Fintech Acquisitions and Market Reactions: The Role of Information Asymmetry and Pandemic Shocks

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Abstract

The rapid rise of financial technology (fintech) has led traditional financial institutions to pursue fintech acquisitions as a strategic response to digital transformation. This paper examines how investor reactions to fintech acquisitions differ from those to non-fintech acquisitions, with a focus on the role of information asymmetry and how this effect evolves during the COVID-19 pandemic. Using a sample of 398 acquisition deals by Japanese traditional financial institutions, we find the announcement of fintech acquisitions trigger more negative reactions than non-fintech acquisitions. Casual mediation analysis confirms that increased information asymmetry partly explains this effect. The higher public acceptance of fintech during the COVID-19 period does not mitigate this negative response; instead, the negative effect becomes even more pronounced and fades in the post-pandemic period. PSM-DID method and alternative measures of market reactions is used to check the robustness. Furthermore, the cross-sectional analysis reveals that the negative market reactions is significantly amplified for non-bank acquirers and firms with greater financial leverage during the COVID-19 period.

Keywords: Information asymmetry; Fintech acquisitions; Market reactions

1. Introduction

In recent years, driven by the rise of financial technology (fintech) firms, the financial industry has undergone as significant transformation. According to Statista[1], by 2024 there are over 29000 active fintech firms operating globally. These firms offer innovative products and new concepts for customers that have not been offered by traditional financial institutions previously. Fintech firms are fast and innovative, which puts a lot of pressure on traditional financial institutions and forces them to speed up their digital transformation (Milian et al., 2019).

In response, many traditional financial instituions have accelerated the way to innovation. However, the performance of internal development cannot compare to the digital facilities created by fintech startups in terms of cost or user-friendliness (Akhtar & Nosheen, 2022). As a result,

[1] Data source: Statista. Number of fintechs woroldwide from 2008~2024, by region. https://www.statista.com/statistics/893954/number-fintech-startups-by-region/

acquiring fintech startups has become an increasingly popular strategy for both obtaining external technological expertise and mitigating competitive threats (Akhtar & Nosheen, 2022; Collevecchio et al., 2024; Kueschnig & Schertler, 2024). The outbreak of COVID-19 further intensified this trend by accelerating the demand for digital financial services and pushing institutions to pursue fintech acquisitions more aggressively.

However, these fintech acquisitions pose a challenge for market investors: information asymmetry—the difficulty in accessing the same level of information as managers about the transaction. Reliable information is especially important for market investors to assess the potential risks and benefits of a M&A transactions. M&A announcements often lead to a sudden increase in information asymmetry, which has negative impact on market reactions (Howe & Morillon, 2020). On one hand, management can gather the first-hand information and more details from due diligence process/ negotiation process than investors. On the other hand, management have more accurate material knowledge because they are involved in their firms' daily operations, and this personal experience help them evaluate about the potential synergies of the impending transaction better than the market investors (Hassan & Alhenawi, 2022). In response to such heightened information asymmetry, investors demand compensation for the information disadvantage. This is typically reflected in the discounting of the acquirer's stock price following the M&A announcement, as market investors adjust their valuation downward to reflect the uncertainty and information disadvantage they face (Malmendier & Tate, 2008; Song et al., 2021). Compare to conventional targets, the acquisitions of fintech firms cause a higher level of information asymmetry between the acquirer and market investors due to the intangible nature of their technologies, uncertain business models, and integration risks—such as whether a financial institution has the capability to successfully absorb and utilize a tech-oriented firm.

While a growing body of empirical research examines market reactions to fintech acquisitions, the findings remain mixed—ranging from significantly positive to negative or statistically insignificant effects (Carlini et al., 2022; Kueschnig & Schertler, 2024; Zheng & Mao, 2024). More recent work also highlights the role of macroeconomic conditions in shaping these reactions (Ochirova & Miriakov, 2025). A common feature of these studies is that they focus only on fintech acquisition deals, without comparing them to non-fintech acquisitions. Consequently, it remains unclear whether investor responses to fintech acquisitions are systematically different from other deals—and if so, whether this difference is stable over time or varies under external

shocks such as the COVID-19 pandemic.

Using a sample of 399 acquisitions deals by tranditional financial institutions from 2015 to 2024, this paper examine the role of the information asymmetry in shaping market investors reactions to fintech acquisitions. We find that the announcement of fintech acquisitions trigger more negative market reactions than non-fintech acquisitions. The causal mediation mechanism test confirms information asymmetry significantly contributes to this effect. Furthermore, we also test how the relationship evolved during the COVID-19 pandemic. We find investor reactions became more negative during the pandemic period and this effect does not persist in the post-pandemic period.

We further employ the Propensity Score Matching Difference-in-Differences (PSM-DID) approach to address potential selection bias. After matching the treatment and control groups and verifying the parallel trends assumption, the results remain robust. The findings also hold when alternative measures of market reaction are employed.

We also exploited two cross-section analyses to explore heterogeneity in investor reactions by acquirer's industry and the financial structure. Specifically, we show that the negative impact of fintech acquisition on market investors are more prominent for the acquirers with higher leverage. Moreover, during the COVID-19 pandemic, this negative effect is particularly significant for non-bank acquirers and those with higher leverage ratios.

The implication of our findings are as follows. First, this paper confirms that information asymmetry is a key mechanism shaping negative investor reactions to fintech acquisition announcements. While prior studies have reported mixed results of the market reactions of the fintech acquisition—ranging from negative to insignificant effects—these inconsistencies may stem from differences in sample periods and the omission of investor responses to information asymmetry. This gap is especially important for fintech, because COVID-19 brought more uncertainty and increased the use and value of fintech solutions. These changes may affect how information asymmetry matters in the market. By considering this dynamic, our study helps explain the mixed results in previous research.

Second, existing research on fintech M&A is predominantly based on Western markets with relatively transparent information environments. However, not all markets operate under such conditions. We select Japan as our research setting, where information frictions are more pronounced due to a less mature private equity market compared to the U.S. or U.K. This context

offers new insights into how information asymmetry operates in less mature or less transparent capital markets, offering insights that may inform studies in other emerging or less transparent markets.

Third, existing research has shown that public health events like SARS and COVID-19 affect financial markets in similar ways (Ru et al., 2021). Our findings may serve as a reference for future external shocks of a similar nature. Understanding how pandemics amplify investor sensitivity to information asymmetry helps regulators and firms prepare better communication and disclosure strategies during such crises.

