FINANCIAL ADVISORS AND INDUSTRY MERGER AND ACQUISITION WAVES

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DECLARATION

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Abstract
The thesis examines whether financial advisors play a role in the formation of merger and acquisition (M&A) waves at the industry level. The analysis demonstrates that financial advisors are the primary drivers of industry M&A waves. This finding suggests that financial advisors encourage companies to conduct M&A deals and thus contribute to the generation of industry M&A waves. The effects of financial advisors are consistent across different industry shocks that have been previously identified under the neoclassical theory. This thesis also finds that the interactions between financial advisors and different industry shocks are significantly and positively correlated with industry M&A waves, suggesting that financial advisors contribute to the effect of industry shocks in generating industry M&A waves. The results are robust to endogeneity controls and alternative explanations.

Keywords: Merger &Acquisition waves; Financial advisors; Industry shocks

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Chapter 1

Introduction

The phenomenon that merger and acquisition (M&A) activity clusters over time and across industries has been well documented in the M&A literature (Mitchell and Mulherin 1996, Mulherin and Boone 2000, Andrade, Mitchell and Stafford 2001, Harford 2005, Duchin and Schmidt 2013). For example, Mitchell and Mulherin (1996) find significant differences in the time-series clustering of M&A activities across 51 industries. Harford (2005) identifies 35 industry M&A waves from 1981 to 2000 and Duchin and Schmidt (2013) observe 77 industry M&A waves from 1980 to 2009, with an average of 50 M&A deals in each wave. Many researchers have investigated various factors affecting the clustering of M&A activity. For instance, Shleifer and Vishny (2003), Rhodes-Kropf and Viswanathan (2004) and Rhodes–Kropf, Robinson and Viswanathan (2005) document that M&A waves are associated with overpriced bidder stock. Mitchell and Mulherin (1996) and Harford (2005) find that industry M&A waves can be explained by industry shocks that shift the fundamental structure of industries. Harford (2005) documents the importance of capital liquidity in the generation of M&A waves. However, no prior study has examined the role of financial advisors in explaining industry M&A waves even though financial advisors are considered important financial intermediaries in the M&A market (Walter, Yawson and Yeung 2008, Ismail 2010, Golubov, Petmezas and Travlos 2012).

This study investigates the role of financial advisors in industry M&A waves. In the literature, This study utilizes financial advisors to explain the formation of industry M&A waves after an industry shock has occurred. This study is important since it not only is the first to investigate the role of financial advisors in industry-level M&A activity but also supports

and expands the neoclassical theory with a new component to explain industry M&A waves. The neoclassical theory states that industry or economic shocks are the initial triggers for the formation of industry M&A waves. Industry and economic shocks have been considered as a highly consistent factor in explaining the formation of industry M&A waves (Mitchell and Mulherin 1996, Harford 2005, Powell and Yawson 2005, Garfinkel and Hankins 2011, Duchin and Schmidt 2013). However, there have been few studies that investigate the factors that drive the formation of industry M&A waves after industry shocks have occurred. Additionally, although financial advisors are identified as important financial intermediaries in the M&A market (Walter et al. 2008, Ismail 2010, Golubov et al. 2012), previous studies focus on the firm-level impact of financial advisors in the M&A market. This study fills these gaps by analysing financial advisors with a large sample of 56,632 M&A deals in 48 industries. This study contributes to the extant literature of the neoclassical theory since it is the first study that shows the importance of financial advisors in the generation of industry M&A waves after industry shocks have occurred. To uncover the role of financial advisors in industry M&A waves, two hypotheses are constructed.

The first hypothesis is that the number of financial advisors has a positive association with industry M&A waves. It is posited that this occurs because financial advisor companies, in their pursuit of M&A advisory fees, have a strong motivation to generate industry M&A waves. Hunter and Jagtiani (2003) document that M&A advisory fees play an important role in motivating financial advisors to expedite the completion of M&A deals. Thus M&A advisory fees can be considered as a mechanism that financial advisors encourage corporate companies to be M&A clients and provide superior skills in M&A transactions. Because of M&A fees, financial advisors contribute to the generation of industry M&A waves by encouraging companies to conduct M&A activity, and by making M&A activity in which they are involved more successful due to their special skills in facilitating M&A transactions. The

more companies are persuaded by financial advisors to conduct M&A activity after an industry shock has occurred, the greater the possibility that an industry M&A wave would form. Financial advisors will obtain massive M&A advisory income from the encouragement. On the other hand, the superior skills and services contributed by financial advisors to M&A transactions can attract more companies to enter into M&A transactions that contribute to the generation of industry M&A waves. Bao and Edmans (2011) identify a significant investment bank fixed effect in the announcement returns of M&A deals. Walter et al. (2008) document that high-quality financial advisors have superior skills in completing M&A deals faster for corporate clients.

Second, we hypothesise that financial advisors constitute an incremental factor that contributes to industry shocks in the generation of industry M&A waves. This is because financial advisors have an information advantage in the M&A market (Servaes and Zenner 1996, Andrade et al. 2001). Financial advisors are in a better position to evaluate the impact of industry shocks and the appropriateness of a potential target or bidder. Thus, once an industry shock has taken place such as broad industry shock and deregulation, financial advisors use the opportunity to persuade more corporate clients to conduct M&As, hence financial advisors contribute to the industry shock in generating industry M&A waves.

To examine these hypotheses, we construct an extensive M&A data sample from the Thomson Financial SDC database. The sample includes 56,632 M&A deals between 1980 and 2017. The M&A transactions are classified into the Fama and French (1997) 48 industry groups. The final sample consists of 1824 industry-year observations. According to the definition of M&A wave (Brealey, Myers, Allen and Mohanty 1988, Mitchell and Mulherin 1996), we use the industry-year number of M&A transactions and M&A transaction volume to measure industry M&A waves, and we use the highest value of the number of M&A transactions or transaction value in the 2 consecutive years to capture the occurrence of industry M&A waves.

Analysis of the role of financial advisors in industry M&A waves is as follows. First, using OLS regression analysis, we examine the relationship between financial advisors and industry M&A waves after industry M&A shocks have occurred. The findings show that financial advisors are positively and significantly related to industry M&A waves after the occurrence of different types of industry shocks. This finding is consistent with our expectation and indicates that financial advisors contribute to the formation of industry M&A waves. As a robustness check, this study uses the Fama and MacBeth (1973) regression to examine the relationship. The finding of an association between financial advisors and industry M&A waves remains robust after conducting the Fama and MacBeth (1973) regressions.

Next, we conduct a series of tests to deal with potential endogeneity problems to establish the causal link between financial advisors and industry M&A waves. In this thesis, reverse causality is the main potential source of endogeneity. The positive association between financial advisors and industry M&A waves could be explained by reverse causality, as the industry waves initialized by industry shocks could attract financial advisors to participate in industry M&A activity. If this were the case, then financial advisors would be the consequence of the occurrence of industry M&A waves rather than a driver of industry M&A waves. To alleviate the potential endogeneity problem, this study employs a two-stage least squares (2SLS) regression approach and a subgroup analysis using an exogenous shock.

In the 2SLS regression approach, the first-stage regression models the financial advisors variable and the second-stage regression corrects for potential reverse causality. The instrumental variable (*MarketFinAdvisor*) in the first-stage regression represents the total number of financial advisor companies in the economy. The instrumental variable is correlated with the financial advisors variable because financial advisors participating in industry M&A waves are a part of the financial advisors in the economy, which satisfies the relevance criterion for an IV. Meanwhile, the instrumental variable is independent of industry M&A waves. This

is because not all financial advisors in the economy participate in industry M&A activity. Hence, the financial advisors in the economy cannot directly affect industry M&A waves. Also, the number of financial advisors in the economy (*MarketFinAdvisor*) is not decided by industry M&A waves, but the factors related to the whole economy, thus satisfying the exclusion criterion. The results generated from the 2SLS regression suggest that the association between financial advisors and industry M&A waves is robust.

Subgroup analysis uses an exogenous shock, the Financial Services Modernization Act of 1999. This law change deregulated the M&A advisory market, allowing more companies to access the M&A advisory business. If financial advisors are a driver of industry M&A waves, this deregulation will increase the coefficient of financial advisors in predicting industry M&A waves from the year that deregulation occurred. Therefore, this exogenous shock provides a useful tool to examine the potential endogeneity problem. The results of the analysis of the exogenous shock are consistent with our expectation, which suggests that financial advisors are a driver of industry M&A waves.

After the relationship between financial advisors and industry M&A waves is established, the next step is to explore the impact of the interactions between financial advisors and different types of industry shocks on industry M&A waves. This analysis aims to test the hypothesis that financial advisors are incremental to the effect of industry shocks in the generation of industry M&A waves after industry shocks have occurred. The evidence from this analysis shows that the interaction terms between financial advisors and industry shocks are positively correlated with industry M&A waves. This evidence is consistent with our expectation and suggests that financial advisors are an incremental factor to industry shocks to generate industry M&A waves.

Lastly, this study employs two additional analyses to examine the relationship between financial advisors and industry M&A waves by employing an alternative measurement of

financial advisors and a dummy variable for measuring the occurrence of industry M&A waves. The purpose of these two additional analyses is to verify the robustness of the role of financial advisors in generating industry M&A waves. The alternative measurement of financial advisors is computed as the total number of the times that bidder and target financial advisors participate in industry M&A activity. The results show that financial advisors are still positively and significantly related to industry M&A waves. The dummy variable is based on the highest value of the number of M&A transactions or transaction value occurring in the 2 consecutive years. The dummy variable aims to capture the occurrence of industry M&A waves in their peak. By using the dummy measurement in the probit model, the analysis indicates that financial advisors are an important factor in generating industry M&A waves. These findings continue to support the first hypothesis.

To the best of our knowledge, this is the first study on the role of financial advisors in industry M&A waves. Prior studies have found many different factors that determine M&A waves. Mitchell and Mulherin (1996) and Harford (2005) document that fundamental industry or economic shocks that shift the structure of industries, lead to industry M&A waves. Shleifer and Vishny (2003) and Rhodes-Kropf and Viswanathan (2004) provide evidence on how bidder overpriced stock affects M&A waves. Harford (2005) documents that industry M&A waves are caused by industry shocks only when there is sufficient capital market liquidity in the market. Garfinkel and Hankins (2011) propose a risk management hypothesis to explain the generation of industry M&A waves. Garfinkel and Hankins (2011) document a strong relationship between cash flow uncertainty and industry M&A waves, suggesting that M&As can be a solution to deal with cash flow uncertainty. No prior study has investigated the role of financial advisors in the generation of M&A waves. This study contributes to the literature by showing that financial advisors have a positive impact on industry M&A waves. The evidence suggests that financial advisors are an important determinant of industry M&A activity.

This study also provides empirical evidence about the importance of financial advisors in the M&A market at the industry level, given the evidence that financial advisors have a role in industry-level M&A activity in the literature. Prior literature finds that financial advisors are an important factor in affecting M&A transactions at the firm level (Walter et al. 2008, Bao and Edmans 2011, Golubov et al. 2012). This is an important issue since financial advisors are important financial intermediaries in the M&A market (Ismail 2010). It is necessary to have the theoretical knowledge not only about the firm-level impact of financial intermediaries but also about the industrial importance of financial intermediaries in the M&A market. The empirical evidence that financial advisors have a positive association with industry M&A waves demonstrates the importance of financial advisors in the M&A market at the industry level.

Finally, the thesis contributes to the empirical evidence that supports the neoclassical theory. The neoclassical theory states that economic or industry shocks are the initial drivers of industry M&A waves (Mitchell and Mulherin 1996, Harford 2005, Powell and Yawson 2005). However, after the initial effect of industry shocks on industry M&A waves, it is unclear what factors cause the intensive clustering of M&A activity. This study provides empirical evidence that financial advisors are an incremental factor to industry shocks in formulating industry M&A waves. Thus, this study contributes new information to the neoclassical theory in the explanation of the generation of industry M&A waves. Once an industry shock shifts the structure of an industry, an industry M&A wave starts and the formation of the industry M&A wave is further generated by financial advisors.

The remainder of this thesis is organized as follows. Chapter 2 reviews the relevant literature. Chapter 3 describes the sample data and variable construction employed in this study. Chapter 4 investigates the relationship between financial advisors and industry M&A waves

and presents the results from additional analyses designed to alleviate the endogeneity problem. Chapter 5 concludes the thesis.

Chapter 2

Prior Literature and the Development of the Hypotheses

It is well known that M&A activity clusters over time (Mitchell and Mulherin 1996, Mulherin and Boone 2000, Jovanovic and Rousseau 2002, Brealey, Myers and Allen 2003). Mitchell and Mulherin (1996) and Mulherin and Boone (2000) document that the clustering of M&A activity significantly varies across industries in the US. Furthermore, Powell and Yawson (2005) examine UK takeovers and divestitures in the 1980s and 1990s and find that UK takeovers cluster across industries and time, which is consistent with the finding of Mitchell and Mulherin (1996). Harford (2005) identifies 35 industry M&A waves using a simulation method on a sample from 1981 to 2000.

Several theories have been proposed to explain why M&A activity clusters across industries and time (Mitchell and Mulherin 1996, Shleifer and Vishny 2003, Harford 2005, Powell and Yawson 2005, Garfinkel and Hankins 2011). Shleifer and Vishny (2003), Rhodes-Kropf and Viswanathan (2004) and Rhodes–Kropf et al. (2005) all suggest that M&A waves are correlated with stock market overvaluation. Dong, Hirshleifer, Richardson and Teoh (2006) and Ang and Cheng (2006) employ accounting numbers to estimate the fundamental value of a company and get results consistent with Shleifer and Vishny (2003). Goel and Thakor (2009) argue that CEO envy is an important factor causing M&A waves. They document that the compensation for the CEOs of the bidder company is higher in earlier M&A transactions than in later M&A transactions. They suggest that the envy comes from the CEOs of the bidder companies who are jealous about the compensation of the CEOs in earlier M&A transactions; the envy motivates CEOs of bidder companies to undertake irrational M&A transactions. This causes clustering of M&A transactions. Ahern and Harford (2014) and Ahmad, Bodt and Harford (2017) suggest that the industry network of the relationships among companies,

consumers and suppliers is the channel that generates economy-wide M&A waves. However, the theory most consistently used to explain the clustering of M&A is the neoclassical theory.

According to the neoclassical theory, M&A waves occur when economic or industrial shocks trigger reorganization of an industry (Gort 1969, Mitchell and Mulherin 1996, Powell and Yawson 2005, Garfinkel and Hankins 2011). The neoclassical theory assumes that the market is efficient and managers act in the best interests of shareholders (Mitchell and Mulherin 1996). Once a shock hits an industry, the industry's structure shifts and companies in the industry will reorganize their asset combination via M&As. This corporate restructuring aims to benefit the future development of the companies because M&As are considered as the most effective way to obtain the best asset combination. Coase (1937) is an early study supporting the view that technology shocks can result in active M&A activity. Mitchell and Mulherin (1996) examine the relationship between industry-level clustering of M&A activity and various industry shocks. They find that broad industry shocks or some specific industry shocks, such as deregulation and energy volatility, are positively correlated with industry M&A waves. They argue that industry shocks can change the business environment of an industry positively or negatively. Both positive and negative industry shocks can lead to industry M&A waves. Furthermore, Powell and Yawson (2005) show that UK takeovers are positively correlated with foreign competition shocks and industry returns. Additionally, Stahl (2016) provides evidence that corporate restructuring in the US broadcast industry became much more dynamic after the Telecommunication Act of 1996 was introduced. Calomiris (1999) also provides evidence to support the neoclassical theory. He documents that bank M&A waves throughout history have generated large efficiency gains for banks. Improved efficiency after industry shocks is one important implication under the neoclassical theory. Ovtchinnikov (2010) supports the neoclassical theory by showing that deregulation has a positive relationship with capital structure.

Another important determinant of M&A waves is capital liquidity. Harford (2005) documents that the spreads of the commercial and industrial (C&I) loan rate and the Fed funds rate are significantly negatively correlated with industry M&A waves. Harford (2005) argues the formation of industry M&A waves depends on the level of capital liquidity. Hence, when capital liquidity is sufficient, industry M&A waves can be initiated by different industry shocks. Khatami, Marchica and Mura (2015) and Almeida, Campello and Hackbarth (2011) support the importance of capital liquidity in facilitating M&A activity by showing that capital liquidity is positively related to acquisition decisions. Eisfeldt and Rampini (2006) support the importance of capital liquidity by showing that variation of capital liquidity over time has strong effects on the level of total capital reallocation in the economy.

Based on the neoclassical theory, Garfinkel and Hankins (2011) propose a risk management hypothesis to explain industry M&A waves. Examining mergers and tender offer transactions in the US market, Garfinkel and Hankins (2011) find that vertical integration transactions are required during industry M&A waves. They document a significant relationship between cash flow uncertainty and industry M&A waves. Garfinkel and Hankins (2011) argue that companies' operating hedging purpose is related to industry M&A waves because industry shocks create periods of cash flow uncertainty within industries. Vertical integration is the solution for companies to deal with cash flow uncertainty. Garfinkel and Hankins (2011) conclude that risk management considerations are significant drivers of industry M&A waves.

Even though past studies have identified several important factors that underpin M&A waves, the understanding of industry M&A waves is incomplete. Prior studies have not considered the role of financial advisors in creating industry M&A waves even though there is evidence that financial advisors play an important role in M&A activity (Servaes and Zenner 1996, Walter et al. 2008, Bao and Edmans 2011, Golubov et al. 2012). For example, Hunter

and Walker (1990) state that financial advisors "can improve the overall quality of the matches made in the market relative to a market where firms by-pass merger intermediaries in favour of a do-it-yourself approach". Hunter and Jagtiani (2003) and Walter et al. (2008) document that high-quality financial advisors can complete M&A deals faster. Furthermore, Hunter and Jagtiani (2003) find a positive correlation between the number of financial advisors employed and the probability of M&A transaction completion. Kale, Kini and Ryan (2003) document that the absolute gain by bidder companies is positively correlated with the reputation of bidder advisors, and they find that the total wealth generated in an M&A transaction is positively associated with the reputation of the bidder and target financial advisors. Bao and Edmans (2011), using a fixed-effects analysis, identify a significant investment bank fixed effect in the announcement of returns from M&A deals. Golubov et al. (2012) and Servaes and Zenner (1996) compare in-house acquisitions with M&A transactions with financial advisors. They find that the complexity of M&A transactions is positively correlated with the possibility of hiring financial advisors. Bowers and Miller (1990) show that top-class financial advisors have better expertise in delivering higher total synergies for M&A clients because of superior negotiation skills that financial advisors contribute through their advisory service. Hunter and Walker (1990) analyse M&A advisory fee structures. They conclude that M&A advisory fees motivate financial advisors to improve the efficiency of matches between buying and selling firms. Based on the literature regarding financial advisors, it is reasonable to believe that financial advisors play an important role in improving the quality of M&A transactions at the firm level. However, no prior study has examined the role of financial advisors in the generation of industry M&A waves.

