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How do acquirers fare in bank-insurance takeovers? A risk decomposition approach

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ABSTRACT

We explore the effects of a wide range of international bank-insurance ventures on the risk profiles of acquiring institutions. A risk decomposition approach is employed to gauge changes in the risk components of bidders, before and after the deals' announcement. Furthermore, a cross section analysis attempts to identify: a) factors affecting the various risk elements; and b) shifts in their significance following deals. The findings indicate that bancassurance does not significantly affect the total and idiosyncratic risks of bidders, but does increase systematic risk, depending on the type of deal. Further analysis reveals that a) this increase is not caused by the increase in insurance activities, but rather by greater size; b) the relationship between diversification and idiosyncratic risk differs with the type of target; and, c) results vary with bank size. The overall findings imply that bancassurance offers financial institutions a mechanism to rebalance their risk exposures.

JEL classification: G21; G22; G32; G34

Keywords: Bank-insurance; financial conglomerates; diversification; risk decomposition; determinants of risk

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1. Introduction

The cost of the global financial crisis extends beyond banking sector write downs (the most recent estimate is $2.2 trillion, IMF 2010), to include fiscal costs of government actions and the loss of output (Laeven and Valencia, 2010). The role of financial conglomerates in propagating shocks and the difficulties inherent in regulating complex institutions is being readily acknowledged (Wagner, 2008; Herring and Carmassi, 2009). Banking sector fragility underlines the salient relationship between diversification and risk. It is little more than a decade since the Gramm-Leach-Bliley Act of 1999 revoked functional separation and permitted US bank holding companies (BHC) to operate as universal banks. This option had been available to European banks through the 1989 Second Banking Directive. Discussions on the future of bank regulation and the wider financial architecture should take stock of the diversification debate (Morrison, 2009; Moshirian, 2011a,b). Empirical studies can help inform the debate: for instance, De Jonghe (2010) determines the impact of specialized and diversified firms on financial stability under extreme conditions; Chan-Lau (2010) proposes a method to allocate capital charges for financial firms according to their systemic importance.

Post-deregulation period data from the US show large banks became bigger through mergers and acquisitions (M&A) which, for many banks, represented an opportunity to diversify.[1] A critical question concerns the expected impact of diversification upon risk. Ex ante, the answer is ambiguous: portfolio theory defines total risk as the sum of systematic and idiosyncratic risks.[2] Firm managers may engage in product or geographical diversification to eliminate idiosyncratic risk leaving only systematic risk. In a theoretical paper, Wagner (2010) challenges the conventional view that diversifying idiosyncratic risk lessens total risk:

[1] Stiroh (2009) shows the asset share of the five largest BHCs in the US jumps from 21.2% to 48.0% between 1986 and 2006. Using the mean ratio of non-interest income-to-total operating income to proxy diversification reveals that the BHCs increasingly diversify with time: from 39.0% in 1986 to 53.2% in 2006. The mean BHC operates in more states (21 *c.f.* 5) with greater branch penetration (3,118 *c.f.* 463) over time. Berger et al. (1999) and Berger et al. (2001) discuss consolidation in the US and Europe.

[2] In the literature, the terms systematic risk and market risk, and idiosyncratic risk and unsystematic risk are interchanged. For ease of exposition, we shall use the terms systematic and idiosyncratic risk in this paper.

he identifies a trade-off between the effects of diversification in reducing the probability of firm failure whilst concomitantly increasing systemic risk. In his model, systemic risk grows because the probability of simultaneous firm failure increases as firms become more alike and are exposed to the same shocks. Furthermore, as risk taking is endogenous, it does not follow that diversification leads to a lower level of risk (Stiroh, 2009).

We contribute to the debate on financial sector diversification and identify the effects on the risks for acquiring firms that participate in M&A between banks and insurance companies, a phenomenon known as bancassurance. Our first objective is to estimate risks before and after the announcement of bancassurance partnerships, and to identify the direction of any changes. This exercise should interest bank regulators because ex ante expectations are that overall risk decreases after M&A due to lower idiosyncratic risk resulting from diversification. On the contrary, risk may rise as large financial firms grow more alike and are subjected to similar shocks. Our second objective is to formally examine the relationship between risk and diversification in bancassurance partnerships. A priori diversification suggests that financial conglomerates benefit from multiple, low or non-correlated revenue streams, which should be of interest to managers, depositors, policyholders and bondholders seeking to minimize idiosyncratic risk.

We employ a two-stage econometric approach to achieve three aims. First, to decompose [total] risk into its systematic and idiosyncratic components. To the best of our knowledge, this paper contains the first application of risk decomposition to bancassurance deals. Second, to formally validate the hypothesis that diversification realizes lower levels of risk. A cross-sectional framework models the determinants of risk after controlling for firm-specific attributes; namely, asset quality, profitability, leverage and firm size. We are unaware of any other examination of this relationship before and after bancassurance ventures. A final aim is to test for shifts in risks, and changes in the relationship between diversification and risk, between periods before and after announcements of bancassurance partnerships.

Our sample comprises 210 international M&A deals involving banks and insurance companies from 1990 to 2006 making it the most comprehensive sample in the literature on the risk effects of bank-insurance takeovers. We build on a recent study that shows returns are sensitive to the principal business of the insurance partner - underwriter or agent – in M&A deals (Dontis-Charitos et al., 2011).[3] Thus, we construct three subsets of deals: banks acquiring insurance companies (Bank-Insure); insurance companies acquiring banks (Insure-Bank); and banks acquiring insurance agencies (Bank-Agency).