2. Literature review

2.1 The impact of fintech acquisitions on financial institutions

Previous research has explored the impact of fintech acquisitions on financial institutions from multiple theoretical perspectives. According to the synergy theory , fintech acquisitions are expected to generate greater value for both the acquiring and target firms than they would achieve independently by lowering cost or revenue enhancement (Ismail, 2011). Empirical studies have shown that, in the long term, fintech acquisitions can enhance the financial performance of acquiring firms, improve innovation output, and support strategic transformation (Akhtar & Nosheen, 2022; Y. Wang, 2024; Zheng & Mao, 2024). Moreover, just like other types of M&A transactions, fintech acquisition also can create value by produce synergies in information (Zhang et al., 2024). Drawing on the signaling theory, a firm's first fintech acquisition is often interpreted by investors as a credible signal of commitment to a digital future, resulting in a stronger positive stock price reaction compared to subsequent fintech deals (Kueschnig & Schertler, 2024). However, other studies suggest that market reactions are not always positive. Due to difficulty of integrating different business model, marker investors shows a negative reaction to the full acquisition of fintech firms (Cappa et al., 2022). Furthermore, market responses are not uniform and can vary depending on macroeconomic conditions, such as GDP or inflation rate (Ochirova & Miriakov, 2025).

Despite these valuable insights, the role of information asymmetry in fintech acquisitions remains underexplored. Information asymmetry plays a critical role in shaping market reactions, especially in M&A settings, where investors must evaluate uncertain future synergies based on

incomplete information. How well investors can assess the post-acquisition value depends heavily on the quality and availability of information they can get. This challenge is even greater in fintech deals, where complex technology and business models further widen the information gap between acquirers and investors. Therefore, addressing this gap is crucial to gaining a more comprehensive understanding of the heterogeneous market responses to fintech-related M&A transactions.

2.2 Heightened information asymmetry in fintech acquisitions

Comparing with other acquisitions, the acquisitions of fintech firms exhibit higher information asymmetry. The higher level of information asymmetry is aroused from two aspect. First, fintech firms, like other companies in technology-related industries, rely heavily on R&D investment as a core driver of innovation and growth. However, R&D investment is a source of information because (1) R&D projects are often unique and firm-specific, limiting external comparability; (2) they lack observable market prices, making valuation highly subjective; and (3) accounting standards restrict transparent reporting of R&D productivity and future value (Aboody & Lev, 2000). These factors make it difficult for outside investors to assess the intrinsic value of fintech targets.

Second, there is considerable uncertainty in evaluating post-merger integration outcomes. Fintech firms often differ substantially from traditional financial institutions in terms of organizational structure, technology, business models, and corporate culture. These differences create integration challenges, increasing the risk of post-merger performance or synergies failing to materialize (Buono et al., 1985; Oh & Johnston, 2020) . As a result, investors face greater difficulty in evaluating the synergies or post-merge risk, which in turn heightens the degree of information asymmetry surrounding fintech-related M&A deals.

Therefore, we propose the following hypothesis:

H1: Fintech acquisitions by financial institutions elicit more negative market reactions than non-fintech acquisitions, owing to higher levels of information asymmetry.

2.3 COVID-19 and amplified information asymmetry

The negative impact of information asymmetry on market reactions will be amplified by the COIVD-19 pandemic. Existing studies shows that when environment uncertainty increases, market investors request higher compensation for risk they bear. For instance, Pastor and Veronesi (2013) develop a general equilibrium model of government policy choice and indicated that the

compensation for the risk of political uncertainty is larger in weaker economic conditions. Gortz and Yeromonahos (2022) employ a variety of different measures and proved that the overall risk premia rises sharply during recessions. One explanation for this phenomenon lies in fear sentiment. Events like infectious disease outbreaks can induce negative changes in investors' sentiment that strongly affects their investment decisions and, consequently, stock market prices (H. Liu et al., 2020). In such contexts, investors become more sensitive to incomplete or ambiguous information, thereby intensifying the negative market response to information asymmetry.

The COVID-19 pandemic has substantially heightened environmental uncertainty (S. Liu et al., 2023). The macroeconomic and business operating environment has changed dramatically, and much of the historical data is less informative and has lost its explanatory power, making it more difficult for investors to make accurate judgments based on available information. In such an environment, the market investors are expected to request more compensation for bearing risks associated with information asymmetry in acquisition deals. Since fintech firms are inherently more opaque as we discussed above, we expected M&A transactions involving fintech firms are likely to trigger stronger negative market reactions during the pandemic

Therefore, we propose the following hypothesis:

H2a: The negative market impact of information asymmetry in fintech acquisitions becomes more pronounced than non-fintech acquisitions during the COVID-19 pandemic period.

However, the pandemic has also created a unique opportunity for the fintech sector. On the demand side, restrictions on in-person activities and the need for social distancing have accelerated the adoption of digital and contactless financial services (Fu & Mishra, 2022). A significant increase in the rate of financial app downloads was observed following the outbreak of COVID-19, reflecting a widespread shift toward fintech solutions. On the supply side, financial institutions have responded by expanding their fintech offerings. These developments have reinforced the growth prospects of the fintech industry, potentially setting it apart from other industries that were more adversely affected during and after the pandemic.

As a result, despite heightened information asymmetry and risk perceptions during the pandemic, investors become more familiar with fintech firms' business models, user bases, and growth potential, their ability to process relevant information improves, thereby reducing the negative market reactions typically caused by information asymmetry.Therefore, we propose an alternative hypothesis:

H2b: The negative market impact of information asymmetry in fintech acquisitions becomes less pronounced than non-fintech acquisitions during the COVID-19 pandemic period.

3. Data collection and descriptive statistics

3.1 Data collection

M&A transactions are obtained from the SDC Platinum database based on the following selection criteria:

a. The sample period is restricted to 2015–2024. The year 2015 is often referred to as the "first year of FinTech" in Japan, as it marks the point when financial institutions and government agencies began implementing concrete initiatives related to FinTech.

b. Acquirers are limited to traditional financial institutions, including banks, brokerages, insurance companies, credit institutions, and other intermediaries such as miscellaneous intermediation, real estate credit providers, and offices of bank holding companies.

c. Financial M&A transactions that are primarily investment-driven—such as those involving venture capital (VC) or private equity (PE) firms—are excluded.

d. All acquirers are publicly listed firms at the time of the transaction.

e. To avoid bias from very small transactions, we restrict the sample to deals with a disclosed value greater than 150 million yen (approximately 1 million USD).