This study posits that financial advisors play a pivotal role in generating industry M&A waves by advising more companies to conduct M&As after an industry shock has occurred. This hypothesis is based on the neoclassical theory which states that industry shocks are the

initial cause of industry M&A waves (Gort 1969, Mitchell and Mulherin 1996, Harford 2005, Powell and Yawson 2005, Garfinkel and Hankins 2011). When an industry shock changes the structure of an industry, companies in that industry start to conduct M&As to restructure their asset combinations. The companies hire financial advisors to help them to execute the M&A transactions. Additionally, financial advisors have an information advantage in the M&A market (Servaes and Zenner 1996, Andrade et al. 2001) in the sense that they are better positioned to evaluate the impact of industry shocks and the appropriateness of a potential target or bidder. Thus, financial advisors consider industry shocks as an opportunity to encourage and persuade more companies to participate in M&A deals. Therefore, it is reasonable to expect that financial advisors can be an incremental factor contributing to industry shocks that trigger industry M&A waves.

Financial advisors are willing to contribute to the generation of industry M&A waves because of the M&A advisory fees they expect to receive. An M&A advisory fee consists of fixed and contingent parts; the contingent part of advisory fees depends on completion of the transaction (McLaughlin 1990, McLaughlin 1992). Firmex and Divestopedia (2017) report that the fixed part of M&A advisory fees is paid in advance and is non-refundable. In the industry, the contingent advisory fee is also called the M&A success fee (Firmex and Divestopedia 2017). Based on the structure of M&A fees, if financial advisors do not finish M&A deals, they receive only the fixed part of the fee. On the other hand, if financial advisors complete M&A deals successfully, they will collect both the contingent reward and the fixed part of the fees from the M&A clients. Thus, regardless of M&A deals being completed or not, financial advisors have incentives to encourage more companies to become their clients. Therefore, once an industry shock hits the business environment of an industry, financial advisors are motivated to approach and persuade more companies in the industry to conduct M&A transactions. Thus, a greater the number of companies that financial advisors can persuade to participate in M&A

deals, the more likely an industry M&A wave is generated. At the same time, financial advisors can earn more aggregate M&A advisory revenue in the process. For example, Tully (2003) states that M&A bankers took advantage of an economic recovery trend that happened in 2003. Therefore, following an industry shock, it is expected that financial advisors encourage and persuade more companies to undertake M&A transactions.

In addition, financial advisors contribute their special skills to M&A transactions and encourage companies to be involved in the M&A market after an industry shock has occurred. When M&A clients are satisfied with the contribution of financial advisors in M&A deals, they are more likely to hire financial advisors for the next M&A deal. Simultaneously, more new companies will be persuaded by financial advisors to participate in M&A deals. Thus, with the number of potential M&A clients increasing, financial advisors can receive more M&A advisory fees. This can explain the behaviour of financial advisors in generating industry M&A waves.

The validity of the argument above rests on an important assumption: that each financial advisor has the capability to deal with infinite M&A transactions and clients at the same time. With this assumption, only a few financial advisors can generate an industry M&A wave. This assumption is not plausible. Within a short time period, the resources available to each financial advisor, such as human resources, are limited and fixed. In other words, an individual financial advisor can handle only a limited number of M&A transactions at one time. However, only if more financial advisors engage in the M&A market after a shock has occurred, this problem is overcome and all potential M&A clients can be serviced. Thus, an industry M&A wave can be generated by financial advisors following an industry shock if new financial advisors enter the market in a particular industry.

Based on the reasons discussed above, the following hypotheses are proposed:

H1: The number of financial advisors is positively associated with industry M&A waves.

H2: Financial advisors are incremental to the effects of industry shocks in the formation of industry M&A waves.

Chapter 3

Data and Methodology

3.1 M&A activity and industry M&A waves

The sample of mergers and acquisitions (M&A) is constructed from the Thomson Financial SDC database from 1 January 1970 to 31 December 2017. The sampling criteria follow Golubov et al. (2012) and Harford (2005). An M&A deal is included in the sample only if it meets all of the following conditions. First, each merger or acquisition bid has a transaction value of at least 50 million in US dollar. Secondly, the M&A bids must involve both US bidders and targets. Thirdly, each merger or acquisition transaction must be announced or have been completed. These sample criteria resulted in an initial sample of 56,632 M&A deals. The M&A transactions are classified into the Fama and French (1997) 48 industry groups. The final sample consists of 1824 industry-years.

To assess industry M&A waves, three measurements are employed. The first two measurements are employed by Brealey et al. (2003) and Powell and Yawson (2005). The two measurements are: (i) the number of completed M&A transactions (*Numdeals*); and (ii) the industry-level transaction value of the completed M&A transactions (*Deal value)*. The measurement of industry M&A waves in this study differs from the approach of Mitchell and Mulherin (1996) and Mulherin and Boone (2000). They measure industry M&A waves by the number of transactions over the sample period as the percentage of the number of total companies. However, the measurement in this study and the measurement of Mitchell and Mulherin (1996) and Mulherin and Boone (2000) have the same rationale. This is because Mitchell and Mulherin (1996) and Mulherin and Boone (2000) hold the number of total companies constant over time. Hence, in principle, they used the number of M&A transactions over time to measure industry M&A waves.

Apart from the two measurements above, another indicator is employed to measure industry M&A waves. The third measurement, *NumTdeals*, is the number of M&A announcements during the calendar year. In the literature, industry M&A waves have been identified by completed M&A deals in different forms (Mitchell and Mulherin 1996, Mulherin and Boone 2000, Harford 2005). For example, Mitchell and Mulherin (1996) and Mulherin and Boone (2000) measure industry M&A waves by the number of completed M&A transactions over the sample period as the percentage of the constant number of total companies. However, before each M&A deal is completed, it must be announced. Once an industry shock hits an industry environment, companies in the affected industry start to conduct M&A activities so that a great number of M&A announcements must be witnessed before clustering of completed M&A transactions occurs. Therefore, it is reasonable to use the number of M&A announcements across industries and time to capture the generation of industry M&A waves.

[Insert Table 1 approximately here]

In order to investigate the position that the number of M&A announcements across industries and time can be used to capture the generation of industry M&A waves, we analyse the lengths between M&A announcement and M&A deal completion. Table 1 presents the time lengths for 48 industries. The time length between M&A announcement and M&A deal completion is measured by days. As shown in Table 1, all 48 industries have average time lengths below 182.5 days (half of a year). The maximum average time length across 48 industries is 156.58 days, which occurs in the banking industry. Moreover, the highest median time length across the 48 industries is 151, which also occurs in the banking industry. This number is also less than 182.5. Thus, for the M&A bids that are completed, on average, M&A announcements can be completed within one year. Therefore, it is reasonable to use the number of M&A announcements to measure industry M&A waves on an annual basis.

3.2 Measuring financial advisors

The financial advisors data are also sourced from the Thomson Financial SDC database, along with the M&A transactions data. Like the M&A transaction data, financial advisors data are allocated into the 48 industry groups based on Fama and French (1997) industry classification and are summarized on a yearly basis. Each observation represents one industry-year.

To capture the role of financial advisors in industry M&A waves, this study uses two measurements. The first measurement, *UniqueFinAdvisor*, is constructed as the sum of both bidders and targets' financial advisors without duplicate company names. This variable captures the number of unique financial advisors at the industry level because unique financial advisors only consist of different financial advisor companies. The second measurement, *NumFinAdvisor*, is the total number of times that financial advisors participate in industry M&A activity each year. The only difference between these two variables is the sum of duplicate M&A transactions that each individual financial advisor handles. For example, in one industry, five M&A deals involving different companies are completed by JP Morgan in a year. The first measurement is one and the second variable is five. Therefore, the first variable is expected to capture the role of unique financial advisor companies in industry M&A waves. The second variable captures not only the role of unique financial advisors in industry M&A waves but also the multiple M&A bids that each financial advisor handles. Therefore, the second variable is expected to capture all participation of financial advisors in the M&A market.

3.3 Measuring industry shocks

Broadly, industry shocks are categorized into two groups: broad industry shocks and specific industry shocks (Mitchell and Mulherin 1996, Powell and Yawson 2005). Mitchell and Mulherin (1996) and Powell and Yawson (2005) argue that broad industry shocks aim to

directly measure the economic change experienced by industries that can alter industry structure. Broad industry shocks are measured by three aspects: sales, employment and operating cash flow (Mitchell and Mulherin 1996, Powell and Yawson 2005). Each type of shock, including sales, cash flow and employment shocks, is measured in two ways: abnormal sales (cash flow, employment) growth and sales (cash flow, employment) shock. Following Mitchell and Mulherin (1996) and Powell and Yawson (2005), this study uses these three types of broad industry shock and calculates the abnormal sales growth as the growth for the 5-year period preceding the sample year. Sales shocks are defined as the absolute value of the difference between an industry's abnormal sales growth and the average sales growth across all 48 industries. This process is repeated for the cash flow and employment shocks. Taking the absolute value in shock variables captures the broad industry shocks in both positive and negative ways because industry shocks can positively or negatively change the structure of industries (Mitchell and Mulherin 1996, Powell and Yawson 2005). Therefore, the absolute value of a shock variable takes both positive and negative impacts of industry shocks into consideration.

Prior studies show that two types of specific industry shocks, deregulation and technology change, significantly contribute to industry M&A waves (Mitchell and Mulherin 1996, Harford 2005, Powell and Yawson 2005). Deregulation increases the pressure of the market and competition within affected industries (Mitchell and Mulherin 1996, Powell and Yawson 2005). The changes in the industry's business environment require companies in the affected industry to adapt, which can be facilitated by M&A transactions. Mitchell and Mulherin (1996) argue that technology shock is negatively associated with industry M&A waves because the substitution mechanism takes place between R&D expenditure and asset restructuring. If companies have high R&D expenditure, they are unlikely to merge or acquire other firms because of limited financial resources.

This study further explores these two types of specific industry shocks. For the deregulation variable, Harford (2005) and Ovtchinnikov (2013) employ deregulation events which are provided by Viscusi, Harrington and Vernon (2005) to generate a deregulation dummy variable. The deregulation events included in this study are also obtained from Viscusi et al. (2005), with updates of deregulation events until 2017 from the US annual *Economic Report of the President*. This report provides an annual overview of US economic progress and publishes deregulation initiatives annually. The report is the source of the deregulation events in Viscusi et al. (2005). For the deregulation variable, following Powell and Yawson (2005) and Garfinkel and Hankins (2011), the deregulation-event dummy equals one for all post-deregulation years within the deregulated industry. The other type of specific industry shock is technology change. To assess technology change, this study uses the proxy from Mitchell and Mulherin (1996), the industry-level R&D/sales ratio. Except for deregulation, shock measurements are based on financial information at the industry level. Deregulation is measured as a dummy variable equal to one for all post-deregulation years. The financial information is retrieved from the Compustat database. All industry shock indicators are measured at the year t-1 in the analysis, except for deregulation, which is measured at year t.

3.4 Other control variables

It is necessary to control for previously documented factors that can affect industry M&A waves. Shleifer and Vishny (2003), Rhodes-Kropf and Viswanathan (2004) and Rhodes–Kropf et al. (2005) document that the bull stock market condition is related to M&A waves. Including variables that are related to stock market conditions allows measurement of the role of financial advisors in industry M&A waves without the impact of the bull stock market condition. Following Harford (2005), the following control variables are used to exclude the possibility that stock market conditions affect the results: market-to-book ratio (*MB*), 3-year return

(*Return*), and the standard deviation (*SD*) of 3-year return and industry capitalization (*Induscap*). *MB* is the industry median market-to-book ratio. *Return* is the industry-level 3-year return. *SD* is the intra-industry standard deviation of 3-year return and *Induscap* is computed as the natural log of the value of industry capitalization.

Harford, Klasa and Walcott (2009) document that leverage level is related to M&A transactions since companies are willing to reach optimal leverage level via M&As. Harford (2005) and Garfinkel and Hankins (2011) provide evidence supporting the importance of leverage in M&A waves. So it is necessary to control for the leverage ratio at the industry level in this analysis to eliminate the impact of leverage. Following Harford (2005) and Garfinkel and Hankins (2011), the industry median debt-to-equity ratio (*DE*) is included in the model. The financial information for the control variables such as industrial-level market-to-book ratio and debt-to-equity ratio is from the Compustat database, and the data for calculating the variables related to stock price, such as return and industry capitalization, are from the CRSP database.

3.5 Econometric model

The empirical analysis aims to investigate whether financial advisors contribute to industry M&A waves following industry shocks. An econometric model is employed and examined by ordinary least squares (OLS) regressions using industry-year panel data, as specified in the following equation:

$$M\&A\ waves_{i,t} = \beta_0 + \beta_1 * FA_{i,t} + \beta_2 * Shock_{i,t-1} + \beta_3 * Control_{i,t-1} + \varepsilon_{i,t} \qquad (1)$$

The dependent variable, *M&A waves*$_{i,t}$, measures industry M&A waves for industry i year t. The following variables as the dependent variables are used in the regressions in turn: (1) the number of completed M&A transactions (*Numdeals*); (2) the number of announced M&A

transactions (*NumTdeals*); and (3) M&A transaction value (*Deal value*). The key independent variable, $FA_{i,t,}$ represents the number of financial advisors engaged in industry i at year t. The variable, $FA_{i,t}$, consists of two measurements: (1) the number of unique financial advisors (*UniqueFinAdvisor*); and (2) the number of times that financial advisors participate in industry M&A activity (*NumFinAdvisor*). Another independent variable, $Shock_{i,t-1}$, captures industry shocks for industry i at year t-1. Industry shocks include broad industry shocks and specific industry shocks. The industry shock variables are motivated by Mitchell and Mulherin (1996) and Powell and Yawson (2005), who examine the role of sales shocks, cash flow shocks, employment shocks, deregulation and technology change in industry M&A waves. Since the focus of this study is whether financial advisors contribute to industry M&A waves following industry shocks, this study estimates financial advisors one year after industry shocks. The control variables include market-to-book ratio (*MB*), 3-year return (*Return*), standard deviation of 3-year return (*SD*), debt-to-equity ratio (*DE*) and industry capitalization (*Induscap*).

3.6 Summary Statistics

Table 2 reports the summary statistics for the sample of 1824 industry-year observations which include Fama and French (1997) 48 industries and 38 years from 1970 to 2017. The sample size differs across variables because of missing data. The mean for a variable is the average number across all sample years and industries. As reported in Table 2, the mean in completed M&A deals (*Numdeals*) is 28.53, which represents the average number of completed M&A deals per year, per industry. The average number of M&A announcements (*NumTdeals*) per year, per industry is 31.05. The difference indicates that, on average, around 2.5 M&A announcements fail to be successfully completed per year, per industry. The average annual transaction value of completed M&A deals across the 48 industries is $US18.47 billion.

[Insert Table 2 approximately here]

In relation to the financial advisor measurements, the deviation of mean values between unique financial advisors (*UniqueFinAdvisor*) and the participation times of financial advisors (*NumFinAdvisor*) is interesting. The mean of unique financial advisors (*UniqueFinAdvisor*) is 16.52 whereas the participation times of financial advisors (*NumFinAdvisor*) has a mean of 33.94. The *NumFinAdvisor* average is just over twice as many as *UniqueFinAdvisor*. This indicates financial advisors are very active in the M&A market, and they are willing to handle multiple M&A transactions within a year. This is consistent with the argument that financial advisors are willing to encourage more companies to do M&A transactions.

The maximum values of all variables are presented in Table 2 column 6. The maximum values of *Numdeals*, *NumTdeals*, *Deal value*, *UniqueFinAdvisor*, *NumFinAdvisor* do not occur in the same industry or the same year. As reported in Table 2, the maximum number of completed M&A deals (*Numdeals*) is 575, which occurred in the finance industry in 2017. For that year, the finance industry had 149 unique financial advisors (*UniqueFinAdvisor*) and financial advisors participated 241 times in M&A deals (*NumFinAdvisor*). The maximum number of M&A announcements (*NumTdeals*) is 620 and the maximum completed M&A transaction value (*Deal value*) is $US691.74 billion. Both maximum numbers occurred in the finance industry for 2006. The maximum number of unique financial advisors (*UniqueFinAdvisor*) is 150, which occurred in 2006. This means that there were 150 different financial advisor companies helping M&A clients in the finance industry in 2006. The maximum value of total participation of financial advisors (*NumFinAdvisor*) is 556, which was in the business service industry for 2000. In the same year, that industry had 461 completed M&A transactions (*Numdeals*) and 473 M&A announcements (*NumTdeals*).

Table 3 reports the correlations between *Numdeals*, *NumTdeals*, *Deal value*, *UniqueFinAdvisor*, *NumFinAdvisor* and the other control variables. As reported in Table 3, the correlations among the number of completed M&A deals (*Numdeals*) and the number of M&A

announcements (*NumTdeals*) and the completed M&A transaction value (*Deal value*) derived from the same scale are positive and over 0.8. This is because, when an industry M&A wave occurs, the M&A market is active and the number of completed M&A transactions is much greater than during a normal period. At the same time, M&A announcements and transaction value also experience a boom condition. So in the periods of industry M&A waves, a greater number of completed M&A deals and announced M&A deals, as well as transaction value, are observed together. Additionally, the correlation between financial advisors and industry M&A waves is over 0.8 (see Table 3). This implies that the relationship between financial advisors and industry M&A waves is positive and nearly linear. However, the industry capitalization has positive correlations with the measurements of financial advisors. For example, industry capitalization (*Induscap*) and unique financial advisors (*UniqueFinAdvisor*) have a correlation coefficient of 0.563. This may lead to a multicollinearity problem in the OLS regression model. A multicollinearity problem may lead to incorrect results for financial advisors in the regression. To deal with this potential issue, additional tests removing industry capitalization in the model were conducted[1].

[Insert Table 3 approximately here]

[1] When the *Induscap* variable was removed from the regression analysis, the relationship between financial advisors and industry M&A waves was still robust and consistent.