By way of preview, we find (statistically weak) evidence that bancassurance partnerships realize an increase in systematic risk. Analysing the subsets of deals reveals a more complex picture. Comparing Bank-Insure deals to Insure-Bank deals, acquiring insurance companies display relatively higher total risk. Differences between the two are also apparent when the relative importance of the constituents of total risk is considered. Insurers are much more exposed to systematic risk than banks, whereas the latter are more exposed to idiosyncratic risk. When we consider Bank-Agency deals, we find that the idiosyncratic component of acquiring banks accounts for more than 80% of their total risk. We show the exposure of acquiring banks to systematic risk is greater when banks merge with insurance agencies (Bank-Agency) rather than underwriters (Bank-Insure). Our results imply that diversification per se does not drive up systematic risk; rather the causal factor is the increasing scale of the merged entities. Finally, further analysis reveals that the coefficient estimates vary with bank size.

[3] Earlier studies of bank diversification into nonbank activities point out the sensitivity of results to different combinations of activities (see, for example, Genetay and Molyneux, 1998; Lown et al., 2000; and Nurullah and Staikouras, 2008).

In what follows, section 2 reviews the extant contributions on the risk issues relating to financial conglomerates and discusses the empirical evidence. Section 3 presents the sample and methodological framework. We discuss results in section 4 with Section 5 concluding.

2. Literature Review

The question of whether financial conglomerates outperform their more specialized counterparts in terms of their risk-return attributes is an issue of ongoing academic research. Generally, proponents of diversification (Benston, 1994; Saunders, 1994) cite the existence of synergies through cost and revenue economies of scope coupled with lower bankruptcy risk due to the imperfect correlations of revenue streams from different functional activities. On the contrary, a basic argument against diversification is that investors can diversify away firm specific risk by constructing efficient portfolios at lower cost (Levy and Sarnat, 1970).[4] While much of the evidence we discuss below is drawn from US studies, we note the emergence of a European literature.[5]

Despite the various methodological avenues followed in the extant literature, the evidence is mixed and the question still remains. This is very apparent when one reviews academic survey evidence on this subject. For instance, Kwan and Laderman (1999) review the effects of combining banking and nonbank financial activities on bank risk and return. They report that securities activities, insurance broking, and insurance underwriting are riskier but more profitable than banking activities, and provide potential for diversification. Similar conclusions are drawn by Berger et al. (1999) who suggest that consolidation can help to diversify the portfolio risks of financial institutions as well as increase profit efficiency.

[4] Levy and Sarnat (1970) employ portfolio theory to prove that in the absence of synergistic gains and capital cost economies, the diversification benefits stemming from mergers cannot produce economic gains in a perfect capital market.

[5] The empirical research on bancassurance and financial conglomerates comprises, but is not limited to, studies that look into the effects on shareholder value, efficiency and risk. To keep the task manageable, this section presents an overview of some evidence related to the risk effects of bank-insurance deals, with no intention to lessen the importance of any studies excluded. The interested reader is referred to Fiordelisi and Ricci (2011) for evidence on efficiency effects, and to Dontis-Charitos et al. (2011) for evidence on shareholder value effects.

Berger et al. (2001) review the literature on the effects of consolidation on the efficiency of the European financial services industry. Whilst they acknowledge that consolidation may yield efficiency gains, which are mainly attributable to risk diversification, they admit that much of the potential gain could be offset by barriers to consolidation.[6] Saunders and Walter (1994) survey 18 studies, concluding that there is a lack of consensus as to whether nonbanking activities reduce bank risk (nine studies answer yes, six answer no, while three are inconclusive).

In addition to the survey evidence, the empirical record is also inconclusive, and offers as explanation problems like data unavailability and/or methodological issues. Heggestad (1975) uses variance/covariance analysis at the aggregate industry level and finds that many nonbank activities are safer than banking, which implies potential diversification benefits may exist in some nonbanking operations. Others employ a combination of accounting and market data to examine the relationship between BHC risk and diversification into nonbanking. The results lack generality: Boyd and Graham (1986) do not find a significant relationship between either profitability or risk and nonbank activity;[7] Brewer (1989) fails to uncover evidence of high BHC risk associated with nonbank activity, though he does report a strong negative relation between risk and nonbank activity for high risk BHCs. Using a similar framework, Brewer et al. (1988) report a negative relation between the proportion of nonbank activity and BHC risk.

The earlier literature suffers from two shortcomings. First, in studies covering periods prior to the 1999 Gramm-Leach-Bliley Act, the regulatory model of functional separation limited the range of permissible nonbank activities. Second, nonbanking activities tended to be aggregated implying a loss of detail in the analysis of risks. Initial attempts to remedy these anomalies include the application of merger simulation techniques. For instance, Boyd

[6] The barriers include distance, language, culture and implicit rules against foreign institutions.

[7] The relationship between nonbank share and risk is strong and positive in a sub-period prior to the imposition of tighter BHC regulations.

and Graham (1988) analyse the impact of a hypothetical expansion of BHCs into nonbanking on BHC risk, using accounting and market data. They suggest that combinations between BHCs and securities firms, real estate developers and property and casualty (P/C) insurance increase the volatility of returns and the risk of failure. Yet, they also find that the expansion of BHCs into life insurance reduces both the volatility of returns and the risk of failure. Similarly, Laderman (1999) finds that either life insurance underwriting, P/C insurance underwriting or securities underwriting reduce the probability of BHC bankruptcy. Genetay and Molyneux (1998) analyse the impact of an expansion by UK banks into mutual and proprietary life insurance on bank risk. They report mixed evidence on risk, with significantly lower probabilities of failure, but insignificant changes in return on assets volatility for bancassurance combinations.

It is worth noting that the practice of randomly selecting pairs of companies without controlling for size can create an unrealistic pairing of large nonbanks with small BHCs. Boyd et al. (1993) and Lown et al. (2000) take account of this problem. The former authors suggest that mergers between BHCs and life or non-life insurance firms can be risk reducing when the appropriate portfolio weight combinations are chosen, whereas mergers with either securities or real estate companies are likely to increase BHC risk. In contrast, the latter authors conclude that mergers between BHCs and either securities firms or property and casualty firms are likely to modestly raise BHC risk. However, mergers between BHCs and life insurance companies lower risk for both firms because of diversification benefits. Other authors adopt a portfolio approach: Allen and Jagtiani (2000) use market data to create synthetic universal banks[8] and find that nonbank activities reduce total risk but increase systematic risk; Estrella (2001) claims banking institutions and insurance companies can experience diversification benefits by converging.

