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RESEARCH ARTICLE

# Banking market consolidation in Asia: Evidence from acquirers, targets, and rivals

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## Abstract

We analyse the financial sector consolidation in Asia by using a comprehensive sample of bank M&As from 1995 to 2021. Our results show that M&A announcements by Asian domestic acquirers are associated with significant positive stock price returns to both acquirers and their rivals. In contrast, cross-border acquirers and their rivals experience negative but insignificant returns, while targets and their rivals record gains, regardless whether it is a domestic or cross-border transaction. Further analyses reveal that domestic acquirers obtaining larger relative increases in their market share benefit the most, indicating that market power considerations are the primary driver behind acquirers' positive returns. For cross-border acquirers, neither cultural differences nor regulatory arbitrage considerations can explain return patterns surrounding M&A announcements.

## KEYWORDS

Banks, Emerging markets, Market consolidation, Market power, mergers and acquisitions (M&As), Rival market reactions

## 1 | INTRODUCTION

Consolidation among financial institutions has continued almost unabated over the last decades, reshaping the global banking market. This trend may ostensibly be driven by increasing competition among banks and their desire to realize synergies in the form of economies of scale and scope. While synergies may be one potential driver of mergers and acquisitions (M&As), market power considerations might also play a prominent role in case of mergers among financial institutions (Hankir et al., 2011). Recent cross-industry evidence from the U.S. suggests that industry concentration levels have generally been rising, resulting in increasingly profitable M&As (Grullon et al., 2019).

Yet, the overall evidence on the investor perception of bank M&As is ambiguous. Early studies of U.S. and European bank mergers find that these are generally associated with positive shareholder wealth effects for the acquiring bank (e.g., Cornett & De, 1991; Cybo-Ottone & Murgia, 2000; James & Wier, 1987). These significant positive effects, however, dissipate over time, and became either insignificant or even negative (e.g., Becher, 2000; Hagendorff et al., 2008; Houston & Ryngaert, 1994). This change occurred while the banking sector transitioned from relatively high levels of market fragmentation to increased market concentration, potentially facilitated by policy changes (e.g., the repeal of the Glass-Steagall Act in 1999 in the U.S., increased integration among most European nations through the introduction of the Euro as common currency starting at the end of 1998).

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Similarly prominent policy changes are, however, largely absent in Asia. Asian banking markets historically had higher levels of market concentration than U.S. and European ones, yet the financial sector consolidation in the region is still progressing and is set to continue at a high pace (The Asian Banker, 2022). This makes Asia an interesting region to study the impact of continued banking sector consolidation as banks from more mature economies are increasingly turning to this region in search of growth opportunities, while many Asian economies liberalized their markets to spur competition and economic growth (Abid et al., 2021; Battaglia & Gallo, 2015).

To fully assess the true impact of the banking market consolidation, it is important to look beyond the directly involved institutions and to also consider their respective rivals. Yet, very few studies exist on the industry-wide wealth effects of M&As, especially for the financial sector. General, cross-industry studies on rival effects of M&As predominantly suggest that M&As lead to positive wealth effects for rivals (e.g., Eckbo, 1985; Song & Walking, 2000). Hankir et al. (2011) are the only ones who assess the impact of U.S. and European intra-continental bank mergers and the resulting wealth effects on rival institutions. Their results suggest that market power considerations play a prominent role in explaining return patterns following M&A announcements.

We leverage bank M&As in Asia to test whether domestic transactions that should increase market concentration, result in different valuation effects compared to cross-border deals that are unlikely to increase market concentration. This allows us to draw conclusions on whether transactions that increase market concentration—and therefore market power considerations—are the main channel driving M&A returns in Asia. Our analyses consist of two main parts. First, we investigate the industry-wide shareholder wealth effects of bank M&As in Asia. We look beyond the acquiring and target institutions and additionally examine the market reactions of their respective rivals. If market power considerations play a role in domestic Asian bank mergers, we should not only observe stock price gains for domestic acquirers, but also positive spillover effects to their rivals. Likewise, target banks and their rivals should record significant share price increases. Second, we specifically test whether market power considerations are the main channel through which the observed acquirer returns are achieved and to what degree cross-border acquisitions affect Asian banking markets. This is supported by additional analyses of the changes in banking market concentration levels following mergers.

Utilizing a dataset of 486 majority acquisitions by banks in Asia between 1995 and 2021, our results show that Asian domestic acquirers experience significant share price increases, while acquirers in cross-border transactions record slightly positive but insignificant returns. Moreover, we find that rivals of cross-border acquirers experience small losses, while those of Asian domestic acquirers obtain significant positive returns. Targets enjoy positive stock valuation effects, irrespective of whether the bank is the target of a domestic or cross-border transaction. Our cross-sectional regression analyses confirm that acquirer announcement returns are primarily driven by Asian domestic deals. In line with expectations, we observe a significant increase in market concentration levels following domestic acquisitions, but not following cross-border ones. Examining domestic Asian bank M&As in detail, we find that particularly those domestic acquirers benefit that can obtain the largest relative increases in their market share. This result remains robust even when excluding countries with the largest number of observations. We additionally test whether cultural factors or regulatory arbitrage considerations are potential channels that may explain the return patterns observed for cross-border bank mergers, but we find no evidence that these play a significant role in determining returns of cross-border acquirers. Taken together, our empirical results suggest that market power considerations are the dominant driver of shareholder wealth creation in Asian bank mergers.

Our study contributes to the existing research on bank M&As in multiple ways. First, our finding of significant positive returns to acquiring banks stands in contrast to the majority of prior research on mergers among financial institutions in the U.S. and Europe (e.g., Becher, 2000; Hankir et al., 2011). Second, by going beyond an analysis of the wealth effects of acquirers and targets and also including their respective rivals in the analysis, we obtain a more nuanced picture of the consolidation process. Our observation of positive spillover effects to the rivals of Asian domestic acquiring banks provides first evidence that market power considerations seem to play a prominent role in local Asian transactions. Additionally, by examining the target rival effects, we extend the research on corporate M&As by Song and Walking (2000) and Akhigbe and Madura (1999) and offer additional insights into the banking sector. Third, we go beyond Hankir et al. (2011) by explicitly showing that market concentration levels increase in the wake of domestic bank mergers and that the relative changes in an individual acquiring bank's market share appear to be the most prominent channel through which acquirers realize positive valuation effects. Overall, our results provide valuable insights into the financial sector

consolidation in Asia, highlighting the importance that market power considerations play in driving this process.

The rest of the article is structured as follows. Section 2 provides a brief overview of the related literature and develops our main research hypotheses. Section 3 reports the sample selection process, presents descriptive statistics, and explains the empirical approach. Sections 4 and 5 document the results of our analyses. Section 6 includes additional tests while Section 7 concludes.

## 2 | RELATED LITERATURE AND HYPOTHESES DEVELOPMENT

### 2.1 | Wealth effects of bank M&As

Empirical research on bank M&As has predominantly focused on the U.S. and Europe. For the U.S., the first empirical studies documented positive M&A announcement returns for U.S. acquiring banks (e.g., Cornett & De, 1991). This changed for later studies, with results commonly showing negative acquirer returns surrounding M&A announcements (e.g., Becher, 2000). In contrast, the combined institution earns positive returns, with synergetic reasons appearing to be one possible channel explaining the positive returns (Becher, 2000). Besides synergetic reasons, geographically focusing mergers also lead to higher returns for acquiring banks (Cornett et al., 2006; DeLong, 2001). Targets in the U.S. almost always experience significant positive wealth effects. For European target banks a similar picture emerges as for their U.S. counterparts; they earn large and positive returns surrounding M&A announcements (Cybo-Ottone & Murgia, 2000). However, in contrast to most U.S. studies, acquirers do not appear to destroy shareholder wealth (Cybo-Ottone & Murgia, 2000; DeLong, 2003), with the deviation from the U.S. results being explained by differences between the regulatory regimes in Europe and the U.S. (Cybo-Ottone & Murgia, 2000). Investigating the drivers of European bank M&As more closely, Beitel et al. (2004) find that geographical proximity is a key determinant for successful bank mergers.

Research on M&As, even beyond the narrow scope of bank mergers, is still comparatively scarce outside of the U.S. and Europe and few studies look at Asian economies. However, these countries continuously gain in importance to the global economy and potentially offer attractive investment opportunities, especially for firms and banks operating in markets that have fewer growth opportunities. Still, the M&A literature focusing on Asia is limited and predominantly focused on corporate M&As

rather than specifically on bank M&As. Examining a large dataset of global M&As, Alexandridis et al. (2010) find that Japanese firms earn positive and significant M&A announcement returns, while the announcement returns for other Asian acquirers lack significance but are still positive. They contend that one reason for these return patterns are lower levels of competition in the market for corporate control outside of US, Canada, and UK. Chuang (2017) reports positive returns for acquirers in M&A transactions in the Asia-Pacific region, especially for acquirer's employing top-tier financial advisors. For Chinese domestic M&As, Chi et al. (2011) as well as Ahmed et al. (2023) report positive acquirer M&A announcement returns, while Fatemi et al. (2017) document similar findings for Japan.

Focusing on bank mergers in emerging markets more broadly, Kiyamaz (2004) shows that U.S. acquirers engaging in acquisitions in Latin America experience positive shareholder wealth effects, which can be partially explained by macroeconomic variables, such as the economic development status of the target country and the level of government efficiency. Goddard et al. (2012), in contrast, document less positive valuation effects for mergers among Latin American banks with, the acquiring institutions obtaining at best statistically weakly significant returns. The effects of bank M&As in Asia are likewise not well documented. Kiyamaz (2004) documents for a subsample of U.S. acquiring banks that they earn insignificant returns in Asia. In a similar vein, Goddard et al. (2012) report non-significant returns for Asian banks that acquire targets in other emerging Asian economies.

Based on recent evidence from corporate M&As that acquirers earn positive returns upon M&A announcements (e.g., Alexandridis et al., 2017; Tunyi, 2021), the findings for corporate M&As in Asia (e.g., Alexandridis et al., 2010; Chuang, 2017), the earlier findings on bank mergers in Asia (Goddard et al., 2012; Kiyamaz, 2004), and the evidence from the U.S. and Europe that geographically focusing mergers tend to lead to better results for the acquiring banks' shareholders than cross-border mergers (e.g., Beitel et al., 2004; Cornett et al., 2006; DeLong, 2001), we predict that Asian domestic acquirers will achieve positive stock returns. At the same time, we expect that acquirers engaging in cross-border transactions achieve negative returns, as their choice of target might be limited (e.g., due to restrictions on foreign bank ownership) or expansion into a different regulatory and cultural environment may be perceived as riskier. Targets, on the other hand, are likely to achieve large positive returns, regardless of the origin of the acquirer. We therefore hypothesize:

**H1a.** Domestic bank M&As in Asia result in positive returns for acquirers, while cross-border acquisitions are associated with negative acquirer returns.