Chapter 4

Empirical Analysis

4.1 Financial advisors and broad industry shocks

Table 4 provides empirical evidence that financial advisors significantly affect industry M&A waves after broad industry shocks have occurred. Specifically, when sales shocks are examined in the regression, as reported in columns 1-3, the coefficients for unique financial advisors (*UniqueFinAdvisor*) are positive and economically significant at the 1% level in predicting industry M&A waves. For example, all else being equal, a one-standard-deviation (17.82574) increase in unique financial advisors (*UniqueFinAdvisor*) leads to an average increase of 53 deals (2.984*17.82574) in the number of completed M&A transactions (*Numdeals*) and an average increase of $US37.38 billion (2.097*17.82574) in the completed M&A transaction value (*Deal value*). When the cash flow and employment shocks are measured, as shown in columns 4-6 and columns 7-9, respectively, the coefficients for financial advisors are similar to the results for sales shock in both size and significance. For example, as shown in columns 1 and 4, the coefficients for financial advisors controlled for sales shock and cash flow shock are 2.984 and 3.072, respectively, significant at the 1% level. The evidence reported in Table 4 supports the first hypothesis that the number of financial advisors is positively associated with industry M&A waves and shows that financial advisors are an important factor affecting industry M&A waves following broad industry shocks.

[Insert Table 4 approximately here]

For the broad industry shock variables in the regression, as reported in Table 4, the coefficient of industry shocks is positive and significant in predicting industry M&A waves, which is consistent with the neoclassical theory, such as Mitchell and Mulherin (1996), Harford (2005) and Powell and Yawson (2005). However, the control variables such as market-to-book

ratio (*MB*), 3-year return (*Return*) and the standard deviation of 3-year return (*SD*) have no significant impact in predicting industry M&A waves, and even industry capitalization (*Induscap*) has a negative association with industry M&A waves. This is not consistent with evidence related to bull stock market condition (Shleifer and Vishny 2003, Rhodes‐Kropf and Viswanathan 2004).

To confirm the positive association between financial advisors and industry M&A waves following broad industry shocks, two additional analyses are conducted. First, the Fama and MacBeth (1973) regressions are estimated in lieu of the OLS regressions. Compared with OLS regressions, the Fama and MacBeth (1973) regressions correct standard errors for the correlation among 48 industries. The result of the Fama and MacBeth (1973) regressions are presented in Appendix Table 2. As the results of the OLS regressions, the coefficient of unique financial advisors (*UniqueFinAdvisor*) (see Appendix Table 2) remains positive and significant at the 1% level in predicting industry M&A waves after controlling for the three types of broad industry shocks (sales shock, cash flow shock, employment shock). For example, as shown in Appendix Table 2, column 1, all else being equal, a one-standard-deviation increase in unique financial advisors (*UniqueFinAdvisor*) is associated with an average increase of 46 (2.575*17.82574) deals in completed M&A transactions (*Numdeals*), which is significant at the 1% level. This empirical finding in Appendix Table 2 reinforces the first hypothesis and the importance of financial advisors in affecting industry M&A waves. In addition, as shown in Appendix Table 2, the coefficients of sales shock, cash flow shock and employment shock are positive and significant in predicting industry M&A waves, which is consistent with the neoclassical theory (Mitchell and Mulherin 1996, Powell and Yawson 2005).

$$M\&A\ waves_{i,t} + \ln(M\&A\ waves_{i,t}) = \beta_0 + \beta_1 * FA_{i,t} + \beta_2 * Shock_{i,t-1} + \beta_3 * Control_{i,t-1} + \varepsilon_{i,t} \quad (2)$$

Secondly, the dependent variables are transformed into a new form to examine the role of financial advisors in the generation of industry M&A waves in order to confirm the robustness of the positive association between financial advisors and industry M&A waves. The new measurement of completed M&A deals is computed as the natural log of *Numdeals* plus *Numdeals*. This process is repeated for M&A announcements (*Numdeals*) and transaction value of completed M&A transaction (*Deal value*). There are two reasons for employing this form of dependent variables, rather than the direct natural logarithm. The first is that some industries have no M&A transactions in some years, e.g., the defence industry had no M&A bids in 1982 and 1983. The second reason is that the correlations between financial advisors indicators and the indicators of industry M&A waves are all higher than 0.8 as is shown in Table 3. This means that financial advisors and industry M&A waves have a linear, positive relationship, rather than a logarithmic relationship. Appendix Table 3 shows that the coefficient of unique financial advisors (*UniqueFinAdvisor*) is positive and significant in predicting industry M&A waves following sales, cash flow and employment shocks. The results for financial advisors in Appendix Table 3 further support the significant effect of financial advisors on industry M&A waves. The evidence of broad industry shocks is consistent with the neoclassical theory (Mitchell and Mulherin 1996, Powell and Yawson 2005).

4.2 Financial advisors and specific industry shocks

Following Mitchell and Mulherin (1996) and Harford (2005), this study uses deregulation and technology shocks to explore the relationship between financial advisors and industry M&A waves. Deregulation plays a role to increase the pressure of the market and competition within the affected industries (Mitchell and Mulherin 1996, Powell and Yawson 2005). The changes in the industry business environment require companies in the affected industry to adapt, which can be facilitated by M&A transactions. Thus, a deregulation shock can lead to M&A activity clustering. Harford (2005) and Ovtchinnikov (2013) use the

deregulation events proposed by Viscusi et al. (2005) to generate a deregulation dummy variable. In this study, the deregulation events and the affected industries are listed in Table 5. Table 5 includes the deregulation events in Viscusi et al. (2005) and updates them to 2017 from the US *Annual Economic Report of the President*. This report is the source of the deregulation events listed by Viscusi et al. (2005). There are a total of 10 affected industries: agriculture, banking, pharmaceutical products, entertainment, healthcare, insurance, petroleum and natural gas, telecommunication, transportation and utility.

[Insert Table 5 approximately here]

For technology shocks, Mitchell and Mulherin (1996) show that industry R&D/sales ratio is negatively associated with industry M&A waves. They argue that a project substitution mechanism takes place between R&D expenditure and asset restructuring. If companies have high R&D expenditure, they are unlikely to merge or acquire other firms because of limited financial resources.

Table 6 shows that financial advisors are a determinant of industry M&A waves following specific industry shocks. Specifically, when deregulation is included in the analysis, as presented in Table 6, columns 1-3, the coefficients of unique financial advisors (*UniqueFinAdvisor*) are positive and economically significant at the 1% level, related to industry M&A waves. For instance, all else being equal, a one-standard-deviation increase in unique financial advisors (*UniqueFinAdvisor*) predicts an average increase of 35 (1.95*17.82574) deals in completed M&A transactions (*Numdeals*) and an average increase of $US37.26 (2.09*17.82574) billion in completed M&A transaction value (*Deal value*). When technology shock is included in the regression, financial advisors retain a positive and significant relationship with industry M&A waves. For instance, all else being equal, as shown in Table 6, column 4, a one-standard-deviation increase in unique financial advisors

(*UniqueFinAdvisor*) predicts an average increase of 53 (2.998*17.82574) deals in completed M&A transactions (*Numdeals*). Therefore, the empirical evidence in Table 6 supports the first hypothesis and demonstrates the importance of financial advisors in industry M&A waves after specific industry shocks have occurred. The effect of deregulation on industry M&A waves is consistent with the findings of Mitchell and Mulherin (1996), Harford (2005) and Powell and Yawson (2005), and the effect of technology shocks on industry M&A waves are similar to the evidence of Mitchell and Mulherin (1996).

[Insert Table 6 approximately here]

Like the consistency test of financial advisors reported in Appendix Tables 2 and 3, the role of financial advisors in industry M&A waves following specific industry shocks is examined using the Fama and MacBeth (1973) regression method and transformation of the dependent variables. Appendix Table 4 shows the results of the Fama and MacBeth (1973) regressions; unique financial advisors (*UniqueFinAdvisor*) remain an important factor in predicting industry M&A waves at the 1% significance level. For specific industry shocks, the results show that technology change is negatively correlated with industry M&A waves, consistent with prior research (Mitchell and Mulherin 1996). The coefficients of deregulation in the Fama-Macbeth regressions are positive but insignificant.

Appendix Table 5 shows the regression results after the dependent variables are transformed. Compared with Table 6 and Appendix Table 4, Appendix Table 5 shows that unique financial advisors (*UniqueFinAdvisor*) are positively and significantly correlated with industry M&A waves. The coefficients of financial advisors (*UniqueFinAdvisor*) in Appendix Table 5 still support the first hypothesis that financial advisors are positively associated with industry M&A waves following specific industry shocks. Additionally, specific industry

shocks have a significant impact on industry M&A waves, consistent with Mitchell and Mulherin (1996), Harford (2005) and Powell and Yawson (2005).

4.3 Endogeneity concerns

Though the analyses above establish a link between financial advisors and industry M&A waves, the model may suffer from potential endogeneity problems. Reverse causality is the most important potential endogeneity concern. In the relationship between financial advisors and industry M&A waves, reverse causality may exist because the relationship could be subject to an alternative explanation. Industry M&A waves could attract more financial advisors to deal with M&A transactions after industry shocks have initialized the industry M&A waves. In that case, financial advisors become a consequence of the generation of industry M&A waves, rather than a driver of industry M&A waves. This contradicts the two hypotheses and the arguments. This section tries to alleviate the reverse causality problem with a two-stage least squares (2SLS) regression approach and a subgroup analysis using an exogenous shock.

4.3.1 The 2SLS regression approach

The 2SLS regression approach is used to deal with the reverse causality problem. The 2SLS equations are listed below:

$$UniqueFinAdvisor_{i,t} = \alpha_0 + \alpha_1 * MarketFinAdvisor_t + \alpha_2 * Shock_{i,t-1} + \alpha_3 * Control_{i,t-1} + \theta_{i,t} \quad (3)$$

$$M\&A\ waves_{i,t} = \beta_0 + \beta_1 * \widehat{UniqueFinAdvisor}_{i,t} + \beta_2 * Shock_{i,t-1} + \beta_3 * Control_{i,t-1} + \varepsilon_{i,t} \quad (4)$$

Equation (2) is the first-stage regression, which models the financial advisors variable. Equation (3) is the second-stage regression which corrects for the reverse causality problem. The instrumental variable, *MarketFinAdvisor*, should have an impact on the financial advisors participating in the industry M&A activity (*UniqueFinAdvisor*), but not on the industry M&A waves. To construct *MarketFinAdvisor*, all financial advisor companies from the 48 industries

are summarized and duplicate companies eliminated. *MarketFinAdvisor* is the number of this group of financial advisors on a yearly basis. This group of financial advisors is considered as the total unique financial advisors in the whole economy. *MarketFinAdvisor* is correlated with the unique financial advisors (*UniqueFinAdvisor*) because the unique financial advisors participating in industry M&A activity (*UniqueFinAdvisor*) are a part of the unique financial advisors in the economy. Furthermore, *MarketFinAdvisor* is independent of industry M&A waves. This is because not all unique financial advisors in the economy participate in industry M&A activity. Hence, *MarketFinAdvisor* is not a cause of industry M&A waves. Meanwhile, the number of unique financial advisors in the economy (*MarketFinAdvisor*) is not decided by industry M&A waves, but the factors related to the whole economy. As shown in Table 3, the correlation between *MarketFinAdvisor* and industry M&A waves is less than 0.2. Therefore, the unique financial advisors in the economy (*MarketFinAdvisor*) can be considered as a valid instrumental variable.

Table 7 reports the 2SLS regression results. Table 7, column 1, shows the first-stage equation with sales shocks. The instrumental variable, *MarketFinAdvisor*, is positively correlated with unique financial advisors, significant at the 1% level. The instrumented variable in the second stage is the predicted value of unique financial advisors from the first stage. In columns 2, 3, and 4, the second-stage equations are provided when controlled for sales shocks. The coefficients of predicted unique financial advisors are 2.552 in predicting completed M&A transactions (*Numdeals*), 2.326 in predicting M&A announcements (*NumTdeals*), and 2.154 in predicting transaction value (*Deal value*). All coefficients are statistically significant at the 1% level. Columns 5-8 are the results of the 2SLS regressions controlling for cash flow shocks. Column 5 suggests that *MarketFinAdvisor* is a statistically significant factor for unique financial advisors, with a coefficient of 0.05 at the 1% significance level. The second-stage equations reported in columns 6-8 show the predicted unique financial advisors are

significantly, positively correlated with industry M&A waves after employment shocks have occurred. When examining employment shocks, the results in columns 9-12 show that the *MarketFinAdvisor* in the first stage is still a significant factor and the instrumented variable is positively correlated with all industry M&A wave measurements at the 1% significance level.

[Insert Table 7 approximately here]

Table 8 presents the 2SLS regressions when controlling for specific industry shocks. Table 8, columns 1-4, show the first- and second-stage equations with deregulation shock control. Columns 5-8 show the first- and second-stage equations for technology shocks. For the first-stage equations in columns 1 and 5, the coefficients of *MarketFinAdvisor* are positive and statistically significant in predicting the unique financial advisors (*UniqueFinAdvisor*). In the second-stage equations, the predicted unique financial advisors are significantly and positively associated with industry M&A waves when measuring the responses to either deregulation or technology shocks.

[Insert Table 8 approximately here]

Based on the 2SLS regression results, the empirical results show that the positive association between financial advisors and industry M&A waves is robust. The results support the conclusion that financial advisors are a significant determinant of industry M&A waves rather than the consequences of industry M&A waves.

4.3.2 Subgroup analysis

Secondly, subgroup analysis with an exogenous shock is used to test the relationship between financial advisors and industry M&As. The exogenous shock is the introduction of the Financial Services Modernization Act of 1999. This law change deregulated the finance industry. The Financial Services Modernization Act of 1999 allowed different types of financial companies, such as commercial banks, insurance companies and investment banks,

to integrate their operations. Before 1999, insurance companies and commercial banks were prohibited from providing financial advisory services for M&A activity. After 1999, more financial companies were allowed to access the M&A market as financial advisors. Because of the timing of the law change, the sample period (1980-2017) is divided into two subgroups: the pre- and the post-change groups. The pre-change group consists of observations before 1999. The post-change group includes the observations from 1999. If financial advisors are a driver of the generation of industry M&A waves then, when more financial advisors enter the market as a result of the Financial Services Modernization Act of 1999, it is reasonable to expect that more completed M&A transactions, more M&A announcements, and higher transaction value would result. On the other hand, if the financial advisors participating in the M&A market are a consequence of the occurrence of industry M&A waves, the law change affecting financial advisors would have no impact on the magnitude of the coefficient of unique financial advisors. This is because industry M&A waves are drivers of the participation of financial advisors in the M&A market rather than financial advisors causing M&As to cluster.

The results from the exogenous shock analysis controlling for broad industry shocks are reported in Table 9. The pre-change group results are presented in columns 1, 3 and 5, and the post-change group results are in columns 2, 4 and 6. The differences in financial advisor coefficients between the pre- and post-change groups are tested using the Wald test. As presented in Table 9, an increase in the coefficient of unique financial advisors (*UniqueFinAdvisor*) from pre-change to post-change is seen and is statistically significant, by the Wald test. For example, in columns 1 and 2, Panel A, the coefficient of unique financial advisors (*UniqueFinAdvisor*) increases from 2.391 to 3.187 in predicting completed M&A transactions (*Numdeals*). The p-value of the difference of the coefficients of *UniqueFinAdvisor* is 0.0019, from the Wald test. Furthermore, as shown in Table 9, based on the Wald test, the increase in the coefficient of unique financial advisors (*UniqueFinAdvisor*) from pre-change to

post-change is significant and consistent when controlled for different types of broad industry shocks. These empirical results support the expectation that the exogenous shock causes a significant and positive effect on the independent variable, which provides evidence to show that financial advisors are a determinant of industry M&A waves rather than a consequence of industry M&A waves when broad industry shocks are controlled in the model.

[Insert Table 9 approximately here]

The pre- and post-change results to specific industry shocks are reported in Appendix Table 6; columns 1, 3 and 5 are the pre-change results, and columns 2, 4 and 6 are post-change results since 1999. When either deregulation or technology change shocks are included in the regression, the post-change coefficients of unique financial advisors on industry M&A waves are greater than the coefficients of unique financial advisors in the pre-change period. By the Wald Test, the differences in the coefficients of unique financial advisors (*UniqueFinAdvisor*) are statistically significant. However, the differences are not significant for deregulation. Overall, the relationship between financial advisors and industry M&A waves is still robust taking into account an exogenous shock, though the effect of the exogenous shock is not statistically significant when deregulation is included in the regression.

4.4 The interaction between financial advisors and industry shocks

This section tests the second hypothesis with OLS regressions. Under this hypothesis, financial advisors are expected to consider industry shocks as opportunities to generate industry M&A waves. This is because industry shocks that shift industry structure introduce corporate clients to financial advisors and motivate financial advisors to persuade more companies to conduct M&A activity. Therefore, after industry shocks occur, financial advisors can take advantage of the effects of industry shocks to persuade companies to conduct M&A activity, which generates industry M&A waves. In this section, the interaction terms between unique

financial advisors and different industry shocks are added to the model to examine the relationship between the interactions and industry M&A waves as equation (4).

$$M\&A\ waves_{i,t} = \beta_0 + \beta_1 * FA_{i,t} + \beta_2 * (FA_{i,t} * Shock_{i,t-1}) + \beta_3 * Shock_{i,t-1} + \beta_4 * Control_{i,t-1} + \varepsilon_{i,t} \quad (5)$$

Table 10 reports the results of the interaction between unique financial advisors and broad industry shocks in the generation of industry M&A waves. Table 10, columns 1-3, show the regression results of the interaction between unique financial advisors and sales shocks (*UniqueFinAdvisor*Sales shock*) in predicting industry M&A waves. Columns 4-6 are the regression results for the interaction between unique financial advisors and cash flow shocks (*UniqueFinAdvisor*Cash flow shock*), and columns 7-9 report the results for the interactions between unique financial advisors and employment shocks (*UniqueFinAdvisor*Employment shock*).

