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# What Motivates Banks and Other Financial Services Firms to Merge? An Empirical Analysis of Economic and Institutional Factors[1]

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***A*bstract:** With globalization and deregulation, the financial services industry in many areas has consolidated significantly since the mid-1990s. What drove financial services mergers among key segments and geographic regions? This paper uses a comprehensive data set comprising 1,434 mergers in 62 countries from 1995-2011 to explore empirically the motivations behind financial services mergers, examining the factors that impact the deal premium paid to effectuate the merger. We find stronger regulatory environments, especially lower corruption, to have a positive effect on the synergies projected to arise from financial services mergers. In contrast, higher financial freedom levels were found to have a negative impact on the deal premium. Also, higher measured levels of legal protection are associated with higher deal premiums in banking mergers, though the opposite is true for insurance. Acquirers also pay higher premiums to purchase targets that are relatively small and easier to integrate. Finally, there is evidence that acquirers pay more to consummate cross-border versus domestic mergers, a result driven by cross-border, investment banking mergers.

**Keywords:** Financial services mergers and acquisitions; Cross-border mergers and acquisitions; Foreign direct investment; Deal premium; Banking regulation

**JEL Classifications**: G34, G14, G28

## 1. Introduction

The past 20 years have seen remarkable merger and acquisition activity among financial service firms. Tectonic changes in regulation and technology go a long way to explaining the waves of financial sector mergers and acquisitions (M&A) activity since the 1990s. Regulatory changes such as the US Riegle-Neal Act of 1994 eliminating restrictions on interstate banking and Gramm-Leach-Bliley Act of 1999 repealing the separation of investment and commercial banking, as well as the European Union's Single Market Act of 1988, opened up legal space for combinations. Some of the changes in the financial sector had very broad cross-sector effects, such

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as the repeal of the Glass-Steagall Act. Other changes were focused only on particular financial service sectors, such as the Riegle-Neal Act.

Also, in the 1990s and early 2000s, technological changes driven by information and communication technology advances resulted in important innovations such as credit scoring, on-line trading, and design and analysis of complex securities. These innovations altered production functions and created new synergies between products and markets.[2]

While banking M&A, which accounts for the majority of financial M&A deals, has been extensively studied[3], we are unaware of studies of M&A activity in the financial sector as a whole. This paper sheds light on the motivations behind merger and acquisition (M&A) transactions at the financial sector level, as well as the sub-sector and country level, from 1995 to 2011. The paper focuses on the impact that varying regulatory regimes and institutional settings (e.g. country-level corruption and financial freedom) have on the motivations behind financial sector mergers, both domestic and cross border.

We do so by analyzing the deal premium, a proxy for the projected synergies that financial firms believe will be achieved through a merger. We then estimate how micro, macro, regulatory and institutional factors impact deal premia. In addition, we assess how these motivations differ between domestic versus cross-border mergers as well as between different financial services sectors and key world regions. We find that premia are higher for cross-border mergers, a result driven largely by mergers among investment firms. In addition, we find that micro-level factors, particularly absolute and relative size, strongly affect merger premia.

We also find institutional factors to have a strong impact, but only in some subsectors of the financial industry and in some geographical areas. Notably, better acquirer scores on the Heritage corruption index and EFW Legal index have a positive impact on premia paid in banking mergers, both domestic and cross-border. We also find the financial freedom index to have a negative effect on the deal premium for domestic mergers.

The plan of the paper is as follows. The second section provides a literature review. The third section describes the data and explains our methodology. The fourth section presents the results, and the fifth and final section concludes.

## 2. Literature Review

Financial sector mergers are motivated by a variety of factors, including changing levels of regulation and enforcement, economies of scale and scope, and country-specific issues relating to cross-border mergers. The literature largely focuses on motivations behind banking transactions. We review this literature to motivate our empirical work regarding the entire financial sector.

### 2.1 Institutional quality, stringency of regulation and level of enforcement

Previous research finds that lower legal and regulatory restrictions on banks' activities increase M&A activity, including cross-border M&A deals. For example, Goldberg and Grosse (1994) found that foreign banks were more likely to establish themselves in US states with fewer restrictions on foreign bank activities, while Focarelli and Pozzolo (2001), Barth, Caprio and Levine (2001), and Buch and DeLong (2004) reach similar findings for cross-border mergers.

[2] Merger activity in the financial sector falls squarely among the examples of merger waves studied by Mitchell and Mulherin (1996)

[3] See, among others, James and Wier (1987), Akhavien et al. (1997), Altunbas et al. (1997), DeLong (2001).

Uhde and Heimeshoff (2009) use the Heritage Index of Economic Freedom to examine the government's involvement in the domestic banking sector as well as restrictions on foreign entry. They find that greater economic freedoms can improve efficiency of financial service firms, but they can also allow for greater risk taking, which can lead to financial instability.

The stringency of regulation and its enforcement might have different effects than restrictions on activities. Stronger regulation might make competition fairer, or reduce risk-taking by poorly managed institutions that could lead to negative reputational or macroeconomic effects. Berger et al. (2001) conclude that a stronger regulatory environment in the country of the target can attract acquirers as it may imply risk reduction among foreign bidders. Hagendorff et al. (2012) find stricter regulatory regimes among European banks lower the takeover premium, perhaps due to higher compliance costs. Karolyi and Taboada (2014) also find that banking foreign direct investment (FDI) is not a "race to the bottom"; acquirers do not prefer more lax regulatory environments.