After excluding the observations with missing data of variables, our final sample has 398 observations.

3.2 Variable measurement

3.2.1 Independent Variable

The first dependent variable, fintech, is defined as a dummy variable that equals to one if the transaction is identified as a fintech acquisition. We define a fintech acquisition as a transaction in which the acquirer is a financial institution and the target firm operates in the technology industry.

We construct a categorical variable, COVID, coded as "before" for pre-pandemic period (2015.01-2019.12), "during" for pandemic period (2020.01-2023.04), and "post" for post-pandemic period (2023.05-2024.12), to capture the temporal impact of the crisis. This classification reflects the key stages of the pandemic's development and corresponding shifts in

public health policy. The first confirmed case of COVID-19 in Japan was reported on January 16, 2020, marking the onset of the pandemic's potential market impact. In May 2023, the World Health Organization (WHO) declared an end to the global public health emergency, and the Japanese government reclassified COVID-19 from Category II to Category V under the Infectious Disease Control Law, signaling the end of the pandemic period.

3.2.2 Dependent Variable

To measure the market reactions of the announcement of fintech acquisition by the financial institutions, we follow the event study method and measure the cumulated abnormal return (CAR) of [-1,3], [-1,5], given time 0 as the date of the announcement. CAR is the sum of abnormal return which calculated by the Fama-French three factor model and estimated from 270 days to 21days before the announcement, as detailed in the following equation:

$$AR_{i,T} = R_{i,T} - [\alpha + \beta_1 * (Rm_T - Rf_T) + \beta_2 * SMB_T + \beta_3 * HML_T] \quad (1)$$

$$CAR[t_1, t_2]_{i,t} = \sum_{T=t_1}^{T=t_2} AR_{i,T} \quad (2)$$

3.2.3 Control variables

We also include control variables to control the potential impact. First, we control for the transaction characteristics, including dv_log, as the natural logarithm of deal value; pct_acq, as the percentage of the acquisition; cash, a dummy variable that equals one if the payment is made by cash; cross_border, a dummy variable that equals one if the M&A transaction is a cross border deal; first_fintech, a dummy variable that equals one if the fintech acquisition is the acquirer's first fintech acquisition. Second, we control for the target characteristic by including t_public, a dummy variable that equals one if the target is a public firm.Third, we also control for acquirers' characteristic, as tobin_q, the ratio of acquirers' market value to book value; bm, as the ratio of book value to market value; bl, as the natural logarithm of the number of business line; assets, as the natural logarithm of total assets of acquirers. We also include topix, as the natural logarithm of topix index to control the impact of macro environment and ipo_deals, as the number of new IPO deals for each month. A detailed description of the study's variables is presented in Appendix 1

3.3 Descriptive statistics

The annual and industry distributions of samples is showed in Panel A and Panel B in Table 1. Panel A presents the distribution of the number of samples by year. Out of a total of 399 transactions, 33 deals are identified as fintech acquisitions, while the remaining 366 deals are non-

fintech acquisitions. We observe that the number of M&A transactions in our samples are growing gradually from 2015 to 2024. The number of fintech transactions remains relatively low throughout the sample period but shows a modest upward trend in recent years, peaking at 9 cases in 2023.

Panel B shows presents the distribution of the number of samples by industry. In terms of the number of M&A transactions, banks account for the largest share with 166 deals. This is followed by brokerage (94 deals) and insurance sector (80 deals). Fintech acquisitions are most concentrated in brokerage sector, which accounts for approximately 42% of all fintech-related transactions in the sample. This is followed by the banking sector (27%) and the insurance sector (15%), suggesting that brokerages are more active in acquiring fintech firms compared to other traditional financial institutions.

Insert Table 1 Here

In Table 2, we report the mean, standard deviation, and the median for our full sample of 399 transactions, as well as subsamples of 33 fintech acquisitions and 366 non-fintech acquisitions. Column 10 presents univariate comparisons for the characteristics of transactions of fintech and non-fintech transactions.

Insert Table 2 Here

Regarding the main dependent variable, CAR, both CAR measures (CAR[-1,3], and CAR[-1,5]) have positive means for the full sample, while the medians are smaller than the means, suggesting a right-skewed distribution with several large positive samples. The relatively large standard deviations further support the presence of high variability across observations. In coloumn 10, we compare the acquirer's CARs between fintech acquisitions and non-fintech acquisitions. We observe negative and statistically significant differences of CAR[-1,3], indicating that fintech acquisition announcements are associated with more negative market reactions—consistent with our hypothesis.

Regarding the main independent variable, COVID, approximately 41.4% of all deals occurred before the COVID-19 pandemic, 35.3% during the pandemic, and 23.3% after. The distribution is broadly similar across fintech and non-fintech acquisitions. A chi-square test of independence reveals no statistically significant association between COVID-19 periods and the likelihood of a transaction being a fintech acquisition (χ^2 = 1.82, p = 0.403). This suggests that the distribution of fintech and non-fintech acquisitions across the pre-pandemic, pandemic, and

post-pandemic periods does not differ in a statistically meaningful way.

Regarding the transaction characteristics, the average deal value (dv_log) of fintech acquisition, which is significantly lower than that of non-fintech acquisitions. Notably, 48% of fintech acquisitions in the sample represent the acquirer's first fintech transaction (first_fintech). While there are no statistically significant differences between fintech and non-fintech acquisitions in terms of ownership percentage acquired (pct_acq), payment method (cash), or cross-border status (cross_border).

Regarding the target characteristics, 62% of non-fintech acquisitions involve public targets (t_public), compared to 45% for fintech acquisitions. The 17% difference is statistically significant at the 10% level, suggesting that financial institutions are more likely to acquire public targets in non-fintech acquisitions.

Regarding acquirers' characteristics, the acquirers of non-fintech acquisitions have a significant higher book value to market value (bm) at the 1% level, implying that they are more likely to be value-oriented firms, potentially reflecting more conservative investment strategies. The acquirer of fintech acquisition tend to operate across more business lines (bl). For the rest variables, firm size (assets), market index (topix) and the new IPO deals in the acquisition month (ipo_deals) do not differ significantly between two groups.