[Insert Table 10 approximately here]

As reported in Table 10, the interaction term between financial advisors and broad industry shocks is positive and statistically significant in predicting the number of completed M&A transactions (*Numdeals*) and M&A announcements (*NumTdeals*), but there is no significant association with the transaction value of completed M&A deals (*Deal value*). For instance, from columns 1-3, the coefficient of the interaction (*UniqueFinAdvisor*Sales shock*) is 0.582 in predicting the number of completed M&A transactions (*Numdeals*), which is significant at the 5% level. The coefficient of *UniqueFinAdvisor*Sales shock* is 0.757 which is significant at the 1% level in predicting M&A announcements (*NumTdeals*). However, the coefficient of the interaction (*UniqueFinAdvisor*Sales shock*) is 0.23 and not significant in the prediction of the transaction value of completed M&A deals (*Deal value*). When cash flow shock and employment shock are separately included in the regressions, in columns 4-6 and columns 7-9, respectively, the coefficients of the interaction between financial advisors and

cash flow or employment shocks are similar to the coefficient of the interaction with sales shocks in both size and significance. However, in columns 4-6, the coefficients of cash flow shock become positive but insignificant. Overall, the empirical evidence in Table 10 supports the second hypothesis that financial advisors are an incremental factor to broad industry shocks in the generation of industry M&A waves.

Apart from the results shown in Table 10, the coefficient of unique financial advisors (*UniqueFinAdvisor*) is positive and significant in predicting industry M&A waves. This is consistent with the first hypothesis. For the broad industry shock variables in the regression, the evidence of sales, cash flow and employment shocks is consistent with the prior work by Mitchell and Mulherin (1996), Harford (2005) and Powell and Yawson (2005).

Table 11 reports the OLS regression results of interactions between financial advisors and specific industry shocks in the formation of industry M&A waves. Table 11, columns 1-3, present the results of the interaction between financial advisors and deregulation (*UniqueFinAdvisor*Deregulation*). Columns 4-6 show the regressions of the interaction between financial advisors and technology shock (*UniqueFinAdvisor*RD*). As shown in Table 11, the coefficient of the interaction between financial advisors and deregulation (*UniqueFinAdvisor*Deregulation*) is positive and significant in predicting industry M&A waves. Deregulation events are created by official announcements so that financial advisors easily capture the announcements and the following news. Thus financial advisors can take advantage of deregulation events to generate M&A transactions. However, the coefficient of the interaction between financial advisors and technology shocks (*UniqueFinAdvisor*RD*) is not significant. This is because technology shocks are negatively related to industry M&A waves (Mitchell and Mulherin 1996). Therefore, technology shocks do not provide opportunities for financial advisors to encourage more companies into M&A activity.

[Insert Table 11 approximately here]

4.5 Additional analysis

4.5.1 Alternative measurement of financial advisors

The first additional analysis is using the other financial advisor variable to investigate the role of financial advisors in the generation of industry M&A waves. The second variable of financial advisors, *NumFinAdviso*r, is applied in this analysis rather than the unique financial advisors (*UniqueFinAdvisor*). *NumFinAdvisor* represents the total number of times that financial advisors participate in industry M&A activity. There are two reasons for conducting this additional analysis. First, the robustness of the positive association between financial advisors and industry M&A waves can be shown by using a different measurement of financial advisors. In previous sections, the unique financial advisors (*UniqueFinAdvisor*) variable has been used in all regression analyses. To eliminate measurement bias, *NumFinAdvisor* is now used to check the robustness of the relationship between financial advisors and industry M&A waves. Second, *NumFinAdviso*r measures financial advisors in a more comprehensive way than unique financial advisors (*UniqueFinAdvisor*). *NumFinAdviso*r not only captures the role of unique financial advisors in industry M&A waves but also the multiple M&A bids that each unique financial advisor handles. In other words, this variable includes the number of M&A bidder and target companies that are persuaded by financial advisors into M&A transactions. Therefore, it is necessary to use the second variable of financial advisors (*NumFinAdviso*r) to enable a test of whether the positive association between financial advisors and industry M&A waves is consistent.

Table 12 provides empirical evidence that financial advisors are a determinant of industry M&A waves following broad industry shocks. Specifically, when sales shock is included in

the regression, as reported in columns 1-3, the coefficient of the participation of financial advisors (*NumFinAdvisor*) is positive and economically significant at the 1% level in predicting industry M&A waves. For example, all else being equal, a one-standard-deviation increase (55.50788) in the participation of financial advisors (*NumFinAdvisor*) leads to an average increase of 53 (0.961*55.50788) deals in the completed M&A transactions (*Numdeals*) and an average increase of 57 (1.021*55.50788) bids in M&A announcements (*NumTdeals*). When including cash flow or employment shocks in the regressions, the coefficients of the participation of financial advisors (*NumFinAdvisor*) remain positive and significant at the 1% level in predicting industry M&A waves. This additional empirical evidence supports the positive association between financial advisors and industry M&A waves in the baseline results, and the first hypothesis that the number of financial advisors is positively correlated with industry M&A waves. In addition, the coefficients of sales, cash flow and employment shocks are positive in predicting industry M&A waves, which is consistent with the work of Mitchell and Mulherin (1996), Harford (2005) and Powell and Yawson (2005).

[Insert Table 12 approximately here]

Table 13 reports the relationship between the participation of financial advisors and industry M&A waves following specific industry shocks. Table 13, columns 1-3, show the results when including deregulation shocks in the regressions. Table 13, columns 4-6, present the regression results when technology shocks are included. The coefficient of the participation of financial advisors (*NumFinAdvisor*) is positive and statistically significant in predicting industry M&A waves for both deregulation and technology shocks. For instance, as shown in columns 1 and 2, all else being equal, a one-standard-deviation increase (55.50788) in the participation times of financial advisors (*NumFinAdvisor*) predicts an average increase of 35 (0.636*55.50788) deals in completed M&A transactions (*Numdeals*) and an average increase of 37 (0.667*55.50788) bids in M&A announcements (*NumTdeals*). The empirical results for

specific industry shocks show that the effect of financial advisors on industry M&A waves is still consistently positive and significant. The effects of specific shocks are consistent with prior findings (Mitchell and Mulherin 1996, Harford 2005, Powell and Yawson 2005).

[Insert Table 13 approximately here]

After the analyses in the previous paragraphs, the positive association between financial advisors and industry M&A waves following industry shocks is established with consistency and robustness. The positive association between financial advisors and industry M&A waves has a strong implication that M&A advisory fees motivate financial advisors to contribute to the generation of industry M&A waves, as argued previously. Therefore, it is reasonable to expect that the industry-level M&A advisory fees have a positive association with industry M&A waves.

In this analysis, industry-level M&A fees are used in the OLS regression to replace the unique financial advisors variable (*UniqueFinAdvisor*). The industry-level M&A fees are constructed as the log value of the annual total M&A advisory fees at the industry level. The results show a positive relationship between M&A fees and industry M&A waves either controlling for broad industry shocks or specific industry shocks. When broad industry shocks are controlled, seven regressions out of nine show a significant positive relationship between M&A fees and industry M&A waves. When specific industry shocks are controlled, five regressions out of six show a significant relationship between financial advisors and industry M&A waves. This evidence supports the argument that advisory M&A fees are the motivation for financial advisors to generate industry M&A waves.

4.5.2 Financial advisors and the occurrence of industry M&A waves

In the previous analyses, we show a positive relationship between financial advisors and industry M&A waves measured by the number of M&A bids and M&A transaction value

across time. However, the measurements of industry M&A waves in the previous analysis do not indicate when in fact industry M&A waves occur, or when industry M&A waves have the highest number of M&A transactions and transaction value. In this section, in order to address the inability of our previous analysis to demonstrate causation, we employ a dummy variable to measure the occurrence of industry M&A waves and investigate the relationship between financial advisors and the occurrence of M&A waves in a probit regression model.

In this part, following Mitchell and Mulherin (1996), we consider each industry M&A wave to occur in the 2 consecutive years with the highest value of the number of M&A transactions or transaction value. We split the whole sample period into 4 parts: 1980s (1980-1989), the 1990s (1990-1999), the 2000s (2000-2009) and the 2010s (2010-2017). This is because the different time periods are characterized by distinct M&A waves (Mitchell and Mulherin 1996, Harford 2005). In order to examine a consistent relationship between financial advisors and the occurrence of industry M&A waves, we create five dummy variables to measure the occurrence of industry M&A waves and estimate the following model:

$$P(wave_{i,t}) = \beta_0 + \beta_1 * FA_{i,t} + \beta_2 * Shock_{i,t-1} + \beta_3 * Control_{i,t-1} + \varepsilon_{i,t} \qquad (6)$$

P(*wave*) represents the probability of the occurrence of an industry M&A wave in industry i and at year t. The first independent variable, *FA*, represents the number of unique financial advisors (*UniqueFinAdvisor*) in industry i and at year t. Another independent variable, *Shock*, captures industry shocks for industry i at year t-1. Industry shocks include sales shocks, cash flow shocks, employment shocks, deregulation and technology change. The control variables have market-to-book ratio (*MB*), 3-year return (*Return*), standard deviation of 3-year return (*SD*), debt-to-equity ratio (*DE*) and industry capitalization (*Induscap*).

[Insert Table 14 approximately here]

Table 14 provides empirical evidence that financial advisors are an important factor in determining industry M&A waves when proxied by *wavedummy1*. The *wavedummy1* is equal to 1 when the maximum number of completed M&A deals occurs in an industry in an adjacent two-year period within the 1980s, the 1990s, the 2000s and the 2010s respectively. Specifically, as shown in Table 14, the coefficients for unique financial advisors (*UniqueFinAdvisor*) are positive and economically significant at the 1% level in predicting the occurrence of industry M&A waves. For example, in column 1, all else being equal, one unit increases in unique financial advisors (*UniqueFinAdvisor*) leads to an average increase of 0.011 in *wavedummy1* which represents an industry M&A wave occurs or not. The evidence reported in Table 14 supports the expectation that financial advisors play a critical role in the generation of industry M&A waves.

However, as reported in Table 14, neither the coefficients of broad industry shocks nor specific industry shocks are significant in the probit models. This is because industry shocks are the initial trigger of industry M&A waves, and their effects in changing industry structure occur at the beginning stage of industry M&A waves. The dummy variables capture the occurrence of industry M&A waves at their peak because the maximum number is used in the construction of dummy variables. Thus, during the peak of industry M&A waves, industry shocks have no effect on the occurrence of industry M&A waves, because their impact has occurred at the beginning of the waves. Therefore, the evidence of industry shocks in Table 14 is consistent with our expectation.

[Insert Table 15 approximately here]

Table 15 reports the evidence of a positive relationship between financial advisors and the occurrence of industry M&A waves when proxied by *wavedummy3*. The *wavedummy3* is equal to 1 when the maximum average proportion of completed M&A deals occurs in an

adjacent two-year period in an industry within the 1980s, the 1990s, the 2000s and the 2010s respectively. The proportion of completed M&A deals is computed as the number of completed M&A deals divided by the number of firms across the sample period in an industry. As shown in Table 15, the coefficients of unique financial advisors (*UniqueFinAdvisor*) are positive and economically significant at the 1% level in predicting the occurrence of industry M&A waves, with the control of different industry shocks. For example, shown in column 1, the coefficient of unique financial advisors (*UniqueFinAdvisor*) is 0.014 when we control for sales shock. The results for industry shocks, presented in Table 15, show that sales shock and employment shock have positive coefficients, significant at the 10% level. However, the coefficient of cash flow shock is -0.044 which is significant at the 5% level. Deregulation and technology have no significant effects on the probability that an industry M&A wave will occur. The inconsistent result of industry shocks is because the dummy variable (*wavedummy3*) is affected by the number of companies who enter and leave industries across the sample period[2]. In the calculation of the proportion of completed M&A deals in creating dummy variable, we employ the number of companies across time, which is not constant.

[Insert Table 16 approximately here]

Table 16 reports the probit models which estimate the relationship between financial advisors and the probability of the occurrence of industry M&A waves represented by *wavedummy5*. The dummy variable, *wavedummy5*, is equal to 1 when the maximum M&A transaction volume occurs in an industry in an adjacent two-year period within the 1980s, the 1990s, the 2000s and the 2010s respectively. As reported in Table 16, unique financial advisors (*UniqueFinAdvisor*) remain a significant and positive factor in predicting the occurrence of

[2] The results of industry shocks are consistent with our expectation that industry shocks are insignificant in predicting the occurrence of industry M&A waves when we consider a fixed number of firms in 1980 in the calculation of dummy variable.

industry M&A waves. The coefficients of *UniqueFinAdvisor* are significant at the 1% level. This evidence is consistent with our expectation that financial advisors are related to the occurrence of industry M&A waves. Furthermore, in Table 16, the coefficients of industry shocks, such as sales shock and deregulation, are insignificant in predicting the occurrence of industry M&A waves. This meets our expectation. However, in column 2, cash flow shock shows a negative coefficient of -0.035 at the 10% significance level.

In order to confirm the consistency of the positive relationship between financial advisors and the occurrence of industry M&A waves, we employ wavedummy2 and wavedummy4 to measure the occurrence of industry M&A waves3. Appendix Table 7 shows the results of wavedummy2 as the dependent variable in probit models. As reported in Appendix Table 7, unique financial advisors (UniqueFinAdvisor) is an economically significant factor in predicting the occurrence of industry M&A waves with the control of different industry shocks. For example, when we control for sales shock, shown in column 1, the coefficient of UniqueFinAdvisor is 0.013, significant at the 1% level. The evidence of financial advisors in Appendix Table 7 continues to support the important role of financial advisors in the generation of industry M&A waves. Appendix Table 8 presents the results of probit models by employing wavedummy4 as the dependent variable. Similar to the results of Appendix Table 7, the coefficients of unique financial advisors (UniqueFinAdvisor) remain positive and significant at the 1% level. Furthermore, as shown in Appendix Table 7 and Appendix Table 8, the coefficients of different industry shocks, except for cash flow shock, are insignificant in these models. These results are consistent with our expectation that industry shocks have no significant impact on the prediction of the occurrence of industry M&A waves.

[3] The *wavedummy2* is equal to 1 when the maximum number of announced M&A deals occurs in an industry in an adjacent two-year period within the 1980s, the 1990s, the 2000s and the 2010s respectively. The *wavedummy4* is created as 1 when the maximum fraction of M&A announcements occur in an adjacent two-year period in an industry within the four time periods respectively. The fraction of M&A announcements is computed as the number of announced M&A bids divided by the number of firms in 1980 in each industry.

Chapter 5

Conclusion

This study investigates the role of financial advisors in the generation of industry M&A waves following different industry shocks. This study is important since it is not only the first to investigate the role of financial advisors in industry M&A waves, but also this study supports and expands the neoclassical theory with a new component to explain industry M&A waves. In an analysis of an extensive sample of US M&A transactions, financial advisors are found to be a significant driver in the generation of industry M&A waves after industry shocks have occurred. The potential endogeneity issue of the relationship between financial advisors and industry M&A waves is addressed by the well-documented 2SLS regression approach and a subgroup analysis with an exogenous shock.

Based on the effect of industry shocks, financial advisors contribute to the generation of industry M&A waves by persuading companies to be involved in M&A activity. The empirical evidence shows that the number of different financial advisor companies is positively correlated with industry M&A waves. This study also documents that the frequency of the participation of financial advisors in M&A activity is positively related to industry M&A waves. Furthermore, this study shows that the interaction between financial advisors and industry shocks is positively associated with industry M&A waves, suggesting that financial advisors collaborate with industry shocks to generate the industry M&A waves.

Overall, this study provides novel evidence shedding new light on the explanation of industry M&A waves by financial advisors, which supports the neoclassical theory and expands the neoclassical theory with a new component: financial advisors explain industry M&A waves. The formation of an industry M&A wave occurs when a shock hits the industry

environment, and industry M&As are further encouraged by financial advisors, which causes the clustering of M&A activity at the industry level.

Additionally, this study shows the effect and power of financial advisors at the industry level on the M&A market, given the evidence that the number of financial advisors is positively correlated with industry-level M&A waves and activity. This indicates that financial advisor companies are important financial intermediaries in the industry-level M&A market. Therefore, future research on financial advisors should focus on whether financial advisors involved in industry M&A activity can create wealth and improve efficiency for the industry.

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Tables

Table 1 The time interval (days) between M&A deal announcement and M&A deal completion.

Industry Abbreviation	Industry full name	Average	Median	Standard Derivation
AGRIC	Agriculture	88.5949	52	106.1854
AERO	Aircraft	71.9786	48	68.2310
BEER	Alcoholic beverages	76.1386	55	78.3209
CLTHS	Apparel	63.2703	45	67.7555
AUTOS	Automobile and Trucks	84.6893	60	91.3180
BANKS	Banking	156.5842	151	123.1915
BUSSV	Business Service	67.1482	46	88.8218
PAPER	Business Supplies	81.7445	52.5	139.2092
SODA	Candy and Soda	89.9037	60	95.2916
CHEMS	Chemicals	90.4600	64	95.7061
COAL	Coal	91.6185	44	184.2664
COMPS	Computer	75.0856	59	71.6041
CNSTR	Construction	63.9779	39	94.3833
BLDMT	Construction Material	72.1146	47	102.5864
HSHLD	Customer Goods	76.8500	53	96.3465
GUNS	Defences	94.8265	69	98.2896
DRUGS	Pharmaceutical products	81.3937	50	118.1856
ELCEQ	Electrical equipment	70.9361	50	82.3545
CHIPS	Electronic equipment	82.9028	60	94.5326
FUN	Entertainment	115.0991	77	128.1610
FABPR	Fabricated products	82.1163	46	121.9617
FOOD	Food	85.6388	49	122.3394
HLTH	Healthcare	90.2027	68	94.7401
INSUR	Insurance	115.5544	101	95.3857
MACH	Machinery	69.6096	49.5	75.9413
LABEQ	Measuring and Control equip	77.1467	56	93.1897
MEDEQ	Medical equipment	81.9435	58	109.4875
OTHER	Miscellaneous	109.9677	65	117.1338
MINES	Non-metallic mining	94.1551	55	166.1751
PERSV	Personal services	72.7709	48	92.2490
ENRGY(OIL)	Petroleum and natural gas	73.7591	48	97.0761
GOLD	Precious metals	129.6000	69	261.1269
BOOKS	Printing and Publishing	87.8070	52	150.5346
RLEST	Real Estate	35.8864	68	108.1666
TOYS	Recreational Products	72.6749	55	71.5768
MEALS	Restaurants	74.7088	36	149.8547
RTAIL	Retail	82.4253	56	101.1412

RUBBR	Rubber and Plastic products	64.0058	43	95.6445
SHIPS	Shipbuilding	99.3966	56	117.1265
BOXES	Shipping container	77.6927	57	124.3041
STEEL	Steel work	86.0153	58	92.9798
TELCM	Telecommunication	146.1707	119	138.5454
TXTLS	Textiles	83.1123	63	83.9127
SMOKE	Tobacco	108.4500	84.5	91.9305
FIN	Trading	83.4745	49	116.6918
TRANS	Transportation	89.4100	56	112.5560
UTIL	Utilities	136.0734	81	161.7898
WHLSL	Wholesale	69.5934	48	82.5209

Table 2 Descriptive Statistics

This table reports the descriptive statistics for the sample 1980-2017. Numdeals and NumTdeals represent the number of completed transactions and the number of completed plus withdrawn deals, respectively. Deal value is the US dollar value of completed M&A transactions ($ billions). UniqueFinAdvisor is the number of unique financial advisors participating in M&A deals. This variable is computed as the sum of financial advisor companies participating in M&A deals without duplicate company names. NumFinAdvisor is the number of times that financial advisors participate in industry M&A activity. MarketFinAdvisor is the total financial advisors in the economy computed as the sum of UniqueFinAdvisor among all industries (removing duplicate companies). Sales shock, Cash flow shock and Employment shock represent the measures of broad industry shocks separately. All three measures are calculated over a 5-year rolling period, starting in 1975. Sales growth, Cash flow growth, and Employee growth are measured over the 5-year period before each sample year. Others are control variables as described in Appendix Table 1. The number of observations represents the number of industry-years without missing data.

