender offer from SDC.
Public deals	A dummy which takes the value of one when the target firm's public status is public from SDC.
Private deals	A dummy which takes the value of one when the target firm's public status is private from SDC.
Diversifying deals	A dummy which takes the value of one if the first 2-digits of the bidder's SIC code do not match those of the target's SIC code and zero, otherwise.
Hostile deals	A dummy which takes the value of one when the acquisition method is hostile from SDC.
All cash	A dummy which takes the value of one if 100% of the transaction was paid by cash from SDC.
All stock	A dummy which takes the value of one if 100% of the transaction was paid by stock from SDC.
Mixed payments	A dummy which takes the value of one if the transaction was paid by both cash and stock from SDC.
Premium	The SDC percentage deal premium 4 weeks prior to the acquisition announcement, which is winsorized between 0 and 2 as in Officer (2003).
CAR (-1, +1)	The bidder's value-weighted 3-day cumulative abnormal return around the announcement date. The CAR is generated using the bidder's stock return

	minus the benchmark portfolio return over the event window. The benchmark is estimated using market model over the period beginning -295 days and ending -45 days before the announcement.
Prior advisor	A dummy variable which is equal to one if a bank was the bidder's previous M&A advisor in the past five years.

Appendix B Variable Definition

Control variables	Definition from Compustat Bank Fundamentals Annual
Size	The natural log of the book value of divesting bank's total assets (AT) at the end of the fiscal year prior to divestiture announcement.
Inefficiency	The ratio of divesting bank's sum of staff expense total (XLR) and occupancy expense of bank premises net (OEBPN) over sum of net interest income (NIINT) and total non-interest income (TNII) at the end of the fiscal year prior to divestiture announcement.
Operating inefficiency	The ratio of divesting bank's expense noninterest total (bank) (XNITB) over the book value of total assets (AT) at the end of the fiscal year prior to divestiture announcement.
Liquidity	The ratio of divesting bank's sum of cash and due from banks total (CDBT) and investment securities total (IST) over the book value of total assets (AT) at the end of the fiscal year prior to divestiture announcement.
Leverage	Financial leverage measured by divesting bank's proportion of common/ordinary equity total (CEQ) to the book value of total assets (AT) at the end of the fiscal year prior to divestiture announcement.
Capital	Divesting bank's risk-adjusted capital ratio - tier 1 (CAPR1) at the end of the fiscal year prior to divestiture announcement. Tier 1 capital is calculated as equity capital plus minority interests less portion of perpetual preferred stock and goodwill as a percent of adjusted risk-weighted assets. Regulatory minimum is four percent.
Default risk	Nonperforming assets (NPAT) divided by the book value of total assets (AT).
Asset growth	Divesting bank's change in book value of total assets (AT) from one year before the end of the fiscal year prior to divestiture announcement.
Market-to-book	The risk evaluation of the equity markets measured by the market value of equity over the book value of equity.
Loan growth	An average percentage growth in bank loans (LNTAL) over the past 3 years before the end of the fiscal year prior to divestiture announcement.
Loan losses	The ratio of divesting bank's provision credit losses (income account) (PCL) over loans net of total allowance for loan losses (LNTAL) at the end of the fiscal year prior to divestiture announcement.
Return on asset (ROA)	The ratio of divesting bank's net income (loss) (NI) over the book value of total assets (AT) at the end of the fiscal year prior to divestiture announcement.
Return on equity (ROE)	The ratio of divesting bank's net income (loss) (NI) over stockholders equity parent (SEQ) at the end of the fiscal year prior to divestiture announcement.
Net interest margin (NIM)	Divesting bank's net interest margin (NIM) or the ratio of divesting bank's net interest income (NIINT) (computed by total interest income minus total interest expense) over the book value of total assets (AT) at the end of the fiscal year prior to divestiture announcement.
Change in ROA	Divesting bank's ROA 1, 2, and 3 years after a divestiture minus ROA at the end of the fiscal year prior to divestiture announcement.
Change in ROE	Divesting bank's ROE 1, 2, and 3 years after a divestiture minus ROE at the end of the fiscal year prior to divestiture announcement.
Historical aspiration gap	The difference between a bank's ROAt-1 and the average of ROAt-2, ROAt-3, ROAt-4.
Positive performance gap	The value of the Historical aspiration gap if the gap is positive, and zero otherwise.
Negative performance gap	The absolute value of the Historical aspiration gap if the gap is negative, and zero otherwise.
	Definition from SDC Mergers & Acquisitions Database
Divest	A dummy equal to one if a bank divested.
Past M&A	A dummy equal to one if a bank has performed M&A in the past three years.

Future M&A	A dummy equal to one if a bank has performed M&A in the next three years after divestiture. announcement date
Diversification level	The degree of divesting bank's diversification based on the number of different first 2-digit SIC codes in which the bank operates in.
Diversification	A dummy equal to one if a divesting bank operates in more than one industry defined by the number of different first 2-digit SIC codes.
Non-core unit	A dummy equal to one if divesting bank's primary 4-digit SIC code is different from that of its divested unit.
Distant unit	A dummy equal to one if a divesting bank's headquarter is located in a different state from that of its divested unit.
Related buyer	A dummy equal to one if the primary 4-digit SIC code of buyer is identical with that of divested unit.
Related merger	A dummy equal to one if divesting bank has acquired a firm with the same first 2-digit SIC code during the period 3 years prior to and 1 year after divestiture announcement.
All seller	A dummy equal to one if a bank divested.
Focusing seller	A dummy equal to one if divesting bank is diversified and acquired related business and divested non-core unit.
Divestiture experience	The natural log of one plus divesting bank's number of divestiture experience over the last 3 years before the divestiture announcement.
State	A dummy equal to one if a buyer is located in the same state as its seller's divested unit.
	Definition from CRSP Daily Stock File
Tobin's Q	The ratio of divesting bank's market value of total assets (book value of total assets (AT) minus common/ordinary equity total (CEQ) plus market value of equity) over the book value of total assets (AT) at the end of the fiscal year prior to divestiture announcement.
Runup	Divesting bank's value weighted and market-adjusted excess return during the 200-day period (-205, -6) prior to divestiture announcement.
CAR	Divesting bank's value weighted 3-day (-1, +1) cumulative abnormal return around divestiture announcement date. CAR is generated using the divestor's stock return minus the benchmark portfolio return over the event window. The benchmark is estimated using market model over the period beginning -295 days and ending -45 days before the announcement.