4. Empirical results

4.1 The impact of the announcement of fintech acquisitions and market investors' reaction.

4.1.1 Non-parametric test

We start our analysis by investing whether the announcement of fintech acquisitions by financial institutions arouse a more negative market reactions than other types of acquisitions. For that purpose, we first conduct non-parametric tests to compare cumulative abnormal returns (CARs) between fintech and non-fintech deals. To further validate the findings and control for confounding factors, we conduct the regression models with industry- and year- fixed effects.

To conduct non-parametric tests, we calculate cumulative average abnormal returns (CAARs), we average (by dividing by the number of transactions N evaluated in the total) all CARs of a certain event window.

$$CAAR_{i,t} = \frac{1}{N} * \sum_{i,t} CAR_{i,t}$$

To test the CAAR's statistical significance, we employ KP test proposed by Kolari and Pynnönen (2010) which improves upon the traditional event study t-test by controlling the clustering effects of M&A deal waves. As a nonparametric alternative, we also use the generalized rank test (GRANK) by Kolari and Pynnönen (2011), which provides robustness to our analysis which enhances the robustness of our analysis by not requiring the assumption of normally distributed returns.

Table 3 presents the results. CAAR[-1,3] and CAAR[-1,5] of non-fintech acquisitions are significantly positive according to the KP test and GRANK test. While all CAARs of fintech acquisitions are negative but not statistically significant. This suggests that market reactions to fintech M&As are significantly weaker than those to non-fintech M&As, which consistent with the first hypothesis.

Insert Table 3 Here

4.1.2 Regression model

To further test for the differences in market reactions between fintech and non-fintech acquisitions, we employ the regression model and the regression design is as follows:

$$CAR_{i,t} = \alpha + \beta_1 fintech_i + \beta_2 Controls_{i,t} + \lambda_j + \varphi_j + \varepsilon_{i,t} \quad (3)$$

Where, i and t denote the financial institution and year, respectively. λ_j and φ_j represents the industry- and year- dummy variables, $\varepsilon_{i,t}$ is the error term. The dependent variable, includes CAR[-1,3], CAR[-1,5].The independent variable, , is a dummy variable of whether the acquisition deals is identified as a fintech acquisition. The control variable, is explained in Appendix 1.

Column 1 and column 3 in Table 4 presents the regression results. Column 1 shows that the announcement return of fintech acquisitions, measured by CAR[-1,3], is 3.477% lower than that of non-fintech acquisitions, and the result is statistically significant. Similarly, when extending the event window to 6 days (CAR[-1,5]), Columns 2 indicates that the announcement returns are 4.287% lower and significant at the 5% level. These results support our first hypothesis that fintech acquisitions are associated with more negative market reactions upon announcement.

Insert Table 4 Here

4.2 The impact of COVID-19 on the announcement of fintech acquisition

In this section, we explor the impact of COVID-19 on the announcement of fintech acquisition by the following regression model:

$$CAR_{i,t} = \alpha + \beta_1 fintech_i + \beta_2 COVID_{i,t} + \beta_3 fintech_i * COVID_{i,t} + \beta_4 Controls_{i,t} + \lambda_j + \varphi_j + \varepsilon_{i,t} \quad (4)$$

Where, the variable of interest is the interaction term between $fintech_i * COVID_{i,t}$. All the control variables, industry-, and year- dummy variables are the same as the regression in Eq(1).

Column 2 and column 4 in Table 4 represents the regression results. The coefficients of the interaction term between fintech and COVIDduring in all both columns are significantly negative, implying that the announcement of fintech acquisition are associated with a more negative market reactions during the COVID-19 pandemic. This result supports H2a, suggesting that although fintech firms received increased attention after the COVID-19 pandemic, market investors reacted more negatively to information asymmetry in an environment of heightened risk. The increased expectations for fintech firms do not offset investors' intensified aversion to information asymemtry, leading to a stronger negative response toward fintech-related deals during this period. However, the interaction term between fintech and COVIDpost is statistically insignificant, suggesting that the negative market reactions does not continue to worsen in the post-pandemic period, but rather reverts to a level comparable to that before the pandemic.

4.3 Mediation mechanism test

To test whether the higher level of information asymmetry of fintech acquisitions is a reason of a more negative reactions of market investors, we employ causal mediation mechanism test.

Previous studies suggests that hat higher information asymmetry reduces investor willingness to trade, thereby decreasing stock liquidity (Schoenfeld, 2017; F. Wang et al., 2022). Therefore, we employ the stock liquidity to measure the information asymmetry. Following Amihud (2002), we use the change in illiquidity (with a window of [-1,3] and [-1,5]) as the proxy of information asymmetry. *ILLIQ* is a commonly used measue of stock illiquidity, calculated as the daily ratio of the absolute stock return to its dollar trading volume, averaged over a specified period. We calculate the difference between of pre-announcement window of [-90, -30] and a post-announcement window of either [-1, 3] or [-1, 5], capturing the shift in stock liquidity around the acquisition announcement. A significant mediation effect would suggest that fintech

acquisitions lead to increased information asymmetry—reflected in lower liquidity—which in turn drives more negative market reactions.

Table 5 presents the mediation effect test of information asymmetry based on 1,000 bootstrap simulations. As shown in Panel A, for CAR[-1,3] (*ΔILLIQ[-1,3]*), the average causal mediation effect (ACME) is -0.299 (p = 0.046), indicating a marginally significant indirect effect through stock liquidity. The average direct effect (ADE) remains significantly negative at -3.179 (p = 0.006), and the total effect is -3.477 (p <0.001). Approximately 8.6% of the total effect is mediated through the change in liquidity.

Results are consistent when using CAR[-1,5] (*ΔILLIQ[-1,5]*) as the outcome. The ACME is again -0.575 (p = 0.024), with a direct effect of -3.712 (p <0.001) and total effect of -4.287 (p < 0.001). The proportion mediated remains at 13.4%, reinforcing the role of stock liquidity as a partial channel through which fintech acquisitions influence market reaction.

Taken together, these findings suggest that the negative CARs associated with fintech acquisitions are partly driven by a decline in stock liquidity, a proxy for information asymmetry. This supports the notion that information asymmetry serves as a mediating mechanism in shaping investor reaction to fintech acquisition announcements.