Variable	Obs	Mean	Std.Dev.	Min	Max
Numdeals	1824	28.53235	55.86510	0	575
NumTdeals	1824	31.04825	59.64202	0	620
Deal value	1824	18.46799	45.02636	0	691.7379
UniqueFinAdvisor	1824	16.52138	17.82574	0	150
NumFinAdvisor	1824	33.94353	55.50788	0	556
MarketFinAdvisor	1824	174.2105	68.37276	30	283
Sales shock	1824	0.342715	0.315865	0.000294	2.803605
Cash flow shock	1246	1.327545	4.394949	0.000808	93.07722
Employment shock	1824	0.258717	0.568062	0.000040	8.292441
Sales growth	1824	0.355644	0.370089	-1.008467	2.828052
Cash flow growth	1247	0.961328	4.509154	-14.30439	93.14874
Employment growth	1824	0.141078	0.616603	-1.305611	8.317711
Deregulation	1824	0.154605	0.361627	0	1
RD	1824	0.584528	5.116178	0	123.1701
Induscap	1783	10.77337	2.045345	-4.201351	15.45218
return	1824	0.464133	0.421868	-1.468284	2.520890
MB	1824	1.854727	0.884875	0.286519	13.79310
SD	1824	0.066127	0.025899	0.020001	0.212278
DE	1824	1.468772	1.836263	-2.941333	16.63225

Table 3 Matrix of correlations

The table reports a correlation matrix for the sample period 1980-2017. The observations used in the calculation of correlation are on an industry-year basis without missing values.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1) Numdeals	1.000																	
(2) NumTdeals	0.999	1.000																
(3) Deal value	0.841	0.846	1.000															
(4) UniqueFinAdvisor	0.877	0.879	0.800	1.000														
(5) NumFinAdvisor	0.913	0.912	0.856	0.952	1.000													
(6) Sales shock	0.064	0.069	0.033	-0.021	0.024	1.000												
(7) Cash flow shock	0.182	0.191	0.128	0.108	0.124	0.102	1.000											
(8) Employment shock	-0.046	-0.044	-0.062	-0.127	-0.083	0.464	0.011	1.000										
(9) Sales growth	0.103	0.109	0.062	0.054	0.074	0.792	0.105	0.350	1.000									
(10) Cash flow growth	0.051	0.049	0.030	-0.006	0.028	0.053	0.817	0.003	0.067	1.000								
(11) Employment growth	-0.001	-0.000	-0.019	-0.040	-0.018	0.437	0.041	0.682	0.499	0.038	1.000							
(12) deregulation	0.128	0.130	0.243	0.235	0.228	-0.020	-0.050	-0.077	0.021	-0.008	-0.019	1.000						
(13) RD	0.038	0.039	0.109	0.097	0.092	-0.023	-0.027	-0.044	-0.006	-0.013	-0.016	0.183	1.000					
(14) induscap	0.415	0.413	0.446	0.563	0.520	-0.153	-0.051	-0.219	-0.008	-0.016	-0.067	0.369	0.156	1.000				
(15) return	0.091	0.091	0.093	0.090	0.102	0.088	-0.018	0.017	0.159	-0.022	0.012	-0.000	0.020	0.117	1.000			
(16) MB	0.024	0.021	0.089	0.025	0.061	-0.006	-0.065	-0.001	0.030	-0.015	-0.000	-0.120	0.228	0.186	0.382	1.000		
(17) SD	-0.122	-0.126	-0.128	-0.153	-0.114	0.095	-0.053	0.044	-0.017	-0.024	0.014	-0.111	0.047	-0.108	0.033	-0.006	1.000	
(18) DE	0.247	0.259	0.188	0.285	0.284	0.066	0.199	0.058	0.072	0.060	0.048	0.308	-0.079	0.135	0.008	-0.153	-0.201	1.000

Table 4 OLS regressions of unique financial advisors in M&A waves following broad industry shocks

The table reports OLS regressions of the unique financial advisors in M&A waves on measures of broad industry shocks. Three different measures of broad industry shock and growth (sales, cash flow and employment) are used. All explanatory and control variables are measured at year t-1, except for UniqueFinAdvisor. UniqueFinAdvisor is the number of unique financial advisors, which is computed as the sum of financial advisors participating M&A deals in a year minus the multiple times for each financial advisor in different M&A deals. Each regression uses 48 industries, each over 38 years (1980-2017). ***, **, and * represent statistical significance at 1%, 5% and 10%, respectively, using a two-tail test. The numbers in parentheses are p-values.

	Sales shock			Cash Flow shock			Employment shock		
	Numdeals	NumTdeals	Deal value	Numdeals	NumTdeals	Deal value	Numdeals	NumTdeals	Deal value
UniqueFinAdvisor	2.984***	3.187***	2.097***	3.072***	3.221***	2.189***	2.994***	3.198***	2.108***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sales shock	13.043***	12.755***	11.914***						
	(0.000)	(0.000)	(0.000)						
Sales growth	-3.980	-2.114	-7.926***						
	(0.118)	(0.426)	(0.000)						
Cash flow shock				1.176**	1.660**	0.305			
				(0.049)	(0.013)	(0.536)			
Cash flow growth				-0.038	-0.396	0.633			
				(0.948)	(0.550)	(0.273)			
Employment shock							7.739***	7.222***	10.509***
							(0.000)	(0.000)	(0.000)
Employment growth							-4.582***	-3.922**	-8.517***
							(0.003)	(0.015)	(0.000)
Induscap	-2.980***	-3.535***	-0.594	-3.619***	-3.837***	-0.340	-3.045***	-3.650***	-0.445
	(0.000)	(0.000)	(0.363)	(0.000)	(0.000)	(0.650)	(0.000)	(0.000)	(0.457)
Return	2.666*	3.331**	2.938**	0.902	1.433	0.234	3.185**	4.031***	3.022**
	(0.056)	(0.025)	(0.036)	(0.661)	(0.503)	(0.910)	(0.020)	(0.005)	(0.030)
MB	-0.329	-0.567	2.513***	0.907	1.038	3.811***	-0.304	-0.526	2.541***

	(0.651)	(0.472)	(0.002)	(0.303)	(0.247)	(0.001)	(0.663)	(0.484)	(0.002)
SD	8.980	-5.598	-36.174	17.572	10.382	-39.876	13.073	-1.415	-34.466
	(0.697)	(0.816)	(0.168)	(0.512)	(0.707)	(0.201)	(0.571)	(0.953)	(0.193)
DE	0.024	0.719	-1.344**	0.049	0.417	-0.910	0.184	0.916	-1.288**
	(0.968)	(0.278)	(0.034)	(0.961)	(0.705)	(0.432)	(0.761)	(0.164)	(0.041)
Constant	6.183	10.749**	-13.177**	10.207	10.938	-19.518***	7.602*	13.143***	-15.512***
	(0.183)	(0.037)	(0.014)	(0.173)	(0.163)	(0.003)	(0.092)	(0.009)	(0.001)
N	1736	1736	1736	1174	1174	1174	1736	1736	1736
R^2	0.783	0.788	0.639	0.784	0.789	0.652	0.782	0.786	0.640
adj. R^2	0.782	0.787	0.637	0.783	0.787	0.650	0.781	0.785	0.639
F	115.053	116.507	74.748	82.195	82.793	70.585	122.443	123.654	77.475

Table 5 Major Economic Deregulatory Initiatives, 1980-2017

This table lists the major deregulatory initiatives during the sample period. This table is adapted from Viscusi, Harrington Jr, and Vernon (2005), *Economic of Regulation and Antitrust*, Tables 10.3 and 10.4 on page 368 and 370 respectively, which list deregulation events up to 2002. Information about deregulation initiatives from 2002 to 2017 is sourced from the US annual *Economic Report of the President* (https://fraser.stlouisfed.org/title/45)

Year	Initiatives	Industry affected
1980	Motor Carrier Reform Act	Transportation
	Household Goods Transportation Act	Transportation
	Staggers Rail Act	Transportation
	Depository Institutions Deregulation and Monetary Control Act	Banking
	International Air Transportation Competition Act	Transportation
	Deregulation of cable television (FCC)	Telecommunication
	Deregulation of customer premises equipment and enhanced services (FCC)	Telecommunication
1981	Decontrol of crude oil and refined petroleum products (executive order)	Petroleum and Natural Gas
	Deregulation of radio (FCC)	Telecommunication
1982	Bus Regulatory Reform Act	Transportation
	Garn–St. Germain Depository Institutions Act	Banking
	AT&T settlement	Telecommunication
1984	Space commercialization	Telecommunication
	Cable Television Deregulation Act	Telecommunication
	Shipping Act	Transportation
1986	Trading of airport landing rights	Transportation
1987	Sale of Conrail	Transportation
	Elimination of fairness doctrine (FCC)	Telecommunication
1988	Proposed rules on natural gas and electricity (FERC)	Utilities
	Proposed rules on price caps (FCC)	Telecommunication
1989	Natural Gas Wellhead Decontrol Act of 1989	Petroleum and Natural Gas
1991	Federal Deposit Insurance Corporation Improvement Act	Insurance
1992	Cable Television Consumer Protection and Competition Act	Entertainment
	Energy Policy	Petroleum and Natural Gas
	FERC Order 636	Utilities
1993	Elimination of state regulation of cellular telephone rates	Telecommunication
	Negotiated Rates Act	Transportation
1994	Trucking Industry and Regulatory Reform Act	Transportation
	Riegle-Neal interstate Banking and Branching Efficiency Act	Banking
1995	ICC termination Act	Transportation
1996	Telecommunication Act	Telecommunication
	FERC Order 888	Utilities

1999	FERC Order 2000	Utilities
	Gramm-Leach-Bliley Act	Banking
2003	Medicare Prescription Drug, Improvement, and Modernization Act	Drugs
	Energy policy in Electricity Transmission Grid	Utilities
2004	Airline Computer Reservation Systems Deregulation	Transportation
2005	Magnuson-Stevens Fishery Conservation and Management Act	Agriculture
2008	Deregulation of Broadband service providers (FCC)	Telecommunication
	Emergency Economic Stabilization Act	Insurance
2009	Health Information Technology for Economic and Clinical Health Act	Healthcare

Table 6 OLS regressions of unique financial advisors in M&A waves following specific industry shocks

The table reports OLS regressions of the unique financial advisors in M&A waves on measures of specific industry shocks. UniqueFinAdvisor is the number of unique financial advisors computed as the sum of financial advisors participating M&A deals in a year minus the multiple times for each financial advisor in different M&A deals. Two different measures of shock (deregulation and technology change) are used. Deregulation is a dummy variable for 10 industries experiencing major federal deregulation: agriculture, banking, drugs, entertainment, healthcare, insurance, petroleum and natural gas, telecommunication, transportation and utility. Each industry covers all of the sample period (1980-2017). Technology change is measured by industry average research and development expense/sales ratio at year t-1. The regressions on technology change use 48 industries, each over 38 years (1980-2017). ***, **, and * represent statistical significance at 1%, 5% and 10%, respectively, using a two-tail test. The numbers in parentheses are p-values.

	Deregulation			Technology		
	Numdeals	NumTdeals	Deal value	Numdeals	NumTdeals	Deal value
UniqueFinAdvisor	1.950***	2.039***	2.090***	2.998***	3.201***	2.087***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Deregulation	6.140***	7.102***	11.722***			
	(0.000)	(0.000)	(0.006)			
RD				-0.467***	-0.464***	0.516**
				(0.000)	(0.001)	(0.025)
Induscap	0.501	-0.319	3.470*	-3.279***	-3.869***	-0.911
	(0.568)	(0.739)	(0.092)	(0.000)	(0.000)	(0.158)
Return	5.939**	5.167*	5.307	2.654**	3.517**	3.092**
	(0.024)	(0.059)	(0.206)	(0.049)	(0.014)	(0.021)
MB	-1.355	-0.844	6.082	0.395	0.182	1.945**
	(0.329)	(0.568)	(0.110)	(0.548)	(0.797)	(0.013)
SD	46.073	39.188	-62.177	23.854	9.060	-30.335
	(0.307)	(0.388)	(0.405)	(0.295)	(0.703)	(0.245)
DE	0.010	0.351	-2.290***	0.198	0.933	-1.170*
	(0.972)	(0.314)	(0.000)	(0.744)	(0.156)	(0.067)
Constant	-19.548**	-9.468	-69.788***	9.916**	15.237***	-8.329
	(0.037)	(0.344)	(0.000)	(0.028)	(0.002)	(0.102)

N	342	342	342	1736	1736	1736
R^2	0.778	0.761	0.500	0.782	0.786	0.640
adj. R^2	0.774	0.756	0.490	0.781	0.786	0.639
F	141.309	122.456	32.812	116.203	115.845	86.945

Table 7 IV-2SLS regression with broad industry shocks

This table presents IV-2SLS regressions of the unique financial advisors in M&A waves with three types of broad industry shocks (sales shock, cash flow shock and employment shocks). The first stage regressions are in columns 1, 5, and 9. The instrumental variable used in the first stage regression is MarketFinAdvisor which represents the yearly total number of financial advisors in the market. MarketFinAdvisor is calculated as the sum of UniqueFinAdvisor in all industries without replicating company name in each sample period (1980-2017). Except for instrumented UniqueFinAdvisor and MarketFinAdvisor, other explanatory and control variables are measured at year t-1. ***, **, and * represent statistical significance at 1%, 5% and 10%, respectively, using a two-tail test. The numbers in parentheses are p-values.

	Sales shock				Cash flow shock				Employment shock			
	First-stage	Second-stage			First-stage	Second-stage			First-stage	Second-stage		
	UniqueFinAdvisor	Numdeals	NumTdeals	Deal value	UniqueFinAdvisor	Numdeals	NumTdeals	Deal value	UniqueFinAdvisor	Numdeals	NumTdeals	Deal value
UniqueFinAdvisor		2.552***	2.326***	2.154***		4.176***	4.129***	4.192***		2.414***	2.129***	2.176***
(Instrumented)		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
MarketFinAdvisor	0.037***				0.050***				0.036***			
(Instrumental)	(0.000)				(0.005)				(0.000)			
Sales shock	-0.190	13.531***	13.728***	11.849***								
	(0.917)	(0.000)	(0.000)	(0.000)								
Sales growth	1.750	-4.104	-2.363	-7.909***								
	(0.214)	(0.115)	(0.406)	(0.000)								
Cash flow shock					1.477***	-0.382	0.379	-2.521*				
					(0.000)	(0.761)	(0.755)	(0.093)				
Cash flow growth					-1.024***	1.112	0.549	2.720**				
					(0.001)	(0.280)	(0.593)	(0.029)				
Employment shock									-3.199***	6.058***	4.128**	10.708***
									(0.003)	(0.000)	(0.050)	(0.000)
Employment growth									2.359**	-3.290**	-1.544	-8.670***
									(0.015)	(0.031)	(0.406)	(0.000)
Induscap	4.352***	-0.904	0.610	-0.870	5.568***	-9.931**	-9.026**	-11.790**	4.203***	-0.339	1.332	-0.766
	(0.000)	(0.566)	(0.711)	(0.473)	(0.000)	(0.034)	(0.048)	(0.028)	(0.000)	(0.823)	(0.408)	(0.522)
Return	1.774**	2.812**	3.622**	2.919**	1.987*	-1.194	-0.290	-3.569	1.814**	3.354**	4.343***	3.002**
	(0.030)	(0.037)	(0.014)	(0.036)	(0.054)	(0.654)	(0.912)	(0.287)	(0.026)	(0.011)	(0.004)	(0.029)
MB	-1.171***	-0.508	-0.925	2.536***	-1.321**	2.164	2.071	6.090***	-1.088**	-0.526	-0.935	2.567***
	(0.009)	(0.402)	(0.125)	(0.001)	(0.011)	(0.164)	(0.163)	(0.001)	(0.016)	(0.350)	(0.115)	(0.001)
SD	-40.936***	-8.401	-40.304	-33.863	-31.580**	53.493	39.913	25.290	-38.238***	-8.343	-40.841	-31.926
	(0.004)	(0.710)	(0.100)	(0.217)	(0.034)	(0.148)	(0.268)	(0.619)	(0.007)	(0.712)	(0.107)	(0.246)
DE	1.886***	0.820	2.307***	-1.450**	1.879***	-1.991	-1.260	-4.612**	1.940***	1.274	2.923***	-1.417**
	(0.000)	(0.292)	(0.008)	(0.020)	(0.000)	(0.237)	(0.459)	(0.022)	(0.000)	(0.108)	(0.001)	(0.028)

Constant	-35.560***	-8.585	-18.739	-11.213	-53.206***	58.882	50.955	68.785	-33.072***	-11.089	-21.267*	-13.295
	(0.000)	(0.479)	(0.137)	(0.244)	(0.000)	(0.122)	(0.169)	(0.115)	(0.000)	(0.333)	(0.079)	(0.144)
N	1736	1736	1736	1736	1174	1174	1174	1174	1736	1736	1736	1736
R^2	0.378	0.771	0.747	0.638	0.396	0.717	0.748	0.320	0.379	0.761	0.723	0.640
adj. R^2	0.375	0.770	0.745	0.637	0.392	0.715	0.746	0.315	0.376	0.760	0.722	0.638
F	63.369				40.276				80.761			

Table 8 IV-2SLS regression with specific industry shocks

This table presents IV-2SLS regressions of the unique financial advisors in M&A waves with two types of specific industry shocks (deregulation and technology change). The first stage regressions are in columns 1, 5, and 9. The instrumental variable used in the first stage regression is MarketFinAdvisor which represents the yearly total number of financial advisors in the market. MarketFinAdvisor is calculated as the sum of UniqueFinAdvisor in all industries without replicating company names in each sample period (1980-2017). Except for instrumented UniqueFinAdvisor and MarketFinAdvisor, other explanatory and control variables are measured at year t-1. ***, **, and * represent statistical significance at 1%, 5% and 10%, respectively, using a two-tail test. The numbers in parentheses are p-values.