[8] The term synthetic describes universal banks that do not exist, but are created for the purposes of the study. A "synthetic universal bank" is effectively a portfolio consisting of one depository institution, one securities firm, and one insurance company.

The emergence of bank-insurance combinations and financial conglomerates, in general, following deregulatory acts paves the way for studies that investigate actual combinations. For instance, Nurullah and Staikouras (2008) show that diversifying into life and non-life insurance activities significantly increases the volatility of bank returns and the probability of bankruptcy; they propose insurance brokerage as the best candidate for bank expansion. Other studies examine the relationship between measures of bank diversification and performance, and/or risk. However, the expected benefits of diversification for financial firms are not always apparent, and when benefits do exist they may be offset by other factors. Using non-interest income share to proxy diversification, Stiroh (2004) finds diversification is associated with higher volatility and lower risk-adjusted returns at banks. Whereas Stiroh and Rumble (2006) find diversification benefits for BHCs, they acknowledge the offsetting impact on risk-adjusted returns of exposure to more volatile activities. Stiroh (2006) confirms diversification is associated with increasing volatility of returns at BHCs, which implies that some banks may be overly diversified. In a study of European banks, Baele et al. (2007) find diversification (non-interest revenue share) is positively associated with systematic risk, but contrary to Stiroh (2006), they report a negative relationship between diversification and idiosyncratic and total risks. Further scrutiny reveals that the latter relationship is non-linear. Other European evidence is consistent with Stiroh (2006); a study of small European banks finds diversification and risk-adjusted performance are inversely related, implying that small banks should focus on activities in which they have a comparative advantage (Mercieca et al., 2007). Similarly, Vallascas and Hagendorff (2011) show that low-risk European banks that diversify into other financial activities (mainly insurance) experience a marked increase in default risk.

3. Data and Methodology

We consider the effect of international bank-insurance partnerships on the risks of acquiring institutions, using 210 bank-insurance deals from the Thomson One Banker M&A database between 1990 and 2006 to form our sample. We create three subsets of the sample because the literature on the interface between banks and insurance companies points to significant differences in the risk-return profiles of banks when they combine with insurance agencies/brokers, as opposed to combining with insurance firms (Boyd et al., 1993; Nurullah and Staikouras, 2008). Failing to differentiate between deals where the target is an insurance underwriter – exposed to underwriting risks – and deals where the target is and insurance agent/broker – where underwriting risk is not present – can bias the results. We define the subsets as follows: Bank-Insure comprises banks that acquire insurance companies (n = 100); Insure-Bank comprises insurance companies that acquire banks (n = 20); and Bank-Agency comprises banks that acquire insurance agencies (n = 90). Table 1 presents the distribution of the sample of bidders and targets by country and deal type, while Figure 1 shows the composition of the sample of deals by year and deal type.

[INSERT TABLE 1 AND FIGURE 1 HERE]

Table 1 reveals that the majority of partnerships are concentrated in the US and Europe with bank acquisitions of insurance companies (Bank-Insure) evenly distributed. Yet distinct geographical features exist: insurance company acquisitions of banks (Insure-Bank) are a European phenomenon whilst bank acquisitions of insurance agencies (Bank-Agency) are mostly in the US. Concerning the timing of deals, it is unsurprising to note that most of the deals take place between 1997 and 2005, a period that takes into account the removal of the regulatory barriers between banks and insurance companies in the US, following the Financial Services Modernization Act (FSMA) of 1999.[9]

To gain insight into the risk effects for each type of bancassurance combination, we utilise a risk decomposition approach and decompose the risks facing acquiring firms into systematic and idiosyncratic components. Starting from a generalised multi-factor model, and using a matrix structure, we obtain the linear return generating process for each firm *i*:

$$R_{it} = \alpha_i + B_i' \, F + \varepsilon_{it} \qquad [1]$$

where R_i is the logarithmic return on asset *i*, *a* is the constant term, *B* is a *k*x1 vector of exposures (β_{pi}, $p=1,\ldots,k$) of asset *i* to *k* common risk factors, *F* is the *k*-dimensional column vector of risk factors (f_p), ε_{it} is a residual term with usual properties and is uncorrelated to the *k* risk factors, and *t* equals time. Under this framework asset's *i* systematic return variation is:

$$\sigma^2_{Sys\,R_i} = \sum_{p=1}^{k} \sum_{q=1,\ p\neq q}^{k} \beta_{pi}\,\beta_{qi}\,\sigma\big(f_p\,f_q\big) + \sum_{p=1}^{k} \beta_{pi}^2\,\sigma^2\big(f_p\big) \qquad [2]$$

where $\sigma\,(f_p\,f_q)$ is the covariance among risk factors *p* and *q*. Given that we employ the single index market model, then asset's *i* systematic variation to market risk boils down to $k = 1$ in equation [2]:

$$\sigma^2_{Sys\,R_i} = (\beta_{m_i}\,\sigma_{m_i})^2 = \sigma^2_{R_i} - \sigma^2_{\varepsilon_i} \qquad [3]$$

where $\sigma^2_{R_i}$ and $\sigma^2_{\varepsilon_i}$ is the asset's *i* total and idiosyncratic exposures, respectively.

[9] Prior to the FSMA of 1999, a number of US deals took place under specific regulatory permissions. Ten deals that fall into this category are included in the sample. Further information is available upon request.