Still, theory does not provide clear guidance on the relationship between regulation, competition and the profitability of banking. Gonzalez (2009) distinguishes between the effects of activity restrictions, official monitoring, market monitoring and the effectiveness of legal contracting on the relationship between efficiency and bank size. He concludes that only market monitoring and contracting significantly affect the efficiency-bank size relationship. This suggests that both legal and institutional factors permitting greater market monitoring and more effective contracting would permit more efficient banks to gain market share. In addition, more efficient banks might face greater incentives to acquire other financial service firms in countries with strong market monitoring and contracting.

### 2.2 Economies of scale, scope, and relative size

As in other industries, financial sector mergers may be motivated by the desire to lower cost by increased scale or scope. Cybo-Ottone and Murgia (2000) study European banking mergers and find that value stems from economies of scale and product diversification or economies of scope. Banks increase margins through higher volume and also often seek to cross sell products, particularly higher valued products to retail customers (Akhavein et al., 1997). In an earlier study, however, Altunbas et al (1997) concluded that gains from economies of scale among European banking mergers occurred in less than half the mergers; constant returns or even diseconomies of scale occurred in the other cases.

Another reason why financial services firms, particularly banks, may want to increase size is to create an entity that is "Too-Big-To-Fail", and, therefore, would benefit from implicit government subsidies. Under this rationale financial services acquirers would pay a larger premium to consummate a merger, simply to increase the absolute size of the new institution.

Another argument is that in addition to seeking economies of scale, banks and / or other financial services firms may want to acquire relatively smaller firms to minimize integration costs by minimizing principal-agent problems.[4] In a related vein, James and Wier's (1987) study of FDIC auctions found larger relative size of acquirers relative to bidders to lead to higher abnormal returns for acquirers. They theorize that relatively larger banks have greater choice among smaller acquisition targets, leading them to make acquisitions at more favorable prices.

[4] Roll (1986) suggests that takeover deals do not generally create value, so that the deal premium is simply a reflection of managerial hubris. Since we do not study the post-deal performance of the firms, we can neither confirm nor deny this. Instead, our analysis looks for regularities in the motivations that lead acquirers to pay more. This may reflect hubris, or accurate foresight, or some of both.

Finally, DeLong (2001) finds that US bank mergers that focus geographically or by activity create value, while those that diversify by geography or activity do not create value.

### 2.3 Special features of cross-border deals

M&A motivations will likely differ for cross-border mergers versus domestic deals due to regulatory and institutional differences.[5] For example, Focarelli and Pozzolo (2001) posit that cross-border banking mergers follow the pattern of economic integration between countries. Banks and possibly other financial services companies expand abroad to provide services to their home-country clients in international transactions. This explanation seems to fit the relationship-nature of financial services.

Market size, as measured by GDP per capita and/or credit/GDP, and growth may also impact financial services FDI as acquirers seek economies of scale and growth. Brealey and Kaplanis (1996), Wezel (2004), Yamori (1998), and Buch (2002) all find a positive relationship between host country per capita GDP and bank FDI.

Another distinguishing characteristic of cross-border versus domestic mergers relates to information costs and potential information asymmetries. The decision to merge with a foreign bank entails a trade-off between the benefits of diversifying revenues and the costs due to the information and cultural frictions (Buch and DeLong, 2004). Buch and DeLong (2004) find distance variables to have an adverse effect, while the presence of a common legal system has a positive influence on the attractiveness of an acquisition candidate. Berger et al. (2001) further explain that cross-border financial services mergers entail the monitoring problems relating to different cultures, management styles, employee skill sets, and regulatory structures. In fact, early empirical studies[6] all report a negative correlation between geographic distance and degree of bank FDI.

Other cultural and institutional differences among countries or even jurisdictions within countries may impact financial firm performance and therefore mergers. La Porta et al (1998, 2000) argue that differences in broad legal tradition impact financial development and corporate governance. Stultz and Williamson (2003) contend that the principal religion of a country does a better job of predicting levels of protection of shareholder rights than legal tradition, but that these effects are mitigated by greater openness to international trade. Taken together, these works suggest a strong role for cultural factors in determining the nature and effectiveness of financial law, with potentially important effects on both domestic and cross-border mergers as well.

Ownership percent can also affect the premium paid as noted by Sonenshine and Reynolds (2014). Their study of all cross-border mergers finds that ownership percentage has a large and significant positive influence on the deal premium for transactions where the target resides in a developing country and/or has a high level of intangible asset intensity. In either case, greater or complete ownership either increases the value of the target's intangible assets or lessens the risk to the acquirer of monetizing these assets.

## 3. Empirical Methodology and Data

### 3.1 Data

This paper analyzes a set of 1,434[7] financial services mergers of public companies with a

[5] In the US, state-level regulatory differences have been substantial historically. But this degree of sub-national heterogeneity is exceptional.

[6] See Grosse and Goldberg (1991), Buch (2002), and Focarelli and Pozzolo (2001).

[7] Complete data for regression analysis was only available on 847 mergers.

minimum transaction value of $100 million[8] that were announced over a sixteen year time period between Jan 1, 1995 and December 31, 2011. Of these transactions, 209 were cross-border and 1,225 were domestic mergers. Detailed data on each financial services merger was collected from the Thomson SDC database. Financial services were categorized into five sectors: commercial banks, investment, real estate, insurance, and credit.

Table 1 displays the frequency of domestic and cross-border mergers segmented by acquirer and target regions.