**H1b.** Bank mergers in Asia lead to significant, positive returns for target banks, regardless whether it is a domestic or cross-border transaction.

## 2.2 | M&As and market power

M&As can alter the competitive landscape of an entire industry and will therefore likely affect the rivals of merging firms, too. Any examination of the effect of M&As on an industry's consolidation process should consequently include an analysis of rival effects to M&A announcements (Berger et al., 1999). The main concern relating to increased consolidation through M&As centre on market concentration and the potential increase in market power for the industry's remaining firms. This increase in market power for the remaining firms may lead to subsequent anticompetitive behaviour by these firms, potentially to the detriment of consumers. These concerns are captured by the *Market Power Hypothesis*. Particularly in the banking industry, the possibility of such behaviour leads to extensive scrutiny of mergers by antitrust authorities.

Multiple studies examine the effects of M&As on rival companies' share prices to draw conclusions about investors' perception of consolidation activity (e.g., Eckbo, 1983, 1985; Hankir et al., 2011; Mataigne et al., 2021; Song & Walking, 2000; Stillman, 1983). Eckbo (1983) and Stillman (1983) specifically test whether increases in market power are potentially a valid concern. They argue that horizontal mergers should not only lead to positive wealth effects for acquirers, but also for their rivals, as all companies within a given industry should profit from an increase in the industry's concentration level. While they find evidence for positive wealth effects for rivals, they still argue that these wealth effects are not the main driver of M&As. Nonetheless, recent evidence from the U.S. shows that mergers in industries with high concentration ratios are more profitable, while operational efficiency does not increase (Grullon et al., 2019). Moreover, Fathollahi et al. (2022) document that mergers in concentrated industries with high product similarity lead to more positive wealth effects for acquirers and their rivals. This suggests that market power considerations are likely a driving force behind M&As.

The rival effects of bank mergers and acquisitions received limited attention so far. Hankir et al. (2011) examine the intra-continental rival effects to U.S. and European bank mergers. They find that, among the investigated hypotheses, market power considerations are likely to be the main consideration when market participants value bank mergers. In particular, return patterns where acquirers, targets, and their respective rivals benefit, are significantly related to intra-industry mergers, increasing market concentration, and large relative target size. In the context of bank takeovers in Asia, market power considerations are also likely to be a dominant factor, as local governments opened their banking sectors and simultaneously encouraged further consolidation among domestic institutions following the 1997 Asian Financial Crisis. In this scenario of increasing consolidation, not only Asian domestic acquirers but also their rivals stand to gain. Therefore, with respect to rival stock market returns we hypothesize<sup>1</sup>:

**H2.** Rivals of Asian domestic acquiring banks earn significant positive returns surrounding M&A announcements.

In case market power considerations should indeed play a prominent role, then not only the share price of the acquirers' rivals should increase, but also those of the target rivals. However, when it comes to the target rivals' M&A announcement effects, the picture is more nuanced with the most frequently investigated assumption relating to the *Acquisition Probability Hypothesis*. Its fundamental idea is that target rivals will earn positive returns around the takeover announcement of a competitor, based on an increased probability of becoming a target in a future transaction (Song & Walking, 2000). Both Song and Walking (2000) and Akhigbe and Madura (1999) find evidence in support of the *Acquisition Probability Hypothesis* in their respective cross-industry studies. Moreover, Akhigbe and Martin (2000) document that the return patterns predicted by the *Acquisition Probability Hypothesis* are particularly pronounced for target rivals of cross-border M&As. Foreign entry into a market may increase competition, but the positive signal that foreign takeovers send to capital markets with regard to growth opportunities and favourable asset valuations appear to offset these concerns. Yet, the existence of market power considerations may also play a role when it comes to the stock returns to target rivals, which means that the *Market Power Hypothesis* cannot be completely ruled out, too. This leaves us with some ambiguity regarding the possible channel for target rival returns. We therefore differentiate between the origin of the acquiring bank and



distinguish between target rivals of domestic and cross-border transactions.

In the context of the present study, the *Acquisition Probability Hypothesis* is likely to be relevant for cross-border deals. The acquisitions of a firm by foreign financial institutions may indicate favourable industry conditions and growth opportunities while simultaneously raising the probability for the remaining firms of becoming future takeover targets. The interpretation of the stock returns for target rivals of domestic acquisitions is less obvious. In principle, they stand to gain based on the same rationale as the rivals of targets in cross-border transactions. At the same time, these firms would also gain from further consolidation and less competition. Higher levels of market concentration may, however, also imply less room for additional consolidation, which may moderate returns since being the target of a future acquisition is then less likely. This leads us to anticipate that the rivals of cross-border acquisition targets stand to achieve higher returns than those of domestic transactions. These considerations are summarized in the following hypothesis:

**H3.** Rivals of target banks achieve significant positive returns whereby rivals of targets that are acquired in a cross-border transaction gain higher returns than target rivals of domestic deals.

Besides using the stock return patterns of acquirers, targets, and their respective rivals to derive whether market power considerations are a driving force behind bank M&As in Asia, a more direct approach is to examine market concentration ratios, or more specifically their changes. Focusing on changes in concentration ratios is motivated by Nocke and Whinston (2022), who highlight that changes in concentration levels are more important in determining the impact of mergers on competition than the concentration levels by themselves. We anticipate a significant increase in concentration ratios following domestic mergers, while we expect no such effect following cross-border acquisitions. In the latter case, market concentration should remain the same, as the market share is simply transferred to a foreign bank, which should have no impact on domestic concentration ratios. We therefore hypothesize:

**H4.** Asian domestic bank M&As lead to increases in market concentration ratios

following transactions, while concentration ratios are unaffected by cross-border deals.

### 3 | DATA AND METHODOLOGY

#### 3.1 | Acquirer and target bank data selection and sample description

Our primary source for M&As among financial institutions is the Thomson Financial Securities Data Company Mergers and Acquisition database (SDC). We only consider events where the target is located in Asia,<sup>ii</sup> whereas no restrictions are placed on the nationality of the acquiring institution. We select all completed M&A deals announced between January 1995 and December 2021. Additionally, we require that a transaction value is recorded and that both target and acquirer are financial institutions.<sup>iii</sup> Furthermore, we only consider majority acquisitions and require that at least the acquiring bank is listed on a stock exchange with stock price data being available in sufficient quality. In a next step, we verify that the official announcement day in SDC is correct by checking it with official company announcements and the Nexis database. Any discrepancies are resolved by using the first announcement date we identified. Furthermore, we ensure that no major confounding events occur during the  $[-5; +5]$  event window. Applying these criteria, we identify a total of 486 events for acquiring banks from 30 different nations with a total deal value in excess of 382 billion U.S. dollars. The majority of targets are private and the data quality for the publicly listed ones is often comparatively poor, leaving us with a target sample of 107 observations. The most frequent acquiring nation is Japan with a total of 164 transactions followed by 50 M&As by South Korean banks, and 49 transactions by Indian financial institutions (see Table OA-1 in the Online Appendix for the country distribution matrix).

Table 1 shows the distribution of deals of the acquirer and target sample by geographic focus of the transaction and by year. Table 1 Panel A shows that 71.4% of transactions are by domestic Asian acquirers, while 28.6% are cross-border deals. The value of acquisitions by Asian domestic acquirers far exceeds those of cross-border acquirers with more than 318 billion U.S. dollars versus 64 billion U.S. dollars, indicating that cross-border transactions are, on average, smaller (USD 460 million versus USD 918 million). Looking at the distribution of deals across time, we find that the number of M&A deals is

TABLE 1 Acquiring and target bank sample description.

	Acquirer sample				Target sample			
	Number of deals	Percentage of deals	Deal value (million U.S.\$)	Percentage of total deal value	Number of deals	Percentage of deals	Deal value (million U.S.\$)	Percentage of total deal value
Panel A: Geographic focus								
Domestic	347	71.40	318,581.77	83.27	88	82.24	260,155.83	90.78
Cross-border	139	28.60	64,024.68	16.73	19	17.76	26,423.77	9.22
Total	486	100.00	382,606.45	100.00	107	100.00	286,579.60	100.00
Panel B: Frequency by years								
1995	3	0.62	34,056.06	8.90	1	0.93	33,787.73	11.79
1996	4	0.82	368.41	0.10				
1997	2	0.41	93.78	0.02				
1998	8	1.65	2238.88	0.59	2	1.87	244.39	0.09
1999	14	2.88	73,963.64	19.33	4	3.74	71,633.04	25.00
2000	27	5.56	38,534.23	10.07	4	3.74	30,415.01	10.61
2001	20	4.12	18,289.25	4.78	11	10.28	12,092.53	4.22
2002	16	3.29	11,422.36	2.99	6	5.61	8984.30	3.14
2003	14	2.88	6189.48	1.62	3	2.80	5168.90	1.80
2004	23	4.73	8009.03	2.09	4	3.74	2467.47	0.86
2005	27	5.56	53,110.50	13.88	6	5.61	45,805.50	15.98
2006	15	3.09	11,986.32	3.13	4	3.74	3537.35	1.23
2007	24	4.94	12,231.40	3.20	4	3.74	8209.05	2.86
2008	27	5.56	9179.71	2.40	4	3.74	7215.03	2.52
2009	42	8.64	23,237.69	6.07	6	5.61	10,752.50	3.75
2010	27	5.56	7605.18	1.99	9	8.41	5218.19	1.82
2011	21	4.32	4464.15	1.17	2	1.87	2205.71	0.77
2012	25	5.14	5807.94	1.52	1	0.93	1437.48	0.50
2013	16	3.29	6915.78	1.81	1	0.93	394.24	0.14
2014	29	5.97	16,618.80	4.34	5	4.67	9770.81	3.41
2015	14	2.88	5804.11	1.52	2	1.87	3837.98	1.34
2016	15	3.09	4320.24	1.13	5	4.67	1713.72	0.60
2017	20	4.12	14,194.69	3.71	9	8.41	13,416.89	4.68
2018	16	3.29	6131.81	1.60	4	3.74	4753.48	1.66
2019	24	4.94	4067.93	1.06	7	6.54	2695.66	0.94
2020	4	0.82	527.45	0.14	1	0.93	507.39	0.18
2021	9	1.85	3237.67	0.85	2	1.87	315.26	0.11
Total	486	100.00	382,606.45	100.00	107	100	286,579.60	100

*Note:* This table shows the geographic focus of the acquisitions and the distribution of events through time for the acquirer and target bank sample. The deal value is given in U.S. dollars as of the time the deal was announced.

roughly evenly distributed between the first half of the investigation period (1995–2008) and the second half (2009–2021), albeit with a slight tendency towards more transaction during the latter period.

The sample of exchange-listed targets is mainly from Japan (45), followed by India and Taiwan (both 15), and South Korea (10) (see also Table OA-1 in the Online Appendix). Nevertheless, even though the target sample

consists of only 107 transactions, the overall deal value is more than 286 billion U.S. dollars, or approximately 75% of the sample's total deal volume. This is not surprising, as the largest deals usually have targets that are listed on a stock exchange.