We estimate equation [1] for the pre-announcement period (day -250 to day -1) and the post-announcement period (day +1 to day +250) separately. This requires daily stock prices for acquiring institutions and daily prices for the stock market index where each acquirer is traded. We source data from Thomson Datastream for a period of 251 trading days before and 250 trading days after each M&A announcement. All models are estimated using logarithmic returns.

In a second step, we estimate equation [4] using a cross-sectional approach in order to assess the determinants of risks before and after M&A announcements. We build upon the risk decomposition results and employ total risk, systematic risk, and idiosyncratic risk as dependent variables; we estimate equation [4] for pre- and post-announcement periods.

$$Y_{j,i} = \alpha + \beta_1 DIV_{k,i} + \beta_2 LL_{h,i} + \beta_3 ROA_i + \beta_4 LEV_i + \beta_5 Size_i + \varepsilon_\iota \,, \qquad [4]$$

where, $Y_{j,i}$ is each of the market-based measures of risk (systematic risk, measured by the market beta, β, idiosyncratic risk, $\sigma^2_{\varepsilon i}$, or total risk, $\sigma^2 R_i$).

A combination of theory and empirical evidence influences our choice of the determinants of risk. *DIV* indicates diversification and we select two variables as proxy: the percentage of non-interest income-to-total operating income; and the percentage of loans-to-assets. Section 2 notes that the empirical literature does not yield a precise expectation of the sign on the relationship between diversification and risk. *LL* is proxy for loan-related risk (Acharya et al., 2006; Berger et al., 2010). We measure loan risk via three indicators: the percentage of non-performing loans-to-total assets; the percentage of loan loss provisions-to-total assets; and the percentage of loan losses-to-total assets. We expect a positive sign on the coefficient of LL with respect to idiosyncratic risk as a signal that firms are bearing an increasing exposure to firm-level risk. *ROA*, *LEV* and *Size* are control variables capturing profitability (return on assets), leverage (ratio of total assets-to-common equity), and size (natural logarithm of total assets). Finally, ε_ι, is the error term with the usual properties.[10] All balance sheet, income statement and deal specific data are sourced from Thomson One Banker.

As a robustness test, we re-estimate our models using the completion date for each deal instead of the announcement date. We also re-estimate our models for the pre- and post-announcement periods within a single equation by employing two interaction binary variables; DB, which is equal to one before the announcement and zero after, and DA, which is equal to one after the announcement and zero before the announcement. In both cases the results remain quantitatively similar (and are available upon request from the authors).

4. Empirical Findings

4.1. Risk Decomposition

This section gauges the impact of M&A announcements on the risk profiles of acquiring institutions and identifies the shifts in total, systematic and idiosyncratic risks between pre- and post-announcement periods. In what follows, we present results from all deals (section 4.1.1) before examining Bank-Insure deals and Insure-Bank deals to assess any possible variations in risk adjustments before and after announcements (section 4.1.2). Finally, we discuss the results of the Bank-Agency deals (section 4.1.3).

4.1.1. Risk decomposition: All deals

Table 2 shows the results of the risk decomposition exercise for all deals. Panel A presents the decomposition of total risk in the pre-announcement period with the comparative post-announcement data in Panel B. Panel C reports changes in the variables between the two

[10] In order to conserve space, we only report the results for one DIV variable (non-interest income-to-total operating income) and one LL variable (loan loss provisions-to-total-assets). The results for the alternative proxies are discussed in the paper and detailed tables are available upon request. The same also applies to the total risk regressions.

periods. In Table 2, column one identifies the variables/statistics while columns two to five present the results for the full sample and three subsets of deals.

[INSERT TABLE 2 HERE]

Let's begin by considering the results for all deals (column two).[11] An initial observation is that the mean portfolio return ($\bar{R}_i$) falls following M&A announcements (from 0.041% to 0.033%) whereas the mean market return ($\bar{R}_m$) moves in the opposite direction (from 0.015% to 0.025%). Furthermore, the variance of market return increases by 0.075 from 1.646 to 1.721 (or by 4.58%, see Panel C). However, the differences in the mean and variance of returns between the pre- and post-announcement periods are statistically insignificant (for the variance this is consistent with Fields et al. (2007). Although the mean market beta (β) increases from 0.819 to 0.857 (by 4.69%, see Panel C), its standard deviation drops from 0.423 to 0.386. Though the differences in the mean and variance of beta are insignificant, the fact that the average market beta increases, accords with expectations: as market concentration and the average size of firms both increase due to M&A, the equities of these larger firms will tend to approach the total market basket; therefore, betas will be closer to one. The academic literature documents that large, diversified banks with relatively high shares of non-interest income, exhibit systematically higher market betas meaning that they bear higher systematic risk (Allen and Jagtiani, 2000; Baele et al., 2007; Stiroh, 2006). This implies that the bancassurance partnerships will also exhibit higher systematic risk.

Shifting focus to the sources of risk, total return risk ($\sigma^2 R_i$) in the pre-announcement period is 4.007 with systematic risk accounting for 35.62% and idiosyncratic risk for 64.38% of total portfolio risk. Following M&A announcements, total risk increases to 4.080 (by 1.83%), triggered by a slight increase in systematic risk ($\beta^2\sigma^2_{Rm}$) from 1.427 to 1.506 (by 5.51%). Idiosyncratic risk ($\sigma^2_{\varepsilon i}$), marginally declines from 2.580 to 2.574 (by 0.21%). The risk shifts

[11] The results exclude deals in which insurance agencies are the target institution (see Notes to Table 2).

are statistically insignificant, and there is not a significant change in the relative contribution to total risk from its systematic and idiosyncratic constituents. Indeed, it appears that the direction and magnitude of the change in constituent risks is offsetting.