**Table 1.** Domestic versus Cross-border Mergers by Region

| | Acquirers | | | Target | | |
|---|---|---|---|---|---|---|
| **Region** | **Domestic Mergers** | **Cross-border Mergers** | **Total** | **Domestic Mergers** | **Cross-border Mergers** | **Total** |
| Austral Asia | 145 | 13 | 158 | 145 | 13 | 158 |
| North America | 943 | 93 | 1,036 | 943 | 92 | 1,035 |
| Latin America | 50 | 5 | 55 | 50 | 15 | 65 |
| Southeast Asia | 86 | 20 | 106 | 86 | 39 | 125 |
| Europe | 316 | 171 | 487 | 316 | 145 | 461 |
| Middle East and North Africa | 29 | 13 | 42 | 29 | 10 | 39 |
| Russia/CIS | 4 | 1 | 5 | 4 | 2 | 9 |
| Total | **1,573** | **316** | **1,889** | **1,573** | **316** | **1,889** |
| Percent of total | **83%** | **17%** | **100%** | **83%** | **17%** | **100%** |

**Data source:** Thompson SDC. All mergers 1995-2011.
**Regions:** Austral Asia (includes Australia, Japan, and South Korea)
North America (includes Canada and USA)
Latin America (includes Brazil and Mexico)
Southeast Asia (includes China, Philippines, Vietnam, Indonesia, Malaysia, and Singapore)
Europe
Middle East and North Africa
Russia/CIS (includes Russia and former Soviet Republics)

The largest number of mergers, both domestic and cross-border, occurred among North American acquirers. From Table 1, we also find that cross-border mergers accounted for the largest percent (35%) of mergers among European mergers. In fact, 54% percent of the acquirers and 45% of the targets in cross-border mergers were European.

Our analysis focuses on the deal premium, calculated as the percent difference between the stock price paid to effectuate the merger at the announcement date and the stock price four weeks prior to the merger announcement.[9] This approach is used to test the projected synergies that management believes will stem from the merger. Deal premia were censored between 0 and 200

[8] This $100 million threshold is consistent with Cybo-Ottone and Murgia's (2000) study.

[9] See Sonenshine (2010) for the definition of the of merger premium.

percent[10], to reduce the effect of outliers. A four week time period[11] was used instead of a smaller window to account for the possibility that information regarding the merger can leak into the market prior to the announcement date. Assuming the local stock markets are efficient, the value of the deal premium represents the additional value, above the market value, of the target to the acquirer. All of the firms in the data set are public, so the purchase price captures the full return to the shareholders of the target firm.

The independent variables include proxies for regulatory conditions in the target firm's country. As in Buch and DeLong (2004), the Heritage's economic freedom index[12] is used to measure the impact of regulation. We used the composite index for each country as well as the target's index[13] for rule of law[14], measured via the target's Corruption Index and Property Index.

We also used a second set of five regulatory indices from the Frazier Institute's Economic Freedom of the World (EFW) Indicators[15]: legal system and property rights, freedom to trade, credit market regulation, labor market regulation, and business regulation.

As discussed in Section 2 above, the direction of the impact of these institutional variables (Heritage and EFW indices) on the deal premia is not always obvious *a priori*. On the one hand, poor institutions leading to weak regulation and enforcement might enable rent-seeking opportunities. For example, in a more corrupt environment, it might be possible to pay bribes to prevent competitors from entering the market. On the other hand, greater corruption and legal concerns might discourage M&A activity by creating greater uncertainty about firms' ability to protect their earnings from arbitrary confiscation.

In contrast, factors that imply increasing competition may decrease profit expectations and discourage mergers. However, an increase in the degree of competition, could lead to mergers and acquisitions in an attempt to (re)establish market power.

Additionally, we introduce a binary variable for location of the target in a developing market country. Our hypothesis is that firms will pay higher premia to acquire financial services firms in developing markets where limited competition and higher expected growth rates may lead to greater profits. Also, profits may be higher in developing markets, where credit may be relatively scarce.

We also analyze how the target's absolute and relative size affects the deal premium. The hypothesis is that a financial services merger (domestic and cross-border) will increase a firm's customer reach and thereby lower transaction and operating costs, and that entry into a larger

[10] Officer (2003) provided a standard for truncating deal premia in merger studies.

[11] We also ran regressions using a smaller window (one week time period) and found the results to be similar.

[12] The factors that comprise the index are: property rights, freedom from corruption, fiscal freedom, government spending, business freedom, labor freedom, monetary freedom, trade freedom, investment freedom, financial freedom, tariff rates, income tax rates, tax burden as a percent of GDP, and government expenditure as a percent of GDP.

[13] We also use the acquirers' Heritage indices for Corruption and Property in addition to the target's Heritage indices when analyzing cross-border financial services mergers.

[14] As shown on the Heritage Foundation website, http://www.heritage.org/index/book/methodology, each country is graded on a scale from 1 to 100, with 100 being that private property is guaranteed by the government and 1 being private property is outlawed. Differences generally stem from a qualitative assessment of how the courts enforce contracts, the likelihood of expropriation, and, and the apparent level of corruption.

[15] There are a total of 24 EFW indicators.

market will imply greater potential economies of scale. We use the target firm's net asset level to test this effect. Another set of factors predicting deal premia should be ones that suggest larger markets for the merged firm. We include target GDP per capita in logs to examine potential economies of scale effects from the merger. Regarding cross-border mergers, the existence of Free Trade Agreements might imply a larger market. We use variables for GDP growth[16] and the presence of a free trade agreement to test for these effects.

Also, dummy variables are used to indicate the year of the merger to account for macroeconomic effects. In addition, a dummy is used to control for horizontal versus diversifying mergers, with a diversifying merger defined as one between firms operating in different financial service sectors.

We also control for the effect of exchange rates using the monthly index for acquirers' real effective exchange rate. The hypothesis is that the higher the acquirer's real effective exchange rate, the more an acquirer can pay in deal premium given the implied discount from the exchange rate (Sonenshine and Reynolds, 2014). Alternatively, the effective exchange rate of the target should have the same effect.

