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International Bank-Insurance Takeovers: The Risk-Return Effects on Bidders and Peer Institutions

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ABSTRACT

We investigate the impact of domestic and international bank-insurance mergers on risk-return profiles of the acquiring banks, peer banks and peer insurers within a GARCH framework. We find that the acquiring and peer firms experience positive abnormal returns with the effect on insurer peers being larger and more gradual. These results establish the prevalence of intra- and inter-industry contagion. Abnormal returns on bidders vary with leverage, relative size of the deal, growth opportunities, medium of payment and bidder location. The overall risks of the bidders and peer firms decline following the bancassurance deals, though the systemic risk may still increase.

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1. INTRODUCTION

Over the last three decades, market deregulation, technological progress, and reduced trade barriers across national borders have served as driving forces behind product proliferation and product convergence among financial intermediaries, and internationalization of the geographic scope of financial institution activities. These phenomena have intensified the competitive challenges faced by financial firms, ushered in a colossal wave of mergers and acquisitions (M&As) within the banking and insurance industries, and strengthened market integration and potential systemic risk in the financial services enterprise (Parsons and Mutenga, 2009). In terms of economic consequences, the broader geographic and product scopes and the more rapid interaction among financial markets have brought about greater access to capital, wider corporate restructuring and enhanced financial intermediary efficiency.

A widespread mode of corporate restructuring within financial intermediaries is the bank-insurance interface, or bancassurance[1] as it is customarily known. In 1989, the European Parliament passed the Second Banking Directive allowing the creation of financial conglomerates in the Eurozone. Within a decade, the U.S. Congress passed the Financial Services Modernization Act (FSMA, 1999), which opened up the interface among banks, securities firms and insurers under the umbrella of financial services holding companies (FSHCs). These hybrid organizations have become a common phenomenon in both Europe and

[1] The term first appeared in France after 1980. Variants of this term are also known as Assurancebank or Allfinanz.

the U.S. over the last decade, with the growth rate being larger in the Eurozone (Staikouras, 2006). Nevertheless, the number of FSHCs operating in the U.S. exceeded 580 in 2009.[2]

The phenomenon of bancassurance has engulfed fervent allies as well as rigid opponents. Arguments in favor of this structure include diversification benefits, scale and scope economies, efficiency, strength to withstand competition, and managerial discipline through takeovers. On the other hand, skeptics argue that the bacassurance structure is vulnerable due to conflicts of interest/culture, creation of superpowers, increased systemic risk and allocative distortions (Herring and Santomero, 1990; Santomero and Eckles, 2000). Regulatory concerns about this structure include regulatory arbitrage, subsidization of non-bank affiliates via the bank safety net (deposit insurance guarantees and bailouts), affiliation risk (bank runs due to non-bank affiliate problems), and increased financial and political powers of such hybrid firms (Herring and Santomero, 1990; Flannery, 1999). In particular, a main concern among regulators, shareholders and bank managers is whether in the presence of these conglomerates, financial crises such as the one witnessed during 2007-2009 have a greater potential to spill over from banking into the insurance industry and vice versa, and from these industries to the real economy (Parsons and Mutenga, 2009).

It is noteworthy, however, that, in practice, banks and insurers have witnessed a considerable level of convergence in terms of savings and risk management products and asset-liability instruments. The overlap in the two sectors is especially apparent in markets where products offered by banks, such as credit-default swaps (CDS), closely resemble a casualty insurance policy; albeit without either an insurable-interest requirement, or any role for an

[2] Regulatory bodies, the Office of Thrift Supervision (OTS), the Federal Reserve Board (FRB), and the Office of Comptroller of the Currency (OCC) allowed the expansion of banking activities well before the passage of the FSMA (Broome and Markham, 2000). The source for FSHC data is: federalreserve.gov/generalinfo/fhc.

insurance adjuster (Saunders and Cornett, 2008). These similarities make the bank-insurer interface a natural process, and in a sense, a "fait accomplit" in spite of the regulatory concerns.

In this context, it is important to examine how M&As between banks and insurance companies within and across national borders will affect the risk and returns of the acquiring firms, as well as those of the other financial firms operating in the same market place, and what factors determine the magnitude of such effects. These issues will be investigated in the current study.

Our contribution includes the following. First, we examine the wealth effects of bancassurance corporate restructurings within a Generalized Auto-Regressive Conditionally Heteroskedastic (GARCH) asset pricing model. This specification accounts for the cluster patterns commonly observed in financial time series, nests the more traditional asset pricing models and allows for the strength of shock persistence to be measured. Second, we investigate the spillover effects on both insurer and bank peers to learn whether the effects of such M&As are limited to the firms involved, or they spillover to their competitors as well. Third, we model and estimate the determinants of bidder abnormal returns around the announcement of bank-insurance partnerships using cross-sectional data, in order to identify the main factors contributing to the abnormal performance of the acquiring firms. Finally, we examine possible changes in the total, systematic and unsystematic risks of the bidder firms and their peers after the deal's announcement. We find that M&As between banks and insurers produce positive abnormal returns and reduced risk for the acquiring firms. These return and risk changes also spill over to the bank and insurer peers. The magnitude of the effect on bidder abnormal returns is determined by accounting and deal-specific factors such as leverage, size of the deal, considerations offered by bidders, growth opportunities and whether the acquirer is located in the

U.S. These findings have implications for regulators as well as managers of financial services firms and investors in the financial services industry. The paper proceeds as follows. In section 2, we review the literature and in Section 3 we describe the data and methodology. Section 4 reports the empirical findings and Section 5 concludes.

2. RELEVANT LITERATURE

There is an extensive literature on the product and geographic diversification of the banking firms. Product diversification may occur within the banking industry e.g., by spreading loans across different categories and engaging in fee-based and off-balance sheet activities, or through expansion into areas outside the banking enterprise such as insurance, investment banking, real estate and commerce. Geographic diversification may occur within a country or across the national borders.

A number of studies have investigated bank product diversification through M&As within the banking industry. Houston and Ryngaert (1994) use data on 153 bank mergers between 1985 and 1991 to examine the consequent gains/losses. The finding is that mergers result in transfer, rather than creation, of additional wealth as targets realize gains while bidders suffer losses in response to merger. Houston, James and Ryngaert (2001) analyze a sample of 64 large bank mergers between 1985 and 1996. They find that mergers result in an increase in the value of the combined entities (bidders and targets) with most of revaluation originating from cost savings, rather than revenue enhancements. Delong (2001) divides bank mergers between bank holding companies (BHCs) into diversifying and focusing mergers along geographic or activity lines. While focusing mergers are found to create value, diversifying mergers are not.

DeYoung and Roland (2001) employ data on 472 banks over 1988-1995 to investigate the association between diversification and profitability, volatility and revenue sources. Their findings indicate that increased diversification into fee-based activities are associated with

higher, rather than lower, volatility of bank revenues. Similarly, Stiroh (2004) investigates diversification benefits from banks' expansion into non-traditional activities producing fees and service charges, fiduciary income and trading revenues. He uncovers two main results. First, at the aggregate level, although the volatility of banks' net operating income declines, the lower volatility is not due to diversification benefits but because of reduced volatility of net interest income. Second, at the micro level, increased reliance on non-interest income is accompanied by higher risk and lower risk-adjusted profits. The overall conclusion is that product diversification into non-interest income activities need not be stabilizing. As a way of explanation, Stiroh (2004) points out that convergence across financial institutions has led to higher correlations among product lines, reducing diversification gains as a result. For example, increased cross-selling and the use of similar models of risk measurement and risk management tend to expose different segments of a conglomerate firm to the same economic and financial shocks.

In the international context, Acharya, Hasan and Saunders (2006) use micro level data on 105 Italian banks over 1993-1999 to investigate the effect of diversification within traditional banking activities on risk and returns. They find that diversification of bank loans across sectors and industries within those sectors, does neither necessarily improve return nor reduce risk. They conclude that these results are consistent with the view that effectiveness of monitoring and information gathering by banks declines when they diversify into newer industries and operate at higher levels of risk. At the micro level, reduced effectiveness of monitoring may also occur, e.g., due to increased opacity of the firm when it diversifies across different products (Elyasiani and Yong, 2008).

Of more recent interest has been the expansion of banks into non-banking activities, especially the bank-insurance enterprise. The growth of this phenomenon in the industrialized

world has fuelled an ongoing debate in the academic literature (Kane, 1996; Akhigbe and Whyte, 2001; Mamun, Hassan and Maroney, 2005; Yildirim, Kwag and Collins, 2006). A number of arguments have been proposed as to the benefits of a more integrated financial system. First, Herring and Santomero (1990) argue that financial conglomerates are more flexible when they encounter changing economic conditions, due to their diversity.[3] Second, Saunders and Walter (1994) and Vander Vennet (2002) claim that conglomerates are more cost efficient, compared to specialized stand-alone institutions, because they tend to eliminate overlapping production units (plants) and to overcome indivisibilities in technology and in hiring of highly skilled managers. Third, these entities can potentially benefit from scale and scope economies, and cost complementarities due to input reusability (e.g. reuse of customer credit quality) and joint account maintenance. Fourth, according to portfolio theory, diversified firms can enjoy lower earnings volatility through 'coinsurance effect' (Lowellen, 1971; Boot and Schmeits, 2000). Finally, large diversified firms benefit from superior resource allocation through effective internal markets (Stein, 1997).