Insert Table 5 Here

4.4. Robustness checks and endogenity

4.4.1 Difference-in-difference with PSM

The main analysis shows that market investors react more negatively to the announcement of fintech acquisitions than the announcement of other firms. However, these results may be subject to selection bias, as fintech acquisitions could systematically differ from non-fintech acquisitions in observable characteristics. Therefore, to further address the selection bias, we employ the propensity score matching technique (PSM). We implement a nearest neighbour matching procedure using one-to-five matching with replacement. The matching is based on transaction-level, target-level, acquirer-level, and macroeconomic variables consistent with those employed in the main analysis, in order to pair fintech acquisition deals (treatment group) with comparable non-fintech acquisition deals (control group)[2]. To evaluate the quality of the matching,

[2] The results remain robust when we use matching with replacement or matching by nearest neighbour matching method.

we examine the mean differences in variables between the treatment and control groups. Panel A in Table 6 presents the results. None of mean differences in these variables are significant, suggesting the treatment group and control group are well balanced in terms of the transaction-level, acquirer-level, macro-level characteristics.

Based on the matched sample, we implement a difference-in-differences (DID) analysis to estimate the dynamic effect of Fintech acquisition announcements, particularly in the context of the COVID-19 pandemic. We conduct the parallel trends test. As shown in Panel B, all coefficients for the interaction term in the pre-COVID periods are statistically insignificant, suggesting that there was no systematic difference in the trends of CAR between the treatment and control groups before the pandemic. This finding supports the validity of the parallel trends assumption underlying the DID methodology.

Panel C in Table 6 presents the results of PSM-DID method. Column 1 and column 2 suggests that market investors continue to respond more negatively to fintech acquisition announcements compared to non-fintech ones, even after controlling for selection bias. Column 3 and column 4 further reveal that this negative market reactions becomes significantly stronger in the post-COVID-19 period. The results remain consistent with the main analysis.

Insert Table 6 Here

4.4.2 Alternative measures of CARs

In the ealier analysis, we measured the market investor's reactions by the CARs which is measured by Fama-French three-factor model. To ensure the robustness of the findings, we re-mesure the CARs by the market index (TOPIX) as an alternative benchmark. Furthermore, following the previous studies, we use average abnormal return (AAR) as an alternative measure of market reactions. AAR is defined as the average daily anormal return over the event window (Tunyi et al., 2024). We computed the AAR using both the Fama-French three-factor model. Panel A and Panel B in Table 7 presents the results. Regardless of the method used to measure market reactions, we find that fintech acquisitions receive more negative market reactions than non-fintech acquisitions. This negative effect is more pronounced during the COVID-19 pandemic and dissipates in the post-pandemic period. These findings consistent with the conclusions drawn from our ealier analysis.

Insert Table 7 Here

4.3 Cross section analysis

In this section, we conduct a cross-sectional analysis to examine how the impact of fintech acquisitions on stock market reactions varies depending on the acquirer's industry and firm age.

4.3.1 The impact of acquirer's industry

We examine whether the acquirer's industry affects market investors' reactions to the announcement of fintech acquisitions by dividing the sample into two subsamples: bank and non-bank acquirers. Unlike other financial institutions, banks are typically not profit-driven, are more risk-averse, and are subject to stricter regulations and policies. In Japan, major banks such as the "megabanks" (e.g., MUFG, SMFG, Mizuho) are widely regarded as systemically important financial institutions, with strong governmental and regulatory ties. It has been proved that banks are perceived to enjoy implicit safety net subsidies because they are "too systemically-important to fail". The safety net increases investor confidence even during risky moves like acquisitions, due to the reduced perceived probability of catastrophic failure. Therefore, we expect that market investors will react more negatively to fintech acquisition announcements made by non-bank acquirers, and that this effect is more pronounced in the COVID-19 period than non-bank acquirers.

Panel A in Table 8 presents the results. The coefficients of fintech on CAR[-1,3] is siginificantly negative for non-bank acquirers. The coefficients of the interaction term of fintech and COVIDduring is only negatively significant for non-bank acquirer. These findings indicate that while the impact of fintech acquisitions on market reactions is more prominent for non-bank acquirers in terms of CAR[-1,3], while the combined effect of fintech and the COVID-19 context is more pronounced for non-bank acquirers. This implies the market investors treat banks' fintech acquisitions with greater tolerance, even when information asymmetry is high under the belief of safety net.

Insert Table 8 Here

4.3.2 The impact of acquirer's leverage

Next, we further examine whether the acquirer's finance structure influences market investors' reactions to fintech acquisition announcements. The sample is divided into two subsamples based on the mean leverage ratio (the ratio of debt to total asset): low leverage acquirers and high leverage acquirers. High-leverage acquirers face a greater risk of financial distress or bankruptcy, especially when undertaking uncertain or complex investments such as fintech acquisitions. As a result, when highly leveraged acquirers pursue fintech acquisitions—

often characterized by high information asymmetry—market participants may react more negatively due to heightened bankruptcy concerns. Therefore, we expect the negative impact of fintech acquisition on market reactions is more prominent for high leverage acquirers.

Panel B in Table 9 presents the results. The coefficients of fintech on CAR[-1,3] is siginificantly negative for high-leverage acquirers, indicating that overall, the market reacts more negatively to fintech acquisitions when acquirers carry higher financial risk. However the interaction term between fintech and COVIDduring are only negatively significant for the subsample of low leverage acquirers. The possible explanation for this results is that low-leverage acquirers engaging in fintech acquisitions during a time of heightened uncertainty were penalized more heavily, possibly because such moves deviated from their expected conservative behavior.

5. Conclusion

This paper examines the role of information asymmetry in shaping the market investor's reaction to fintech acquisitions. Examining 399 M&A transactions between 2015 and 2024, we find evidence to support the idea that the higher level of information asymmetry in fintech acquisitions leads to more negative reactions from market investors than the acquistions with other targets. We also find that the negative market response to fintech acquisitions becomes more pronounced during the COVID-19 pandemic, though this heightened sensitivity does not persist in the post-pandemic period. Taken together, our results underscore the critical role of information asymmetry in explaining investor behavior around fintech M&A announcements and underscore the importance of accounting for macroeconomic shocks—such as the COVID-19 pandemic.