Finally, we control for the ownership level[17] acquired. We expect the deal premium to be positively affected by the ownership percentage acquired.

### 3.2 Summary statistics

Summary statistics for several binary statistics are broken out in Tables 2 and 3.

**Table 2.** Summary Statistics – Average Deal Premia By Binary Variable

| Variable | N | Binary Categories | Deal Premia |
|---|---|---|---|
| Cross-border | 209 | Cross-border | 33.8% |
| | 1225 | Domestic | 28.6% |
| Developing Target | 76 | In Developing Country | 22.8% |
| | 1,358 | Not In Developing Country | 29.7% |
| Horizontal | 453 | Diversifying | 27.7% |
| | 981 | Horizontal | 30.1% |
| Total | 1,434 | | 29.3% |

**Data source:** Thompson SDC. All mergers 1995-2011.

The deal premium for cross-border mergers is substantially larger than for domestic mergers (33.8 vs 28.6 percent). Deal premia were lower for mergers with developing country targets[18]. Finally, deal premia on average were higher for mergers in the same industry.

Table 3 shows differences in the binary statistics segmented by the three largest acquirer regions. Premia were higher for cross-border mergers in all three regions. Also, premia were higher among acquirers in Europe and North America, but not in Austral-Asia, for developing country

[16] A growth factor is used instead of a growth rate as all the continuous variables are logged. With a growth factor, a negative growth rate, which would be slightly less than one, can be logged.

[17] The sample only includes mergers where 50 percent or more of the company was acquired.

[18] We used the IMF's April 2012 World Economic Outlook Report to categorize developing countries.

targets[19]. Also, premia were far higher for diversifying mergers among Austral-Asian acquirers, but not among North American or European acquirers.

**Table 3.** Summary Statistics – Average Deal Premia By Region by Binary Variable

| Binary Category | Binary Variable | Europe | North America | Austral-Asia |
|---|---|---|---|---|
| Cross-border/domestic | Cross-border | 29.0% | 40.2% | 48.7% |
| | Domestic | 20.6% | 33.5% | 18.4% |
| Target in developing country | In developing | 41.9% | 44.9%[20] | 13.3%[21] |
| | Not in developing | 23.1% | 34.0% | 20.5% |
| Horizontal /Diversifying | Horizontal | 23.8% | 34.7% | 18.0% |
| | Diversifying | 23.1% | 32.6% | 28.0% |
| **Total** | | **23.5%** | **34.0%** | **20.5%** |

**Data source:** Thompson SDC. All mergers 1995-2011.

From Table 4 below we see differences in the deal premium by industry across key regions.

**Table 4.** Summary Statistics – Average Deal Premia By Region by Industry

| Industry | Europe | North America | Austral-Asia (AAS) | Asia (excl. AAS) | Average |
|---|---|---|---|---|---|
| Banking | 22.0% | 37.4% | 9.0% | 15.9% | 33.0% |
| Credit | 22.9% | 54.7% | 42.9% | 15.5% | 42.4% |
| Insurance | 32.0% | 36.7% | 17.2% | 21.5% | 33.3% |
| Investment | 22.7% | 23.0% | 21.6% | 11.8% | 22.1% |
| Real Estate | 20.5% | 26.7% | 41.3% | 22.9% | 22.6% |
| | **23.5%** | **34.0%** | **20.5%** | **16.4%** | **29.3%** |

**Data source:** Thompson SDC. All mergers 1995-2011.

Deal premia in the investment and real estate industries are well below premia in banking, credit, and insurance. These findings are heavily influenced by North American acquirers, who account for roughly half the sample. Also, North American acquirers pay the highest premia, while Asian acquirers pay the lowest.

Table 5 shows the differences in deal premia by variable between domestic and cross-border mergers. A T-test reveals that the difference between the two samples is significant.

Table 5 reveals that while the net assets of the target are virtually the same between domestic and cross-border mergers, the ratio of net assets between acquirer and target is significantly higher

[19] There were only two mergers in North America and Austral-Asia involving a target in a developing country.

[20] There were only two financial services mergers in which the acquirer is North American and the target is located in a developing market.

[21] There were only two financial services mergers in which the acquirer is Austral Asian and the target is located in a developing market.

in cross-border mergers. In addition, a greater percent of ownership on average is acquired with domestic versus cross-border mergers. This makes sense, since often acquirers want foreign partners to have some ownership interest due to the uncertainties of working in a foreign country. Two other significant differences between the samples lie in each of the Heritage Indices, all of which have a significantly higher mean in domestic mergers. In addition, the loan-to-GDP ratio for banking mergers is higher for cross-border mergers.

**Table 5.** Summary Statistics by Target Firm or Country Characteristics[1]

| Variable | Domestic Mergers | | Cross-border Mergers | |
|---|---|---|---|---|
| | Mean | Standard Error | Mean | Standard Error |
| Deal Premium (in percent)* | 28.6 | 1.6 | 33.7 | 4.01 |
| Horizontal* | 60.7 | 0.027 | 69.0 | 0.01 |
| Target Net Assets | 1254 | 119 | 1254 | 144 |
| Deal Value | 1,997 | 155 | 1,765 | 164 |
| Acquirer/Target Net Asset Ratio* | 16.1 | 2.4 | 50.6 | 11.4 |
| GDP Per Capita | $30,339 | 1,134 | $32,174 | $304 |
| Percent Ownership in target achieved by deal* | 94.2 | 32.6 | 87.1 | 0.99 |
| Real Exchange Rate Index, Acquirer Country | - | - | 103.1 | 0.81 |
| Contiguous borders | | | 36.4 | 8.7 |
| Common Language | | | 31.9 | 3.13 |
| Growth Factor | 1.029 | 0.01 | 1.033 | 0.01 |
| Heritage Composite Index* | 74.26 | 0.17 | 71.62 | 0.52 |
| Heritage Financial Index* | 72.86 | 0.38 | 69.54 | 1.01 |
| Heritage Property Index* | 84.00 | 0.32 | 78.00 | 1.07 |
| Heritage Corruption Index* | 74.50 | 0.37 | 70.36 | 1.20 |
| Bank*Loan-to-GDP* | 120.0 | 3.30 | 149.4 | 1.20 |

1. Starred variables are those in which a Ttest reveals there is a significant difference to the 5% level between the variable mean for domestic versus cross-border mergers. Data source: see Table 1.