### 3.2 | Rival bank data selection and sample description

The acquirer and target rival sample selection procedure follows a modified approach of Hankir et al. (2011) with the requirement to obtain at least three rival firms for an event to avoid over- or underweighting specific events (see Appendix B for a detailed description of the rival selection procedure). We determine three suitable rivals for 466 acquirers out of our sample of 486 acquiring banks, giving us a total of 1398 rival observations. For our sample of 107 exchange-listed targets, we identify three rivals for 94 institutions, giving us a total of 282 observations. Acquiring and target bank rivals are fairly close in terms of average market capitalization, with the acquiring bank's rival being within approximately 32% of the acquiring bank, while for targets it is slightly lower at about 29%.<sup>iv</sup> Generally, rivals of domestic acquirers or targets are closer to the respective acquirer or target in terms of market capitalization than their peers in cross-border transactions.

### 3.3 | Empirical analyses

The stock returns are calculated using a market model event study. The model is estimated using a 252-trading day period (one trading year) from 272 to 21 days prior to the official merger announcement with:

$$R_{it} = \hat{\alpha}_i + \hat{\beta}_i R_{mt} + \varepsilon_{it}, \quad (1)$$

where  $R_{it}$  is defined as the return of stock  $i$  on day  $t$  during the estimation period,  $R_{mt}$  is defined as the return of the respective value-weighted Datastream country index on day  $t$ , and  $\hat{\alpha}_i$  and  $\hat{\beta}_i$  are the regression coefficients of stock  $i$ . The cumulative abnormal returns (CARs) for stock  $i$  are calculated during the event window  $[\tau_1; \tau_2]$  with  $\tau_1, \tau_2 \in [-5, \dots, +5]$  starting 5 days prior to and ending 5 days after the announcement day  $t=0$ . Average CARs (ACARs) are calculated as the sum of all CARs over a particular event window divided by the number of observations.

Two significance tests are used to determine whether the observed ACARs are statistically different from zero.

We employ the variance-change corrected standardized cross-section test developed by Boehmer et al. (1991), the BMP-test, incorporating the correction for serial dependence that can occur when summing up successive abnormal returns that are estimated using the same parameters according to Cowan (1993). Furthermore, we test for significance using the nonparametric rank test first introduced by Corrado (1989) and later refined by Corrado and Zivney (1992), the CZ-test.

To identify the main determinants of the acquiring banks' short-term abnormal returns to the M&A announcements, we conduct several cross-sectional regression analyses. In its full specification, the ordinary least squares (OLS) regression takes the form:

$$CAR_{i,[-1;+1]} = \alpha + \beta_1 DOMESTIC_i + \sum_j \gamma_j Y_{ij} + \sum_k \delta_k Z_{i,k} + \varepsilon_i, \quad (2)$$

where the dependent variable  $CAR_{i,[-1;+1]}$  is the cumulative abnormal return of firm  $i$  during the  $[-1;+1]$  event window. To test whether Asian domestic acquirers achieve significantly higher CARs than acquirers in cross-border transactions, we use the binary variable *DOMESTIC*, which is equal to one in case acquirer and target are headquartered in the same country, and zero otherwise.  $Y_{ij}$  and  $Z_{i,k}$  are vectors of deal and acquirer control variables, respectively. The deal control variables include, among others, variables relating to the value of the transaction, whether the transaction was focusing for the bank's activities, the stake acquired, and whether the acquirer was previously invested in the target. We also control whether the target was private at the time of the acquisition announcement, as prior research shows that acquirers of private firms can achieve higher returns as they pay lower premiums due to an illiquidity discount for private firms (Fuller et al., 2002; Ma et al., 2019; Officer, 2007). The vector of acquirer control variables contains variables relating to the size of the acquirer, its leverage, and profitability. Finally,  $\varepsilon_i$  is the error term. A detailed description of all variables is provided in Appendix A, while Table OA-2 S2 in the Online Appendix reports the summary statistics of the variables.

## 4 | EMPIRICAL RESULTS

### 4.1 | Acquirer and target M&A announcement effects

The event study results for the acquiring banks surrounding M&A announcements are presented on the left of Table 2. Overall, we observe significant positive



TABLE 2 Event study results for acquiring and target banks.

Event window	ACAR (%)	Median CAR (%)	BMP-test (Z-score)	Corrado-test (Z-score)	ACAR (%)	Median CAR (%)	BMP-test (Z-score)	CZ-test (Z-score)
All acquirers ( $n = 486$ )				All exchange-listed target banks ( $n = 107$ )				
$[-5;+5]$	1.49	0.33	3.507***	2.379**	5.42	3.72	3.979***	2.962***
$[-1;+1]$	0.97	0.42	2.990***	2.503**	4.13	1.33	4.666***	4.313***
$[0;0]$	0.52	-0.01	3.054***	2.285**	2.03	0.68	3.976***	3.911***
$[-1;0]$	0.72	0.18	3.231***	2.387**	2.59	0.48	3.911***	3.652***
$[0;+1]$	0.78	0.25	2.530**	2.293**	3.56	1.90	4.433***	4.395***
Asian domestic acquirers ( $n = 347$ )				Targets of Asian domestic acquirers ( $n = 88$ )				
$[-5;+5]$	1.86	0.61	3.773***	2.345**	5.69	3.64	3.927***	2.443**
$[-1;+1]$	1.31	0.46	3.649***	3.115***	4.07	2.03	4.424***	4.057***
$[0;0]$	0.73	0.14	3.860***	3.138***	2.06	0.82	3.802***	4.299***
$[-1;0]$	0.93	0.32	3.653***	2.757***	2.51	0.42	3.523***	3.425***
$[0;+1]$	1.11	0.51	3.383***	3.276***	3.62	2.36	4.273***	4.584***
Cross-border acquirers ( $n = 139$ )				Targets of cross-border acquirers ( $n = 19$ )				
$[-5;+5]$	0.57	0.04	0.507	0.752	4.16	5.21	1.438	1.980**
$[-1;+1]$	0.15	0.23	-0.273	-0.277	4.37	0.67	1.574	1.705*
$[0;0]$	0.00	-0.24	-0.612	-0.738	1.86	-0.10	1.212	0.083
$[-1;0]$	0.18	0.09	0.251	0.088	2.95	0.60	1.667*	1.468
$[0;+1]$	-0.04	-0.18	-0.961	-0.949	3.28	0.12	1.341	0.679

Note: This table reports the stock market reaction of acquiring and target banks to M&A announcements in Asia between 1995 and 2021. The cumulative abnormal returns (CARs) are estimated for acquiring and target banks over multiple event windows. Daily abnormal returns are obtained using the market model with a 252-trading day estimation period. Average CARs (ACARs) are tested for statistical significance using the parametric test by Boehmer et al. (1991), the BMP-test, and the nonparametric rank test by Corrado (1989) and Corrado and Zivney (1992), the CZ-test. The results for Asian domestic and cross-border acquirers and targets of Asian domestic and cross-border acquirers are presented separately. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% level, respectively.

announcement returns, with an ACAR of 0.97% during the  $[-1;+1]$  event window, culminating in an ACAR of 1.49% during the  $[-5;+5]$  event window. This result stands in stark contrast to earlier studies on the financial sector consolidation in the U.S. (e.g., Becher, 2000), where generally significant negative returns are documented. The result also differs from prior studies on European bank M&As (e.g., Beitel et al., 2004) and M&As in emerging economies (e.g., Goddard et al., 2012; Kiymaz, 2004), where in both cases insignificant returns are observed. For example, Beitel et al. (2004) report insignificant negative ACARs close to zero during the  $[-1;+1]$  event window for bidders in European bank M&As and Goddard et al. (2012) document insignificant ACARs of 0.017% for Asian bidders. However, our results mirror more recent empirical evidence for M&As outside the banking sector (e.g., Adra et al., 2020; Alexandridis et al., 2017; Tunyi, 2021).

To test hypothesis H1a, we divide our sample into Asian domestic acquirers and cross-border acquirers. We find that Asian domestic acquirers are the driving force behind the overall positive returns as they achieve a

highly significant and positive ACAR of 1.31% during the  $[-1;+1]$  event window, and up to 1.86% during the  $[-5;+5]$  event window. The results for cross-border acquirers, in contrast, generally lack significance and are much smaller in magnitude, albeit largely positive. It therefore appears as if Asian domestic acquisitions are indeed viewed far more positively by investors than cross-border acquisitions into Asia, supporting hypothesis H1a.<sup>v</sup>

The results for the sample of exchange-listed target banks are presented on the right of Table 2 and are in line with prior research on bank M&As in U.S. and Europe (e.g., Becher, 2000; Beitel et al., 2004; Hankir et al., 2011) as target banks earn large, positive, and highly significant abnormal returns during the days surrounding M&A announcements. During the entire  $[-5;+5]$  event window, the ACAR reaches 5.42%. To test hypothesis H1b, we divide the target sample into firms purchased by Asian domestic acquirers and those that are targets of cross-border acquisitions. Targets of Asian domestic acquirers obtain highly significant positive returns of up to 5.69% during the  $[-5;+5]$  event window. The targets of cross-border acquisition likewise earn

TABLE 3 Event study results for acquirer and target rivals.

Event window	ACAR (%)	Median CAR (%)	BMP-test (Z-score)	Corrado-test (Z-score)	ACAR (%)	Median CAR (%)	BMP-test (Z-score)	CZ-test (Z-score)
All acquirer rivals ( $n = 1398$ )					All exchange-listed target bank rivals ( $n = 282$ )			
$[-5;+5]$	0.34	-0.23	1.219	1.377	1.85	0.79	2.849***	0.930
$[-1;+1]$	0.23	0.03	2.094**	1.624	1.33	0.25	4.417***	2.462**
$[0;0]$	0.03	-0.10	0.351	0.694	0.47	-0.01	3.150***	1.609
$[-1;0]$	0.12	-0.05	1.124	1.193	0.82	0.02	3.469***	1.367
$[0;+1]$	0.14	-0.05	1.596	1.287	0.98	0.21	4.131***	2.786***
Asian domestic acquirer rivals ( $n = 999$ )					Asian domestic acquirer target rivals ( $n = 243$ )			
$[-5;+5]$	0.71	-0.05	2.537**	1.914*	1.35	0.50	1.816*	0.220
$[-1;+1]$	0.38	0.06	2.713***	1.793*	1.46	0.28	4.358***	2.232**
$[0;0]$	0.20	-0.05	2.496**	1.946*	0.51	-0.02	3.007***	1.434
$[-1;0]$	0.26	-0.05	2.130**	1.621	0.95	0.02	3.544***	1.313
$[0;+1]$	0.32	0.01	2.805***	1.950*	1.02	0.21	3.886***	2.434**
Cross-border acquirer rivals ( $n = 399$ )					Cross-border acquirer target rivals ( $n = 39$ )			
$[-5;+5]$	-0.58	-0.41	-1.357	-0.468	4.98	2.05	2.576***	2.260**
$[-1;+1]$	-0.15	-0.02	-0.376	0.171	0.48	-0.12	1.091	0.878
$[0;0]$	-0.40	-0.12	-2.506**	-1.759*	0.21	0.09	0.944	0.653
$[-1;0]$	-0.25	-0.05	-1.029	-0.347	-0.02	0.11	0.361	0.258
$[0;+1]$	-0.30	-0.19	-1.441	-0.688	0.71	-0.04	1.452	1.279