Several counter arguments can be offered. First, Black, Miller and Posner (1978) argue that conglomeration of banking and non-banking enterprises results in risk proliferation, rather than risk reduction, and increased social costs.[4] Second, Staikouras (2006) unveils a variety of factors such as regulatory constraints, reputation, business culture and corporate brand that might adversely impact the long-term survival of integrated bank-insurance institutions. Third, along the lines suggested by Jensen and Meckling (1976), Aggarwal and Samwick (2003) propose that

[3] The business nature of the conglomerate firms allows them to exhibit greater ability in developing new products and services in case of changing customer needs and changing technology and/or market conditions. They can also adapt more easily, and at lower costs, to demand shifts across financial services than their specialized counterparts.

[4] Herring and Santomero (1990) cite the wider market impact of conglomerate failures, the greater costs of supervision of these firms, and the higher moral hazard due to possible access of non-banks to the safety net. One may also consider the social costs related to reduced competition, concentration of market and political power, reduced consumer choice and conflicts of interest (Santomero and Eckles, 2000).

managers tend to diversify their firms in order to capture private benefits such as job security, rather than achieving improved performance and a reduction in idiosyncratic risk. The adverse impact of this agency problem may counterbalance and even overwhelm the gains from diversification. Fourth, in cases of long-distance geographic diversification, especially cross-country mergers, the distance between the headquarters and the acquired affiliate and the complexity of the diversified organization, intensify informational asymmetry between the headquarters and the affiliates, and make the monitoring job of the managers located at the headquarters more difficult. These factors all heighten the agency problems, harm performance and increase risk (Berger, Miller, Peterson, Rajan and Stein, 2005; Acharya, Hasan and Saunders, 2006; Baele, Jonghe and Vennet 2007; Deng and Elyasiani, 2008). [5]

Empirical evidence on the gains and losses due to diversification across industry lines is mixed. The studies in this area can be divided into several strands of literature. One strand concentrates on the risk effects of bank expansion into non-banking activities and produces mixed findings. For example, Santomero and Chung (1992) provide evidence, via merger simulations, that bank expansion into insurance activities results in increased earnings stability, while Boyd, Graham and Hewitt (1993) report that expansion of banks into insurance business is and their expansion into securities and real estate is not risk reducing. More recently, Lown, Osler, Strahan and Sufi (2000) find that mergers between BHCs and securities and property-casualty firms modestly raise BHCs risk. Within a European sample, Brown, Genetay and Molyneux (1996) find that combining building societies and mutual life insurers reduces risk; while Genetay and Molyneux (1998) obtain mixed evidence on the risk effects of the UK bank-

[5] Given these complexities, Merton (1990) proposes that the regulatory system needs to be restructured from institutional to functional orientation in order to accommodate the rapidly advancing financial conglomerates. Molyneux, Altunbas and Gardener (1997) and Van den Berghe and Verweire (2001) offer excellent overviews of the bank-insurance trend, while DeYoung, Evanoff and Molyneux (2009) offer a thorough survey on the M&A trend among financial intermediaries.

insurance activities. Contrary to the above, Nurullah and Staikouras (2008) discover that mergers of European banks with insurers increase the probability of bankruptcy while the same does not hold when banks acquire insurance brokers. Vallascas and Hagendorff (2011) show that low-risk European banks diversifying into other financial activities experience an increase in default risk.

An important question is whether diversification per se has a positive or negative impact on the market valuation of conglomerates. This has been empirically assessed in the academic literature by comparing the valuations of diversified firms with valuations that the same firms would have if they were broken into their component units. For example, Berger and Ofek (1995) and Servaes (1996) report a diversification discount for U.S. firms. The former study also reports that this discount is smaller for companies that diversify into related industries. Nevertheless, the findings of studies on corporate diversification are questioned in Villalonga (2004a) who documents that the diversification discount is an artifact of Compustat segment data. Using a database that incorporates a more consistent business unit breakdown she reveals a diversification premium.

Somewhat comparable conclusions are also drawn in Villalonga (2008b) where it is found that diversification does not destroy value. The issue of a conglomerate discount, however, re-appears for financial firms. Specifically, Laeven and Levine (2007) use an international sample and even after accounting for the issues raised in Villalonga (2004a), find that diversification of bank-based financial services firms is value destroying. On the contrary, Elsas, Hackethal and Holzhäuser (2006) find no evidence on discount for financial conglomerates when they diversify into fee-based services, trading, and underwriting insurance contracts, based on data of nine industrialized countries over 1996-2003. Indeed, they find that revenue diversification is associated with higher bank profitability and greater market valuation.

Another strand of literature documents a positive stock market reaction along with a reduction in the riskiness of financial institutions in response to the passage of the FSMA (Akhigbe and Whyte, 2001; Hendershott, Lee and Tompkins, 2002; Mamun, Hassan and Maroney, 2005; Yildirim, Kwag and Collins, 2006). Some studies also find that equity markets responded in a positive manner when court rulings allowed U.S. banks to sell annuities (Carow, 2001b) and in response to the Citicorp-Travelers merger (Johnston and Madura, 2000; Carow, 2001a). In a survey study, Carow and Kane (2002) reach the conclusion that relaxation of long-standing geographic/product line restrictions on the U.S. financial firms may have redistributed rather than created value; while Dontis-Charitos, Molyneux and Staikouras (2011) and Fields, Fraser and Kolari (2007a,b) find positive abnormal returns for bank-insurance announcements and Hagendorff, Collins and Keasey (2008) show that banks diversifying into other financial activities create value for shareholders under weak investor protection regimes in Europe.

As for real world evidence against inter-industry diversification, divestitures by financial firms are sometimes taken as an indication that conglomerate entities combining commercial and investment banking with insurance products are unsuccessful (Stiroh and Rumble 2006; Yeager, Yeager and Harshman, 2007). Well known examples are the spin-off of the Travelers property and casualty insurance to St. Paul Companies in 2003, and the divestiture of Travelers Life & Annuity business to MetLife in 2005 by Citigroup.[6]

3. DATA AND METHODOLOGY

3.1. Data

[6] *Financial Services Fact Book 2005*, published by Insurance Information Institute. "MetLife: Priming for Travelersresque Acquisition?" Grant Catton, *Mergers & Acquisitions Report*, February 20, 2006. Other examples include: divestiture of Wintertur International to XL Capital Ltd by Credit Suisse in 2001; divestiture of Churchill Insurance Co to RBS Group in 2003; and divestiture of Danica to TopDanmark A/S by Den Danske Bank in 1999.

The mergers and acquisitions database of Thomson One Banker is used to retrieve information on announcements of completed deals between banks and insurance companies within and across the borders of the acquirer's country during the 1991-2006 period. The ending period is chosen to avoid the financial crisis of 2007-2009, which may distort the results.[7] Our sample draws data from the U.S., European and other countries available on the database (see Table 1). The criteria employed are that the bidder is a public banking institution, the value of the deal is disclosed, and the deal does not entail rescue motivations. Given these criteria, after excluding the cases with incomplete data. 50 diversifying deals (banks-insurers) are found on the database. The data provide an ideal landscape for research since large and public deals are usually followed more closely by analysts and the press, resulting in wider dissemination of information about the cases and greater impacts on investor and policy maker decisions.

INSERT TABLE 1

We also examine the peer institutions of the bidders. Information for the peer groups is collected from the Thomson One Banker's deal tear sheets. Once the name of the acquirer, the deal's date and the index where the bank is traded are identified, Bloomberg and/or Thomson Datastream are used to track the historical constituent lists.[8] Using Bloomberg's and/or Datastream's company classification systems, two peer groups are subsequently constructed for every bidder; bank peers and insurance company peers.

Daily equity prices for bank bidders and their peer institutions covering 250 days before and 250 after each announcement are collected from Thomson Datastream. Stock returns (log

[7] Moreover, the number of bank-insurance deals after this date is limited. Specifically, between January 2007 and July 2011 only twelve additional deals (given our criteria) took place (seven medium-sized and five small).
[8] In cases where historical constituent lists are not available on either Bloomberg or Thomson Datastream, the lists are obtained by contacting the local exchanges.

$price_t$ / $price_{t-1}$) are calculated for each of the 50 bank bidders[9], as well as the portfolios consisting of bank and insurance company peers. The final peer samples include 40 bank and 33 insurer peer portfolios. The smaller sample for the peer portfolios is due to the non-availability of constituent lists and/or equity prices during a particular period – different for each country where the bidder is located. Finally, accounting variables for the second-step cross-sectional analysis are from the Thomson Financial database and deal-specific characteristics are collected from Thomson One Banker's deal tear sheets.

3.2. Methodological issues

An event study approach is employed to investigate the equity wealth changes (excess returns) due to bank-insurance deals for the acquiring firms and their peers. Abnormal returns are calculated as the difference between observed returns and those predicted by the single index market model. An estimation period of 210 days (-250 to -41 days prior to the event date, i.e. day zero) is used to obtain the coefficient estimates for calculation of abnormal returns during the 81 trading days of the reference period (-40 to +40 days) surrounding the event date. The event date is the bank-insurance deal announcement date.