	Deregulation				Technology change			
	First-stage	Second stage			First-stage	Second stage		
	UniqueFinAdvisor	Numdeals	NumTdeals	Deal value	UniqueFinAdvisor	Numdeals	NumTdeals	Deal value
UniqueFinAdvisor		1.555***	1.405***	1.561***		2.410***	2.132***	2.304***
(Instrumented)		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
MarketFinAdvisor	0.074***				0.037***			
(Instrumental)	(0.000)				(0.000)			
Deregulation	-0.121	6.802***	8.163***	12.607***				
	(0.912)	(0.000)	(0.000)	(0.005)				
RD					0.213***	-0.356***	-0.261**	0.475**
					(0.000)	(0.004)	(0.028)	(0.041)
Induscap	4.420***	3.054**	3.775***	6.882***	4.274***	-0.495	1.194	-1.939
	(0.000)	(0.016)	(0.010)	(0.002)	(0.000)	(0.744)	(0.460)	(0.126)
Return	2.700*	6.441**	5.973**	5.979	2.069**	2.950**	4.055***	2.983**
	(0.051)	(0.014)	(0.034)	(0.147)	(0.011)	(0.022)	(0.005)	(0.027)
MB	2.072***	-0.299	0.851	7.494*	-1.382***	0.024	-0.493	2.082***
	(0.001)	(0.852)	(0.639)	(0.087)	(0.002)	(0.965)	(0.411)	(0.007)
SD	9.946	43.611	35.239	-65.468	-42.552***	-0.101	-34.498	-21.489
	(0.633)	(0.345)	(0.467)	(0.391)	(0.002)	(0.996)	(0.168)	(0.439)
DE	1.714***	0.582	1.268***	-1.526**	1.945***	1.306*	2.949***	-1.579**
	(0.000)	(0.105)	(0.003)	(0.026)	(0.000)	(0.098)	(0.001)	(0.017)
Constant	-52.200***	-44.908***	-50.147***	-103.688***	-33.843***	-9.438	-19.955	-1.183

	(0.000)	(0.001)	(0.002)	(0.000)	(0.000)	(0.411)	(0.101)	(0.903)
N	342	342	342	342	1736	1736	1736	1736
R^2	0.663	0.767	0.734	0.491	0.380	0.760	0.723	0.636
adj. R^2	0.656	0.762	0.728	0.480	0.378	0.759	0.722	0.634
F	107.315				84.263			

Table 9 Pre and Post effects on financial advisors with broad industry shocks in OLS regressions

This table reports OLS regressions of the pre- and post-change effects of the Financial Modernization Act 1999 on industry M&A waves with broad industry shocks. The Financial Modernization Act was issued and implemented in 1999. The sample period (1980-2017) is divided into two: the pre-change period (1980-1998) and the post-change period (1999-2017). Columns (1), (3), (5) represent the regressions in the pre-change period, and columns (2), (4), (6) use the observations in the post-change period[4]. Panel A reports regressions for sales shocks. Panel B reports regressions for cash flow shocks. Panel C reports regressions for employment shocks. All explanatory and control variables are measured at year t-1, except for UniqueFinAdvisor. UniqueFinAdvisor is the number of unique financial advisors computed as the sum of financial advisors participating M&A deals in a year minus the multiple times for each financial advisor in different M&A deals. ***, **, and * represent statistical significance at 1%, 5% and 10%, respectively, using a two-tail test. The numbers in parentheses are p-values.

Panel A: sales shocks

	Pre	Post	Pre	Post	Pre	Post
	(1)	(2)	(3)	(4)	(5)	(6)
	Numdeals	Numdeals	NumTdeals	NumTdeals	Deal value	Deal value
UniqueFinAdvisor	2.391***	3.187***	2.784***	3.345***	1.246***	2.333***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sales shock	5.088	17.120***	5.057	18.233***	4.940*	12.960***
	(0.275)	(0.005)	(0.135)	(0.000)	(0.094)	(0.000)
Sales growth	-2.080	-3.366	-0.590	-2.491	-3.999*	-5.891**
	(0.618)	(0.512)	(0.819)	(0.515)	(0.076)	(0.029)
Induscap	-1.266***	-4.138***	-1.706***	-4.443***	-0.224	-0.889
	(0.001)	(0.000)	(0.003)	(0.000)	(0.465)	(0.410)
Return	1.563	1.688	2.092	1.860	2.516*	1.370
	(0.314)	(0.534)	(0.169)	(0.456)	(0.063)	(0.568)
MB	-0.873	1.165	-2.458**	1.331	0.944	4.568***
	(0.382)	(0.349)	(0.013)	(0.182)	(0.235)	(0.001)

[4] The difference of the effects of UniqueFinAdvisor between the pre and post-change groups is tested by the Wald test. In Panel A, the p-values of the Wald test are: 0.0019 (column 1 and 2); 0.0564 (column 3 and 4); 0.0001(column 5 and 6). In Panel B, the p-values of the Wald test are: 0.0776 (column 1 and 2); 0.1215 (column 3 and 4); 0.0004(column 5 and 6). In Panel C, the p-values of the Wald test are: 0.0015 (column 1 and 2); 0.0483 (column 3 and 4); 0.0001(column 5 and 6).

SD	0.100	1.264	16.685	-3.742	-32.296	-85.865**
	(0.998)	(0.973)	(0.614)	(0.908)	(0.188)	(0.018)
DE	0.949***	0.316	1.344**	0.637	0.100	-0.838
	(0.004)	(0.667)	(0.013)	(0.603)	(0.818)	(0.421)
Constant	-0.120	11.322	2.580	12.310	-6.188**	-14.650
	(0.979)	(0.191)	(0.604)	(0.257)	(0.036)	(0.148)
N	843	893	843	893	843	893
R^2	0.774	0.789	0.773	0.793	0.491	0.680
adj. R^2	0.772	0.787	0.771	0.791	0.486	0.677
F	356.407	413.829	61.765	79.357	12.644	55.562

Panel B: cash flow shocks

	Pre	Post	Pre	Post	Pre	Post
	(1)	(2)	(3)	(4)	(5)	(6)
	Numdeals	Numdeals	NumTdeals	NumTdeals	Deal value	Deal value
UniqueFinAdvisor	2.520***	3.000***	2.684***	3.123***	1.319***	2.163***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash flow shock	3.122	2.831***	3.892	3.535***	-0.346	2.388**
	(0.157)	(0.000)	(0.101)	(0.000)	(0.819)	(0.031)
Cash flow growth	-3.045	1.957***	-3.823	1.879***	0.144	2.081**
	(0.162)	(0.000)	(0.103)	(0.003)	(0.922)	(0.044)
Induscap	-1.691*	-3.437***	-1.696*	-3.502***	0.660	-0.206
	(0.077)	(0.000)	(0.092)	(0.000)	(0.382)	(0.743)
Return	-5.607	2.010	-4.853	2.238	-2.834	0.936
	(0.139)	(0.383)	(0.229)	(0.349)	(0.598)	(0.676)
MB	2.219	1.017	1.933	1.188	3.284	4.479***
	(0.324)	(0.275)	(0.407)	(0.209)	(0.208)	(0.001)

SD	-184.536*	13.065	-203.714*	10.642	-125.855	-80.774**
	(0.064)	(0.660)	(0.059)	(0.725)	(0.128)	(0.021)
DE	0.532	-0.462	0.799	-0.298	3.068	-1.684
	(0.697)	(0.531)	(0.613)	(0.710)	(0.224)	(0.134)
Constant	9.625	8.030	10.205	6.969	-16.701*	-18.930***
	(0.448)	(0.402)	(0.444)	(0.474)	(0.077)	(0.004)
N	281	893	281	893	281	893
R^2	0.775	0.808	0.784	0.815	0.519	0.707
adj. R^2	0.769	0.806	0.777	0.813	0.505	0.704
F	30.394	110.598	30.332	110.812	12.056	63.714

Panel C: Employment Shocks

	Pre	Post	Pre	Post	Pre	Post
	(1)	(2)	(3)	(4)	(5)	(6)
	Numdeals	Numdeals	NumTdeals	NumTdeals	Deal value	Deal value
UniqueFinAdvisor	2.392***	3.203***	2.783***	3.363***	1.249***	2.344***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Employment shock	3.848**	12.596***	2.784	13.310***	4.938***	13.657***
	(0.033)	(0.000)	(0.165)	(0.000)	(0.000)	(0.000)
Employment growth	-3.024*	-3.456	-1.718	-3.514	-4.423***	-8.278***
	(0.074)	(0.140)	(0.366)	(0.157)	(0.000)	(0.007)
Induscap	-1.288***	-4.018***	-1.774***	-4.324***	-0.186	-0.609
	(0.004)	(0.000)	(0.001)	(0.000)	(0.518)	(0.527)
Return	1.751	2.196	2.264	2.577	2.718**	1.505
	(0.197)	(0.359)	(0.146)	(0.302)	(0.048)	(0.524)
MB	-0.567	1.030	-2.126**	1.172	1.180	4.433***
	(0.453)	(0.273)	(0.034)	(0.227)	(0.146)	(0.001)

SD	-7.407	10.977	12.329	7.219	-43.169*	-79.516**
	(0.782)	(0.728)	(0.717)	(0.825)	(0.086)	(0.031)
DE	1.031**	0.336	1.463***	0.685	0.127	-0.845
	(0.015)	(0.771)	(0.005)	(0.586)	(0.762)	(0.424)
Constant	0.249	10.662	3.904	11.887	-7.055***	-18.213**
	(0.953)	(0.307)	(0.434)	(0.281)	(0.010)	(0.040)
N	843	893	843	893	843	893
R2	0.774	0.788	0.773	0.792	0.493	0.681
adj. R2	0.772	0.786	0.771	0.790	0.488	0.678
F	71.934	83.357	67.048	83.850	11.261	59.142

Table 10 OLS regressions of the interactions between financial advisors and broad industry shocks

This table presents OLS regression estimates of the unique financial advisors and the interaction between financial advisors and broad industry shocks. UniqueFinAdvisor is the number of unique financial advisors computed as the sum of financial advisors participating M&A deals in a year minus the multiple times for each financial advisor in different M&A deals. UniqueFinAdvisor *Sales shock, UniqueFinAdvisor *Cash flow shock, and UniqueFinAdvisor *Employment shock are the three interaction terms of UniqueFinAdvisor with three shock measures with a one-year lag (sales shock, cash flow shock and employment shock). Each regression uses 48 industries, each over 38 years (1980-2017). All shock and control variables are measured in year t-1. ***, **, and * represent statistical significance at 1%, 5% and 10%, respectively, using a two-tail test. The numbers in parentheses are p-values.

	Sales shock			Cash flow shock			Employment shock		
	Numdeals	NumTdeals	Deal value	Numdeals	NumTdeals	Deal value	Numdeals	NumTdeals	Deal value
UniqueFinAdvisor	2.815***	2.967***	2.029***	2.908***	3.021***	2.110***	2.875***	3.053***	2.122***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
UniqueFinAdvisor*Sales shock	0.582**	0.757***	0.232						
	(0.038)	(0.009)	(0.467)						
Sales shock	7.067*	4.981	9.535***						
	(0.062)	(0.203)	(0.005)						
Sales growth	-4.565*	-2.875	-8.159***						
	(0.068)	(0.270)	(0.000)						
UniqueFinAdvisor*Cash flow shock				0.605**	0.737***	0.293			
				(0.019)	(0.006)	(0.315)			
Cash flow shock				0.713	1.096*	0.082			
				(0.241)	(0.098)	(0.881)			
Cash flow growth				0.376	0.108	0.833			
				(0.532)	(0.869)	(0.132)			
UniqueFinAdvisor*Employment shock							0.734***	0.890***	-0.088
							(0.008)	(0.003)	(0.745)
Employment shock							4.543**	3.347	10.890***
							(0.036)	(0.149)	(0.000)
Employment growth							-4.727***	-4.097**	-8.499***
							(0.002)	(0.013)	(0.000)
Induscap	-3.074***	-3.658***	-0.631	-3.617***	-3.834***	-0.339	-2.973***	-3.563***	-0.453
	(0.000)	(0.000)	(0.324)	(0.000)	(0.000)	(0.653)	(0.000)	(0.000)	(0.454)
Return	2.719**	3.400**	2.959**	0.266	0.658	-0.074	3.090**	3.917***	3.033**
	(0.048)	(0.019)	(0.034)	(0.895)	(0.754)	(0.972)	(0.021)	(0.006)	(0.030)
MB	-0.512	-0.806	2.440***	0.637	0.710	3.680***	-0.389	-0.629	2.551***
	(0.482)	(0.310)	(0.002)	(0.478)	(0.439)	(0.001)	(0.583)	(0.412)	(0.002)
SD	14.896	2.098	-33.820	19.048	12.180	-39.162	18.115	4.699	-35.068

	(0.519)	(0.930)	(0.203)	(0.468)	(0.651)	(0.207)	(0.433)	(0.845)	(0.193)
DE	-0.322	0.268	-1.482**	-0.400	-0.130	-1.128	-0.270	0.365	-1.234**
	(0.582)	(0.672)	(0.016)	(0.688)	(0.905)	(0.317)	(0.656)	(0.578)	(0.048)
Constant	9.660**	15.272***	-11.793**	11.452	12.454	-18.917***	7.879*	13.478***	-15.545***
	(0.027)	(0.002)	(0.016)	(0.118)	(0.103)	(0.003)	(0.080)	(0.007)	(0.001)
N	1736	1736	1736	1174	1174	1174	1736	1736	1736
R^2	0.787	0.793	0.640	0.789	0.795	0.654	0.786	0.791	0.640
adj. R^2	0.786	0.792	0.638	0.787	0.794	0.651	0.785	0.790	0.638
F	109.091	110.643	67.119	83.432	85.090	62.996	114.975	116.897	71.559

Table 11 OLS regressions of the interactions between financial advisors and specific industry shocks

This table presents OLS regression estimates of the role of unique financial advisors and the interaction between financial advisors and specific industry shocks. UniqueFinAdvisor is the number of unique financial advisors computed as the sum of financial advisors participating M&A deals in a year minus the multiple times for each financial advisor in different M&A deals. UniqueFinAdvisor*Deregulation and UniqueFinAdvisor*RD are two interaction terms of UniqueFinAdvisor with deregulation and technology change, respectively. The control variables in deregulation are measured at year t, and the control variables in RD are measured at year t-1. ***, **, and * represents statistical significance at 1%, 5% and 10%, respectively, using a two-tail test. The numbers in parentheses are p-values.

	Deregulation			Technology Change		
	Numdeals	NumTdeals	Deal value	Numdeals	NumTdeals	Deal value
UniqueFinAdvisor	1.479***	1.617***	0.638**	2.995***	3.200***	2.084***
	(0.000)	(0.000)	(0.043)	(0.000)	(0.000)	(0.000)
Deregulation	-2.516	-0.638	-14.941***			
	(0.263)	(0.799)	(0.007)			
UniqueFinAdvisor*Deregulation	0.534***	0.478***	1.645***			
	(0.001)	(0.007)	(0.000)			
UniqueFinAdvisor*RD				0.023	0.013	0.018
				(0.270)	(0.528)	(0.649)
RD				-1.390	-1.008	-0.218
				(0.111)	(0.257)	(0.893)
Induscap	0.366	-0.440	3.053	-3.253***	-3.854***	-0.891
	(0.673)	(0.646)	(0.137)	(0.000)	(0.000)	(0.169)
Return	5.169**	4.479	2.937	2.655**	3.518**	3.093**
	(0.049)	(0.103)	(0.480)	(0.048)	(0.014)	(0.021)
MB	-0.847	-0.390	7.649**	0.485	0.235	2.017**
	(0.546)	(0.796)	(0.047)	(0.461)	(0.741)	(0.011)
SD	48.471	41.332	-54.790	25.201	9.854	-29.264
	(0.273)	(0.353)	(0.464)	(0.270)	(0.680)	(0.267)
DE	-0.055	0.292	-2.493***	0.194	0.931	-1.173*

	(0.857)	(0.420)	(0.000)	(0.748)	(0.157)	(0.067)
Constant	-11.362	-2.148	-44.574**	9.519**	15.003***	-8.645*
	(0.235)	(0.837)	(0.040)	(0.036)	(0.003)	(0.094)
N	342	342	342	1736	1736	1736
R^2	0.783	0.764	0.518	0.782	0.786	0.640
adj. R^2	0.777	0.758	0.507	0.781	0.785	0.639
F	162.686	142.408	34.265	102.249	101.603	76.253

Table 12 OLS regressions of the number of financial advisors with broad industry shocks

The table reports OLS regressions of the number of financial advisors in M&A waves on measures of broad industry shocks. Three different measures of shock and growth (sales, cash flow and employment) are used. The explanatory and control variables are measured at year t-1, except for NumFinAdvisor. NumFinAdvisor is the financial advisors participation including multiple M&A deals for each financial advisor. Each regression uses 48 industries, each over 38 years (1980-2017). ***, **, and * represent statistical significance at 1%, 5% and 10%, respectively, using a two-tail test. The numbers in parentheses are p-values.