The results of the risk decomposition for all deals are mostly inconclusive. One explanation might be that deals do not significantly alter the risk profiles of acquiring institutions, as reflected by market data. An alternative possibility might be that the risk effects from bank-driven deals and insurance-driven deals are diametrically different and, in effect, cancel out each other when a mixed sample is considered. Staikouras (2006) uses a theoretical framework to explore the distinct dynamics affecting banks and insurance companies. He argues that banks are bigger, financially stronger, and experience stronger brand recognition than insurers, and suggests a number of cultural differences between the two types of institution, both at the corporate and retail levels. Such differences can affect investor expectations, particularly with respect to the institution that takes the lead in bancassurance partnerships. From the perspective of returns, empirical evidence is supportive and shows that the market places more weight on bank-driven deals as opposed to insurance-led partnerships (Dontis-Charitos et al., 2011).[12]

4.1.2. Risk decomposition: Bank-Insure deals and Insure-Bank deals

Columns thee and four of Table 2 show the results for the Bank-Insure and Insure-Bank subsets. Pre-announcement the mean returns for the two subsets are very close[13], but they diverge post-announcement. Between the two periods, the mean portfolio return for Bank-Insure drops slightly from 0.041% to 0.036%, while the return of Insure-Bank falls considerably to 0.019%. In line with expectations, the average betas of both portfolios

[12] When insurers take the lead in a bank-insurance partnership, it is known as an Assurebank operation, where the insurer underwrites the products which are then marketed by the bank.

[13] The mean returns of the two sets of acquirers appear to be equal in Table 2. This is due to rounding up but in reality they are not equal but very close. Further information is available upon request.

increase post announcement, though the changes are statistically insignificant. The variance of betas decreases post announcement for Bank-Insure deals but increases for Insure-Bank deals (the changes are statistically insignificant). The results on market betas are consistent with Fields et al. (2007) who do not report significant changes in the risk measures of insurance bidders pre- and post-merger.

Analysing the risk decomposition, we find that total return risk decreases from 3.985 to 3.834 (by 3.79%) for Bank-Insure, but increases for Insure-Bank from 4.130 to 5.470 (by 32.45%). The evolution of systematic risk exhibits a similar pattern: falling for Bank-Insure deals (from 1.316 to 1.239, or by 5.87%) and rising for Insure-Bank deals (by 46.76% from 2.052 to 3.012). Finally, while the idiosyncratic risk component of Bank-Insure deals drops from 2.668 to 2.595, the corresponding figure for Insure-Bank deals increases from 2.078 to 2.459 (by 18.32%). However, all changes are statistically insignificant.

For the Bank-Insure subset, the contribution of the systematic (idiosyncratic) component to total risk drops (increases) by about one percentage point. The opposite occurs for the Insure-Bank subset, where the contribution of the idiosyncratic (systematic) component decreases (increases) by about five percentage points. The respective risk-return profiles of banks and insurance companies are distinct: generally, insurance companies focus their asset reserves at the longer end of the maturity spectrum in order to match their long-term liabilities, while banks generally hold short-term liabilities and long-term assets. The latter mismatch causes the so-called negative gap in banks' asset-liability structure, as short-term liabilities are greater than short-term assets. We verify this feature through the decomposition of risks for Bank-Insure and Insure-Bank deals. Irrespective of the risk shifts due to M&A, it is clear that insurance companies are generally riskier than banks (higher total risk figures), with a larger exposure to systematic risk than banks. Pre-announcement, systematic risk for Insure-Bank deals accounts for 49.68% of total risk compared to 33.04% for Bank-Insure deals. On the contrary, Bank-Insure acquirers bear higher idiosyncratic risk than their Insure-Bank counterparts (66.96% c.f. 50.32%, respectively). A similar conclusion is drawn from the post-announcement period; the contribution of idiosyncratic risk to total risk is 67.68% for Bank-Insure deals and 44.95% for Insure-Bank deals.

Events of the banking crisis of 2007-2009 substantiate our findings: with more banks than insurance companies facing financial distress and requiring injections of capital. What is more, the fact that banks exhibit higher idiosyncratic risk may provide further evidence on why insurance-driven bancassurance deals expose insurers to higher risk post-announcement; that is, the market might be taking into account the addition to the idiosyncratic risk factor resulting from integrating with a bank.

4.1.3. Risk decomposition: Bank-Agency deals

The final column of Table 2 shows the results for Bank-Agency deals. The mean return on deals decreases post-announcement (from 0.042% to 0.039%, or by 6.67%) though the change is insignificant. However, we find a highly significant increase in the average beta between pre- and post-announcement periods for these deals (from 0.589 to 0.704).

The risk decomposition exercise reveals some interesting results. Unlike Bank-Insure, the contribution to total risk of the systematic risk component for Bank-Agency deals is very low (16.78%) whilst the contribution idiosyncratic risk is very high (83.22%). Though there is a marginal shift in the contributions of each factor to total risk post-announcement, it seems that acquiring banks face heavy exposure to idiosyncratic risk. One explanation for this outcome might be the size of the banks that acquire insurance agencies in relation to the banks acquiring insurance underwriters; the former tend to be relatively small in terms of capitalization and assets. Another justification might be that riskier banks tend to bid for insurance agencies. The academic literature claims that when it comes to risk, insurance agents/brokers are the best candidates for bank expansion, since the effect on risk is negligible (Heggestad, 1975; Nurullah and Staikouras, 2008). Considering risk changes, Bank-Agency deals reduce total risk (3.19%) and idiosyncratic risk (6.86%) but considerably increase systematic risk (15.03%). Nevertheless, the changes are statistically insignificant.