Our empirical tests are conducted in four steps. Unlike previous studies, in steps 1 and 2, a GARCH framework is employed to investigate the effect of the takeover events on the acquirer and peer banks and insurers. The choice of this framework is important because equity returns are characterized by volatility clustering (Bollerslev, 1986)**.** In addition, this framework considers the behavioral patterns of both the first and the second moments of the stock return distribution, accounts for conditional heteroscedasticity of the errors and allows for strength of the persistence of shocks to be measured. This is important because improper modeling of time

[9] In order to verify that our sample of deals is not contaminated by conflicting announcements such as other deals, profit reports, dividend announcements etc. we use the Factiva news database to retrieve and assess the news related to the bidder six days around the announcement.

dependence in stock returns leads to inefficient estimates and inconsistent test statistics (Engle, 1982; Bollerslev, 1986, 1987). During the reference period, both abnormal returns and conditional variances are forecasted sequentially on a daily basis. The model adopted can be represented as:

$$R_t = c + \beta R_{mt} + u_t \qquad u_t \sim N(0, h) \qquad (1)$$

$$h_t = \mu + \theta(L)\varepsilon_t^2 + \delta(L)\, h_t \qquad (2)$$

In this specification, R_t is the return on a bank stock or a peer portfolio; c, β, μ, θ and δ denote the parameters to be estimated; R_m is the market return measured by the daily changes on the pertinent market index where the bidder is located; $\theta(L)$ and $\delta(L)$ are lag polynomials of orders p and q, respectively, and L is the backward shift operator. Non-negativity of h_t implies the identification conditions that $\mu > 0$ and $(\theta, \delta) \geq 0$, while variance stationarity is met by $\theta + \delta < 1$. The event's impact on the wealth of acquiring banks and peers is measured by the magnitude of the abnormal return (AR), described by equation (3). The average abnormal return (AAR) and the cumulative average abnormal return (CAAR) are calculated using equations (4)-(5):

$$AR_t = R_t - c - \beta R_{mt} \qquad (3)$$

$$AAR = \sum_{i=1}^{N} AR_{it} \Big/ N \qquad (4)$$

$$CAAR = \sum_{i=-t}^{t} AAR_i \qquad (5)$$

Following Savickas (2003) the cross-sectional test statistic for testing the significance of the GARCH-based excess returns (AR) can be formulated as:

$$t = \sum_{i=1}^{N} \frac{S_{it}}{N} \Bigg/ \sqrt{\frac{1}{N(N-1)} \sum_{i=1}^{N} \left(S_{it} - \sum_{j=1}^{N} S_{jt} / N \right)^2} \qquad (6)$$

where $S_{it} = AR_{it} \big/ \sqrt{h_{it}}$ and N is the number of firms.

The next step in our empirical analysis assesses the determinants of bidders' abnormal returns around the announcement of the bank-insurance mergers using cross-sectional data. This step involves a regression of the abnormal returns on accounting and deal-specific variables. The analytical specification of the model is described by equation (7), where $\boldsymbol{X}$ denotes a vector of predetermined factors; $\boldsymbol{\beta}$ is the vector of parameters to be estimated; and ε is the error term with the usual properties.

$$AR_t = \boldsymbol{X}\,\boldsymbol{\beta} + \varepsilon_t \qquad (7)$$

The final step provides a decomposition of the bidding banks' and peer institutions' total risk into systematic and unsystematic risk components and investigates possible changes in each of these risk categories between pre- and post-deal periods. Based on the GARCH model described by equations (1)-(2), the equities' total risk (*TR*) is expressed as the sum of systematic and unsystematic components:

$$TR = \beta^2 \times Hm + Hu \qquad (8)$$

Equation (8) is obtained using the following steps: a) we estimate single index GARCH (1,1) models for each firm, b) we square the market beta coefficient for each institution and calculate each firm's average conditional variance; c) using the market indices as dependent variables, we estimate GARCH (1,1) models and compute the average conditional variance per market index; d) we compute each firm's systematic risk as the product of its β^2 and the corresponding market index variance (*Hm*); and finally, e) we compute the average systematic risk ($\beta^2 \times Hm$) and the average idiosyncratic exposure (*Hu*) across the sample. The latter is calculated based on the values of each firm's average conditional variance (step b). All calculations are performed for the pre- (-250 -1) and the post-deal period (1 +250) separately.

4. EMPIRICAL FINDINGS

4.1: The GARCH Results on Bank-Insurance Deals

Existing studies often focus on a single bank-insurance event (Jonston and Madura, 2000; Carow, 2001a), examine strategic alliances within a particular country (Chiou and White, 2005), or look at M&As within the banking industry, rather than considering the broader product scope of the financial services industry (Delong, 2001). Even most recent studies investigate the diversification benefits of BHCs in the U.S. (Stiroh and Rumble, 2006) or Europe (Baele, Jonghe and Vander Vennet, 2007) ignoring the cross border ventures. A few studies do examine the bank-insurance interface (Fields, Fraser and Kolari, 2007a,b) but a common weakness of the above studies is that they fail to take into account the volatility clustering observed in domestic and international equity markets. The current study is distinct from the extant research in that it employs a global sample of bancassurance ventures, takes into account the heteroscedastic nature of corporate stock returns using a GARCH framework, looks at possible spill-over effects within the banking and insurance industries and investigates the deal's effects on both return and risk.

GARCH models are estimated for each firm in the sample over different windows, and the corresponding wealth effects and standard errors are averaged across these windows. Thus, the reported wealth effects are the means of cumulative average abnormal returns (CAAR) over different time horizons. The time windows range from the event window of the announcement date [0 0] to a nine-day window [-4 +4]. Different time period combinations, within this latter window, are also explored bringing the number of event windows examined to sixteen. The results are presented in Table 2.

INSERT TABLE 2

Looking at the first column of the results, we observe that the cumulative average abnormal returns (CAAR) are positive and highly significant for up to three cumulative days

around the event, and partly maintain their significance when a 3-day horizon [-2 0] is considered (column 2). However, as the windows widen, both the magnitude and the significance of the CAAR weaken (columns 3 and 4), indicating a quick dissipation of the announcement effects. Comparing the figures in the pre-event [-T 0] and post-event [0 +T] windows (rows 1 and 2) reveals that the former do show significant effects, yet their strength declines when moving away from the event date. On the contrary, the post-event windows do not produce any significant results, apart from the [0 +1] window.

The results in rows 3-4 show the announcement effects over windows combining the pre- and post-event time horizons. Extending the pre-event period up to four days prior to the merger announcement seems to generate statistically significant excess returns, but this is not the case when the post-event period is extended (row 4), apart from the [-1 +1] window. In general, the announcement effects occur before and at the time of the merger. The significant excess returns prior to the announcement indicate the presence of information leaks. The significance of such abnormal returns, however, does not last beyond the post-announcement date, providing some support for market efficiency.

The current findings are indirectly comparable with studies examining the reactions of banks/insurers to court rulings allowing banks to enter insurance brokerage and/or underwriting (Carow, 2001b), the passage of the Financial Modernization Act (FSMA, 1999) (Hendershott, Lee and Tompkins, 2002), and the Citicorp-Travelers merger announcement (Carow, 2001a; Johnston and Madura, 2000).[10] The positive signs of the abnormal returns observed over the event windows send a positive signal about the bancassurance structure and provide some

[10] Although these studies examine the bancassurance market, they focus on the impact of isolated events. The current research examines a large cross-section of international deals, hence, the term 'indirectly comparable'.

justification for the passage of the regulatory acts such as the FSMA (1999), which allowed the interface between banks and insurers.

4.2. Wealth Spillover Effects on Peer Institutions

Most of the extant studies have examined the effects of either individual cases of bank-insurance mergers (Citicorp-Travelers, 1998); or those of specific regulatory changes (FSMA, 1999) on the firms involved or on peer institutions; or have used simulations to assess the impact of BHCs' expansion on their equity risk (Boyd, Graham and Hewitt, 1993). We examine a broad spectrum of actual domestic and cross-border M&A activities between banks and insurers in the U.S., Europe and elsewhere. We also look into the issues of intra- and inter-industry spillover effects and determine the nature of the spillover effects as competitive versus contagion. These issues have been explored frequently in the financial intermediation literature in general, and in banking in particular (Aharony and Swary, 1983; 1996; Kaufman, 1994; Brewer and Jackson, 2002; Elyasiani, Mansur and Pagano, 2007), but not in the context of the bank-insurance interface. Moreover, the reactions of peer institutions, studied here, are assessed based on a wide range of actual deals, rather than regulatory reforms or single events such as the Citicorp-Traveler merger.

The contagion hypothesis of intra- or inter-industry effects is supported when the stocks of peer bank and insurer institutions show reactions in the same direction as the bank bidders themselves, while the competitive hypothesis would hold if peer institutions react in the opposite direction to those of the bank bidders. Lang and Stulz (1992) argue that spillover effects from one or more firms to others can be manifested as a combination of contagion and competitive effects. This also applies in the current analysis. That is, it is likely that some peer firms exhibit competitive effects, while others show contagion effects, around the announcement date. The

peer portfolio excess returns, reported in Table 3, reveal the net spillover effect; that is, if contagion effects dominate competitive effects, the net spillover effect will be of contagion nature and vice versa. The figures for banks and insurer peers are reported in panels A and B of Table 3, respectively.