Appendix C Variable definition

Panel A Variables for restructuring strategies		
Asset restructuring (AR)	Divest	A dummy equal to one if a firm divested (SDC divestiture announcements) during the crisis period (fiscal year 2007 and 2008).
Managerial restructuring (MR)	Management turnover	A dummy equal to one if a firm replaced its CEO and/or top-tier managers during the crisis period. Management is considered replaced when executives leave the firm in year t or year t+1 (COMPUSTAT Execucomp item LEFTCO) and the reason for a departure (COMPUSTAT Execucomp item REASON) is not 'DECEASED' or 'RETIRED'.
Operational restructuring (OR)	Investment reduction	A dummy equal to one if the firm experienced more than 15% reduction in investment activities (COMPUSTAT item IVNCF) from year t−1 to year t or t + 1 over the crisis period.
	COGS reduction	A dummy equal to one if a firm's COGS (scaled by sales) is above the industry median in year t−1 but falls to the bottom quartile in year t or year t + 1 (COMPUSTAT item COGS/SALE) over the crisis period.
	Fixed asset reduction	A dummy equal to one if fixed assets of a firm (COMPUSTAT item PPENT) fall more than 15% between year t−1 and year t or year t + 1 over the crisis period.
	Layoffs	A dummy equal to one if more than 20% of employees have been reduced (COMPUSTAT item EMP) between year t−1 and year t or t+1 over the crisis period.
Financial restructuring (FR)	Dividend cut/omission	A dummy equal to one if a firm experienced more than a 25% decrease in dividends paid between year t−1 and year t or t + 1 (COMPUSTAT item DVT) over the crisis period.
	Debt issue	A dummy equal to one if a firm's net debt (COMPUSTAT item DLTIS less DLTR) exceeds 5% of the book value of its total assets at year t or t+1 over the crisis period.
	Equity issue	A dummy equal to one if a firm's net equity (COMPUSTAT item SSTK less PRSTKC) exceeds 5% of the book value of its total assets at year t or t+1 over the crisis period.
Panel B Control variables		
COMPUSTAT Annual	Size	The natural log of the book value of total assets (AT).
	Leverage	A financing ratio measured by long-term debt (DLTT) plus short-term debt (DLC) over the book value of total assets (AT).
	Liquidity	The ratio of cash and short-term investments (CHE) divided by the book value of total assets (AT).
	Cash flow	A profitability ratio measured by operating income before depreciation (OIBDP) minus interest (XINT) minus taxes (TXT) over the book value of total assets (AT).
	Tobin's Q	A measure of firm's market value in comparison with its intrinsic value estimated by the book value of total assets (AT) minus book value of common equity (CEQ) plus the market value of common equity (CSHO*PRCC_F) over the book value of total assets (AT).
	Book-to-market	A measure of a firm's value estimated by the book value of equity (stockholders' equity (SEQ) plus deferred taxes and investment tax credit (TXDITC) minus preferred stock (PSTK)) divided by the market value of equity (CRSP item PRC*SHROUT).
	OIBD	A measure of a firm's operating performance estimated by operating income before depreciation (OIBDP) plus interest income (IDIT) over the book value of total assets (AT).

	Return on asset (ROA)	A measure of a firm's operating performance estimated by net income (loss) (NI) over the book value of total assets (AT).
	Change in OIBD	A firm's OIBD in t+1, t+2, or t+3 minus OIBD in year t-1.
	Change in ROA	A firm's ROA in t+1, t+2, or t+3 minus ROA in year t-1.
	LDC (low debt capacity)	A dummy equal to one if a firm has a leverage ratio (DLTT + DLC/AT) higher than the industry median and a current ratio measured by current assets divided by current liabilities (ACT/LCT) lower than the industry median. Industry medians are computed based on CRSP US Common Stocks with Fama-French 48 industry classification.
SDC	Core unit	A dummy equal to one if a divesting firm's primary 4-digit SIC code is the same as that of its divested unit.
	Non-core unit	A dummy equal to one if a divesting firm's primary 4-digit SIC code is different from that of its divested unit.
	Distant unit	A dummy equal to one if a divesting firm's headquarter is located in a different state from that of its divested unit.
	Related buyer	A dummy equal to one if the primary 4-digit SIC code of the buyer is identical with that of the seller's divested unit.
	Unrelated buyer	A dummy equal to one if the primary 4-digit SIC code of the buyer is different from that of the seller's divested unit.
CRSP	Runup	A divesting firm's market-adjusted value-weighted excess returns during the 200-day period (-205, -6) prior to divestiture announcement.
	CAR	A divesting firm's value weighted 3-day (-1, +1) cumulative abnormal return around the divestiture announcement date. CAR is generated using the divestor's stock return minus the benchmark portfolio return over the event window. Benchmark returns are estimated using market model over the period beginning -295 days and ending -45 days before the announcement.