4.2. Determinants of Risk

Equation [4] models the relationships between risks and indicators of diversification, loan risk, profitability, leverage and size.[14] As risk is sensitive to the nature of the operations of target institutions, we estimate the model for the Bank-Insure and Bank-Agency subsets. Tables 3 and 4 show the relationships between the covariates and systematic risk and idiosyncratic risk, for Bank-Insure deals and Bank-Agency deals, respectively. Given that the relationships between the covariates and risk factors might vary with bank size, we inflate equation [4] with size interactions and re-estimate the model on a pre- and post-announcement basis. The inflated equation along with the respective coefficient estimates for Bank-Insure deals and Bank-Agency deals are presented in Tables 5 and 6, respectively. Finally, we test for the presence of a non-linear relationship between the risk factors and diversification and leverage by adding the squared terms of the two independent variables in the regression equations.[15]

In Tables 3 and 4, Panel A shows the parameter estimates from the market beta regressions for the pre- and post-announcement periods, while Panel B repeats the exercise for the idiosyncratic risk regressions.

[14] We also try an expanded specification to control for any effects driven by the geographical characteristics of the deals using two binary variables. A cross-border dummy equal to one for cross-border deals and zero otherwise and, second, a US-bidder dummy variable equal to one when the bidder is located in the US and zero otherwise. Their coefficients remain insignificant in all cases. Detailed results are available upon request.

[15] Details of the model and the coefficient estimates are available from the authors upon request.

4.2.1. Bank-Insure deals

4.2.1.1. Systematic risk of Bank-Insure deals

Table 3 reports the estimated parameters from equation [4] for 100 Bank-Insure deals. In the pre-announcement period, we observe a highly significant, positive relationship between systematic risk and diversification when non-interest income share is proxy for the latter (see Panel A, column 1). In effect, banks which are more reliant on non-interest sources of income face higher exposure to market-wide shocks, and consequently realize higher market betas. Baele et al. (2007) report similar results in the context of bank diversification, but not within the context of bancassurance mergers; similarly, Allen and Jagtiani (2000) find nonbank activities increase bank systematic risk. It is notable that the proxy for loan risk does not demonstrate any sort of explanatory power with respect to systematic risk before the deals are announced. Leverage shows a positive association with systematic risk; the intuition behind this result is that riskier firms (with high leverage) tend to have systematically higher betas than unlevered firms.[16] Size shows a strong positive relationship with systematic risk, which accords with expectations, given that larger firms tend to capture a greater share in the total market basket, and hence, realize systematically higher betas. The relationships between systematic risk and diversification appear sensitive to the choice of indicator for the latter; specifying loans-to-total assets as the indicator leads to a loss of explanatory power for the diversification variable. In addition, none of the alternative proxies for loan risk demonstrate any sort of explanatory power with respect to systematic risk before deals are announced.[17]

[INSERT TABLE 3 HERE]

We analyse the post-announcement period (Panel B) and draw three main observations. First, and in contrast to the earlier period, the relationship between diversification and systematic risk turns insignificant (see Panel A, column 2). One plausible explanation for this

[16] Similar conclusions are drawn in Baele et al. (2007). They find an inverse relationship between betas and the capital-to-assets ratio and contend that a higher degree of capital adequacy lowers systematic risk.
[17] See footnote 10.

finding may be that insurance activities bring about the desired diversification effects. Specifically, it is possible that the additional non-interest income accruing from insurance activities helps to lower the systematic risk of Bank-Insure, and the insignificant relationship between non-interest income and systematic risk post announcement simply reflects this. This outcome also sheds additional light on the results in Section 4.1, where we find that systematic risk (β) increases post announcement. We suspect this increase in risk does not relate to a higher non-interest income share arising from insurance activities per se, but relates to other factors like bigger size; additional evidence in support of this argument is provided by the size coefficient which remains positive and significant.

Second, the coefficients on the loan risk variables remain insignificant except for the case where we specify the ratio of non-performing loans-to-total assets as proxy; the coefficient is negative and significant (available upon request). The rationale for the observed sign is that this indicator can be interpreted as an ex-post measure of the actual losses from lending activities (Berger et al., 2010). In effect, it represents a firm specific measure of risk, and firms with a higher (lower) proportion of non-performing loans will inevitably bear greater (lower) exposure to idiosyncratic risk.[18] As a result, the stocks of these firms face less (more) exposure to market-wide shocks, hence the negative relationship with systematic risk. Third, we find a significant, negative relationship between profitability (ROA) and systematic risk (at the 10% level, see Panel A, column 2). One explanation lies in the relationship between ROA and leverage: holding ROE (return on equity) constant, the higher the leverage, the lower the ROA and vice-versa. Therefore, a negative relationship between ROA and systematic risk can be explained if lower ROA stemming from higher leverage leads to higher risk exposure, and as noted, higher systematic risk.

[18] Supporting evidence for this is provided in the discussion in section 4.2.1.2., where the coefficient on this variable shows a positive and significant relationship with idiosyncratic risk.

4.2.1.2. Idiosyncratic risk of Bank-Insure deals

Panel B of Table 3 shows the results of the idiosyncratic risk regressions. The first column shows that pre-announcement, diversification is negatively and significantly related to idiosyncratic risk. However, the relationship loses its significance post-announcement. This is consistent with the hypothesis that, although diversification in non-interest income sources is expected to reduce idiosyncratic risk, an overreliance on non-interest income can produce an opposing effect (Baele et al., 2007; Stiroh, 2006). In the context of Bank-Insure deals, the results imply that the additional non-interest income accruing from insurance does not yield additional benefit to acquiring banks, in terms of further reducing their idiosyncratic risk exposure. Nevertheless, the coefficients on size are negative and significant in both periods, indicating that size-related benefits remain post-announcement, which is consistent with expectations of too-big-to-fail guarantees, and/or scale related synergies. Another explanation might come from Wilson and Williams (2000); they discover that smaller EU banks experience more variable growth than larger banks, and suggest that large banks can exploit diversification advantages through off-balance sheet activities, enabling them to smooth fluctuations in growth. This might explain the sign on the estimated parameter for our size indicator, since banks that exhibit less volatile growth patterns should bear less idiosyncratic risk.