INSERT TABLE 3

The results in Table 3 show that on the event date [0 0] bank peers experience excess returns of 0.38% (panel A, column 1, row 3) and insurer peers show signs of contagion effects with excess returns of 0.31% (panel B, column 1, row 3), a figure very much comparable to those of banks. The excess returns for the [0 +1] window are also positive and slightly larger than those on the event date with the significance level being 10% for banks (panel A, column 1, row 2) and improving to a 5% level for insurers (panel B, column 1, row 2). For the rest of the time windows, including pre-event, post-event and symmetric windows, the banking sector peers generally show insignificant excess returns indicating the lack of contagion or competitive effects from the bank-insurance deals over those windows. The banking industry seems to quickly absorb the shocks due to the M&As announcements, as the significance of excess returns fades away one day after the event.

The peer insurer firms display quite a different response pattern to the bank-insurance deals. Their abnormal returns are all positive, most are significant at the 5% level, and their significance extends up to nine days around the announcement (panel B, row 4). It seems that the excess returns on insurer peers sustain themselves over a wider time period, in the sense that they take longer to vanish. Specifically, the effects over the pre-event periods (panel B, row 1) are significant for the 2-day [-1 0], 3-day [-2 0] and 4-day [-3 0] windows and the effects during the post-event windows (row 2) are also significant for all windows considered. The other event

windows (rows 3 & 4) are significant for the majority of the cases considered. Finally, the magnitudes of the excess returns are sometimes larger than those of the bank peers, particularly in the days surrounding the bancassurance announcement (column 1).

Overall, the pattern of the effects indicates that the impact of bank-insurer M&As on insurers is more significant and slower in pace than those on the banking rivals. Given that the insurer firms acquired are in general small relative to the acquiring banks, the greater impact on insurers is reasonable. Moreover, it seems that the market perceives the peer insurers to be the likely targets of future takeovers by banking institutions and assigns a positive value to these firms. Peer banks do not have the same chances of being acquired and are considered unlikely to produce similar gains. If this is true, dissimilar investor expectations about the future of banks and insurers may be an explanation for the insignificant effects on bank peers. Our overall findings are somewhat similar to Johnston and Madura (2000) and Carow (2001a) both of whom report a positive reaction by large banks, brokerage firms and insurers to the Citicorp-Travelers merger.[11] These findings are also consistent with the literature on banking, which shows the target firms gain as a result of M&As (Amel, Barnes, Panetta and Salleo, 2004).[12]

[11] We should be careful, however, in making direct comparisons because a) the current study considers the average spillover effects of a large cross-section of domestic and international bank-insurance mergers, while the former studies measure the contagion-competitive effects of a specific announcement, and b) the Citicorp-Travelers merger was a distinct case challenging the then existing U.S. regulatory barriers on product diversification. Moreover, it is notable that at Citigroup, the much talked about cross-selling synergies took place on the corporate and not on the retail banking side and, as such, we have to exercise due care in generalizing the findings from these studies.

[12] It is notable that although the insurance business adds significantly to diversification because of its low correlation with the banking industry, many insurer components of the combined firms fail to survive the bank-insurance journey. Citigroup is an interesting case since in August 20, 2002, it spun off the property and casualty division of Travelers, which was later merged with St. Paul Cos. Also in January 31, 2005, Citigroup sold its Travelers life insurance and annuity business to the US insurer MetLife for $11.5 billion. The deal included an agreement that allowed MetLife to distribute its products through Citigroup businesses worldwide. The deal completed the jettisoning of the Travelers business, which Citigroup acquired almost seven years earlier. On the other side of the Atlantic, Credit Suisse entered a strategic alliance with Winterthur Swiss Insurance Company in 1995. On December 15, 1997, Credit Suisse Group merged with Winterthur and gave Credit Suisse a leading position in bank-insurance business around the world. Operationally, Winterthur remained an autonomous company within the Group. In 1998, Credit Suisse sold its reinsurance operations, while on June 30, 2001, Winterthur International divested its corporate insurance business, to the Bermuda-based financial services group XL Capital Ltd. The explanation for such spin-offs is that they are strategies for attaining high-growth and higher-return. Given that

4.3. Determinants of abnormal returns

This section employs a multiple regression framework to examine the relation between bidders' abnormal returns (AR) and a set of accounting, deal-specific and geographical variables. Following Hendershott, Lee and Tompkins (2002), a general to specific methodology is employed to identify the factors that are statistically significant across different time windows. The initial and final models are presented, respectively, by equations (9) and (10).

$$AR_{it} = \alpha + \beta_1(OBSA_i) + \beta_2(LEV_i) + \beta_3(ROE_i) + \beta_4(RDS_i) + \beta_5(M/B_i) + \beta_6(DV\text{-}DOM_i) + \beta_7(DV\text{-}U.S._i) + \beta_8(DV\text{-}OFF_i) + \beta_9(DV\text{-}SOUGHT_i) + \beta_{10}(DIST) + \varepsilon_{it} \quad (9)$$

$$AR_{it} = c + \gamma_1(LEV_i) + \gamma_2(DV\text{-}OFF_i) + \gamma_3(RDS_i) + \gamma_4(DV\text{-}U.S._i) + u_{it} \quad (10)$$

In these models AR_{it} is the estimated excess return of bidder i at time (event-window) t. The accounting variables employed are the ratio of non-interest income to total operating income (as a measure of off-balance sheet activities and functional diversification, OBSA); leverage (equity multiplier measured as assets over equity, LEV); the relative size of the deal (ratio of deal-value/market-value of bidder, RDS); two profitability measures: return on equity (ROE) or return on assets (ROA) used interchangeably; and the market to book value (M/B) ratio as a measure of growth opportunities and lack of transparency.

The deal-specific factors include variables that account for domestic versus foreign deals (dummy equal to 1 if deal is domestic and 0 otherwise, DV-DOM); a dummy variable that accounts for U.S. versus non-U.S. bidders (dummy equals 1 if bidder is based in the U.S. and 0 otherwise, DV-U.S.); the consideration offered, which is the medium of payment used by the bidder (dummy equals 1 if cash and 0 otherwise, DV-OFFER, Thomson One Banker reports

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many major firms seek high returns with a quick pace, acquisition of insurance firms with their long-term horizon, may not always be the "ideal scenario" for success.

cash and stock offers); the consideration sought, which is what the bidder buys from the target (dummy equal to 1 for stock and 0 otherwise, DV-SOUGHT, this is provided as stock versus assets by Thomson One Banker); and finally, the distance[13] between acquirer and target (DIST) is employed as a measure of geographic diversification. The results from the multivariate regression, based on the final model, are presented in Table 4.

INSERT TABLE 4

Among the firm-specific determinants of excess returns, leverage (LEV) shows a positive association with abnormal returns (table 4, row 2). The economic intuition of this result is that higher leverage increases the return on equity (ROE) for a given return on asset (ROA)[14], which in turn increases the appeal of the firms to investors and triggers further trading activity and higher stock prices. Abnormal returns can be associated with the asset-liability structures of financial institutions because profitability catches the attention of market participants even if this is associated with increased risk– in this case measured by leverage. Another likely interpretation is that investors might expect that riskier firms (highly leveraged) will benefit the most from risk diversification associated with bancassurance, and, therefore, will attach higher valuations to them. It should be noted that these two interpretations are not mutually exclusive, and, thus, both could explain the reported relationship between leverage and excess returns.

Regarding the other accounting variables, the analysis does not reveal a significant role for the market to book value (M/B), profitability (ROE or ROA), geographic diversification (DIST), or the non-interest income ratio (OBSA). Profitability is not always associated with abnormal returns because its changes may be expected by market participants, and, therefore, no

[13] The distance between acquirer and target is the distance between their headquarters, using the standard Euclidean approach. This is also known as "as the crow flies" measure, and it is a uniform standard, offering more certainty than a measure based on road miles, which will continually fluctuate as new and different routes are constructed. The DIST variable is expressed as the natural logarithm of the distance.

[14] Note that ROE is the product of the ROA and leverage (assets/equity). Hence, it reflects the impacts of both leverage and ROA. Financial analysts are familiar with the practical interaction between leverage and profitability.

excess reaction is observed. Information availability through the media and financial statements' transparency also contribute to this phenomenon. The geographic diversification result is in line with Stiroh (2004) but contrary to Baele, Jonghe and Vander Vennet (2007). Finally, our results on non-interest income (OBSA) is consistent with recent evidence uncovered by Stiroh and Rumble (2006) who find that increased reliance to non-interest income is associated with higher volatility of financial holding firms' income, but not with higher returns. Looking at the deal-specific attributes, some interesting results arise. The consideration offered by the bidder (DV-OFFER) is negative and significant (table 4, row 3). This implies that banks bidding for insurance companies via cash offers, as opposed to stocks, experience smaller excess returns than those using stock as a method of payment.