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Table 1. Distribution of sample by year and industry

Panel A Distribution of sample by year					
Year	Full sample	Non-fintech acquisition		Fintech acquisition	
		Number	Percentage (%)	Number	Percentage (%)
2015	35	32	8.77	3	9.09
2016	35	31	8.49	4	12.12
2017	37	36	9.86	1	3.03
2018	27	26	7.12	1	3.03
2019	31	30	8.22	1	3.03
2020	33	29	7.95	4	12.12
2021	45	44	12.05	1	3.03
2022	48	44	12.05	4	12.12
2023	52	43	11.78	9	27.27
2024	55	50	13.70	5	15.15
Overall	398	365	100	33	100

Panel B Distribution of sample by industry					
Industry	Full sample	Non-fintech acquisition		Fintech acquisition	
		Number	Percentage (%)	Number	Percentage (%)
Banks	166	157	43.01	9	27.27
Brokerage	94	80	21.92	14	42.42
Credit Institutions	44	41	11.23	3	9.09
Insurance	79	74	20.27	5	15.15
Other Financials	15	13	3.56	2	6.06
Overall	398	365	100	33	100

Table 1 presents the distribution of the sample by announcement year and acquirer industry. The year refers to the calendar year in which the acquisition announcement was made. The industry classification is based on the mid-level industry category of the acquirer, as reported by the SDC Platinum database.

Table 2. Descriptive statistics

	Full sample			Non-fintech acquisition			Fintech acquisition			Mean Difference
	N=398			N=365			N=33			
	Mean	SD	Median	Mean	SD	Median	Mean	SD	Median	
Dependent Variable										
CAR[-1,3]	1.44	5.79	0.56	1.64	5.78	0.80	-0.75	5.56	-0.37	-2.38**
CAR[-1,5]	1.46	7.25	0.98	1.68	7.07	1.04	-0.92	8.73	-0.34	-2.59
Independent Variable										
COVID										
before=1	165.00	41.5%		155.00	42.5%		10.00	30.3%		
during=1	141.00	35.4%		127.00	34.8%		14.00	42.4%		
post=1	92.00	23.1%		83.00	22.7%		9.00	27.3%		
Control Variable										
dv_log	8.74	1.85	8.64	8.83	1.86	8.73	7.72	1.27	7.59	-1.11***
pct_acq	0.22	0.41	0.00	0.21	0.41	0.00	0.27	0.45	0.00	0.06
cash	0.84	0.36	1.00	0.84	0.37	1.00	0.88	0.33	1.00	0.04
cross_border	0.09	0.29	0.00	0.09	0.28	0.00	0.15	0.36	0.00	0.06
first_fintech	0.04	0.20	0.00	0.00	0.00	0.00	0.48	0.51	0.00	0.48***
t_public	0.61	0.49	1.00	0.62	0.48	1.00	0.45	0.51	0.00	-0.17*
tobin_q	0.15	0.32	0.05	0.14	0.29	0.05	0.25	0.50	0.10	0.11
bm	1.85	1.26	1.55	1.89	1.28	1.58	1.35	0.81	1.24	-0.55***
bl	1.42	0.71	1.61	1.38	0.69	1.61	1.86	0.74	2.20	0.48***
assets	15.28	2.37	15.57	15.30	2.36	15.56	15.06	2.57	15.79	-0.24
topix	7.52	0.20	7.52	7.52	0.20	7.51	7.55	0.22	7.58	0.03
ipo_deals	5.32	6.82	3.00	5.35	6.81	3.00	5.00	6.97	1.00	-0.35

Table 2 presents the mean, median, and standard deviation for the main variables of the full sample as well as the subsamples of fintech acquisitions and non-fintech acquisitions. All continuous variables are winsorized at 1% and 99% levels. All variables are defined in Appendix 1. ***, **, and * denote statistical significance at 1%, 5%, and 10% levels, respectively.

Table 3. Nonparametric test (KP test & GRANK test)

	Method	All acquisitions	Fintech acquisitions	Non-fitnech acquisitions
CAAR[-1,3]	KP	4.97***	-0.77	5.43***
	GRANK	4.33***	-1.21	4.82***
CAAR[-1,5]	KP	4.02***	-0.60	4.53***
	GRANK	4.30***	-0.74	4.72***

Table 3 presents the results of non-parametric tests to compare the difference of CAARs between fintech and non-fintech acquisitions, using KP test and GRANK test. ***, **, and * denote statistical significance at 1%, 5%, and 10% levels, respectively.

Table 4. The impact of fintech and COVID-19 pandemic

	CAR[-1,3]		CAR[-1,5]	
	(1)	(2)	(3)	(4)
fintech	-3.477**	2.126	-4.287**	1.151
	(1.492)	(2.980)	(1.806)	(3.608)
COVIDduring		3.607		9.274**
		(3.632)		(4.399)
COVIDpost		3.794		10.630**
		(3.848)		(4.661)
fintech*COVIDduring		-7.054**		-6.958*
		(3.114)		(3.771)
fintech*COVIDpost		-2.707		-1.634
		(2.821)		(3.416)
dv_log	0.363	0.385*	0.524*	0.549*
	(0.231)	(0.231)	(0.280)	(0.280)
pct_acq	-1.574*	-1.465*	-0.886	-0.834
	(0.802)	(0.810)	(0.971)	(0.981)
cash	1.576*	1.865**	1.103	1.419
	(0.884)	(0.889)	(1.069)	(1.077)
cross_border	0.370	0.282	0.108	-0.030
	(1.068)	(1.066)	(1.292)	(1.291)
tobin_q	-4.924***	-5.204***	-4.603**	-4.945**
	(1.625)	(1.636)	(1.967)	(1.981)
first_fintech	3.169	-0.715	3.367	-0.649
	(2.040)	(2.621)	(2.469)	(3.175)
t_public	0.634	0.569	1.135	1.047
	(0.747)	(0.746)	(0.904)	(0.903)
bm	0.122	0.079	0.761**	0.720*
	(0.307)	(0.307)	(0.371)	(0.371)
bl	0.858*	0.887*	3.045***	3.083***
	(0.469)	(0.468)	(0.568)	(0.567)
assets	-1.036***	-1.070***	-1.214***	-1.247***
	(0.224)	(0.225)	(0.271)	(0.272)
topix	-5.730	-6.485	-12.279*	-14.956*
	(6.034)	(6.561)	(7.303)	(7.946)
ipo_deals	0.111**	0.105**	0.189***	0.185***
	(0.049)	(0.049)	(0.059)	(0.059)
Constant	54.898	60.560	98.305*	118.057**
	(44.343)	(48.112)	(53.663)	(58.266)
Year Dummies	YES	YES	YES	YES
Industry Dummies	YES	YES	YES	YES
Observations	398	398	398	398

Table 4 presents the results showing the impact of fintech on market investor's reaction and how this impact changes by the COVID-19 pandemic. All variables were defined in Appendix B. Industry- and year dummy variables are included in all regressions. ***, **, and * denote statistical significance at 1%, 5%, and 10% levels, respectively.