	Sales shock			Cash flow shock			Employment shock		
	Numdeals	NumTdeals	Deal value	Numdeals	NumTdeals	Deal value	Numdeals	NumTdeals	Deal value
NumFinAdvisor	0.961***	1.021***	0.710***	0.961***	1.005***	0.717***	0.962***	1.023***	0.711***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sales shock	5.324**	4.573*	6.084***						
	(0.027)	(0.077)	(0.001)						
Sales growth	-0.804	1.254	-5.547***						
	(0.691)	(0.558)	(0.000)						
Cash flow shock				1.871***	2.400***	0.679*			
				(0.000)	(0.000)	(0.085)			
Cash flow growth				-1.112**	-1.528***	-0.060			
				(0.019)	(0.009)	(0.890)			
Employee shock							0.986	0.001	5.824***
							(0.373)	(0.999)	(0.000)
Employment growth							0.224	1.220	-5.199***
							(0.833)	(0.303)	(0.000)
Induscap	-1.568***	-1.954***	-0.074	-2.178***	-2.279***	0.146	-1.694***	-2.140***	0.062
	(0.000)	(0.000)	(0.891)	(0.000)	(0.000)	(0.815)	(0.000)	(0.000)	(0.900)
Return	0.612	1.155	1.383	2.130	2.734	0.954	0.853	1.558	1.268
	(0.602)	(0.361)	(0.251)	(0.244)	(0.151)	(0.603)	(0.456)	(0.207)	(0.284)
MB	-1.832***	-2.170***	1.447**	-2.365**	-2.393**	1.486	-1.821***	-2.144***	1.459**
	(0.004)	(0.002)	(0.036)	(0.015)	(0.015)	(0.109)	(0.004)	(0.002)	(0.038)
SD	-41.390**	-59.792***	-69.017***	-52.796**	-63.488***	-89.031***	-38.178*	-56.462***	-68.455***

	(0.039)	(0.005)	(0.005)	(0.023)	(0.009)	(0.002)	(0.053)	(0.007)	(0.006)
DE	-0.650	0.034	-2.043***	-1.358	-1.038	-2.151**	-0.565	0.150	-2.040***
	(0.225)	(0.957)	(0.001)	(0.121)	(0.290)	(0.045)	(0.292)	(0.809)	(0.001)
Constant	17.805***	22.517***	-0.854	27.627***	28.757***	-1.968	19.898***	25.691***	-3.032
	(0.000)	(0.000)	(0.872)	(0.000)	(0.000)	(0.755)	(0.000)	(0.000)	(0.521)
N	1736	1736	1736	1174	1174	1174	1736	1736	1736
R^2	0.846	0.844	0.737	0.843	0.844	0.740	0.846	0.843	0.738
adj. R^2	0.845	0.843	0.736	0.842	0.843	0.739	0.845	0.843	0.736
F	186.845	170.459	101.754	109.235	104.898	93.038	172.966	160.225	101.171

Table 13 OLS regressions of the number of financial advisors with specific industry shocks

The table reports OLS regressions of the number of financial advisors in M&A waves on measures of specific industry shocks. Two different measures of shock (deregulation and technology change) are used. Deregulation is a dummy variable for 10 industries experiencing major federal deregulation: agriculture, banking, drugs, entertainment, healthcare, insurance, petroleum and natural gas, telecommunication, transportation and utility. Each industry covers the whole sample period (1980-2017). Technology change is measured by industry average research and development expense/sales ratio at year t-1. The regressions on technology change use 48 industries, each over 38 years (1980-2017). The variable, NumFinAdvisor, another measure of financial advisors, is the yearly number of financial advisors allowing each to handle multiple M&A deals. The control variables in deregulation are measured at year t, and the control variables in RD are measured at year t-1. ***, **, and * represent statistical significance at 1%, 5% and 10%, respectively, using a two-tail test. The numbers in parentheses are p-values.

	Deregulation			Technology Change		
	Numdeals	NumTdeals	Deal value	Numdeals	NumTdeals	Deal value
NumFinAdvisor	0.636***	0.667***	0.765***	0.965***	1.025***	0.708***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Deregulation	5.067***	5.967***	10.004***			
	(0.000)	(0.000)	(0.005)			
RD				-0.417***	-0.408***	0.532**
				(0.000)	(0.000)	(0.014)
Induscap	0.294	-0.573	1.571	-1.672***	-2.083***	-0.263
	(0.565)	(0.341)	(0.488)	(0.000)	(0.000)	(0.612)
Return	2.450	1.501	0.786	0.535	1.274	1.481
	(0.129)	(0.396)	(0.848)	(0.635)	(0.295)	(0.196)
MB	-1.375*	-0.880	5.375*	-1.251**	-1.577***	0.809
	(0.087)	(0.315)	(0.065)	(0.024)	(0.009)	(0.214)
SD	16.115	7.811	-96.614	-33.661*	-52.716**	-67.951***
	(0.548)	(0.779)	(0.158)	(0.084)	(0.011)	(0.005)
DE	-0.521***	-0.214	-3.299***	-0.593	0.124	-1.961***
	(0.010)	(0.415)	(0.000)	(0.268)	(0.841)	(0.001)

Constant	-0.078	11.304*	-29.987	18.951***	24.291***	1.984
	(0.989)	(0.089)	(0.192)	(0.000)	(0.000)	(0.688)
N	342	342	342	1736	1736	1736
R^2	0.908	0.892	0.622	0.847	0.844	0.740
adj. R^2	0.906	0.890	0.614	0.846	0.844	0.739
F	274.503	204.782	36.852	168.606	156.421	116.548

Table 14 The occurrence of industry M&A waves measured by completed M&A deals and unique financial advisors

The table reports the Probit models which estimate the relationship between financial advisors and the probability of the occurrence of an industry M&A wave. The dependent variable, wavedummy1, is a dummy variable which equals 1 when the maximum number of completed M&A deals occurs in an industry in an adjacent two-year period within the periods of 1980-1989, 1990-1999, 2000-2009 and 2010-2017 respectively. All explanatory and control variables are measured at year t-1, except for UniqueFinAdvisor and the variables in column (4). UniqueFinAdvisor is the number of unique financial advisors, computed as the sum of financial advisors participating in M&A deals in a year minus the multiple times each financial advisor appears in different M&A deals. The explanatory and control variables in the column (4) are measured at year t. Each regression uses 48 industries, each over 38 years (1980-2017). ***, **, and * represent statistical significance at 1%, 5% and 10%, respectively, by using a two-tailed test. The numbers in parentheses are p-values.

	(1) wavedummy1	(2) wavedummy1	(3) wavedummy1	(4) wavedummy1	(5) wavedummy1
UniqueFinAdvisor	0.011***	0.010***	0.011***	0.035***	0.011***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sales shock	-0.184				
	(0.461)				
Sales growth	0.273				
	(0.222)				
Cashflow shock		-0.032			
		(0.116)			
Cashflow growth		-0.006			
		(0.749)			
Employment shock			-0.048		
			(0.737)		
Employment growth			0.108		
			(0.420)		
Deregulation				0.175	
				(0.442)	
RD					0.002

					(0.759)
Induscap	-0.044**	-0.040	-0.046**	-0.189**	-0.045**
	(0.030)	(0.132)	(0.024)	(0.021)	(0.024)
Return	0.000	0.197*	0.015	0.151	0.018
	(0.997)	(0.077)	(0.863)	(0.500)	(0.837)
MB	0.198***	0.151***	0.196***	0.132	0.197***
	(0.000)	(0.005)	(0.000)	(0.242)	(0.000)
SD	-7.218***	-7.773***	-7.302***	-8.252**	-7.337***
	(0.000)	(0.000)	(0.000)	(0.036)	(0.000)
DE	-0.051**	-0.049*	-0.050**	-0.071*	-0.049**
	(0.024)	(0.068)	(0.025)	(0.057)	(0.030)
Constant	-0.329	-0.231	-0.282	0.774	-0.284
	(0.167)	(0.442)	(0.229)	(0.376)	(0.218)
N	1736	1174	1736	333	1736
pseudo R^2	0.047	0.051	0.046	0.086	0.045
chi2	70.041	56.536	71.694	26.462	69.366

Table 15 The occurrence of industry M&A waves measured by the proportion of completed M&A deals and unique financial advisors

The table reports the Probit models which estimate the relationship between financial advisors and the probability of the occurrence of an industry M&A wave. The dependent variable, wavedummy3, is a dummy variable which equals 1 when the maximum average proportion of completed M&A deals occurs in an adjacent two-year period in an industry within 1980-1989, 1990-1999, 2000-2009 and 2010-2017 respectively. The proportion of completed M&A deals is computed as the number of completed M&A deals divided by the number of firms across time in an industry. All explanatory and control variables are measured at year t-1, except for UniqueFinAdvisor and the variables in column (4). UniqueFinAdvisor is the number of unique financial advisors, computed as the sum of financial advisors participating in M&A deals in a year minus the multiple times each financial advisor appears in different M&A deals. The explanatory and control variables in the column (4) are measured at year t. Each regression uses 48 industries, each over 38 years (1980-2017). ***, **, and * represent statistical significance at 1%, 5% and 10%, respectively, by using a two-tailed test. The numbers in parentheses are p-values.

	(1) wavedummy3	(2) wavedummy3	(3) wavedummy3	(4) wavedummy3	(5) wavedummy3
UniqueFinAdvisor	0.014***	0.013***	0.014***	0.035***	0.014***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sales shock	0.444*				
	(0.053)				
Sales growth	-0.377*				
	(0.052)				
Cashflow shock		-0.044**			
		(0.043)			
Cashflow growth		0.000			
		(0.992)			
Employment shock			0.269*		
			(0.062)		
Employment growth			-0.167		
			(0.215)		
Deregulation				0.196	
				(0.399)	
RD					-0.002
					(0.783)

Induscap	-0.038*	-0.053*	-0.034	-0.173**	-0.044**
	(0.076)	(0.059)	(0.111)	(0.035)	(0.034)
Return	0.152	0.393***	0.145	0.371*	0.134
	(0.108)	(0.001)	(0.126)	(0.098)	(0.158)
MB	0.129***	0.055	0.126***	0.049	0.133***
	(0.002)	(0.238)	(0.003)	(0.675)	(0.002)
SD	-10.328***	-10.665***	-10.266***	-11.236***	-9.838***
	(0.000)	(0.000)	(0.000)	(0.007)	(0.000)
DE	-0.061**	-0.075***	-0.062**	-0.075*	-0.059**
	(0.013)	(0.007)	(0.014)	(0.069)	(0.018)
Constant	-0.245	0.105	-0.315	0.791	-0.190
	(0.316)	(0.736)	(0.192)	(0.375)	(0.418)
N	1736	1174	1736	333	1736
pseudo R^2	0.063	0.075	0.063	0.101	0.060
chi2	86.919	71.154	87.649	27.393	81.507

Table 16 The occurrence of industry M&A waves measured by the proportion of completed M&A transaction value and unique financial advisors

The table reports the Probit models which estimate the relationship between financial advisors and the probability of the occurrence of an industry M&A wave. The dependent variable, wavedummy5, is a dummy variable which equals 1 when the maximum M&A transaction volume occurs in an industry in an adjacent two-year period within 1980-1989, 1990-1999, 2000-2009 and 2010-2017 respectively. All explanatory and control variables are measured at year t-1, except for UniqueFinAdvisor and the variables in column (4). UniqueFinAdvisor is the number of unique financial advisors, computed as the sum of financial advisors participating in M&A deals in a year minus the multiple times each financial advisor appears in different M&A deals. The explanatory and control variables in column (4) are measured at year t. Each regression uses 48 industries, each over 38 years (1980-2017). ***, **, and * represent statistical significance at 1%, 5% and 10%, respectively, by using a two-tailed test. The numbers in parentheses are p-values.

	(1) wavedummy5	(2) wavedummy5	(3) wavedummy5	(4) wavedummy5	(5) wavedummy5
UniqueFinAdvisor	0.013***	0.011***	0.013***	0.031***	0.013***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sales shock	0.223				
	(0.299)				
Sales growth	-0.102				
	(0.586)				
Cashflow shock		-0.035*			
		(0.056)			
Cashflow growth		-0.003			
		(0.842)			
Employment shock			-0.128		
			(0.379)		
Employment growth			0.220		
			(0.103)		
Deregulation				0.100	
				(0.640)	
RD					0.002

					(0.758)
Induscap	-0.037*	-0.068***	-0.046**	-0.122	-0.043**
	(0.067)	(0.008)	(0.020)	(0.106)	(0.029)
Return	0.220**	0.465***	0.217**	0.451**	0.222**
	(0.011)	(0.000)	(0.012)	(0.029)	(0.010)
MB	0.241***	0.173***	0.238***	0.176*	0.241***
	(0.000)	(0.004)	(0.000)	(0.095)	(0.000)
SD	-9.109***	-9.289***	-8.843***	-13.703***	-8.907***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DE	-0.052**	-0.055**	-0.051**	-0.071**	-0.049**
	(0.015)	(0.038)	(0.014)	(0.024)	(0.020)
Constant	-0.165	0.395	-0.040	0.653	-0.081
	(0.468)	(0.178)	(0.857)	(0.425)	(0.714)
N	1736	1174	1736	333	1736
pseudo R^2	0.068	0.078	0.070	0.109	0.068
chi2	103.062	91.375	106.145	40.417	102.636

Appendix Table 1 Description of Variables

This table reports the description of all the variables used in this thesis. All variables are measured on year-industry basis, except MarketFinAdvisor. MarketFinAdvisor only measures on yearly basis.

Variable	Description
M&A waves Variables	
Numdeals	The number of M&A transactions completed
NumTdeals	The number of M&A transactions announced
Deal value	Transaction value in dollars ($billions)
Financial Advisors Variables	
UniqueFinAdvisor	The industry-year number of financial advisors participating in the M&A market without multiple appearing times
NumFinAdvisor	The industry-year number of financial advisors participating in the M&A market including multiple appearances
MarketFinAdvisor	The year number of financial advisors participating in the M&A market without multiple appearing times in all industries
Shock Variables	
Sales shock	One measurement of broad industry shock by industry sales
Sales growth	One measurement of broad industry shock by industry sales
Cash flow shock	One measurement of broad industry shock by industry cash flow
Cash flow growth	One measurement of broad industry shock by industry cash flow
Employee shock	One measurement of broad industry shock by industry employment
Employment growth	One measurement of broad industry shock by industry employment
Deregulation	Dummy variable if a deregulation takes place
RD	Industry average research and development expense over sales
Control Variables	
Induscap	log of industry capitalization
MB	Industry median market-to-book ratio
Return	The median return in the industry for the three years ending at the end of t-1
SD	Intra-industry standard deviation of 3 year return
DE	Industry median debt to equity ratio

Appendix Table 2 Fama-Macbeth OLS regressions of unique financial advisors in M&A waves with broad industry shocks

The table reports Fama-Macbeth regressions of the unique financial advisors in M&A waves on measures of broad industry shocks. Three different measures of broad industry shock and growth (sales, cash flow and employment) are used. All explanatory and control variables are measured at year t-1, except for UniqueFinAdvisor. UniqueFinAdvisor is the number of unique financial advisors, computed as the sum of financial advisors participating M&A deals in a year minus the multiple times for each financial advisor in different M&A deals. Each regression uses 48 industries, each over 38 years (1980-2017). ***, **, and * represent statistical significance at 1%, 5% and 10%, respectively, by using a two-tail test. The numbers in parentheses are p-values.

	Sales shock			Cash Flow shock			Employment shock		
	Numdeals	NumTdeals	Deal value	Numdeals	NumTdeals	Deal value	Numdeals	NumTdeals	Deal value
UniqueFinAdvisor	2.575***	2.909***	1.413***	2.628***	2.739***	1.576***	2.589***	2.924***	1.425***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sales shock	12.414*	14.955*	6.970						
	(0.079)	(0.054)	(0.129)						
Sales growth	0.961	-0.770	-0.666						
	(0.877)	(0.911)	(0.833)						
Cash flow shock				8.159***	9.069***	3.781*			
				(0.003)	(0.002)	(0.071)			
Cash flow growth				-3.039	-3.781	-2.586			
				(0.198)	(0.140)	(0.184)			
Employee shock							14.496***	15.141***	10.822***
							(0.005)	(0.004)	(0.001)
Employment growth							0.272	-0.533	-5.788***
							(0.935)	(0.876)	(0.001)
Induscap	-2.783***	-3.183***	0.542	-2.590***	-2.536***	1.221**	-2.608***	-3.015***	0.622
	(0.000)	(0.000)	(0.151)	(0.001)	(0.002)	(0.019)	(0.000)	(0.000)	(0.120)
Return	-2.862	-2.470	-3.969*	0.849	0.805	-3.170	-1.399	-0.721	-2.271
	(0.386)	(0.474)	(0.096)	(0.807)	(0.822)	(0.243)	(0.660)	(0.829)	(0.276)
MB	2.028**	1.633*	4.351***	1.932*	1.948*	5.119***	1.762**	1.334	4.343***

	(0.019)	(0.082)	(0.001)	(0.080)	(0.092)	(0.003)	(0.049)	(0.169)	(0.001)
SD	-5.394	5.505	-2.827	-0.306	-2.298	11.271	-19.320	-12.608	-16.278
	(0.893)	(0.899)	(0.925)	(0.995)	(0.965)	(0.754)	(0.652)	(0.783)	(0.573)
DE	0.350	0.644	0.646	-1.377*	-1.267	1.107	0.190	0.519	0.644
	(0.615)	(0.388)	(0.427)	(0.059)	(0.102)	(0.358)	(0.796)	(0.508)	(0.437)
Constant	5.594	6.515	-25.133***	4.219	3.135	-34.503***	4.465	5.723	-26.214***
	(0.281)	(0.228)	(0.000)	(0.655)	(0.746)	(0.000)	(0.447)	(0.342)	(0.000)
N	1736	1736	1736	1174	1174	1174	1736	1736	1736
R^2	0.864	0.848	0.762	0.884	0.886	0.802	0.864	0.847	0.762
F	92.802	119.703	17.463	154.804	157.731	30.794	102.118	135.209	16.855

Appendix Table 3 OLS regressions of unique financial advisors in the log form of M&A waves with broad industry shocks

The table reports OLS regressions of the unique financial advisors in M&A waves on measures of broad industry shocks. Three different measures of shock and growth (sales, cash flow and employment) are used. The explanatory and control variables are measured at year t-1, except for UniqueFinAdvisor. UniqueFinAdvisor is the number of unique financial advisors computed as the sum of financial advisors participating M&A deals in a year minus the multiple times for each financial advisor in different M&A deals. The three dependent variables are the log of value of Numdeals , NumTdeals and Deal value plus original number values. Each regression uses 48 industries, each over 38 years (1980-2017). ***, **, and * represents statistical significance at 1%, 5% and 10%, respectively, using a two-tail test. The numbers in parentheses are p-values.