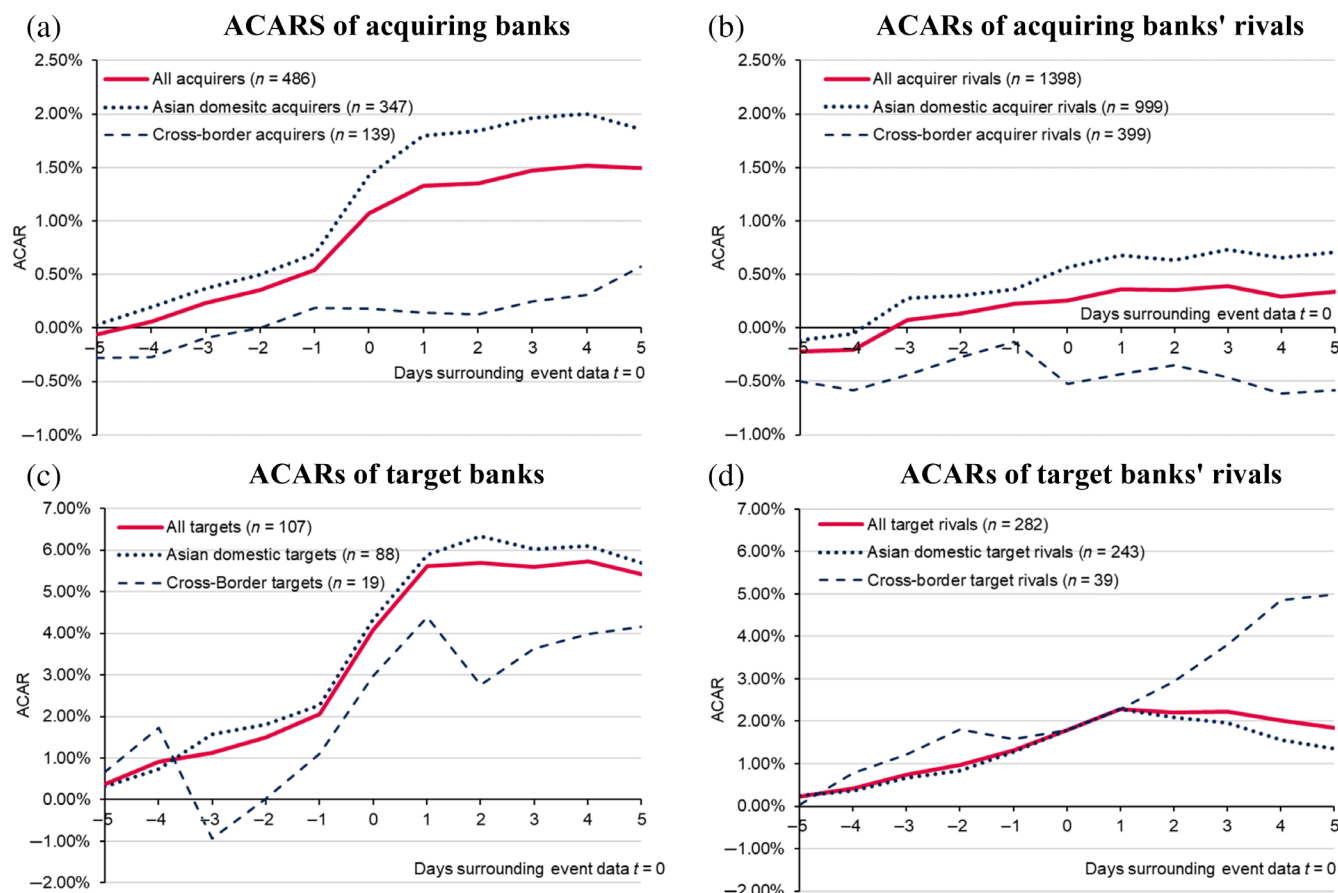
Note: This table reports the stock market reaction of acquiring and target bank rivals to M&A announcements in Asia between 1995 and 2021. The cumulative abnormal returns (CARs) are estimated for acquiring and target bank rivals over multiple event windows. Daily abnormal returns are obtained using the market model with a 252-trading day estimation period. Rivals are the three closest rivals as selected using the approach outlined in Appendix B. Average CARs (ACARs) are tested for statistical significance using the parametric test by Boehmer et al. (1991), the BMP-test, and the nonparametric rank test by Corrado (1989) and Corrado and Zivney (1992), the CZ-test. The results for rivals of Asian domestic acquirers and cross-border acquirers and rivals of targets of Asian domestic and cross-border acquirers are presented separately. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% level, respectively.

positive returns, but these are smaller in magnitude with 4.16% during the  $[-5;+5]$  event window, and frequently lack significance. However, given the small sample size for targets of cross-border acquisitions, the results may not be easily generalizable. Yet, as targets earn significant and positive returns, irrespective of whether the transaction is domestic or cross-border in nature, hypothesis H1b is still supported.<sup>vi</sup>

## 4.2 | Rival announcement effects

The stock market reactions to M&A announcements by the acquiring banks' rivals are presented on the left of Table 3. In contrast to the acquirer sample, the results generally lack significance. The rival returns over the entire event period are comparatively small, but mostly positive. We find an insignificant ACAR of 0.23% during the  $[-1;+1]$  event window, which is in line with the insignificant ACAR of approximately 0.24% observed by Hankir et al. (2011) for their sample of U.S. and European bank M&As during the  $[-3;+3]$  event window. To test hypothesis H2, we split the sample into rivals of

Asian domestic acquirers and rivals of cross-border acquirers. Similar to the results for the acquiring banks, the capital market reactions for rivals differ, depending on whether they are a rival of a domestic acquisition or a cross-border transaction. For rivals of Asian domestic acquirers, the capital market reactions are positive and significant during all event windows, resulting in ACARs between 0.38% for the  $[-1;+1]$  event window and 0.71% for the  $[-5;+5]$  event window. This provides strong support for hypothesis H2. The domestic consolidation process among Asian financial institutions appears to be regarded as predominately positive by shareholders, not only for acquiring banks, but also for their closest rivals. This may also be seen as a first indication that market power considerations potentially play a prominent role when capital markets value M&A transactions by Asian domestic institutions, lending support to the *Market Power Hypothesis*. The returns to rivals of cross-border acquirers, on the other hand, are negative, but largely lack significance. This result is less surprising, as cross-border transactions should have little impact on the competitive environment in the acquiring bank's country of origin.



**FIGURE 1** Acquirer, target, and rival bank ACAR development surrounding the M&A announcement date. This figure shows the development of the average cumulative abnormal return (ACAR) of the acquiring and target banks and their three closest rivals during the  $[-5; +5]$  event window surrounding the M&A announcement date  $t = 0$ . The acquiring bank sample is divided into Asian domestic and cross-border acquirers and the acquiring bank rival sample into rivals of Asian domestic acquirers and rivals of cross-border acquirers. Similarly, the exchange-listed target bank sample is divided into targets by Asian domestic acquirers and cross-border acquirers and the exchange-listed target bank rivals are divided into target rivals of Asian domestic acquirers and target bank rivals of cross-border acquirers. Daily abnormal returns are obtained using the market model with a 252-trading day estimation period. Rivals are selected using the approach outlined in Appendix B. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

The right side of Table 3 presents the stock market reactions for all target rival banks. The reactions are positive and mostly significant, indicating that target rivals also appear to profit from further consolidation among financial institutions. To further investigate hypothesis H3, we divide the sample of target rivals into target rivals of domestic and cross-border deals. In line with our prior analyses, the results differ between domestic and cross-border transactions. Target rivals of domestic transaction earn positive returns of about 1.35% during the  $[-5; +5]$  event window, while target rivals of cross-border transactions earn much higher returns of up to 4.98% during the same event window, lending some support to the *Acquisition Probability Hypothesis*. However, as the sample is rather small and given that all other event windows except the  $[-5; +5]$  one lack significance, the results need to be interpreted carefully. We therefore find that the stock market reaction of target

rivals supports hypothesis H3, but only marginally so given the results for the rivals of targets of cross-border transactions.

In summary, the observed return patterns for acquirers, targets, and their respective rivals are largely in line with those expected if market power considerations were to play a prominent role. Figure 1 illustrates the short-term market reaction to M&A announcements and shows that not only acquirers and targets gain, but also their respective rivals. That this is predominantly driven by domestic deals appears to be reasonable, as these transactions lead to larger banks that can then presumably leverage their larger size to their advantage. Cross-border acquisitions, on the other hand, are unlikely to decrease the level of competition in the target country, as one competitor is simply replaced by another one, albeit from a different country. We explore whether market power considerations or alternative explanations play

TABLE 4 Regression results for acquiring banks and their rivals.

	Model 1	Model 2	Model 3	Model 4	Model 5
Panel A: Acquirer					
<i>DOMESTIC</i>	1.159*** (0.424)	1.254*** (0.453)	1.093** (0.475)	1.236** (0.510)	1.361** (0.598)
Deal controls					
<i>PRIVTAR</i>		−0.001 (0.546)		0.017 (0.574)	−0.081 (0.628)
<i>VALUE</i>		0.030 (0.142)		0.019 (0.145)	0.073 (0.169)
<i>FOCUS</i>		0.613 (0.487)		0.577 (0.493)	0.823 (0.563)
<i>TOEHOLD</i>		−0.073 (0.605)		−0.142 (0.597)	−0.067 (0.683)
<i>STAKE ACQUIRED</i>		−0.008 (0.011)		−0.009 (0.012)	−0.014 (0.013)
<i>ALL CASH</i>		−0.562 (0.514)		−0.548 (0.527)	−0.999* (0.587)
Acquirer controls					
<i>LEVERAGE</i>			−0.327 (1.454)	−0.417 (1.554)	−0.544 (1.733)
<i>ROE</i>			−0.008 (0.007)	−0.007 (0.007)	−0.007 (0.006)
<i>ACQUIRER SIZE</i>			0.066 (0.601)	0.192 (0.624)	0.098 (0.703)
Constant	YES	YES	YES	YES	YES
Year FE	NO	NO	NO	NO	YES
Target country FE	NO	NO	NO	NO	YES
Observations	486	486	486	486	486
<i>R</i> <sup>2</sup>	0.009	0.016	0.014	0.020	0.104
Panel B: Acquirer rivals					
<i>DOMESTIC</i>	0.533** (0.219)	0.545** (0.219)	0.598** (0.232)	0.487** (0.234)	0.445* (0.247)
$\Delta$ SIZE		−0.024** (0.012)	−0.028** (0.011)	−0.029*** (0.011)	−0.024** (0.011)
$\Delta$ ROE		−0.020*** (0.005)	−0.019*** (0.005)	−0.019*** (0.005)	−0.022*** (0.006)
Deal controls	NO	NO	YES	YES	YES
Acquirer controls	NO	NO	NO	YES	YES
Constant	YES	YES	YES	YES	YES
Year FE	NO	NO	NO	NO	YES
Observations	1398	1398	1398	1398	1398
<i>R</i> <sup>2</sup>	0.003	0.009	0.016	0.022	0.054