### 3.3 Empirical model

Our model can be summarized as follows:

$$\textbf{Log Deal premium} = \beta_0 + \sum_{n=1}^{5} \beta_n \text{ Adj. Regulatory indices} + \sum_{n=1}^{4} \beta_n \text{ Dev. Mkt} + \sum_{n=1}^{3} \beta_n \text{ Market} + \sum_{n=1}^{4} \beta_n \text{ Econ Integ.} + \sum_{n=1}^{5} \beta_n \text{ Firm level} + \sum_{n=1}^{3} \beta_n \text{ Control} + \sum_{n=1}^{4} \beta_n \text{ Sector} + \sum_{n=1}^{10} \beta_n \text{ Year} + \varepsilon$$

The independent variables shown above are variable categories summarized in Table 6 on the next page. The first variable group, regulatory indices, refer to the Heritage Index of Economic Freedom and the Economic Freedom of the World (EFW) indices. We use both indices to guard against potential bias. The Heritage measurements include indices for corruption, property rights, financial freedom, corporate tax, and a composite of all indices. The EFW indices used are legal, credit, labor, trade, and business. Because of the high correlation between the regulatory indices and GDP per capita, we regressed GDP per capita on each of the regulatory indices and used the residuals as the covariates in the regression equation. For cross-border mergers, we used the regulatory indices for both the acquirer and target countries.

**Table 6.** Variables by Category (Years: 1995-2011)

| Category | Variables | Data Source |
|---|---|---|
| Regulatory indices | Heritage Economic Freedom Composite, Financial, Property, Corruption, Income Tax Indices | Heritage Foundation (See www.heritage.org/index/book/methodology) |
| | Economic Freedom of the World Indicators | Frazer Institute (see http://www.freetheworld.com) |
| Developing Mkt | Emerging Market, Ownership, Ownership*Emerging Mkt | Thomson SDC database |
| Economic integration | Same language, contiguous | CIA World Fact Book |
| Market | GDP per capita, Loan-to-GDP*banking | World bank indicators See http://data.worldbank.org/indicator |
| Firm level (Relative and absolute size and profitability) | Net Assets, Acquirer/Target Net Asset Ratio, Horizontal | SDC Thomson database |
| Macro Control Variables | Acquirer real exchange rate index, Target real exchange rate index | Bank for international settlement See http://www.bis.org/statistics/eer/ |
| | Growth factor | World bank indicators |
| Sectors | Insurance, Banking, Investment, Real Estate, Other | SDC Thomson database |

Developing market is a binary variable with 1 indicating that one of the parties is located in a developing country. Percent ownership as well as ownership percentage interacted with the developing market variable are the other variables in this category.

Market includes GDP per capita and loan-to-GDP interacted with a binary variable indicating whether the target is a bank. Economic integration includes a variable for contiguous borders of acquirer and target countries, and a binary variable indicating whether the two countries share the same language.

Firm level consists of deal and firm-specific metrics of net asset levels of the target[22] and relative net asset size between the acquirer and the target. These variables are used to test the significance of the size of the target and the relative size of the target versus the acquirer.

Additionally, we control for horizontal versus diversifying transactions. We control for the real effective exchange rate as well as the year and sector of the merger. Finally, we controlled for market growth by including the annual growth factor for the target country.

We run the model for all mergers, and then run models restricted to cross-border and domestic mergers, and to mergers in the key sectors (banking, investment, and insurance) and the region of acquirers.

[22] The deal value for each merger was also gathered. The variable, however, was not incorporated into model due to multi-colinearity between the deal value and the target's net asset value.