Column 2 shows other interesting results from the post-announcement period. We find a significant, positive coefficient on ROA, implying that more profitable banks bear higher idiosyncratic exposures post-announcement. The intuition of this result might be that more profitable banks might be relying on more risky sources of income, like riskier loans, and within the context of Bank-Insure deals, insurance underwriting. Empirical evidence supports this contention; insurance underwriting increases bank risk when actual Bank-Insure combinations are considered (Nurullah and Staikouras, 2008). In line with expectations, the coefficients on the proxies for loan risk (loan losses-to-total assets; non-performing loans-to-total assets) exhibit positive and significant relationships with idiosyncratic risk.

Comparing pre- and post-announcement periods for the relationship between idiosyncratic risk and diversification using loans-to-total assets as the proxy, we observe a shift in market perceptions with the coefficient turning significant in the latter period. In effect, the additional risk element which might stem from raising loan intensity is not being priced by the market, perhaps due to the fact that investors expect that credit risk is offset by diversification into insurance. This result partially contrasts Barros et al. (2007), who report that bigger and more diversified EU commercial banks are less likely to perform well and more likely to perform poorly, as opposed to small and loan-intensive banks. To contextualise the argument, one may expect an inferior performance from large and diversified banks, leading to increasing exposure to idiosyncratic risk. Nevertheless, we find bigger and more diversified banks (post-announcement) bear lower idiosyncratic risk, which may be due to better performance, the pure effect of diversification, or a combination of both, something that is not directly testable in the present analysis.

4.2.1.3. Total risk of Bank-Insure deals

Shifting the focus to total risk, some interesting results arise when the latter is the dependent variable; acknowledging its constituents are driving the results. The relationship between total risk and diversification is insignificant in both periods, which is unsurprising since the positive relation with systematic risk and negative relation with idiosyncratic risk are offsetting. This partially concurs with Baele et al. (2007), who find an insignificant relationship between total risk and non-interest revenue share for European banks. Nevertheless, in a non-linear model specification, the relationship is negative and significant up to a certain threshold (proportion of non-interest income-to-total operating income), after which it turns to positive.[19] Our results contrast with Stiroh's (2006) finding of a strong, positive relationship between total risk and non-interest income for US BHCs. Using loans-to-assets to proxy diversification yields a negative relationship with total risk that is stronger post-announcement, perhaps due to expected diversification benefits from bancassurance. The coefficients of the loan risk proxies are, as in previous models, significant and positive indicating that increasing exposure to loan risk realizes greater total risk.

4.2.2. Determinants of risk: Bank-Agency deals

This section discusses the determinants of risk for Bank-Agency deals. Table 4 shows the results of the systematic risk and idiosyncratic risk regressions; the corresponding results for total risk are discussed and are available upon request.

4.2.2.1. Systematic risk of Bank-Agency deals

A comparison of the systematic risk regressions for Bank-Agency (Table 4) and Bank-Insure (Table 3) reveals a similarity in the observed relationships. For instance, the positive, significant coefficient on diversification loses its significance, though not its sign, post-announcement. This implies that the additional income stemming from insurance brokerage activities is not related to the systematic risk of banks. In contrast to Bank-Insure deals, in Bank-Agency deals the pre-announcements relationships between systematic risk and loan risk (except for the non-performing loans-to-total assets proxy) are positive and significant, before turning insignificant post-announcement.

We observe a similar feature for profitability and leverage.[20] Overall, it seems that the expected diversification benefits exert a strong effect on the capacity of acquirers to assume

[19] As discussed earlier, we carry out further tests to detect the presence of non-linearity in the relationship between non-interest income share and all risk measures. The results are insignificant.

[20] ROA is significant (at 10% level) post-announcement only in a specification where the ratio of non-performing loans-to-total assets is used to proxy for loan risk.

loan risk. Nonetheless, we cannot verify this statement if we specify the loans-to-assets as the diversification proxy, which is positive and significant in both periods. The positive coefficient on size is comparable to results for Bank-Insure deals, and confirms, as discussed earlier, the systematically higher betas of larger firms. Support comes also from the larger magnitude on the coefficient on size post-announcement.

[INSERT TABLE 4 HERE]

4.2.2.2. Idiosyncratic risk of Bank-Agency deals

Panel B presents the results of the idiosyncratic risk regressions for the Bank-Agency subset. It is evident that Bank-Agency deals are more beneficial than Bank-Insure deals in terms of diversification. In particular, the relationship between non-interest income share and idiosyncratic risk remains negative and significant following deal announcements. This contrasts with the findings for Bank-Insure deals, where the additional non-interest income accruing from insurance underwriting does not yield additional benefit to acquirers in terms of further reducing their idiosyncratic risk exposure. On the other hand, our results imply that the additional income generated via insurance brokerage plays an important role in reducing the exposure to idiosyncratic risk. This result is consistent with other findings like Nurullah and Staikouras (2008), which suggests that insurance brokerage does not significantly affect the risk of banking firms. Furthermore, the significant, negative coefficient on size verifies the presence of size-related decreases in idiosyncratic risk, and corroborates previous findings; for instance, Baele et al. (2007) and Stiroh (2006).

4.2.2.3. Total risk of Bank-Agency deals

The total risk regressions for Bank-Agency deals reveal a negative and significant relationship between diversification and total risk that becomes insignificant post-announcement. In effect, fee income from insurance brokerage does not help to reduce exposure to total risk for acquirers. The only remaining significant variable in the models is size, which is negatively signed with total risk.

Previously, we did observe a positive correlation between size and systematic risk and a negative relationship with idiosyncratic risk. Given that the overall effect of size on total risk is negative, we conclude that the effect of size on idiosyncratic risk dominates the relationship between size and systematic risk. This concurs with Stiroh (2006), but contrasts with Baele et al. (2007).