	Sales shock			Cash Flow shock			Employment shock		
	logNumdeal+ Numdeals	logNumTdeals+ NumTdeals	logDealvalue +Deal value	logNumdeals+ Numdeals	logNumTdeals+ NumTdeals	logDealvalue +Deal value	logNumdeals+ Numdeals	logNumTdeals+ NumTdeals	logDealvalue +Deal value
UniqueFinAdvisor	3.079***	3.280***	2.184***	3.160***	3.307***	2.268***	3.092***	3.292***	2.195***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sales shock	12.569***	12.118***	11.715***						
	(0.000)	(0.000)	(0.000)						
Sales growth	-3.393	-1.298	-8.214***						
	(0.18	(0.620)	(0.000)						
Cash flow shock				1.118*	1.601**	0.245			
				(0.059)	(0.016)	(0.616)			
Cash flow growth				0.012	-0.347	0.666			
				(0.984)	(0.597)	(0.249)			
Employee shock							7.363***	6.708***	10.307***
							(0.000)	(0.000)	(0.000)
Employment growth							-4.087***	-3.285**	-8.433***
							(0.007)	(0.042)	(0.000)
Induscap	-2.972***	-3.546***	-0.398	-3.680***	-3.924***	-0.204	-3.057***	-3.694***	-0.244
	(0.000)	(0.000)	(0.552)	(0.000)	(0.000)	(0.788)	(0.000)	(0.000)	(0.689)
Return	3.263**	3.939**	3.109**	2.038	2.573	0.774	3.778***	4.662***	3.123**
	(0.028)	(0.012)	(0.041)	(0.348)	(0.252)	(0.728)	(0.009)	(0.002)	(0.037)
MB	-1.188	-1.513	2.629***	-0.071	0.037	3.887***	-1.153	-1.441	2.652***
	(0.168)	(0.103)	(0.005)	(0.947)	(0.972)	(0.004)	(0.161)	(0.102)	(0.006)
SD	-3.153	-19.430	-50.526*	6.004	-1.936	-53.231	0.118	-15.167	-49.223*
	(0.896)	(0.436)	(0.072)	(0.828)	(0.945)	(0.105)	(0.996)	(0.544)	(0.082)
DE	-0.124	0.565	-1.402**	-0.145	0.224	-0.988	0.032	0.764	-1.359**

	(0.839)	(0.395)	(0.028)	(0.886)	(0.839)	(0.400)	(0.957)	(0.247)	(0.034)
Constant	8.652*	13.861***	-14.817***	13.861*	15.137*	-20.373***	10.373**	16.642***	-17.258***
	(0.074)	(0.009)	(0.009)	(0.071)	(0.060)	(0.003)	(0.027)	(0.002)	(0.001)
N	1681	1691	1681	1151	1155	1151	1681	1691	1681
R2	0.792	0.796	0.656	0.792	0.796	0.665	0.791	0.795	0.657
adj. R2	0.791	0.795	0.654	0.790	0.795	0.663	0.790	0.794	0.656
F	124.933	125.646	83.604	87.669	88.100	76.889	133.401	133.617	86.850

Appendix Table 4 Fama-Macbeth OLS regressions of unique financial advisors in M&A waves with specific industry shocks

The table reports the Fama-Macbeth regressions of the unique financial advisors in M&A waves on measures of specific industry shocks. UniqueFinAdvisor is the number of unique financial advisors computed as the sum of financial advisors participating in M&A deals in a year minus the multiple times for each financial advisor in different M&A deals. Two different measures of shock (deregulation and technology change) are used. Deregulation is a dummy variable for 10 industries experiencing major federal deregulation: agriculture, banking, drugs, entertainment, healthcare, insurance, petroleum and natural gas, telecommunication, transportation and utility. Each industry covers all the sample period (1980-2017). Technology change is measured by industry average research and development expense/sales ratio at year t-1. The regressions on technology change use 48 industries, each over 38 years (1980-2017). ***, **, and * represent statistical significance at 1%, 5% and 10%, respectively, using a two-tail test. The numbers in parentheses are p-values.

	Deregulation			Technology Change		
	Numdeals	NumTdeals	Deal value	Numdeals	NumTdeals	Deal value
UniqueFinAdvisor	2.496***	2.616***	1.661**	2.584***	2.919***	1.413***
	(0.000)	(0.000)	(0.010)	(0.000)	(0.000)	(0.000)
Deregulation	15.219	15.537	7.162			
	(0.120)	(0.125)	(0.561)			
RD				-4.495***	-4.614**	-2.345
				(0.004)	(0.025)	(0.350)
Induscap	1.071	1.363	7.751*	-2.646***	-3.067***	0.194
	(0.700)	(0.686)	(0.084)	(0.000)	(0.000)	(0.636)
Return	-46.414	-43.897*	17.187	-0.400	0.317	-1.208
	(0.111)	(0.081)	(0.585)	(0.904)	(0.927)	(0.453)
MB	7.992	8.628	3.476	3.526***	3.013***	4.386***
	(0.345)	(0.288)	(0.725)	(0.001)	(0.006)	(0.007)
SD	-282.714	-359.208	-301.267	56.265	66.524	2.379
	(0.269)	(0.148)	(0.361)	(0.169)	(0.125)	(0.929)
DE	-3.876**	-4.071**	-5.215**	0.482	0.809	0.810
	(0.020)	(0.022)	(0.030)	(0.488)	(0.278)	(0.331)
Constant	-22.642	-23.952	-123.686***	-0.371	1.060	-21.050***
	(0.412)	(0.461)	(0.005)	(0.941)	(0.838)	(0.000)

N	342	342	342	1736	1736	1736
R^2	0.960	0.957	0.944	0.861	0.844	0.769
F	21.110	24.689	6.052	113.347	135.844	20.063

Appendix Table 5 OLS regressions of unique financial advisors in the log form of M&A waves with specific industry shocks

The table reports the OLS regressions of the role of financial advisors in M&A waves on measures of specific industry shocks. UniqueFinAdvisor is the number of unique financial advisors is computed as the sum of financial advisors participating M&A deals in a year minus the multiple times for each financial advisor in different M&A deals. Two different measures of shock (deregulation and technology change) are used. Deregulation is a dummy variable for 10 industries experiencing major federal deregulation: agriculture, banking, drugs, entertainment, healthcare, insurance, petroleum and natural gas, telecommunication, transportation and utility. Each industry covers all the sample period (1980-2017). Technology change is measured by industry average research and development expense /sales ratio at year t-1. The regressions on technology change use 48 industries, each over 38 years (1980-2017). The three dependent variables are the log of value of Numdeals , NumTdeals and Deal value plus original number values. ***, **, and * represent statistical significance at 1%, 5% and 10%, respectively, using a two-tail test. The numbers in parentheses are p-values.

	Deregulation			Technology Change		
	logNumdeal+Num deals	logNumTdeals+ NumTdeals	logDealvalue+ Deal value	logNumdeal+Num deals	logNumTdeals+ NumTdeals	logDealvalue+ Deal value
UniqueFinAdvisor	2.001***	2.085***	2.162***	3.094***	3.295***	2.176***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Deregulation	6.561***	7.333***	12.666***			
	(0.000)	(0.000)	(0.004)			
RD				-0.434***	-0.427***	0.536**
				(0.001)	(0.001)	(0.019)
Induscap	0.581	-0.266	3.924*	-3.287***	-3.905***	-0.713
	(0.519)	(0.786)	(0.062)	(0.000)	(0.000)	(0.277)
Return	5.828**	5.140*	4.502	3.347**	4.256***	3.404**
	(0.032)	(0.070)	(0.295)	(0.019)	(0.005)	(0.019)
MB	-1.295	-0.868	6.467*	-0.395	-0.686	1.852**
	(0.360)	(0.563)	(0.096)	(0.608)	(0.406)	(0.039)
SD	47.856	39.871	-60.949	11.078	-4.236	-45.040
	(0.295)	(0.385)	(0.420)	(0.641)	(0.864)	(0.106)
DE	0.005	0.347	-2.339***	0.068	0.805	-1.261*
	(0.986)	(0.332)	(0.000)	(0.911)	(0.222)	(0.051)
Constant	-18.917**	-7.893	-75.634***	12.420***	18.416***	-9.841*

	(0.048)	(0.439)	(0.000)	(0.008)	(0.000)	(0.065)
N	339	340	339	1681	1691	1681
R^2	0.780	0.762	0.513	0.791	0.795	0.658
adj. R^2	0.775	0.757	0.503	0.791	0.794	0.656
F	140.333	121.258	34.911	124.959	124.055	97.246

Appendix Table 6 Pre- and post-change effects on financial advisors with specific industry shocks in OLS regressions

This table reports OLS regressions of the pre- and post-change effects of the Financial Modernization Act of 1999 on industry M&A waves with specific industry shocks. The Financial Modernization Act was issued and implemented in 1999. The sample period (1980-2017) is divided in two: the pre-change period (1980-1998) and the post-change period (1999-2017). Columns (1), (3), (5) represent the regressions on the pre-change period, and columns (2), (4), (6) use the observations in the post-change period[5]. Panel A reports the regressions for deregulation. Panel B reports regressions for technology change. All explanatory and control variables are measured at year t-1, except for UniqueFinAdvisor. UniqueFinAdvisor is the number of unique financial advisors computed as the sum of financial advisors participating M&A deals in a year minus the multiple times for each financial advisor in different M&A deals. ***, **, and * represent statistical significance at 1%, 5% and 10%, respectively, using a two-tail test. The numbers in parentheses are p-values.

Panel A: Deregulation

	Pre	Post	Pre	Post	Pre	Post
	(1)	(2)	(3)	(4)	(5)	(6)
	Numdeals	Numdeals	NumTdeals	NumTdeals	Deal value	Deal value
UniqueFinAdvisor	1.917***	2.028***	2.009***	2.158***	1.901***	2.405***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Deregulation	7.439***	3.467	8.785***	3.616	9.308**	13.676
	(0.000)	(0.503	(0.000)	(0.503)	(0.018)	(0.295)
Induscap	-0.629	3.101	-0.505	2.682	-0.469	7.474*
	(0.407)	(0.144)	(0.564)	(0.227)	(0.810)	(0.075)
Return	1.687	7.929*	0.063	7.121	9.396	-4.200
	(0.432)	(0.094)	(0.979)	(0.139)	(0.114)	(0.533)
MB	1.387	-4.185*	1.116	-3.827	4.552	8.327
	(0.319)	(0.091)	(0.477)	(0.139)	(0.230)	(0.227)
SD	-93.536	68.420	-77.601	67.727	-230.584*	-154.098
	(0.100)	(0.218)	(0.207)	(0.228)	(0.078)	(0.108)
DE	0.309	-1.179	0.645*	-1.247	-1.617***	-5.004***

[5] The difference of the effects of UniqueFinAdvisor between the pre- and post-change groups is tested by the Wald Test. In Panel A, the p-values of the test are: 0.6374 (columns 1 and 2); 0.5713 (columns 3 and 4); 0.4556 (columns 5 and 6). In Panel B, the p-values of the Wald Test are: 0.0015 (columns 1 and 2); 0.0488 (columns 3 and 4); 0.0001(columns 5 and 6).

	(0.289)	(0.167)	(0.074)	(0.158)	(0.001)	(0.002)
Constant	-1.066	-48.997***	-0.290	-44.830**	-13.294	-120.241***
	(0.909	(0.008)	(0.978)	(0.020)	(0.530)	(0.000)
N	171	171	171	171	171	171
R^2	0.885	0.654	0.873	0.648	0.496	0.434
adj. R^2	0.881	0.639	0.868	0.633	0.474	0.410
F	98.021	47.790	77.991	46.654	5.402	18.996

Panel B: Technology Change

	Pre	Post	Pre	Post	Pre	Post
	(1)	(2)	(3)	(4)	(5)	(6)
	Numdeals	Numdeals	NumTdeals	NumTdeals	Deal value	Deal value
UniqueFinAdvisor	2.398***	3.211***	2.791***	3.371***	1.252***	2.328***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
RD	-1.718***	-0.476***	-1.935***	-0.472***	-1.061**	0.468**
	(0.000)	(0.000)	(0.000)	(0.001)	(0.011)	(0.045)
Induscap	-1.295***	-4.541***	-1.755***	-4.889***	-0.240	-1.481
	(0.005)	(0.000)	(0.002)	(0.000)	(0.412)	(0.161)
Return	1.432	2.222	1.943	2.672	2.429*	2.527
	(0.272)	(0.346)	(0.195)	(0.278)	(0.072)	(0.256)
MB	0.175	1.885**	-1.128	2.019**	1.422	3.738***
	(0.809)	(0.038)	(0.217)	(0.033)	(0.110)	(0.003)
SD	8.463	22.189	25.641	18.840	-25.945	-80.613**
	(0.741)	(0.477)	(0.428)	(0.560)	(0.283)	(0.028)
DE	0.997**	0.566	1.437***	0.945	0.094	-0.458
	(0.017)	(0.616)	(0.005)	(0.445)	(0.823)	(0.662)
Constant	-0.839	16.627	2.191	18.418*	-6.906**	-5.700

	(0.838)	(0.101)	(0.651)	(0.086)	(0.018)	(0.552)
N	843	893	843	893	843	893
R^2	0.776	0.788	0.775	0.791	0.492	0.681
adj. R^2	0.774	0.786	0.773	0.789	0.488	0.678
F	73.977	79.847	69.231	79.165	20.399	61.268

Appendix Table 7 The occurrence of industry M&A waves measured by announced M&A deals and unique financial advisors

The table reports the Probit models which estimate the relationship between financial advisors and the probability of the occurrence of an industry M&A wave. The dependent variable, wavedummy2, is a dummy variable which equals 1 when the maximum number of announced M&A deals occurs in an industry in an adjacent two-year period within 1980-1989, 1990-1999, 2000-2009 and 2010-2017 respectively. All explanatory and control variables are measured at year t-1, except for UniqueFinAdvisor and the variables in column (4). UniqueFinAdvisor is the number of unique financial advisors, computed as the sum of financial advisors participating in M&A deals in a year minus the multiple times each financial advisor appears in different M&A deals. The explanatory and control variables in column (4) are measured at year t. Each regression uses 48 industries, each over 38 years (1980-2017). ***, **, and * represent statistical significance at 1%, 5% and 10%, respectively, by using a two-tailed test. The numbers in parentheses are p-values.

	(1) wavedummy2	(2) wavedummy2	(3) wavedummy2	(4) wavedummy2	(5) wavedummy2
UniqueFinAdvisor	0.013***	0.012***	0.013***	0.035***	0.013***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sales shock	-0.074				
	(0.770)				
Sales growth	0.247				
	(0.276)				
Cashflow shock		-0.035*			
		(0.083)			
Cashflow growth		-0.008			
		(0.652)			
Employment shock			-0.106		
			(0.498)		
Employment growth			0.227		
			(0.120)		
Deregulation				0.220	
				(0.351)	
RD					0.003
					(0.577)

Induscap	-0.041**	-0.048*	-0.046**	-0.191**	-0.046**
	(0.044)	(0.070)	(0.021)	(0.020)	(0.022)
Return	-0.051	0.155	-0.036	0.043	-0.029
	(0.572)	(0.169)	(0.685)	(0.850)	(0.744)
MB	0.178***	0.107**	0.173***	0.161	0.177***
	(0.000)	(0.024)	(0.000)	(0.157)	(0.000)
SD	-7.808***	-9.096***	-7.791***	-9.419**	-7.854***
	(0.000)	(0.000)	(0.000)	(0.022)	(0.000)
DE	-0.054**	-0.069**	-0.053**	-0.055	-0.050**
	(0.022)	(0.013)	(0.024)	(0.115)	(0.034)
Constant	-0.348	0.027	-0.235	0.811	-0.241
	(0.144)	(0.928)	(0.317)	(0.369)	(0.298)
N	1736	1174	1736	333	1736
pseudo R^2	0.052	0.058	0.054	0.088	0.050
chi2	75.159	58.486	79.867	28.617	74.118

Appendix Table 8 The occurrence of industry M&A waves measured by the fraction of announced M&A deals and unique financial advisors

The table reports the Probit models which estimate the relationship between financial advisors and the probability of the occurrence of an industry M&A wave. The dependent variable, wavedummy4, is a dummy variable which equals 1 when the maximum fraction of M&A announcements occurs in an adjacent two-year period in an industry within 1980-1989, 1990-1999, 2000-2009 and 2010-2017 respectively. The fraction of M&A announcements is computed as the number of announced M&A bids divided by the number of firms in an industry. All explanatory and control variables are measured at year t-1, except for UniqueFinAdvisor and the variables in column (4). UniqueFinAdvisor is the number of unique financial advisors, computed as the sum of financial advisors participating in M&A deals in a year minus the multiple times each financial advisor appears in different M&A deals. The explanatory and control variables in column (4) are measured at year t. Each regression uses 48 industries, each over 38 years (1980-2017). ***, **, and * represent statistical significance at 1%, 5% and 10%, respectively, by using a two-tailed test. The numbers in parentheses are p-values.

	(1) wavedummy4	(2) wavedummy4	(3) wavedummy4	(4) wavedummy4	(5) wavedummy4
UniqueFinAdvisor	0.014***	0.015***	0.014***	0.030***	0.014***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sales shock	0.391*				
	(0.082)				
Sales growth	-0.357*				
	(0.062)				
Cashflow shock		-0.064***			
		(0.002)			
Cashflow growth		0.020			
		(0.288)			
Employment shock			0.232		
			(0.100)		
Employment growth			-0.160		
			(0.225)		
Deregulation				0.188	
				(0.417)	
RD					-0.002
					(0.807)

Induscap	-0.043**	-0.069**	-0.039*	-0.172**	-0.048**
	(0.041)	(0.016)	(0.061)	(0.035)	(0.020)
Return	0.177*	0.387***	0.168*	0.241	0.159*
	(0.061)	(0.002)	(0.077)	(0.316)	(0.093)
MB	0.127***	0.063	0.125***	0.088	0.130***
	(0.002)	(0.172)	(0.003)	(0.439)	(0.002)
SD	-9.684***	-10.524***	-9.612***	-12.599***	-9.264***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DE	-0.061**	-0.072***	-0.063**	-0.066*	-0.060**
	(0.014)	(0.009)	(0.014)	(0.097)	(0.017)
Constant	-0.224	0.223	-0.297	0.945	-0.190
	(0.355)	(0.481)	(0.214)	(0.292)	(0.412)
N	1736	1174	1736	333	1736
pseudo R^2	0.059	0.078	0.058	0.083	0.056
chi2	81.966	72.928	80.975	28.037	77.467