## 4. Results

**Table 7.** Regression Results – Cross-border versus Domestic Financial Services Mergers

| | Heritage Indices | | | EFW Indices | | |
|---|---|---|---|---|---|---|
| Dependent: **Log Premium** | (1) All Mergers | (2) Cross-border | (3) Domestic | (4) All Mergers | (5) Cross-border | (6) Domestic |
| Composite Index (target) | -0.09<br>(0.27) | -1.22<br>(0.62) | -8.80<br>(9.83) | - | - | - |
| Financial Freedom Index (target) | -0.41<br>(0.29) | 0.66<br>(0.79) | -0.66*<br>(0.35) | - | - | - |
| Financial Freedom Index (acquirer) | 0.09<br>(0.29) | 1.44**<br>(0.57) | - | - | - | - |
| Corruption Index (target) | 0.63*<br>(0.36) | 0.23<br>(0.82) | 0.29<br>(0.44) | - | - | - |
| EFW-Legal (target) | - | - | - | -0.11<br>(0.49) | -0.19<br>(1.32) | -0.12<br>(0.54) |
| EFW – Credit (target) | - | - | - | 0.27<br>(0.49) | 0.03<br>(1.09) | 0.30<br>(0.55) |
| EFW-Business (target) | - | - | - | -0.14<br>(0.35) | 0.18<br>(0.81) | 0.09<br>(0.41) |
| Developing (target) | -4.67<br>(3.65) | 23.67**<br>(12.02) | -3.00<br>(4.20) | -5.12<br>(3.64) | -8.08<br>(8.35) | -3.52<br>(4.18) |
| Cross-border | 0.40***<br>(0.16) | - | - | 0.37**<br>(0.16) | - | - |
| Contiguous | - | 0.57*<br>(0.25) | - | - | 0.30<br>(0.21) | - |
| FTA | -0.24<br>(0.18) | -0.61***<br>(0.22) | - | -0.23<br>(0.18) | -0.34*<br>(0.21) | - |
| GDP Per Capita (target) | 0.14<br>(0.19) | 0.43<br>(0.33) | -0.16<br>(0.27) | 0.27<br>(0.18) | 0.15<br>(0.31) | 0.14<br>(0.24) |
| Target Net Assets | -0.09***<br>(0.02) | -0.18**<br>(0.08) | -0.08***<br>(0.27) | -0.09***<br>(0.02) | -0.20***<br>(0.07) | -0.08***<br>(0.03) |
| Loan-to-GDP * Bank (target) | -0.26<br>(0.18) | 0.02<br>(0.04) | -0.56**<br>(0.26) | -0.22<br>(0.17) | 0.29<br>(0.35) | -0.40*<br>(0.23) |
| Acquirer/Target total Asset Ratio | 0.07***<br>(0.02) | -0.03<br>(0.06) | 0.09***<br>(0.03) | 0.07***<br>(0.02) | -0.07<br>(0.06) | 0.09***<br>(0.03) |
| Horizontal | -0.33<br>(0.22) | -0.35*<br>(0.21) | | | | |
| Percent ownership | 0.01<br>(0.07) | 1.86***<br>(0.61) | -0.02<br>(0.08) | -0.01<br>(0.07) | 0.06<br>(0.19) | 0.01<br>(0.08) |
| Sector Dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| No. of Obs. | 847 | 102 | 738 | 845 | 109 | 735 |
| $R^2$ | 0.16 | 0.57 | 0.15 | 0.15 | 0.47 | 0.14 |

**Notes:** Robust standard errors are in parentheses. ***, **, and * denote statistical significance levels of 1%, 5%, and 10%, respectively. MSE denotes means square error.

Table 7 shows the regression results for the whole sample, and broken out between domestic and cross-border mergers. The dependent variable in Tables 7-9 is the deal premium in logs. All

continuous variables are measured in logs; thus the parameter estimates can be interpreted as elasticities. The first three columns show the results using the Heritage regulatory variables, while the last three columns show the results using the EFW regulatory variables.

In Table 7 the coefficient for the Heritage financial index is negative and significant for the target in domestic mergers but positive and significant for the acquirer in cross-border mergers. This suggests that financial service firms pay a larger premium to consummate a domestic merger when there is a higher degree of government regulation in the financial sector and/or greater state ownership of financial service institutions. Perhaps, in domestic mergers, the acquirer hopes to gain market power by consummating a merger where competition is reduced via state involvement in the financial sector.

We find the opposite for cross-border mergers since the Heritage financial index is positive and significant, suggesting that acquirers value openness to foreign competition, and minimal government involvement. These results contrast with Hagendorff et al.'s (2012) findings that lower takeover premia are associated with stricter regulatory regimes in domestic European mergers. Our findings may differ from Hagendorff et al.'s (2012) because we cover financial service transactions worldwide, while they only examine European mergers. No other regulatory variable (except for the composite index in the cross-border sample – column 2) was significant in Table 7, but the Heritage corruption index had a significant influence on the deal premia when examining the sample by sector in Table 8.

In Table 7, the coefficient for cross-border mergers shown in columns one and four is positive and significant. In addition, the existence of a Free Trade Area (FTA) between the countries whose firms engaged in a cross-border merger has a negative effect on the merger premia. This could be because FTAs lower barriers to entry, making it easier to acquire a firm.

We find limited support for the common cultural hypothesis, with contiguous borders having a positive influence only in the Heritage sample. Also, the common language variable was never significant (results not reported). Perhaps cultural similarity is no longer closely tied to geographical borders, since high levels of trade and factor mobility diffuse knowledge much faster than in earlier periods. Additionally, since English has become a near-universal common language, the impact of common language may be blunted.

We did find the coefficient for the loan-to-GDP ratio to have a negative influence on premia paid in domestic mergers. This suggests that more developed lending markets may be approaching saturation, which would have a negative impact on potential profits. This resonates with the "Too Much Finance" view recently expressed by Arcand, Berkes and Panizza (2012).

One of our strongest results is the significant, positive coefficient for the ratio of assets between the acquirer and target in domestic mergers. This is likely because smaller firms are easier to integrate than larger firms. Like Hagendorff et al. (2012), we do not find this effect for cross-border financial service mergers.

Two other noteworthy findings are that the coefficient for percent ownership is positive and significant for cross-border mergers, while the coefficient for horizontal is negative and weakly significant. The former result is consistent with the literature[23] showing that firms will pay higher premia to gain full control of foreign firms. The latter finding may indicate that firms engaging in cross-border mergers are seeking product as well as geographic diversification. In contrast, financial service firms engaging in domestic mergers are motivated more by cost savings associated with scale.

[23] See Sonenshine and Reynolds (2014).

Table 8 presents the results by sector. Here we find another explanation for the higher premia for cross-border mergers since the coefficient for cross-border mergers is positive and highly significant in the sample restricted to investment firms (columns two and five).