In comparison with extant studies, these findings are quite interesting as well as intuitive.[15] In general, the literature on financial institutions has documented negative and/or insignificant results for the bidders (Amel, Barnes, Panetta and Salleo, 2004). This stands in contrast with the positive excess returns observed here for the bancassurance mergers. The explanation may be that since bancassurance deals provide positive benefits to the shareholders, markets may manifest these benefits in their preference for the medium of payment offered. To elaborate, since equity financing by bidders provides for sharing of future wealth (or future misery) with the shareholders of the acquired firms, stock (cash) consideration for the profitable

[15] The choice of the medium offered conveys information about the bidder's assessment of either its own value or the value of the target (Franks, Harris and Titman, 1991). Loughran and Anand (1997) and Raghavendra Rau and Vermaelen (1998) suggest that managers who believe their stock is overvalued (undervalued) pay with stock (cash). Empirical evidence points to lower or negative bidder abnormal returns for stock-financed acquisitions, while higher or positive for cash-financed acquisitions (Alan, 1997; Franks, Harris and Titman, 1991; Raghavendra Rau and Vermaelen, 1998). Similar findings are reported in Travlos (1987) who examines the relation between the medium of payment and bidder abnormal returns around corporate takeover announcements. He also suggests that this occurs because the market participants interpret a cash offer as good news and a common stock exchange offer as bad news about the bidding firm's true value. On the other hand, Alan (1997) reports negative and significant abnormal returns related with cash offers, Fields, Fraser and Kolari (2007a) find insignificant results, and Chang (1998) finds insignificant bidder excess return for cash offers and positive and significant bidder excess return for stock offers.

bancassurance deals will (will not) mirror investors' preferences. As a consequence, cash consideration is perceived negatively and produces either a lower positive or even negative excess returns, compared to the alternative of stock financing. The relative deal-size (RDS), as measured by the ratio of deal value to bidder's market value is found to be positive and significant (table 4, row 4). This may indicate the presence of scale economies and synergies in production of bank-insurance products, gains due to larger internal markets and possible benefits from the "too-big-to-fail" consideration by regulators, at least for the larger conglomerates.

Geographic origin of the bidders (DV-U.S.) shows a positive and significant association with excess returns (table 4, row 5), indicating that U.S. bidders experience superior valuations compared to their non-U.S. counterparts. It is plausible that the recent curtailment of regulatory restrictions in the U.S. (FSMA, 1999) has provided a fertile terrain for financial conglomerates, resulting in a greater performance, compared to the European and other country acquisitions. The large size of the U.S. market may also be a contributory factor. Distinction between domestic versus cross-border deals (DV-DOM) and the distance between the acquirer and target (DIST) are found to play insignificant valuation roles. This may be an indication of market integration across national borders and the fact that geographic distance plays a lesser and lesser role in production and marketing of intermediation services (Berger and DeYoung, 2006). Some existing studies tend to support the idea of greater synergies when the language barrier falls, namely when mergers are domestic (Buch and Delong, 2004). However, this does not seem to be the case in the current research.

4.4. Risk decomposition of the acquiring firms

The existing literature has produced mixed results as to whether bank-insurance formations can produce diversification benefits or lead to lower risk (Boyd and Graham, 1988;

Genetay and Molyneux, 1998; Lown, Osler, Strahan and Sufi, 2000; Nurullah and Staikouras, 2007; Mercieca, Schaek and Wolfe, 2007). In practice, however, M&As among banks and insurers do continue to take place and have become more common over time. Since dynamics of capital markets may be too intricate to be captured by the "simple models" employed in the literature to examine the risk effects of diversification, analysis of the risk effects of bank-insurance mergers within a more general framework may shed new light on the matter.

To this end, we employ a GARCH model to examine the risk effects of the bank-insurance structures. This model is most suitable for analyzing equity movements because the cluster pattern of stock returns, accounted for in the GARCH methodology, is well-established (Bollerslev, 1986). Using this framework, applied here to the bank-insurance interface for the first time, we decompose the risk of the bank-insurance structures into systematic and unsystematic components in both the pre- and post-announcement periods for the deals available in our sample. Studying the risk effects, in addition to wealth effects, of these mergers is particularly important because there is a trade-off between risk and return and, hence, looking at the return effects in isolation would provide only a partial picture. More specifically, it is possible that a firm's equity return rises in response to the merger announcement, but the firm trades off the higher return for a lower level of risk. In this scenario, no increase in returns will be found. However, if we look at both returns and risk, a decline in risk will be observable and the possibility of the trade-off between the two will be manifested.

We decompose the total equity risk of each firm into its systematic and unsystematic components (equation 8) and then contrast the pre- and post-merger values of these risk measures. Our results for bidder banks are presented in Table 5. The pre- and post-announcement risk estimates are located in panel A and panel B respectively.

INSERT TABLE 5

Based on the figures reported in Table 5, the overall risk (TR) of the acquiring firms decreases between the pre- and post-announcement periods from 4.583 (panel A) to 3.989 (panel B), demonstrating a relative decline of 13% in its value (panel C). A somewhat larger part of this decrease is attributed to the decline in the residual (or sector-specific *Hu*) risk, which diminishes from 2.939 to 2.529 (panels A/B), or a relative decline of 13.95% (panel C). The market risk ($\beta^2 \times Hm$) drops from 1.644 to 1.460 (panels A/B) demonstrating a relative decline of 11.20% (panel C). Overall, there is a reduction in total risk (TR) in the post-announcement phase, but the proportions of market and residual risks remain almost unchanged. Specifically, the relative importance of market risk which was 35.9% in the pre-deal period, increases to 36.6% in the post-deal period, while the idiosyncratic risk falls from 64.1% to 63.4%.

The economic intuition behind these figures is that growth of financial conglomerates has increased the share of these institutions in the total market basket, or brought them closer to the large firms in the index and, thus, increased their market risk exposure. The decline in the unsystematic risk of these conglomerates reflects the smaller share of the idiosyncratic factors in the financial services industry (the quality of their financial management and strategic policy) in determining their overall risk. At the same time, the increased co-movement between these firms and the overall market raises concerns about systemic risk. This is demonstrated by the impact that large financial intermediaries have on the economic system and subsequently on the economy. A vivid example is the 2007-2009 credit crunch.

Figure 1 in the Appendix presents the conditional variances of the acquiring firms in the sample in the pre- and post-announcement periods. According to the statistics reported in figure 1, the mean conditional variance in the post-deal period is somewhat smaller (0.00025 compared

to 0.00029) than the pre-deal period and the associated standard deviation is slightly larger (0.00030 compared to 0.00027). Overall, Figure 1 illustrates some reduction in the conditional variance of those bank bidders' equity returns during the post-deal period.

We also carry out an impulse response function (IRF) analysis, which shows how banks react to a one standard deviation shock in the conditional variance of their stocks in the pre- and post-announcement periods.[16] Figure 2 shows that after the exogenous shock takes place, the expected post-deal corporate structure absorbs it more quickly than the firm did prior to the announcement. Looking at Figure 2, although the initial reaction to the shock is higher in the post-deal phase, compared to the pre-deal phase, it takes six days for the post-deal variance to fall below the pre-deal variance. Overall, it can be argued that there is a slight decline in risk in response to the establishment of the bank-insurance structures. This benefit strengthens the gains in terms of excess returns earned by acquiring banks on the days surrounding the deal's announcement, as discussed earlier.

4.5. The Risk Spillover effects on Peer Institutions

With the onset of the 2007-2009 financial crisis, policymakers, regulators and investors have become painfully aware of the consequences of high systemic risk on financial markets and the economy as a whole. A main source of systemic risk is increased financial and/or political power of conglomerates firms, such as bank-insurance structures, the instability of which can increase their own default risk (Vallascas and Hagendorff, 2011) and can send shock waves within and/or across industries and countries threatening the stability of the entire financial system (Santomero and Eckles, 2000, Herring and Santomero, 1990). Specifically, with the emergence of these mega-firms, economic power in financial markets may become so

[16] Impulse response analysis describes the reaction of an endogenous variable (here the conditional variance of the bank bidders) to exogenous impulses (shocks) over a designated time interval (here 21 trading days).

concentrated that a few firms will be able to manipulate or, at least, substantially affect the entire financial sector to the detriment of the economy as a whole. Even unwittingly, these firms may unilaterally affect the flow of capital in particular directions with considerable undesirable impacts on specific segments of the economy. In this context, Carey and Stulz (2005) argue that if large firms are highly interconnected, risk spillover across financial institutions may intensify. Flannery (1998) reveals that strong linkages do indeed exist among financial institutions because of strong information flows among these institutions. Elyasiani, Mansur and Pagano (2007) also demonstrate the existence of wealth-spillover effects across financial firms, confirming the findings of previous studies on spillovers caused by distress announcements (Aharony and Swary, 1983, 1996; Kaufman, 1994; Brewer and Jackson, 2002).

There is limited work on risk spillover effects across sectors and across countries (Elyasiani and Mansur, 2003; Elyasiani, Mansur and Pagano, 2007) and none in the area of bancassurance. Thus, we proceed to assess the existence of risk spillover effects emanating from the bank-insurance interface to the financial services industry, and more specifically to the banking and insurance sectors. Tables 6 and 7 present the risk decomposition analysis for bank and insurance peers, respectively.