Note: This table reports the cross-sectional regression coefficients using acquiring bank (Panel A) and acquiring bank rival (Panel B) *i*'s  $[-1; +1]$  event window cumulative abnormal return (CAR) as the dependent variable. The variable of interest is *DOMESTIC*, defined as one if the acquiring bank and target bank are from the same country, zero otherwise. For the acquirer rivals, additionally the variables  $\Delta$ SIZE, defined as the percentage difference of the total assets between the rival and acquiring bank in the year prior to the M&A announcement, and  $\Delta$ ROE, defined as the percentage difference of the return on equity between the rival and acquiring bank in the year prior to the M&A announcement, are added. The other variables are divided into deal controls and acquirer controls. The acquirer rival controls are the same as for the acquirer, but for the respective acquirer rivals. All variables are defined in Appendix A. The standard errors are corrected for heteroskedasticity and clustered at the acquiring bank level and given in parentheses. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% level, respectively.

a dominant role in domestic and cross-border acquisitions in more depth in Section 5.<sup>vii</sup>

### 4.3 | Cross-sectional analyses

So far, our univariate results suggest that Asian domestic acquirers achieve much higher returns than banks engaging in cross-border acquisitions. Likewise, rivals of domestic acquirers appear to experience stock price increases, while rivals of cross-border acquirers register slight share price losses. To test whether these results also hold in a multivariate setting, we run several cross-sectional regressions controlling for a variety of deal-specific and acquirer-specific variables, while using the acquiring banks' or acquiring banks' rivals CAR as the dependent variable.

The results for the acquiring banks are reported in Table 4 Panel A. Regression model 1 supports our prior results that Asian domestic acquirers achieve significantly higher returns than cross-border acquirers, as shown by the significant and positive coefficient for *DOMESTIC*. Regression models 2 through 4 successively add further deal-specific and acquirer-specific variables, while model 5 includes all control variables as well as year and target country fixed effects. The coefficient for *DOMESTIC* remains positive and significant throughout all model specifications, while the control variables largely lack significance.<sup>viii</sup> As an additional test, we also run separate regressions controlling for the relative size instead of using the deal control variable *SIZE*. The results are reported in Table OA-3 in the Online Appendix and show that the coefficient for the relative size variable is positive and significant, capturing some of the effects of the variable *DOMESTIC* and thereby reducing its level of significance. As relatively large deals are likely to be associated with increased market power, this result provides further support for our assumption that market power considerations are likely a key driver of the observed stock return patterns. These results are in line with our univariate results and provide additional support for hypothesis H1a.<sup>ix</sup>

Next, we examine the drivers of the acquiring banks' rivals short-term stock market performance. The results are presented in Table 4 Panel B. We find that the coefficient for *DOMESTIC* is positive and significant for all model specification, indicating that the rivals of Asian domestic acquiring banks achieve significantly higher returns than the rivals of cross-border acquirers. This result lends further support to hypothesis H2. Adding variables for size and profitability differentials between acquiring banks and their respective rivals,  $\Delta SIZE$  and  $\Delta ROE$ , suggests that differences in size as well as

differences in profitability matter, too. The coefficients for  $\Delta SIZE$  and  $\Delta ROE$  are negative and significant, indicating that rivals with larger size and profitability differentials tend to gain lower returns surrounding the M&A announcement of a competitor. This may be interpreted as markets anticipating that similarly sized rivals that achieve similar levels of profitability stand to gain most from further consolidation of the domestic banking market.

Looking at the event study results for acquirers and their rivals in conjunction with the results of the cross-sectional regression analyses, an increasingly clearer picture emerges that market power considerations may play an important role in explaining acquirers stock returns surrounding M&A announcements. These market power considerations appear to be most prevalent in Asian domestic mergers. In the next section we split the sample into domestic and cross-border transactions to obtain a more nuanced understanding of the different channels that may drive acquiring banks' M&A announcement returns.<sup>x</sup>

## 5 | CHANNELS FOR THE OBSERVED ACQUIRER WEALTH EFFECTS

### 5.1 | Domestic deals and market power considerations

Our empirical results to this point strongly suggest that market power considerations are likely the dominant driver behind the positive shareholder wealth effects observed for bank mergers in Asia. Especially Asian domestic transactions are associated with positive wealth effects, not only for the acquirer and target but also for their respective rivals. To provide further support for this assumption, and to test hypotheses H4, we look at changes in the market concentration in the target country from the year prior to the M&A announcement to the year following the announcement. We use the Herfindahl–Hirschman Index (HHI-Index) and the top three (five) banks concentration ratio, the CR3-ratio (CR5-ratio), defined as the sum of the total assets of the three (five) largest banks in the respective country divided by the total assets of all banks in this country.<sup>xi</sup>

The results of this analysis are presented in Table 5 with Panel A showing the HHI-Index, Panel B the CR3-ratio, and Panel C the CR5-ratio. For the entire sample, the HHI-Index shows a significant increase from the year prior to the acquisition to the year following it. When dividing the sample into Asian domestic and cross-border acquirers, we find that the increase in the



TABLE 5 Changes in market concentration levels.

		Year prior to announcement		Year following announcement		Difference	
	Observations	Mean	Median	Mean	Median	Mean	Median
Panel A: HHI							
All acquirers	461	0.1387	0.0642	0.1542	0.0690	9.574%***	2.031%***
Domestic acquirers	328	0.1170	0.0558	0.1340	0.0572	10.070%***	3.348%***
Cross-border acquirers	133	0.1924	0.1472	0.2042	0.1245	8.350%	−0.584%
Panel B: CR3-ratio							
All acquirers	459	43.694%	35.921%	44.209%	35.046%	2.232%***	1.173%**
Domestic acquirers	328	38.881%	30.252%	40.057%	32.665%	3.424%***	1.786%***
Cross-border acquirers	131	55.743%	54.729%	54.604%	52.507%	−0.752%	−1.074%
Panel C: CR5-ratio							
All acquirers	458	55.372%	45.156%	56.105%	47.224%	2.249%***	0.618%***
Domestic acquirers	328	50.034%	40.564%	51.377%	43.441%	3.304%***	1.073%***
Cross-border acquirers	130	68.841%	69.864%	68.036%	67.164%	−0.413%	−0.153%

Note: This table reports the target country market concentration ratios in the year prior to and following the M&A announcement. This table further reports the changes in the market concentration ratios from the year prior to the announcement to the year following the announcement. Panel A shows the market concentration measured by the Herfindahl–Hirschman Index (HHI), while Panel B (Panel C) shows the market concentration using the CR3-ratio (CR5-ratio), defined as the sum of the total assets of the three (five) largest banks in the target country, divided by the total assets of all banks in the respective country. The differences in market concentration before and after the M&A announcement are calculated for each announcement and the mean and median values for each sample are reported. The changes in the market concentration are tested using the parametric *t*-test, reported at the mean values, and the nonparametric Wilcoxon signed-ranked test, reported at the median values. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% level, respectively.

HHI-Index is entirely driven by Asian domestic transactions, given the positive and significant changes. Acquisitions by cross-border acquirers likewise result in an increase in the HHI-Index, but this increase is not statistically significant. Interestingly, the HHI-Index in case of cross-border acquisitions is on average and at the median higher in the year prior to the acquisition compared to the HHI-Index of domestic transactions. This may indicate that cross-border acquirers primarily pursue deals in countries where market concentration is already relatively high, which in turn suggests that further consolidation by domestic acquirers might not be possible given potential regulatory concerns based on the existing high levels of market concentrations.

For the CR3-ratio and the CR5-ratio a similar picture emerges with the increases in the respective ratio being entirely driven by Asian domestic acquisitions. In case of Asian domestic acquirers, the mean and median CR3-ratio and CR5-ratio are significantly higher in the year following the transaction compared to the year prior to it. Following cross-border acquisitions, we observe slight declines in the CR3-ratio and CR5-ratio, but these changes lack statistical significance. The results of the changes in the concentration ratios support hypotheses H4. We observe significant increases for all three market concentration ratios in case of Asian

domestic acquisitions, while cross-border transactions do not impact concentration ratios in a meaningful manner.

Looking at the empirical results so far, it becomes increasingly apparent that market power considerations appear to be the primary driver of the positive shareholder wealth effects. These positive effects largely accrue to Asian domestic acquirers. In a next step, we limit our sample to domestic transactions and aim to directly link the acquiring bank's M&A announcement returns to changes in its market share. To this end, we introduce the variable  $\Delta MARKET\ SHARE$ , defined as the estimated percentage change of a bank's market share by adding the deal value as a size proxy to its total assets.<sup>xii</sup> The intuition behind this variable is that larger relative changes in a bank's market share are more likely to be associated with an increase in its market power.

Table 6 reports the results of the regression analyses on the impact of changes in a bank's market share on its M&A announcement returns. It can be seen that the acquiring bank's announcement CAR is significantly related to changes in its market share, as indicated by the positive and significant coefficient for  $\Delta MARKET\ SHARE$ . The larger the changes in the market share, the higher the returns to the acquiring bank. Adding further variables and controlling for deal-specific, acquirer-specific, and year and target country fixed effects does

	Model 1	Model 2	Model 3	Model 4	Model 5
$\Delta$ MARKET SHARE	0.116** (0.049)	0.121** (0.052)	0.123** (0.050)	0.136** (0.053)	0.163*** (0.043)
Deal controls	NO	YES	NO	YES	YES
Acquirer controls	NO	NO	YES	YES	YES
Constant	YES	YES	YES	YES	YES
Country FE	NO	NO	NO	NO	YES
Year FE	NO	NO	NO	NO	YES
Observations	347	347	347	347	347
R <sup>2</sup>	0.036	0.041	0.047	0.054	0.170

**TABLE 6** The influence of changes in acquirer's market share on acquiring bank M&A announcement returns.

*Note:* This table reports the cross-sectional regression coefficients using Asian domestic acquiring bank  $i$ 's  $[-1; +1]$  event window cumulative abnormal return (CAR) as the dependent variable. The variable of interest is  $\Delta$ MARKET SHARE, estimated as the percentage change of bank  $i$ 's market share (measured by bank's total assets divided by the country's total banking assets in the year prior to the announcement) by adding the deal value as a size proxy to its total assets. The other variables are divided into deal controls and acquirer controls. All variables are defined in Appendix A. The standard errors are corrected for heteroskedasticity and clustered at the acquiring bank level and given in parentheses. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% level, respectively.

not change this result. This provides robust evidence that increases in market share are highly valued by investors. Viewed in conjunction with the significant increases in market concentration ratios for domestic transactions, this outcome supports our conclusion that the observed positive returns to Asian domestic acquiring banks are primarily driven by market power considerations.