Table 5. Test results of the mediating mechanism effect

Pannel A. CAR[-1,3]				
Effect	Estimate	CI.Lower	CI.Upper	P.Value
ACME	-0.299	-0.697	-0.002	0.046
ADE	-3.179	-5.017	-1.157	0.006
Total Effect	-3.477	-5.283	-1.490	<0.001
Proportion Mediated	0.086	0.0005	0.291	0.046

Pannel B. CAR[-1,5]				
Effect	Estimate	CI.Lower	CI.Upper	P.Value
ACME	-0.575	-1.257	-0.048	0.024
ADE	-3.712	-5.874	-1.356	<0.001
Total Effect	-4.287	-6.483	-2.013	<0.001
Proportion Mediated	0.134	0.011	0.379	0.024

Table 5 presents the mediation effect test of information asymmetry based on 1,000 bootstrap simulations. we use the change in illiquidity with a window of [-1,3] and [-1,5] **(**ΔILLIQ[-1,3]) and *ΔILLIQ[-1,5]*)**)** as the proxy of information asymmetry. Control variables used in the process of mediating mechanism test are consistent with those in Table 2 and defined in Appendix 1.

Table 6. Difference-in-difference with PSM

Panel A. Differences in means of control variables between treatment and control group				
	Control group	Treatment group	Difference	P_Value
dv_log	8.09	7.72	-0.37	0.164
pct_acq	0.21	0.27	0.06	0.479
cash	0.87	0.88	0.01	0.924
cross_border	0.12	0.15	0.04	0.596
t_public	0.48	0.45	-0.03	0.754
tobin_q	0.19	0.25	0.06	0.552
bm	1.36	1.35	-0.02	0.908
bl	1.68	1.86	0.18	0.193
assets	15.07	15.06	-0.02	0.973
topix	7.54	7.55	0.01	0.868
ipo_deals	5.12	5.00	-0.12	0.927

Panel B. Parallel trends test	
	Coefficient
fintech*2016	-5.800
fintech*2017	-10.010
fintech*2018	-5.214
fintech*2019	-6.046
fintech*2020	-8.668*
fintech*2021	-5.582
fintech*2022	-11.302**

fintech*2023	-11.129***
fintech*2024	-7.586*

Panel C. The results of DID with PSM (Nesrest neighbour matching, 1:5)

	CAR[-1,3]		CAR[-1,5]	
	(1)	(2)	(3)	(4)
fintech	-1.926*	1.312	-3.213**	0.388
	(1.065)	(1.780)	(1.247)	(2.083)
COVIDduring		3.068		10.606*
		(4.682)		(5.479)
COVIDpost		2.478		11.875*
		(5.198)		(6.082)
fintech*COVIDduring		-6.886***		-7.462**
		(2.473)		(2.894)
fintech*COVIDpost		-2.128		-2.144
		(2.710)		(3.172)
dv_log	0.385	0.265	0.145	0.006
	(0.382)	(0.382)	(0.448)	(0.447)
pct_acq	-0.777	-0.674	0.776	0.874
	(1.059)	(1.066)	(1.240)	(1.248)
cash	0.451	0.553	-1.262	-1.106
	(1.294)	(1.275)	(1.516)	(1.491)
cross_border	0.195	0.147	0.068	-0.101
	(1.284)	(1.270)	(1.503)	(1.486)
tobin_q	-3.151	-3.421	-3.556	-3.631
	(2.376)	(2.401)	(2.783)	(2.809)
bl	0.834	1.236	5.016***	5.452***
	(0.798)	(0.800)	(0.935)	(0.937)
t_public	0.115	0.158	-0.043	0.030
	(1.019)	(1.006)	(1.194)	(1.178)
bm	0.293	0.333	0.767	0.837
	(0.768)	(0.756)	(0.899)	(0.885)
assets	-1.173***	-1.098***	-1.219***	-1.096***
	(0.340)	(0.346)	(0.399)	(0.405)
topix	-9.619	-10.354	-13.523	-18.122*
	(8.106)	(9.125)	(9.493)	(10.678)
ipo_deals	-0.030	-0.042	0.161*	0.143
	(0.078)	(0.077)	(0.091)	(0.090)
Constant	89.316	93.320	110.061	141.694*
	(59.530)	(66.677)	(69.715)	(78.023)
Year Dummies	YES	YES	YES	YES
Industry Dummies	YES	YES	YES	YES
Observations	198	198	198	198

Table 6 presents the results of the PSM-DID approach. All control variables used in Table 2, except for first_fintech, are employed as matching covariates to construct a comparable control group for fintech acquisitions. Panel A reports the mean differences in variables between the treatment and control groups after matching, to assess the quality of the match. Panel B provides the results of the parallel trends test. Specifically, we examine the pre-treatment evolution of the outcome variable (CARs) between fintech and non-fintech acquisitions. Panel C presents the DID regression results based on the matched sample. Control variables are consistent with those in Table 2 and defined in Appendix 1. All regressions include industry- and year- dummy variables. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 7. Alternative measures of market reaction.

Panel A: Alternative measures of market reactions (CAR: Market model)				
	CAR[-1,3]		CAR[-1,5]	
	(1)	(2)	(3)	(4)
fintech	-3.415**	0.569	-3.819**	1.103
	(1.563)	(3.129)	(1.858)	(3.717)
COVIDduring		6.635*		12.155***
		(3.790)		(4.502)
COVIDpost		6.625*		12.827***
		(4.004)		(4.756)
fintech:COVIDduring		-5.475*		-6.556*
		(3.271)		(3.885)
fintech:COVIDpost		-0.516		-0.937
		(2.962)		(3.519)
Constant	89.153*	95.379*	127.732**	141.183**
	(46.042)	(49.984)	(54.708)	(59.373)
Controls	YES	YES	YES	YES
Year Dummies	YES	YES	YES	YES
Industry Dummies	YES	YES	YES	YES
Observations	398	398	398	398