INSERT TABLES 6 & 7

Based on the figures reported in Tables 6 and 7 (panels A/B), the total risk (*TR*) of bank and insurance peers decreases in the post-announcement period. Interestingly, the risk reduction is much greater for insurance peers (24.8%) than for bank peers (11.7%) as shown in panels C of tables 7 and 6, respectively. Furthermore, looking at the changes in the components of total risk, it is evident that the reduction is mostly attributable to the diminution in the firm-specific risk (*Hu*). Similar to the findings for total risk, the reduction in the idiosyncratic component is almost

double for the insurance peers (31.7%, Table 7) compared to bank peers (16.8%, Table 6). Looking at the changes in the market risk ($\beta^2 \times Hm$), it is evident that bank-insurance deals do have an impact on the market risk of peer institutions as well. As shown in panels C of tables 6 and 7, this impact amounts to a 7.6% reduction for bank peers and to a 14.0% reduction for insurance peers. Figures 3 and 4 in the Appendix present the conditional variances of the peer firms in the pre- and post-announcement periods. Overall, they illustrate some reduction in the conditional variance of equity returns, for both banks and insurers, during the post-deal period.

The overall findings suggest that risk is transmitted from financial conglomerates to their peers and is contagious in nature, namely that the effects on the two are in the same direction. The insurance peers, however, exhibit a greater reduction in risk in the post-announcement phase than the bank peers. Similar to the discussion in section 4.2, an explanation for this finding may be the existence of dissimilar investors' expectations about the future of banks and insurers in that the latter have a greater chance to be acquired and to prosper. The current results are to some extent comparable to Elyasiani, Mansur and Pagano (2007) and Elyasiani and Mansur (2003) who report volatility spillover effects across banks using an international sample, and across commercial bank, investment banks and insurers, respectively. The results of these studies suggest that risk shocks are indeed transferred among domestic markets as well as sectors globally. The finding here that formation of conglomerates leads to risk reduction alleviates some of the concerns about bank-insurance ventures as these ventures seem to reduce the risk of both banking and insurance firms, though they may increase the systemic risk due to increased interconnectedness of the two industries (De Jonghe, 2010; Wagner, 2010).

5. SUMMARY AND CONCLUSIONS

This study employs an event study methodology to investigate the effect of insurers' takeover by banks on the risk-return profile of the acquiring banks as well as their banking and

insurance peers. The analysis is carried out within a GARCH framework, which nests the models commonly used in the literature and accounts for the clustering pattern of errors and persistence of shocks. The determinants of the magnitudes of excess returns for the acquiring banks are also examined. We find that acquiring banks and their bank and insurer peers experience positive abnormal returns in response to the announcement of the mergers. The effect on the acquiring banks occurs faster, within one day, while the effects on peers, especially insurers, take longer to be completed (up to nine days). The bank-insurance deal announcements also bring about a slight decline in risk for the bidding firms and peer institutions and serve as a mechanism to reduce the overall risk of these financial firms.

Our evidence on the positive abnormal returns and risk reduction provides some support for the firms combining banking activities with insurance services and for the passage of the European Directive (1989) in the European Union, and the Financial Modernization Act (1999) in the U.S. The implications of the financial services' consolidation can be seen from firms, investors and public policy angles. At the firm level, managers seeking to improve their corporate performance may consider structures that bring together these two types of financial entities. In terms of risk diversification, banking institutions could pursue such ventures as they seek a reduction in their overall risk exposure. From an investor's point of view, market participants may find the stocks of financial conglomerates a more suitable vehicle to invest in for diversification purposes than those operating in the banking or insurance sectors alone. Finally, at a public policy level, the effect(s) of consolidation on systemic risk, as well as on the risk spillover from such businesses to the sector, and/or the economy as a whole, should be closely monitored. Given the current findings, the creation of such hybrid corporate entities could be favorably seen by regulators and policy makers alike.

It is notable that, in addition to our quantitative findings, a number of qualitative factors such as governance and management quality play important a role in the healthy survival of large financial firms as evidenced by management disasters of the last few years (Staikouras, 2006). Specifically, in spite of the potential gains through bank-insurance mergers, success of these conglomerates is crucially dependent on the choice of the synergies that they aim to realize and the effectiveness of their management. Hence, management initiatives should focus on properly structured and properly priced bancassurance products, accounting for diversification benefits and cost efficiencies, and aiming to accommodate a large part of the market. This will, in general, improve profitability and reduce the risk of financial and product failure. Continued renewal of the governance structure of each partner, and the overall conglomerate, must assure that the diverse cultures of banking and insurance are gelled together appropriately. From the regulatory point of view, the financial crisis of 2007-2009 has demonstrated that misfortunes of financial intermediaries have serious consequences for the financial system as a whole. In this context, undue application of the too-big-to-fail doctrine, which reduces the responsibilities of shareholders and creditors and muddles the waters of discipline and competition, is a source of instability.

Table 1. Sample bancassurance deals per country and year.

Country	Bidders	Targets	Year	No of Deals	%
Argentina	0	2			
Australia	3	2			
Belgium	1	0			
Brazil	1	1	1991	2	3.64%
Canada	6	3	1992	1	1.82%
Cyprus	1	1	1993	1	1.82%
Denmark	4	4	1994	3	5.45%
Finland	1	1	1995	2	3.64%
Germany	2	2	1996	4	7.27%
Hong Kong	1	2	1997	3	5.45%
Ireland	1	2	1998	3	5.45%
Italy	6	6	1999	6	10.91%
Netherlands	0	1	2000	7	12.73%
Norway	1	1	2001	3	5.45%
Philippines	1	1	2002	5	9.09%
Portugal	1	2	2003	4	7.27%
South Korea	1	1	2004	3	5.45%
Spain	3	1	2005	2	3.64%
Sweden	2	2	2006	1	1.82%
Switzerland	1	1			
United Kingdom	4	3			
United States	9	11			
Sum	**50**	**50**	**Total**	**50**	**100%**

Table 2. Bidders' excess returns due to bank-insurance mergers: A GARCH model

		1	2	3	4
			Event windows for up to		
		3 days	5 days	7 days	9 days
	Pre-event window	[-1 0]	[-2 0]	[-3 0]	[-4 0]
1	CAAR	1.58%	1.43%	1.27%	1.28%
	t-value	(2.62) [a]	(2.44) [b]	(1.96) [b]	(1.77) [c]
	Post-event window	[0 +1]	[0 +2]	[0 +3]	[0 +4]
2	CAAR	1.64%	0.39%	0.45%	0.31%
	t-value	(2.92) [a]	(0.96)	(1.05)	(0.66)
	Event window	[0 0]	[-2 +1]	[-3 +1]	[-4 +1]
3	CAAR	1.47%	1.60%	1.45%	1.45%
	t-value	(2.53) [b]	(2.82) [a]	(2.37) [b]	(2.18) [b]
	Event window	[-1 +1]	[-2 +2]	[-3 +3]	[-4 +4]
4	CAAR	1.75%	0.36%	0.26%	0.12%
	t-value	(2.99) [a]	(1.06)	(0.85)	(0.41)
5	Mean ARCH coefficient		0.120		
	t-value		(3.82)		
6	Mean GARCH coefficient		0.730		
	t-value		(11.66)		
7	Mean volatility persistence		0.850		

The sample used consists of 50 bancassurance deals announced between 1991 and 2006. The reported values are cumulative average abnormal returns (CAAR). Abnormal returns are calculated using the market model via a GARCH estimation process. ARCH and GARCH coefficients represent the average of all firms, while the average standard errors are calculated using the following specification due to: $\overline{s.e.} = \frac{1}{n}\sqrt{\sum_{i=1}^{n} s.e.(\hat{b}_i)^2}$, where $\overline{s.e.}$ is the average standard error and $s.e.\left(\hat{b}_i\right)$ is the firm-specific ARCH and GARCH standard errors.

a/b/c denote significant CAAR at the 0.01/0.05/0.10 level (two-tailed test) for the pertinent event period.

Table 3. Spillover effects to bank and insurance peers based on GARCH models

	Panel A: Bank Peers	**1**	**2**	**3**	**4**
		Event windows for up to			
		3 days	5 days	7 days	9 days
	Pre-event window	[-1 0]	[-2 0]	[-3 0]	[-4 0]
1	CAAR	0.34%	0.55%	0.48%	0.56%
	t-value	(0.57)	(0.69)	(0.35)	(0.54)
	Post-event window	[0 +1]	[0 +2]	[0 +3]	[0 +4]
2	CAAR	0.45%	0.74%	1.04%	0.81%
	t-value	(1.81) [c]	(0.67)	(0.93)	(0.56)
	Event window	[0 0]	[-2 +1]	[-3 +1]	[-4 +1]
3	CAAR	0.38%	0.62%	0.54%	0.62%
	t-value	(1.63)	(1.02)	(0.69)	(0.79)
	Event window	[-1 +1]	[-2 +2]	[-3 +3]	[-4 +4]
4	CAAR	0.40%	0.91%	1.13%	0.99%
	t-value	(0.94)	(0.47)	(0.56)	(0.40)
5	Mean ARCH coefficient		0.140		
	t-value		(3.83)		
6	Mean GARCH coefficient		0.570		
	t-value		(7.34)		
7	Mean volatility persistence		0.710		