## 5.2 | Alternative channels for cross-border transactions

In a next step, we want to obtain a better understanding of the factors that influence the wealth effects of cross-border acquisitions. Cross-border acquisitions are less frequent than domestic ones, but are still responsible for about 30% of global M&A deals by number and an even larger share in terms of deal value (Erel et al., 2012, 2022). For corporate cross-border mergers and acquisitions, prior research finds that, among others, differences in the legal protection of shareholder rights (e.g., Barbopoulos et al., 2012; Bris & Cabolis, 2008; La Porta et al., 1998) or labour regulations (Levine et al., 2020) can play a role in determining merger outcomes. For bank mergers, however, particularly considerations around regulatory arbitrage (Houston et al., 2012; Karolyi & Taboada, 2015) appear to play a role. Additionally, cultural differences may also impact cross-border M&As (Ahern et al., 2015) and given the heterogeneity of Asia, both in terms of culture and regulatory regimes, we focus on these two factors in our following analyses.

### 5.2.1 | Cultural differences

Prior studies document that national culture can have an impact on a variety of topics in the area of finance, ranging from stock performance (Chui et al., 2010), equity analysts' recommendations (Pursiainen, 2022), financing structures (Bedendo et al., 2020), to corporate risk taking (Li et al., 2013) and even bank failures (Berger et al., 2021). With respect to the effect of culture on M&As, Weber et al. (1996) find that larger differences in national culture can hamper M&A integration and Siegel et al. (2011) document that M&A performance is rather poor if there are large differentials in the level of egalitarianism between acquirer and target nation. Ahern et al. (2015) show that greater cultural distance between two countries is associated with a lower volume of cross-border mergers and lower combined M&A announcement returns.

To test whether cultural factors impact the acquirers' short-term M&A announcement returns, we follow Berger et al. (2021) and rely on the four most prominent cultural dimensions of Hofstede: (i) individualism versus collectivism, (ii) masculinity versus femininity, (iii) uncertainty avoidance, and (iv) power distance (Hofstede, 2001; Hofstede et al., 2010). As we want to focus on the differences in these dimensions between the acquirer and target nation, we limit our sample to cross-border transactions and use a cross-sectional regression, with the acquiring bank  $i$ 's  $[-1; +1]$  event window CAR as the dependent variable. The regression takes the form:

**TABLE 7** Impact of cultural differences on cross-border acquirer M&A announcement returns.

	Model 1	Model 2	Model 3	Model 4	Model 5
$\Delta IDV$	0.013 (0.025)				0.006 (0.029)
$\Delta MAS$		0.039 (0.025)			0.029 (0.024)
$\Delta UAI$			0.035* (0.019)		0.030 (0.018)
$\Delta PDI$				−0.017 (0.028)	0.001 (0.032)
Deal controls	YES	YES	YES	YES	YES
Acquirer controls	YES	YES	YES	YES	YES
Constant	YES	YES	YES	YES	YES
Target country FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Observations	139	139	139	139	139
$R^2$	0.330	0.351	0.356	0.330	0.370

*Note:* This table reports the cross-sectional regression coefficients using cross-border acquiring bank  $i$ 's  $[-1; +1]$  event window cumulative abnormal return (CAR) as the dependent variable. The variables of interest are  $\Delta IDV$  and  $\Delta MAS$ , which measure the difference in Hofstede's individualism versus collectivism and masculinity versus femininity dimension (Hofstede, 2001; Hofstede et al., 2010) between the acquiring and target bank nation, respectively, and  $\Delta UAI$  and  $\Delta PDI$ , which measure the difference in Hofstede's uncertainty avoidance and power distance index (Hofstede, 2001; Hofstede et al., 2010) between the acquiring and target bank nation, respectively (see Appendix A for more details on the variables). The standard errors are corrected for heteroskedasticity and clustered at the acquiring bank level and given in parentheses. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% level, respectively.

$$\begin{aligned} CAR_{i,[-1;+1]} = & \alpha + \beta_1 \Delta IDV_i + \beta_2 \Delta MAS_i + \beta_3 \Delta UAI_i \quad (3) \\ & + \beta_4 \Delta PDI_i + \sum_j \gamma_j Y_{ij} + \sum_k \delta_k Z_{i,k} \\ & + \varepsilon_i, \end{aligned}$$

where  $\Delta IDV$  and  $\Delta MAS$  are the differences between the acquiring and target bank nation in Hofstede's individualism versus collectivism and masculinity versus femininity dimensions and  $\Delta UAI$  and  $\Delta PDI$  are the difference in Hofstede's uncertainty avoidance and power distance index between the acquiring and target bank nation.  $Y_{ij}$  and  $Z_{i,k}$  are again the vectors of deal and acquirer control variables and  $\varepsilon_i$  is the error term (see also Appendix A for detailed variable definitions).

The results of this analysis are presented in Table 7. We find that none of the variables measuring cultural difference are significant apart from some weak evidence that positive differentials in the uncertainty avoidance index (i.e., the acquirer's country has a higher uncertainty avoidance index than the target's country) may lead to higher acquirer CARs. However, this result is only weakly significant and even loses significance in conjunction with the other variables measuring cultural difference.<sup>xiii</sup> We, therefore conclude that cultural differences do

not have an influence acquiring banks' short-term returns surrounding the M&A announcement.

### 5.2.2 | Regulatory arbitrage considerations

Regulatory arbitrage considerations may also play a prominent role for banks, with M&As being one way through which acquiring banks obtain assets in jurisdiction with lower levels of regulation and supervision than their own. Houston et al. (2012) find that banks indeed seem to move capital into less regulated markets. In contrast, Buch and DeLong (2004) show that banks in jurisdictions with higher levels of supervisory power are actually more attractive targets for international M&A transactions, while Karolyi and Taboada (2015) document that acquiring banks are usually located in countries with stronger regulatory regimes than their target. Moreover, they find that returns to targets are higher in cases where the acquirer's country regulatory framework is of higher quality than that of the target nation. Frame et al. (2020) likewise find that international subsidiaries of U.S. bank holding companies are likely to be located in jurisdiction with lower regulation levels than in the U.S.<sup>xiv</sup>

TABLE 8 Impact of regulatory differences on cross-border acquirer M&amp;A announcement returns.

	Model 1	Model 2	Model 3	Model 4
$\Delta$ TRANSPARENCY	−0.724 (0.909)			−0.195 (2.748)
$\Delta$ SUPERVISORY		−0.475 (0.332)		−0.378 (0.419)
$\Delta$ RESTRICTION			−0.467** (0.222)	−0.153 (0.552)
Deal controls	YES	YES	YES	YES
Acquirer controls	YES	YES	YES	YES
Target country FE	YES	YES	YES	YES
Constant	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	105	71	105	69
R <sup>2</sup>	0.385	0.565	0.414	0.574

Note: This table reports the cross-sectional regression coefficients using acquiring bank  $i$ 's  $[-1;+1]$  event window cumulative abnormal return (CAR) as the dependent variable. The variables of interest are  $\Delta$ TRANSPARENCY,  $\Delta$ SUPERVISORY, and  $\Delta$ RESTRICTION, defined as the difference in the Financial Statement Transparency Index, Official Supervisory Power Index, and the Restriction on Banking Activity Index, respectively between the acquiring and target bank nation. The variables are based on the Bank Regulation and Supervision Survey of the World Bank (see Appendix A for more details on the variables). The standard errors are corrected for heteroscedasticity and clustered at the acquiring bank level and given in parentheses. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% level, respectively.

To analyse whether differences in regulatory regimes play a role in M&A transactions in Asia, we obtain proxies for regulatory and supervisory power in different countries and through time from the Bank Regulation and Supervision Survey of the World Bank. The database is created from multiple surveys and is compiled by Barth et al. (2004, 2005, 2008, 2012) and Anginer et al. (2019).<sup>xv</sup> We use three specific indices for our analyses: the Restriction on Banking Activity Index, the Official Supervisory Power Index, and the Financial Statement Transparency Index. As we are only interested in the differences in the regulatory and supervisory regimes between the acquiring and target country, we again limit our sample to cross-border acquisitions. We calculate the difference in these indices between the acquirer and target country, captured by the following three variables:  $\Delta$ TRANSPARENCY,  $\Delta$ SUPERVISORY, and  $\Delta$ RESTRICTION (see Appendix A for detailed variable definitions). We then use a cross-sectional regression with acquiring bank  $i$ 's  $[-1;+1]$  event window CAR as the dependent variable of the form:

$$\begin{aligned} \text{CAR}_{i,[-1;+1]} = & \alpha + \beta_1 \Delta \text{TRANSPARENCY}_i \\ & + \beta_2 \Delta \text{SUPERVISORY}_i \\ & + \beta_3 \Delta \text{RESTRICTION}_i + \sum_j \gamma_j Y_{ij} \\ & + \sum_k \delta_k Z_{i,k} + \varepsilon_i, \end{aligned} \quad (4)$$

where  $Y_{ij}$  and  $Z_{i,k}$  are again the vectors of deal and acquirer control variables and  $\varepsilon_i$  is the error term.

The regression results reported in Table 8 indicate that regulatory arbitrage consideration appear to play at most a subordinated role for cross-border bank M&As in Asia. The only variable that is significant, at least on a standalone basis, is  $\Delta$ RESTRICTION, which has a negative and significant coefficient. This indicates that acquiring banks that purchase targets in jurisdictions with lower levels of restrictions on banking activities than in their home country obtain lower returns, suggesting that investors may be concerned about the bank potentially taking on risky activities that it may not be able to pursue at home. However, once the variable is analysed in conjunction with the other variables relating to regulatory differences between the acquiring and target country, it loses its significance. We therefore conclude that regulatory arbitrage considerations, like cultural differences, do not significantly impact the short-term M&A announcement returns of cross-border acquirers in Asia. Overall, the stock return patterns surrounding bank M&As in Asia can be predominantly explained by domestic mergers, where market power considerations appear to be the primary channel through which acquirers achieve positive shareholder wealth effects.

## 6 | FURTHER EMPIRICAL ANALYSES

In this section, we conduct two additional tests. First, we take a closer look at our target sample and test which target characteristics increase the likelihood of being selected by Asian domestic acquirers versus cross-border acquirers. Second, we employ propensity score matching (PSM) to control for potential differences in Asian domestic and cross-border acquirers.