**Table 8.** Regression Results by Segment

| | Heritage | | | EFW | | |
|---|---|---|---|---|---|---|
| Dependent: **Log Premium** | (1) Banks | (2) Investment | (3) Insurance | (4) Banks | (5) Investment | (6) Insurance |
| Composite Index, (target) | -0.25 | -1.25* | -1.87 | - | - | - |
| | (0.58) | (0.77) | (1.69) | | | |
| Financial Index (target) | -0.35 | 0.66 | 1.99 | - | - | - |
| | (0.47) | (0.77) | (1.31) | | | |
| Property Index (target) | -0.34 | -0.64 | -0.57 | - | - | - |
| | (0.44) | (1.12) | (1.29) | | | |
| Corruption Index (target) | 1.30*** | 0.13 | -0.54 | - | - | - |
| | (0.45) | (1.01) | (1.23) | | | |
| EFW Credit (target) | - | - | - | -0.72 | 2.23* | 1.34 |
| | | | | (0.66) | (1.28) | (1.27) |
| EFW Legal (target) | - | - | - | 1.32* | 0.14 | -2.82*** |
| | | | | (0.72) | (1.21) | (1.12) |
| EFW Business (target) | - | - | - | 0.74 | -1.27 | -1.15 |
| | | | | (0.54) | (0.90) | (0.92) |
| Growth Factor (target) | 2.31 | 9.09 | 6.22 | -2.46 | -16.16* | -5.88 |
| | (5.71) | (8.53) | (12.21) | (5.33) | (8.81) | (9.88) |
| Cross-border | 0.46 | 0.72** | 0.28 | 0.36 | 1.09*** | 0.46* |
| | (0.29) | (0.37) | (0.25) | (0.30) | (0.36) | (0.25) |
| Loan-to-GDP (target) | -0.23 | 0.13 | 0.79 | -0.09 | 0.01 | 0.02 |
| | (0.29) | (0.52) | (0.72) | (0.26) | (0.45) | (0.21) |
| GDP Per Capita (target) | 0.04 | 1.01* | -0.31 | 0.34 | 0.43 | -1.27 |
| | (0.31) | (0.56) | (1.07) | (0.29) | (0.43) | (0.91) |
| Acquirer/Target total | -0.07*** | -0.79 | -0.22*** | -0.20*** | -0.08 | -0.24*** |
| Asset Ratio | (0.03) | (0.74) | (0.07) | (0.07) | (0.07) | (097) |
| Ratio | 0.07** | 0.13** | -0.38 | -0.66 | 0.14** | -0.07 |
| | (0.03) | (0.06) | (0.77) | (0.65) | (0.06) | (0.07) |
| Horizontal | 0.03 | 0.05 | 0.17 | 0.06 | 0.01 | 0.07 |
| | (0.09) | (0.20) | (0.27) | (0.19) | (0.20) | (0.37) |
| Sector Dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| No. of Observations | 474 | 187 | 107 | 471 | 186 | 115 |
| $R^2$ | 0.15 | 0.26 | 0.37 | 0.13 | 0.25 | 0.34 |

**Notes:** Robust standard errors are in parentheses. ***, **, and * denote statistical significance levels of 1%, 5%, and 10%, respectively. MSE denotes means square error.

There are many potential explanations for this result. Investment acquirers may seek cross-border mergers to combine the target's local expertise with the acquirer's firm-specific advantages. For example, Citigroup justified paying a 44% premium to acquire Japan's Nikko in 2007 with the argument that it would blend Nikko's local expertise and brand with Citigroup's innovative products and reach.

Acquiring an investment company also appears to be an effective and rapid way to gain a foothold into a country, including regulatory permissions or licenses. This was the rationale cited by HSBC in paying a 56% premium to acquire the Indian retail brokerage IL&FS.

Changes in minimum efficient scale may be important as well. For example, Bear Stearns Ltd paid a 47% premium to acquire Macquirie of Australia, noting that the target lacked the size to compete effectively in the market. Greater synergies could also stem from acquiring an investment company that is serving a market where credit is widely available, as evidenced by the positive, significant loan-to-GDP coefficient in Table 8. In such markets, demand for securities might be higher as well, because of saturation of lending and deposit markets and a search for higher-yield investments.

Finally, changing regulation may influence the decision to merge. Merrill Lynch, for example, noted that deregulation and industry consolidation attracted it to the Canadian market, prompting it to pay a 37% premium to acquire Canadian-based Midland Walwyn in 1998.

Also, we find different influences among the regulatory variables between the banking, investment, and insurance sectors. In the banking sector, the coefficient for the corruption index is positive and significant, suggesting that greater synergies stem from lower corruption levels. High corruption levels likely decrease the expected profitability of transactions, perhaps due to the direct costs of bribes or indirect costs of creating an "un level playing field."

In the investment sector, in contrast, we find the coefficient for the EFW credit index to be positive and significant suggesting that fewer restrictions on credit enable acquirers to gain larger synergies in cross-border, investment mergers.

We also find the coefficient for the EFW Legal variable to be positive and significant in the banking sector but negative and significant in the insurance sector. The key elements of this index are the protection of property rights and rule of law. As expected, acquirers view greater legal protection to enhance the synergies of a banking merger. The result in the insurance sector, however, appears counter-intuitive, as it suggests greater synergies to occur with an insurance merger and lower levels of legal protection. Perhaps, lower levels of legal protection heighten the need for insurance and, therefore, increase the pricing power of the insurance company. Also, it may be there is little insurance competition in countries with low EFW legal index scores, suggesting again greater pricing power to accrue to the acquirer.