	Panel B: Insurance Peers				
		Event windows for up to			
		3 days	5 days	7 days	9 days
	Pre-event window	[-1 0]	[-2 0]	[-3 0]	[-4 0]
1	CAAR	0.48%	0.77%	0.62%	0.43%
	t-value	(1.91) [c]	(2.48) [b]	(1.81) [c]	(1.09)
	Post-event window	[0 +1]	[0 +2]	[0 +3]	[0 +4]
2	CAAR	0.50%	0.39%	0.80%	1.49%
	t-value	(2.15) [b]	(1.75) [c]	(2.27) [b]	(2.06) [b]
	Event window	[0 0]	[-2 +1]	[-3 +1]	[-4 +1]
3	CAAR	0.31%	0.96%	0.80%	0.61%
	t-value	(1.86) [c]	(2.70) [a]	(2.15) [b]	(1.50)
	Event window	[-1 +1]	[-2 +2]	[-3 +3]	[-4 +4]
4	CAAR	0.66%	0.85%	1.11%	1.60%
	t-value	(2.22) [b]	(2.32) [b]	(2.32) [b]	(1.80) [c]
5	Mean ARCH coefficient		0.130		
	t-value		(3.13)		
6	Mean G ARCH coefficient		0.640		
	t-value		(9.65)		
7	Mean volatility persistence		0.770		

The sample consists of 40 bank and 33 insurance peer portfolios pertinent to the bank-insurance announcements. The reported values are cumulative average abnormal returns. Abnormal returns are calculated using the market model via a GARCH estimation process. CAAR stands for cumulative average abnormal returns. ARCH and GARCH coefficients represent the average of all peer portfolios (bank/insurance), while the average standard errors are calculated using the following specification: $\overline{s.e.} = \frac{1}{n}\sqrt{\sum_{i=1}^{n} s.e.(\hat{b}_i)^2}$, where $\overline{s.e.}$ is the average standard error and $s.e.\left(\hat{b}_i\right)$ the individual portfolio ARCH and GARCH standard errors.

a/b/c denote significant CAAR at the 0.01/0.05/0.10 level (two-tailed test) for the pertinent event period.

Table 4. Multiple regression analysis of bank-insurance deals

$$AR_{it} = C + \gamma_1 (LEV_i) + \gamma_2 (DV\text{-}OFFER_i) + \gamma_3 (RDS_i) + \gamma_4 (DV\text{-}U.S._i) + u_{it}$$

			1	2	3	4
			Event window			
			[-1 0]	[0 0]	[0 +1]	[-1 +1]
1	*C*	*(Constant)*	0.040	0.038	0.035	0.036
			(1.75) [c]	(1.96) [b]	(1.80) [c]	(1.55)
2	*LEV*	*(Leverage)*	0.002	0.001	0.001	0.001
			(2.18) [b]	(1.90) [c]	(1.63)	(1.89) [c]
3	*DV-OFFER*	*(Payment Method)*	-0.074	-0.062	-0.050	-0.062
			(-3.92) [a]	(-3.85) [a]	(-3.13) [a]	(-3.18) [a]
4	*RDS*	*(Relative deal size)*	0.002	0.005	0.004	0.001
			(0.92)	(2.38) [b]	(1.79) [c]	(0.39)
5	*DV-U.S.*	*(U.S. Bidder)*	0.052	0.057	0.041	0.036
			(2.95) [a]	(3.81) [a]	(2.77) [a]	(1.98) [b]

The sample consists of 50 bancassurance deals announced between 1991 and 2006. After adjusting for companies with unavailable accounting data, the sample size drops to 40 deals. Abnormal returns are calculated using the market model via a GARCH estimation process. The multivariate analysis is performed using ordinary least squares.
AR stands for the abnormal returns, while *C* is the constant; *LEV* is the dummy taking into account the bidder's leverage (equity multiplier); *DV-OFFER* is the dummy variable taking into account the type of consideration offered by the bidder (cash or stock); *RDS* is the relative size of the deal to the bidder's market value; *DV-U.S.* is the dummy taking into account the U.S. acquirers. The figures in brackets indicate t-values.
a/b/c denote significant CAAR at the 0.01/0.05/0.10 level (two-tailed test) for the pertinent event period.

Table 5. Risk decomposition of bidder banks' stock returns

Panel A. Pre-announcement Day -250 to Day -1

	TR	=	$\beta^2 \times Hm$	+	Hu
	4.583	=	1.644	+	2.939
	100%	=	35.9%	+	64.1%

Mean R	0.066%	Standard deviation of R	0.0029
Mean R_m	0.021%	Standard deviation of R_m	0.0015
Mean β	0.920	Standard deviation of β	0.3988
Mean β^2	1.001	Standard deviation of β^2	0.7680
Mean Hm	1.672		

Panel B. Post-announcement Day +1 to Day +250

	TR	=	$\beta^2 \times Hm$	+	Hu
	3.989	=	1.460	+	2.529
	100%	=	36.6%	+	63.4%

Mean R	0.048%	Standard deviation of R	0.0031
Mean R_m	0.013%	Standard deviation of R_m	0.0020
Mean β	0.862	Standard deviation of β	0.3935
Mean β^2	0.894	Standard deviation of β^2	0.6615
Mean Hm	1.735		

Panel C. Changes in risk pre- and post-announcement *

	$\Delta(TR)$	=	$\Delta(\beta^2 \times Hm)$	+	$\Delta(Hu)$
	-0.594	=	-0.184	+	-0.410
% change	-13.0%		-11.2%		-13.9%

Δ (Mean R)	-0.018%	Δ (Standard deviation of R)	0.0002
Δ (Mean R_m)	-0.008%	Δ (Standard deviation of R_m)	0.0005
Δ (Mean β)	-0.058	Δ (Standard deviation of β)	-0.0053
Δ (Mean β^2)	-0.107	Δ (Standard deviation of β^2)	-0.1065
Δ (Mean Hm)	0.063		

The table presents the shift in relative importance of risk factors composing total bank bidder return risk before and after bank-insurance partnership announcements. The sample consists of 50 bank-insurance deals announced between 1990 and 2006. All the risk measures have been calculated using the models described in equation (8). The conditional variance terms are multiplied by 10^4.

R = return on bank bidders, Rm = return on the market portfolio

TR = total risk, β = hedge ratio, Hm = conditional variance, Hu = residual conditional variance.

* Negative (positive) values indicate reduction (increase) from the pre- to the post-announcement period.

Table 6. Risk decomposition of bank peer portfolio returns

Panel A. Pre-announcement Day -250 to Day -1

	TR	=	$\beta^2 \times Hm$	+	Hu
	2.486	=	1.367	+	1.119
	100%	=	55.0%	+	45.0%

Mean R	0.048%	Standard deviation of R	0.0025
Mean R_m	0.021%	Standard deviation of R_m	0.0022
Mean β	0.817	Standard deviation of β	0.2670
Mean β^2	0.738	Standard deviation of β^2	0.4075
Mean Hm	1.939		

Panel B. Post-announcement Day +1 to Day +250

	TR	=	$\beta^2 \times Hm$	+	Hu
	2.194	=	1.263	+	0.931
	100%	=	57.6%	+	42.4%

Mean R	0.019%	Standard deviation of R	0.0025
Mean R_m	0.005%	Standard deviation of R_m	0.0022
Mean β	0.824	Standard deviation of β	0.2290
Mean β^2	0.730	Standard deviation of β^2	0.3652
Mean Hm	1.847		

Panel C. Changes in risk pre- and post-announcement *

	$\Delta(TR)$	=	$\Delta(\beta^2 \times Hm)$	+	$\Delta(Hu)$
	-0.292	=	-0.104	+	-0.188
% change	-11.7%		-7.6%		-16.8%

Δ (Mean R)	-0.029%	Δ (Standard deviation of R)	0.0000
Δ (Mean R_m)	-0.016%	Δ (Standard deviation of R_m)	0.0000
Δ (Mean β)	0.007	Δ (Standard deviation of β)	-0.0380
Δ (Mean β^2)	-0.008	Δ (Standard deviation of β^2)	-0.0423
Δ (Mean Hm)	-0.092		

The table presents the shift in relative importance of risk factors composing total return risk of bank peer portfolios before and after bank-insurance partnership announcements. The sample consists of 40 bank peer portfolios. All the risk measures have been calculated using the models described in equation (8). The conditional variance terms are multiplied by 10^4.

R = return on the bank peers portfolio, Rm = return on the market portfolio

TR = total risk, β = hedge ratio, Hm = conditional variance, Hu = residual conditional variance.

* Negative (positive) values indicate reduction (increase) from the pre- to the post-announcement period.

Table 7. Risk decomposition of insurance peer portfolio returns

Panel A. Pre-announcement Day -250 to Day -1

	TR	=	$\beta^2 \times Hm$	+	Hu
	3.060	=	1.197	+	1.863
	100%	=	39.1%	+	60.9%

Mean R	0.044%	Standard deviation of R	0.0028
Mean R_m	0.021%	Standard deviation of R_m	0.0022
Mean β	0.778	Standard deviation of β	0.2454
Mean β^2	0.664	Standard deviation of β^2	0.3437
Mean Hm	1.678		

Panel B. Post-announcement Day +1 to Day +250

	TR	=	$\beta^2 \times Hm$	+	Hu
	2.301	=	1.029	+	1.272
	100%	=	44.7%	+	55.3%

Mean R	0.042%	Standard deviation of R	0.0027
Mean R_m	0.031%	Standard deviation of R_m	0.0020
Mean β	0.803	Standard deviation of β	0.2269
Mean β^2	0.695	Standard deviation of β^2	0.3195
Mean Hm	1.484		

Panel C. Changes in risk pre- and post-announcement *

	$\Delta(TR)$	=	$\Delta(\beta^2 \times Hm)$	+	$\Delta(Hu)$
	-0.759	=	-0.168	+	-0.591
% change	-24.8%		-14.0%		-31.7%

Δ (Mean R)	-0.002%	Δ (Standard deviation of R)	-0.0001
Δ (Mean R_m)	0.0100%	Δ (Standard deviation of R_m)	-0.0002
Δ (Mean β)	0.025	Δ (Standard deviation of β)	-0.0185
Δ (Mean β^2)	0.031	Δ (Standard deviation of β^2)	-0.0242
Δ (Mean Hm)	-0.194		

The table presents the shift in relative importance of risk factors composing total return risk of insurance peer portfolios before and after bank-insurance partnership announcements. The sample consists of 33 insurance peer portfolios. All the risk measures have been calculated using the models described in equation (8). The conditional variance terms are multiplied by 10^4.