Panel B: Alternative measures of market reactions (AAR:Fama-French three-factor model)				
	AAR_1_3		AAR_1_5	
	(1)	(2)	(3)	(4)
fintech	-0.782*	1.068	-0.640*	0.682
	(0.402)	(0.801)	(0.340)	(0.678)
COVIDduring		0.561		0.416
		(0.976)		(0.827)
COVIDpost		0.724		0.403
		(1.034)		(0.876)
fintech:COVIDduring		-2.242***		-1.622**
		(0.837)		(0.709)
fintech:COVIDpost		-1.118		-0.803
		(0.758)		(0.642)
Constant	4.842	7.084	3.641	3.959
	(11.953)	(12.930)	(10.090)	(10.952)
Controls	YES	YES	YES	YES
Year Dummies	YES	YES	YES	YES
Industry Dummies	YES	YES	YES	YES
Observations	398	398	398	398

Table 7 presents the results of the impact of fintech acquisitions on market reaction, using the alternative measures of market reaction. In Panel A, market reactions is measured by CAR[-1,3] and CAR[-1,5], which is estimated by the market model. In Panel B, market reactions is measured by AAR[-1,3] and AAR[-1,5], defined as the average daily abnormal return, calculated using the Fama-French three-factor model. Control variables are consistent with those in Table 2 and defined in Appendix 1. All regressions include industry- and year- dummy variables. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 8. Cross section analysis

Panel A. The impact of acquirer's industry

	Bank				Non-bank			
	CAR[-1,3]		CAR[-1,5]		CAR[-1,3]		CAR[-1,5]	
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
fintech	-3.166	-1.708	-1.862	-3.617	-2.974*	4.396	-2.357	7.052
	(4.600)	(5.757)	(6.273)	(7.873)	(1.778)	(4.205)	(2.019)	(4.759)
COVIDduring		10.766**		27.488***		-3.110		-4.552
		(4.802)		(6.567)		(5.201)		(5.887)
COVIDpost		8.495*		28.879***		-1.813		-2.699
		(5.077)		(6.943)		(5.653)		(6.399)
fintech*COVIDduring		2.137		3.226		-8.337*		-10.650**
		(5.501)		(7.524)		(4.432)		(5.017)
fintech*COVIDpost		-1.287		1.668		-5.309		-6.638
		(3.681)		(5.034)		(4.302)		(4.870)
Constant	115.541**	96.010	284.120***	300.325***	-19.665	0.333	-37.550	-9.262
	(56.710)	(61.696)	(77.332)	(84.374)	(64.888)	(72.395)	(73.689)	(81.942)
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Year Dummies	YES	YES	YES	YES	YES	YES	YES	YES
Observations	166	166	166	166	232	232	232	232

Panel B. The impact of acquirer's leverage

	Low leverage firm				High leverage firm			
	CAR[-1,3]		CAR[-1,5]		CAR[-1,3]		CAR[-1,5]	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
fintech	-2.705	4.473	-1.312	7.279	-4.737*	-2.147	-6.418*	-3.267
	(1.945)	(4.286)	(2.132)	(4.682)	(2.648)	(4.690)	(3.388)	(5.995)
COVIDduring		-1.079		-3.927		9.192*		22.945***
		(5.322)		(5.813)		(5.109)		(6.531)
COVIDpost		-0.631		-3.050		8.730		24.152***
		(5.668)		(6.191)		(5.432)		(6.944)
fintech*COVIDduring		-7.838*		-9.306**		-4.958		-6.999
		(4.202)		(4.590)		(7.336)		(9.377)
fintech*COVIDpost		9.284		10.482		-2.145		-2.314
		(6.865)		(7.499)		(3.855)		(4.927)
Constant	-6.215	-7.881	-45.839	-44.860		143.522**	280.009***	295.205***
	(66.035)	(71.508)	(72.381)	(78.114)		(68.031)	(79.598)	(86.956)
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Year Dummies	YES	YES	YES	YES	YES	YES	YES	YES
Industry Dummies	YES	YES	YES	YES	YES	YES	YES	YES
Observations	187	187	187	187	211	211	211	211

Table 8 presents the results of the cross-section analysis of whether the impact of fintech acquisitions on market reactions varies with the characteristic of acquirers. In Panel A, we explore the role of the acquirer's industry by splitting the sample into bank and non-bank acquirers. In Panel B, we examine the influence of the acquirer's leverage level, defined as the ratio of total debt to total assets. The sample is split into high- and low-leverage groups based on the mean leverage of the full sample. Control variables are consistent with those in Table 2 and defined in Appendix 1. All regressions include industry- and year- dummy variables. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Appendix 1. The definition of variables

Panel A. Dependent Variable		
Variable	Definition	Source
CAR[-1,3]	The sum of abnormal returns from 1 day before to 3 days after the announcement date.	Nikkei NEEDS Financial Quest
CAR[-1,5]	The sum of abnormal returns from 1 day before to 5 days after the announcement date.	Nikkei NEEDS Financial Quest
AAR[-1,3]	The average of daily abnormal returns from 1 day before to 3 days after the announcement date.	Nikkei NEEDS Financial Quest
AAR[-1,5]	The average of daily abnormal returns from 1 day before to 5 days after the announcement date.	Nikkei NEEDS Financial Quest

Panel B. Independent Variable		
Variable	Definition	Source
fintech	A dummy variable equal to 1 if the acquirer is a financial institution and the target belongs to the technology industry.	SDC Platinum database
COVID	A categorical variable indicating whether the acquisition occurred before, during, or after the COVID-19 pandemic	Official government press releases and regulatory announcements
a_leverage	A ratio of total debt to total assts	Nikkei NEEDS Financial Quest

Panel C. Control Variables		
Variable	Definition	Source
dv_log	The natural logarithm of the deal value.	SDC Platinum database
pct_acq	A dummy equals to 1 if the percentage of shares acquired in the transaction exceeds 50%.	SDC Platinum database
cash	A dummy equals to 1 if the transaction is fully paied in cash.	SDC Platinum database
cross_border	A dummy equals 1 if the transaction is cross-border.	SDC Platinum database
tobin_q	Theratio of market value to total asset.	Nikkei NEEDS Financial Quest
first_fintech	A dummy variable equal to 1 if it is the acquirer's first fintech acquisition.	SDC Platinum database
t_public	A dummy eqauls 1 if the target is a public firm.	SDC Platinum database
bm	The ratio of book value to market value.	Nikkei NEEDS Financial Quest
bl	The natural logarithm of the number of business lines.	SDC Platinum database
assets	The natural logarithm of total assets	Nikkei NEEDS Financial Quest
topix	The natural logarithm of TOPIX index	Nikkei NEEDS Financial Quest
ipo_deals	The number of newly listed IPO firms each month.	IPO white paper

Appendix 1 contains definitions for all variables in this study.