Table 9 shows the results for the sample between the 597 North American acquirers, 137 European acquirers, and 70 Austral-Asian acquirers. North American acquirers value smaller financial service firms, as measured by the net assets of the target or the ratio between acquirer and target net assets. None of the regulatory or country specific factors are significant for North American acquirers. European acquirers, in contrast, appear to be negatively influenced by country growth rates as well as the presence of a free trade agreement.

These findings suggest that European acquirers find higher synergies from acquiring financial service firms in slower growing, perhaps more mature countries. This contrasts with Hagendorff et al. (2012) who find that European acquirers pay higher premia for high growth banks. The difference may be that our data set is broader. Also, Europeans appear to view greater synergies to accrue from financial service mergers outside the EU. Combined, these findings would suggest that

European acquirers are seeking mergers in more mature markets, but where trade barriers exist, giving the acquirer access to a new market.

**Table 9.** Regression Results by Region

| | Heritage | | | Economic Freedom of the World | | |
|---|---|---|---|---|---|---|
| Dependent: **Log Premium** | (1) North American | (2) European | (3) Aust. Asian | (4) North America | (5) European | (6) Aust. Asian |
| Composite Index, (target) | 0.19 | -0.91 | 41.19* | - | - | - |
| | (1.64) | (0.60) | (22.19) | | | |
| Financial Index (target) | -0.62 | -0.10 | -38.33* | - | - | - |
| | (1.30) | (0.70) | (17.67) | | | |
| Property (target) | 0.75 | 0.62 | 18.35*** | | | |
| | (1.33) | (0.58) | (8.06) | | | |
| Corruption Index (target) | 1.73 | 0.17 | -0.09 | - | - | - |
| | (1.43) | (0.67) | (0.60) | | | |
| EFW Credit (target) | - | - | - | 0.41 | 0.70 | 8.96*** |
| | | | | (0.82) | (1.14) | (3.87) |
| EFW Legal (target) | - | - | - | -0.19 | 0.67 | -0.13 |
| | | | | (0.75) | (0.78) | (4.91) |
| EFW Business (target) | - | - | - | -0.55 | -0.78 | 1.39 |
| | | | | (0.69) | (0.67) | (4.78) |
| Growth factor (target) | 1.83 | -13.91** | -13.91** | 0.23 | -20.43** | -19.24 |
| | (14.42) | (8.00) | (8.00) | (13.71) | (8.37) | (23.41) |
| FTA | 0.18 | -0.51** | -0.50** | 0.21 | -0.44 | -2.48 |
| | (0.39) | (0.27) | (0.27) | (0.34) | (0.28) | (2.65) |
| Cross-border | 0.18 | 0.34 | -0.31 | 0.14 | 0.34 | 0.66 |
| | (0.30) | (0.30) | (1.88) | (0.29) | (0.29) | (1.66) |
| Bank*Loan-to-GDP (target) | -0.16 | -0.19 | -3.41** | 0.11 | 0.22 | -3.74*** |
| | (0.59) | (0.49) | -1.61 | (0.55) | (0.55) | (1.45) |
| GDP Per Capita (target) | 0.23 | -0.68 | 10.21** | 0.46 | -0.75* | 3.53 |
| | (0.73) | (0.45) | (5.23) | (0.62) | (0.42) | (2.69) |
| Target Net Assets | -0.08*** | -0.12* | -0.13 | -0.07*** | -0.10 | 0.12 |
| | (0.03) | (0.07) | (0.23) | (0.03) | (0.07) | (0.18) |
| Acquirer/Target total Asset Ratio | 0.08*** | 0.09 | 0.20 | 0.08*** | 0.11 | 0.07 |
| | (0.03) | (0.07) | (0.18) | (0.03) | (0.07) | (0.16) |
| Horizontal | 0.02 | 0.10 | 0.65 | -0.03 | 0.01 | 0.66 |
| | (0.19) | (0.18) | (0.59) | (0.08) | (0.19) | (0.58) |
| Sector Dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| No. of Observations | 595 | 139 | 70 | 596 | 136 | 70 |
| $R^2$ | 0.15 | 0.37 | 0.51 | 0.15 | 0.38 | 0.52 |

**Notes:** Robust standard errors are in parentheses. ***, **, and * denote statistical significance levels of 1%, 5%, and 10%, respectively. MSE denotes means square error.

Austral-Asian acquirers appear to be negatively influenced by the loan-to-GDP ratio, suggesting they perceive greater synergies to accrue from financial services mergers where loan levels are relatively low. In addition, Austral-Asian acquirers appear to find value in financial services mergers in countries that have a high EFW credit rating.

## 5. Conclusions

The results from this study indicate that firms pay a higher premium to consummate cross-border mergers than domestic, financial services mergers. The driver behind this difference appears to be the investment sector, where acquirers appear to find great value in diversifying into other geographic regions with high GDP-per-capita, provided the institutional environment is stable.

For institutional and regulatory environment, we found differential effects between cross-border and domestic mergers for the Heritage Financial Freedom Index, suggesting that low levels of government regulation and state control are highly valued in cross-border mergers but not in domestic mergers.

We also found that for investment mergers, acquirers are seeking targets where restrictions on competition are low. For banking mergers, acquirers paid higher premia where corruption is low. Finally, for insurance mergers, higher premia are paid where legal protection is relatively low, suggesting lower levels of legal protection may heighten the need for insurance.

Our findings suggest that the institutional quality and regulatory environment play a major role, along with other micro factors, in influencing the deal premia in a financial services merger. The effect varies based on the financial services sector as well as the type of merger (domestic versus cross-border) and geographic region of the acquirer.

This paper sheds new light on the motivations affecting firms to merge across the entire financial services industry. It is left to further research to examine the changing pattern of financial sector mergers in the post-Financial Crisis world.

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