R = return on the insurance peers portfolio, Rm = return on the market portfolio

TR = total risk, β = hedge ratio, Hm = conditional variance, Hu = residual conditional variance.

* Negative (positive) values indicate reduction (increase) from the pre- to the post-announcement period.

Appendix

Figure 1. Conditional variance of bidder equity returns during the pre- and post-deal phase.

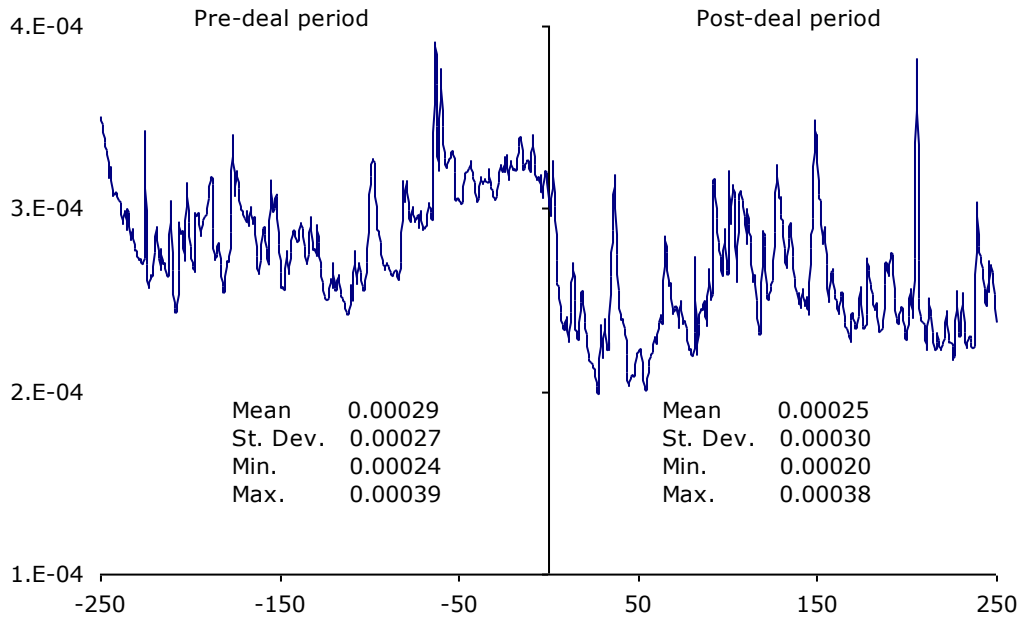


Figure 2. Impulse response analysis on the conditional variance of equity returns.

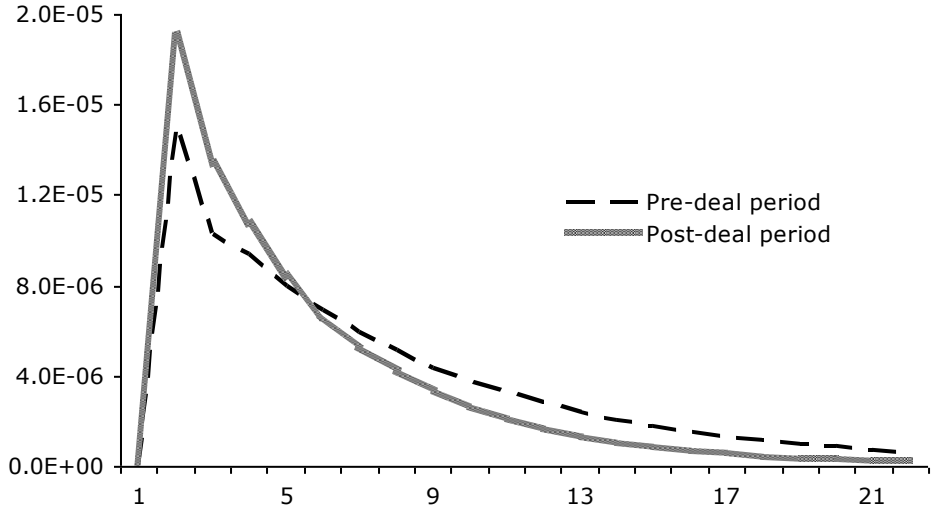


Figure 3. Conditional variance of bank peer equity returns during the pre- and post-deal phase.

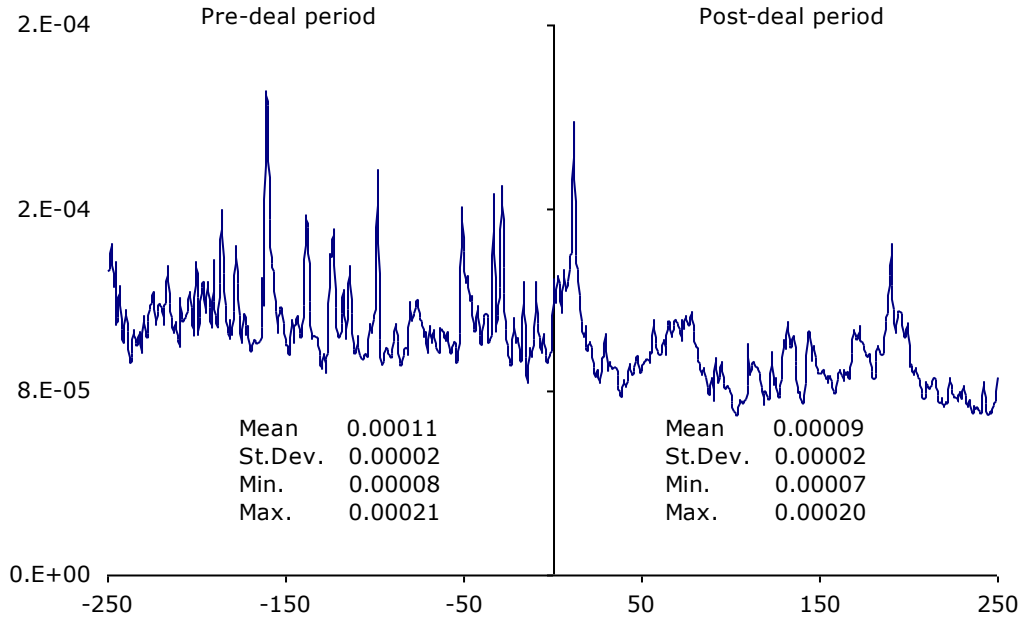
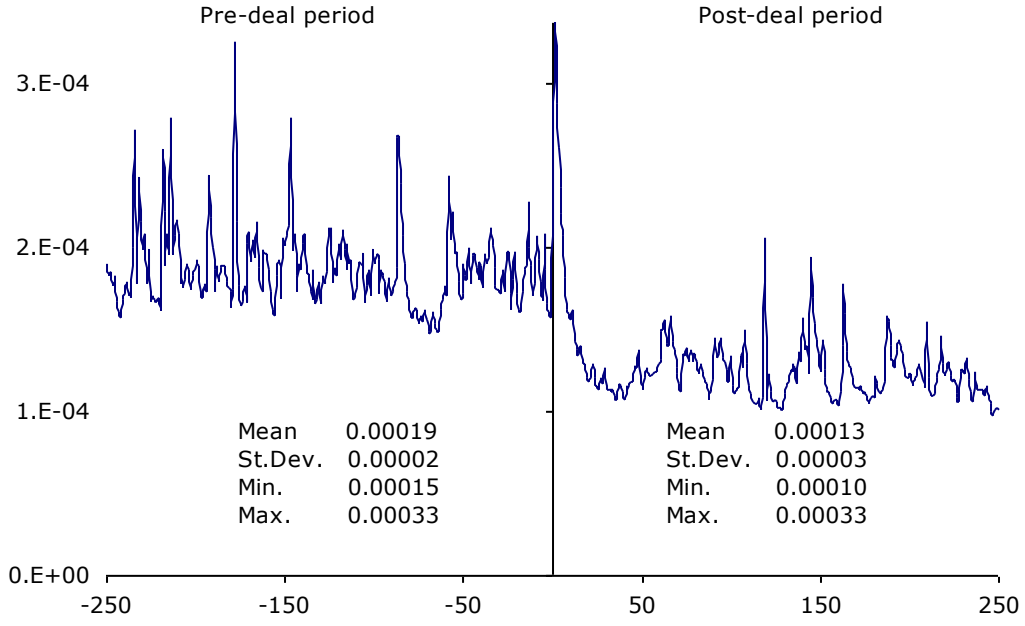


Figure 4. Conditional variance of insurance peer equity returns during the pre- and post-deal phase



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