We use our sample of 107 exchange-listed target observations and run a probit regression where the dependent variable is defined as one, if the target is acquired by an Asian domestic acquirer, and zero otherwise. The independent variables are set of variables related to size and profitability difference as well as selected target characteristics.<sup>xvi</sup> The results of the probit regression consistently show that Asian domestic acquirers select relatively large targets compared to their own size, while profitability differentials play a subordinated role (see Table S5 in the Online Appendix). While we observe a slight tendency that cross-border acquirers are more likely to purchase subsidiaries and relatively large targets, as indicated by the negative coefficient for the respective variables, other target-specific variables do not appear to impact target selection. The evidence that Asian domestic acquirers seem to purchase relatively large targets compared to their own size, while at the same time being less likely to buy subsidiaries, may be interpreted as market consolidation motives being a primary driver of their target selection. That the acquisition of relatively large targets is beneficial for acquirers is also shown in Section 4.3 and Table OA-3 in the Online Appendix.

Next, we use PSM to pair Asian domestic acquirers (treatment group) with cross-border acquirers (control group) to examine whether our results of differential wealth effects between Asian domestic acquirers and cross-border acquiring banks are driven by differences in the characteristics between the two groups. This is done to alleviate possible concerns regarding differences in bank characteristics driving our result of positive Asian domestic acquirer announcement returns. We allow for each control observation to be used more than once and the covariates employed as matching criteria are the deal and acquirer controls, as well as target country and year fixed effects. The average treatment effect is positive with 1.231 and significant at the 5% level. Therefore, Asian domestic acquirers achieve, on average, significantly higher returns than banks that engage in cross-border acquisitions in Asia, even after controlling for potential differences deal-specific and acquirer-specific characteristics.

## 7 | CONCLUSION

We investigate the industry wide shareholder wealth effects of acquirers, targets, and their respective rivals surrounding bank M&A announcements in Asia between 1995 and 2021. Our results for 486 majority acquisitions show that both acquiring and target banks enjoy positive stock market valuation effects. However, when we divide the sample into Asian domestic and cross-border acquiring banks, we observe that the positive overall results for acquirers are entirely driven by Asian domestic deals. In contrast, cross-border acquirers realize non-significant returns. By broadening the scope of our analysis and looking at the returns to the acquiring banks' rivals, we find that rivals of Asian domestic acquirers earn significant positive returns, while the rivals of cross-border acquirers earn slightly negative but largely insignificant returns. The rivals of the target banks also gain, irrespective of whether it is a domestic or cross-border transaction.

The results of the multivariate regressions provide further evidence that Asian domestic acquirers' stock returns outperform those of cross-border acquirers. Additionally, a more detailed analysis of the potential reasons for the positive returns for Asian acquirers provides strong evidence that market power considerations are likely to be the main driver. We observe a significant increase in market concentration ratios in the year following the M&A transaction. At the same time, Asian domestic acquirers achieve higher returns, the higher their increase in relative market share as the result of the transaction. For cross-border acquisitions, we test whether cultural or regulatory arbitrage considerations drive acquiring banks' returns but find no evidence that this is the case. An analysis of a target's likelihood of being acquired by an Asian domestic acquirer shows that domestic acquirers seek out relatively large targets compared to their own size, further corroborating our results that domestic acquirers may specifically seek to consolidate the market.

Our findings are in stark contrast to prior empirical research focusing on the banking markets of the U.S. and Europe (e.g. Becher, 2000; Beitel et al., 2004; Hankir et al., 2011). In Asia, further consolidation among domestic institutions benefits the acquiring banks and their rivals as investors appear to see considerable advantages in these mergers. It seems that investors particularly value increases in the acquiring bank's market share. This increase leads to a subsequent rise in banking market concentration levels, which, in turn, most likely leads to an increase in market power for the remaining institutions. This may ultimately raise regulatory concerns in



case banks start using their increased market power to the detriment of consumers.

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## DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as data from commercial databases has been used that are subject to the database provider data sharing restrictions.

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## ENDNOTES

<sup>i</sup> We do not anticipate that the rivals of cross-border acquirers will experience significant returns as the competitive situation in the respective domestic banking market is not meaningfully altered. We therefore forgo a specific hypothesis in relation to the rivals of cross-border acquirers.

<sup>ii</sup> Asia is defined along the traditional geographic demarcation of Asia and does not include countries in the Pacific region. The following countries in our sample are identified as Asian: China, Hong Kong, India, Indonesia, Japan, Kazakhstan, Malaysia, Oman, Pakistan, Philippines, Saudi Arabia, Singapore, South Korea, Sri Lanka, Taiwan, Thailand, United Arab Emirates and Vietnam.

<sup>iii</sup> We use the primary Standard Industry Classification (SIC) codes from 6000 to 6289 and SIC codes 6712 and 6733 to identify financial institutions. We thereby explicitly exclude all insurance carriers, real estate companies, non-bank holding companies and miscellaneous investment companies, such as oil royalty traders and patent owners and lessors.

<sup>iv</sup> Table B1 in Appendix B provides a brief overview of the market capitalization of the rival sample in relation to the acquiring and target institutions and the frequency of observations for their respective two-digit SIC codes.

<sup>v</sup> For Asian countries with more than five cross-border transaction, we observe that Japanese, South Korean, and Malaysian acquirers generally perform better than Taiwanese or Singaporean ones, but no other distinct patterns emerge for countries with more than five observations. For countries with fewer than five cross-border acquirers, the results are more heterogeneous with no clear pattern emerging. However, what can generally be observed is that cross-border M&As by Asian banks result in lower acquirer CARs than corresponding domestic M&As.

<sup>vi</sup> As a robustness exercise, we also vary the length of the event windows to capture any significant pre-announcement price changes. To this end, we use the  $[-63; +10]$ ,  $[-42; +10]$ ,  $[-20; +10]$  event window, in each case keeping a 252-day estimation window ending 1 day prior to the first day of the event window. The longer event windows are implemented to capture any potential long-term run-ups, particularly for targets (Eaton et al., 2022). The results show that there is almost no run-up observable for cross-border acquirers, but a very slight one for Asian domestic acquirers, which leads to the difference between Asian domestic and cross-border acquirers being even more pronounced (up to 2.86% for the  $[-63; +10]$  event window). For targets, our main results are likewise confirmed as we observe only very small run-ups prior to the M&A announcement, with only little difference between targets of domestic and cross-border acquirers.

<sup>vii</sup> To ensure that our results are not driven by observations from a given target country/countries, we run several sensitivity tests, excluding certain target countries. Our results for acquirer and target announcement CARs hold even when dropping Japanese targets (the largest number of target observations), or Japanese, South Korean and Taiwanese targets. The level of significance is generally lower, the more target countries are dropped, but the overall return patterns for acquirers and targets still hold. For acquirer rivals, the overall return patterns also still hold, but the individual ACARs lose significance when removing these countries. The difference between ACARs of rivals of Asian domestic and cross-border acquirers remains significant, albeit only for certain event windows. Therefore, our results appear to be somewhat sensitive to inclusion of the most prominent target countries, but as the overall return patterns remain, this does not invalidate our results for acquirer rivals. The results for target rivals likewise still hold, albeit at slightly reduced levels of significance. The results are not reported for reasons of brevity but available upon request. Note that we consequently control for country fixed effects in our multivariate regressions, which should capture potential differences between countries.

<sup>viii</sup> While the explanatory power, as measured by the  $R$ -squared, is relatively low for the naïve regression model 1, adding further independent variables improves the explanatory power substantially to more than 0.104 for model 5. The explanatory power of our cross-sectional regressions is therefore largely in line with prior research on bank M&As (e.g., Beitel et al., 2004; Goddard et al., 2012), and also more recent research on corporate M&A (e.g., Tunyi, 2021).

<sup>ix</sup> There are no concerns around multicollinearity with respect to our regressions results, neither for the regressions using the acquirer CARs as the dependent variable, nor for the regressions using the CARs of the acquirers' rivals. The correlation

coefficients of our variables of interest are generally below 0.5 (see Table S4 in the Online Appendix) and variance inflation factors are all small.

<sup>x</sup> Similar to the event study, we also undertake a sensitivity analysis for our regressions dropping Japanese targets, and subsequently Japanese, South Korean, and Taiwanese targets. While the results for the regression on acquirers' CARs remains largely robust, albeit the coefficient for *DOMESTIC* only reaching the 10% level of significance, the results for acquirer rivals are less robust to the exclusion of these countries. For these regressions, the coefficient for *DOMESTIC* does not reach common thresholds of statistical significance, potentially due to the reduction in sample size by more than half, while the significance of the coefficients for  $\Delta SIZE$  and  $\Delta ROE$  remain. We therefore acknowledge that the result regarding rival returns to domestic acquisitions may be partially driven by certain target countries. However, as the results of our subsequent channel analysis for domestic acquirers in Section 5.1 remain unaffected by the exclusion of these target countries, our conclusions regarding market power considerations being a significant driver for domestic acquirer CARs overall remain valid.

<sup>xi</sup> We also considered alternative measures to capture market power considerations, such as the Boone indicator, developed by Boone (2008). However, as the Boone indicator is estimated looking at the relationship between banks' efficiency and their market share, we would need detailed profit and cost data on the bank level to estimate banks' efficiency levels, and in particular to estimate the respective cost functions. For most of our sample banks, this type of granular data is unfortunately not available, and we therefore forgo the estimation of such indicators.

<sup>xii</sup> Adding the deal value as a proxy provides a conservative estimate of the actual changes. Looking at the subsample of acquisitions for which we have target banks' total asset, we find that the average and median ratio of deal value to total assets is 29% and 12%, respectively. The correlation between deal value and total assets is high with 0.83, which suggests it is a reasonable proxy.

<sup>xiii</sup> As a robustness test, we used different methods to measure the cultural distance between acquirer and target nation. Besides the absolute difference, we used the relative distance and Euclidean distance. The results remain unchanged.

<sup>xiv</sup> Regulatory arbitrage appears to play a less prominent role in Europe. While Carbo-Valverde et al. (2012) find that one of the drivers behind bank M&As in Europe is the possibility to shift risk onto EU safety nets, Hagendorff et al. (2012) find no evidence that the premiums targets receive are associated with regulatory arbitrage considerations.

<sup>xv</sup> This database is also used by Houston et al. (2012), Karolyi and Taboada (2015) and, more recently, by Frame et al. (2020). Since regulatory regimes can change over time, we follow Houston et al. (2012), Karolyi and Taboada (2015), and Frame et al. (2020) and divide our investigation period into five subperiods, one of these periods corresponding to each survey. Specifically, we use the first survey for the period from 1995 to 1999, the second survey for the period from 2000 to 2003, the third one for the period from 2004 to 2008, the fourth survey for the period from 2009 to 2014 and the last survey for the period from 2015 to 2021. The five surveys were conducted in 1998/1999, 2003, 2005/2006, 2011/2012 and 2017–2019, respectively.

<sup>xvi</sup> We acknowledge that the target sample is comparatively small as the sample only consists of exchange-listed targets or where the target's ultimate parent is an exchange-listed financial institution. As such, the results need to be carefully interpreted. However, given data limitations with respect to non-public targets that we would encounter in any event, we maintain that this analysis helps to understand the target selection procedure by Asian domestic acquirers and are therefore convinced that it offers additional insights.

<sup>xvii</sup> We also conducted a rival selection with the requirement of the same three-digit primary SIC code. This led to largely the same rivals. A match of the same four-digit primary SIC code did not achieve desirable results, as the four-digit primary SIC codes available on Datastream for non-U.S. financial institutions appear to be error prone. For example, non-U.S. commercial banks have almost exclusively a primary four-digit SIC code of 6029 ('Commercial Banks, not elsewhere classified'), whereas U.S. commercial banks generally follow a more detailed categorization.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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## APPENDIX A

## A.1 | Variable definitions

Variable	Definition
Main variables	
<i>DOMESTIC</i>	Binary variable defined as one if the acquiring bank and target bank are from the same Asian country, zero otherwise
<i>ΔMARKET SHARE</i>	Estimated percentage change in acquiring bank's market share (measured in total assets to the country's total banking assets in the year prior to the announcement) in its country of origin proxied by adding the deal value, as recorded by the SDC Mergers and Acquisitions database, to the acquiring bank's total assets
Deal control variables	
<i>PRIVTAR</i>	Binary variable defined as one if the target firm's public status was private according to the SDC Mergers and Acquisitions database at the time of the acquisition announcement, zero otherwise
<i>VALUE</i>	Natural logarithm of the deal value in U.S. dollars as recorded by the SDC Mergers and Acquisitions database
<i>FOCUS</i>	Binary variable defined as one if the acquiring and target bank have the same primary SIC code as recorded by the SDC Mergers and Acquisitions database, zero otherwise
<i>TOEHOLD</i>	Binary variable defined as one if the acquiring bank had a less than 50% stake in the target firm prior to the M&A announcement according to the SDC Mergers and Acquisitions database, zero otherwise
<i>STAKE ACQUIRED</i>	Percentage of shares that were acquired in the transaction according to the SDC Mergers and Acquisitions database
<i>ALL CASH</i>	Binary variable defined as one if the acquisition is paid exclusively in cash according to the SDC Mergers and Acquisitions database, zero otherwise
Acquirer control variables	
<i>LEVERAGE</i>	Ratio of a bank's total debt to common equity in the year prior to the M&A announcement (Worldscope code WC08231)
<i>ROE</i>	Bank's return on equity in the year prior to the M&A announcement (Worldscope code WC08301)
<i>ACQUIRER SIZE</i>	Bank's total assets in U.S. dollars in the year prior to the M&A announcement (Worldscope code WC02999)
Rival variables	
<i>ΔSIZE</i>	Percentage difference of the total assets (Worldscope code WC02999) between the rival and acquiring bank in the year prior to the M&A announcement
<i>ΔROE</i>	Percentage difference of the return on equity (Worldscope code WC08301) between the rival and acquiring bank in the year prior to the M&A announcement
Culture variables	
<i>ΔIDV</i>	Difference in Hofstede's individualism versus collectivism dimension (Hofstede, 2001; Hofstede et al., 2010) between the acquiring bank's and target bank's nation. Data available on Hofstede's website ( <a href="https://geerthofstede.com/">https://geerthofstede.com/</a> ). For certain countries where no value was available through Hofstede's website, we made the following assumptions: We used China for Macau, Russia for Kazakhstan, Vietnam for Cambodia, Arab countries for Oman, Saudi Arabia, the United Arab Emirates, and Qatar, India for Sri Lanka, and China for Mongolia
<i>ΔMAS</i>	Difference in Hofstede's masculinity versus femininity dimension (Hofstede, 2001; Hofstede et al., 2010) between the acquiring bank's and target bank's nation. Data available on Hofstede's website ( <a href="https://geerthofstede.com/">https://geerthofstede.com/</a> ). For certain countries where no value was available through Hofstede's website, we made the following assumptions: We used China for Macau, Russia for Kazakhstan, Vietnam for Cambodia, Arab countries for Oman, Saudi Arabia, the United Arab Emirates, and Qatar, India for Sri Lanka, and China for Mongolia
<i>ΔUAI</i>	Difference in Hofstede's uncertainty avoidance index (Hofstede, 2001; Hofstede et al., 2010) between the acquiring bank's and target bank's nation. Data available on Hofstede's website ( <a href="https://geerthofstede.com/">https://geerthofstede.com/</a> ). For certain countries where no value was available through Hofstede's website, we made the following assumptions:



Variable	Definition
	We used China for Macau, Russia for Kazakhstan, Vietnam for Cambodia, Arab countries for Oman, Saudi Arabia, the United Arab Emirates, and Qatar, India for Sri Lanka, and China for Mongolia
$\Delta PDI$	Difference in Hofstede's power distance index (Hofstede, 2001; Hofstede et al., 2010) between the acquiring bank's and target bank's nation. Data available on Hofstede's website ( <a href="https://geerthofstede.com/">https://geerthofstede.com/</a> ). For certain countries where no value was available through Hofstede's website, we made the following assumptions: We used China for Macau, Russia for Kazakhstan, Vietnam for Cambodia, Arab countries for Oman, Saudi Arabia, the United Arab Emirates, and Qatar, India for Sri Lanka, and China for Mongolia
Regulatory variables	
$\Delta TRANSPARENCY$	Difference in the Financial Statement Transparency Index based on the Bank Regulation and Supervision Survey of the World Bank between the acquiring bank country of origin and target bank country of origin
$\Delta SUPERVISORY$	Difference in the Official Supervisory Power Index based on the Bank Regulation and Supervision Survey of the World Bank between the acquiring bank country of origin and target bank country of origin
$\Delta RESTRICTION$	Difference in the Restriction on Banking Activity Index based on the Bank Regulation and Supervision Survey of the World Bank between the acquiring bank country of origin and target bank country of origin
Target variables	
$SIZE\ RATIO$	Ratio of the total assets of target to acquirer in the year prior to the M&A announcement (Worldscope code WC02999)
$ROE\ RATIO$	Ratio of the return on equity of target to acquirer in the year prior to the M&A announcement (Worldscope code WC08301)
$TARGET\ SIZE$	Natural logarithm of the target's total assets in U.S. dollars in the year prior to the M&A announcement (Worldscope code WC02999)
$TARGET\ ROE$	Target's return on equity in the year prior to the M&A announcement (Worldscope code WC08301)
$TARGET\ LEVERAGE$	Ratio of a target bank's total debt to common equity in the year prior to the M&A announcement (Worldscope code WC08231)
$SUBSIDIARY$	Binary variable defined as one if the target bank's ultimate parent is considered stock listed by the SDC Mergers and Acquisitions database, but the target itself is not, zero otherwise

*Note:* This table defines the main regression variables and describes them in more detail, including an identification of their data source. The variables are divided into the main variables, deal control variables, acquirer control variables, cultural and regulatory variables, and the target variables used for the regression analyses in Section 6.

## APPENDIX B

### B.1 | Details of rival selection procedure

To select appropriate rivals for each acquiring bank and exchange-listed target bank, we follow a modified approach of Hankir et al. (2011). As a starting point, we determine all financial institutions in the country of origin of each acquiring and target bank using Datastream. The definition of a financial institution follows the one of the acquiring and target bank sample, including all firms with a primary SIC code ranging from 6000 to 6289 and primary SIC codes 6712 and 6733. In order to arrive at the closest rival firm for each acquiring and target institution, we use the following selection process: First, the acquiring and target bank rivals need to be domiciled in the same country as the acquirer or target and they need to be listed on a stock exchange. Second, the first two digits of the primary SIC code of acquiring and target bank need to match with those of the rival firm.<sup>xvii</sup> Third, the three closest rival firms, as measured by market capitalization, are selected. We chose the three closest rivals to have the same number of rival observations for each event to avoid overweighting or underweighting certain events. All observations that did not yield at least three rivals are dropped. Additionally, the return on equity of the rival bank in the year prior to the announcement and its stock price data must be

available from 272 days prior to the M&A announcement day to 5 days after it.

The first requirement is somewhat restrictive, especially for smaller markets with lower data quality, such as Malaysia or the Philippines, and for largely consolidated markets, such as many of the European countries, where few exchange-listed financial institutions remain. Nevertheless, in order to measure the impact of the financial sector consolidation in a given country and the subsequent changes in market concentration ratios, this is a necessary requirement. Furthermore, by requiring a match for the two-digit SIC code rather than the four-digit SIC code, we ensure that the rivals are in a similar line of business.

Following this selection procedure, we find 1398 rivals for the acquiring bank sample, meaning that we have three suitable rivals for 466 of our 486 events. With respect to the targets, we obtain a sample of 243 rivals, that is we have three rivals for 81 out of our 107 events. Table B1 gives a brief overview of the market capitalization of the rival sample in relation to the acquiring and target bank and the frequency of observations for their respective two-digit SIC codes.

TABLE B1 Rival bank sample description.

<b>Panel A: Acquiring bank rivals</b>	<b>All acquirer rivals</b>	<b>Asian domestic acquirer rivals</b>	<b>Cross-border acquirer rivals</b>
Average absolute difference in rival market capitalization to acquirer	32.24%	28.46%	41.73%
Median absolute difference in rival market capitalization to acquirer	24.69%	20.84%	38.17%
Standard deviation of absolute difference in rival market capitalization to acquirer	27.18%	25.04%	29.92%
Observations	1398	999	399
Observations with two-digit SIC code 60	708	507	201
Observations with two-digit SIC code 61	192	156	36
Observations with two-digit SIC code 62	489	333	156
Observations with two-digit SIC code 67	9	3	6
<b>Panel B: Target bank rivals</b>	<b>All target rivals</b>	<b>Asian domestic acquirer target rivals</b>	<b>Cross-border acquirer target rivals</b>
Average absolute difference in rival market capitalization to target	28.69%	27.07%	38.78%
Median absolute difference in rival market capitalization to target	19.52%	16.90%	27.49%
Standard deviation of absolute difference in rival market capitalization to target	26.49%	25.61%	29.88%
Observations	282	243	39
Observations with two-digit SIC code 60	135	114	21
Observations with two-digit SIC code 61	63	60	3
Observations with two-digit SIC code 62	84	69	15

*Note:* This table shows the average, median, and standard deviation of the absolute difference in terms of the market capitalization of the acquiring banks and target banks to their respective closest rivals. The market capitalization is taken as of the last trading day prior to the event year. The two-digit SIC code 60 stands for 'Depository Institutions', the two-digit SIC code 61 stands for 'Nondepository Credit Institutions', the two-digit SIC code 62 stands for 'Security and commodity brokers, dealers, exchanges, and services', and the two-digit SIC code 67 stands for 'Holding and other Investment Offices'. The rival sample is further split into rivals of Asian domestic acquirers and cross-border acquirers.