4.3. Size Effects

This section is motivated from an academic as well as an economic point of view. It is well documented in the literature that bank size is a central aspect of mergers and acquisitions and confers, among other things, bank market and political power, management quality, extent of access to the safety net, profitability, efficiency and risk.[21] In the context of the present analysis, the relationship between the covariates and risk factors might vary with bank size due to a number of different factors. For example, it is reasonable to expect that large and small banks will have different balance sheet compositions prior to and following deals. Specifically, when compared to small banks, large banks can be expected to generate a higher non-interest income as a percentage of their total operating income, and exhibit different loan portfolio composition, profitability and leverage. Thus, it is reasonable to expect that the relationships between these variables and risk might differ across banks of dissimilar size. Therefore, we re-estimate the determinants of risk after splitting the sample into small banks and large banks on the basis of the median value of bank assets. The sample separation is achieved by inflating Equation [4] with two interaction dummy variables; DS is

[21] For an overarching review of the post-2000 literature on mergers and acquisitions of financial institutions see DeYoung et al. (2009).

equal to one for small banks and zero for large banks and, DL is equal to one for large banks and zero for small banks. The detailed specification and results are presented in Tables 5 and 6.

4.3.1. Bank-Insure deals

Table 5 reports the estimated coefficients of the systematic risk (Panel A) and idiosyncratic risk (Panel B) regressions for Bank-Insure deals. We present the results for small banks and large banks, and before and after deal announcements. The systematic risk regressions reveal some interesting variations between small and large banks. Specifically, the results for the diversification proxy corroborate the earlier result in Table 3; that is, both small and large banks register a positive and significant relationship between diversification and systematic risk, which turns insignificant following deal announcements. In contrast, the positive pre-announcement relationship between leverage and systematic risk applies only to large banks. When size is considered, and in contrast with large banks, the positive and significant relationship between size and systematic risk turns insignificant for small banks following announcements. One plausible explanation for this finding is that small banks are not expected to be involved in large acquisitions that would significantly increase their size, and thus their share in the total market basket and finally their market beta.

[INSERT TABLE 5 HERE]

The results for the idiosyncratic risk regressions (Panel B) also suggest that size is an important factor to consider. The previously observed negative and significant relationship between diversification and idiosyncratic risk (Table 3) is only observed for small banks. The intuition behind this result is that large banks not only rely relatively more on non-interest income, but they also may be engaged in riskier non-interest activities, such as insurance and/or securities underwriting. Further support for this argument comes from section 4.1.3., where we show that small (large) banks tend to bid for insurance agencies (insurance underwriters). Finally, the relationship of size with idiosyncratic risk varies with bank size; the negative and significant size coefficient previously reported in Table 3 is only present for small banks. This seems to be counterintuitive considering too-big-to-fail guarantees and increased market power for large banks. One explanation might be that although the size of large banks helps them to lower idiosyncratic risk per se, the increasing interconnectedness amongst large financial institutions increases the probability of bank failure in the light of a systemic shock (Wagner, 2010); hence the insignificant coefficient.

4.3.2. Bank-Agency deals

Table 6 presents the corresponding results for Bank-Agency deals and follows the same structure as Table 5. The results for the systematic risk regressions (Panel A) point to a positive and significant relationship between diversification and systematic risk. Contrary to the aggregate results presented in Table 4, the coefficient here remains significant post-announcement for both small and large banks. Furthermore, prior to the announcement the coefficient on ROA is significant (insignificant) for small (large) banks, while the opposite holds for leverage. Firm size maintains its significance for both subsets with the exception of the post-announcement coefficient for large banks.

[INSERT TABLE 6 HERE]

Turning to Panel B, we observe an interesting variation. Contrary to the aggregate results (Table 4), the diversification variable is significant (insignificant) in the pre-announcement period for small (large) banks and turns insignificant (significant) post-announcement. A plausible explanation may be related to management quality and/or pure reputation effects. Specifically, insurance brokerage business does not expose banks to underwriting risk, yet as suggested by Nurullah and Staikouras (2008), it entails operational risks as well as the risk of potential professional liability for errors and omissions within the course of marketing and administering the sale of insurance products. Furthermore, recent developments in regulation and changes in public awareness[22] are not in favour of brokers, as class-actions against them are becoming increasingly popular. To contextualise this argument, larger banks might have more resources and expertise to train bank clerks in selling insurance products and, thus, be less exposed to the risks mentioned above. Finally, the coefficient attached to size corroborates the respective results shown in Table 5.

5. Conclusion

Since the 1990s, financial institutions may combine banking and insurance businesses, an activity known as bancassurance. An important question is do the benefits of bancassurance outweigh the costs. The benefits include potential diversification gains and cross-selling opportunities, which can help to maximize profits by realizing new revenue streams. A possible downside is that formerly segmented businesses may become exposed to the same type of shocks, thereby raising systematic (and total) risk.

The academic literature, so far, is inconclusive with regards to the risks associated with financial conglomeration and, consequently, the risks relating to bancassurance. To address this we employ risk decomposition technique to assess the direct effects of bancassurance mergers on the total, systematic and idiosyncratic risks of acquiring institutions. We offer novel results with respect to the relationship between the aforementioned market measures of risk and accounting measures of diversification, loan risk, profitability, leverage and size. We test for shifts in these relationships after bancassurance events in order to confirm whether this type of diversification yields a comparative advantage in terms of risk. Using a sample of

[22] This refers to the "deep pocket" approach that is becoming increasingly popular within the insurance business. Specifically, in order to obtain large amounts of compensation, an increasing number of claimants opt to sue brokerage companies and/or their directors and officers (known in insurance terms as "D&O claims"), on the grounds of mis-selling, errors and omissions etc.

210 bancassurance deals between 1990 and 2006, we offer a new insight on the phenomenon, with results that apply to all stakeholders in evaluating such deals.

Overall, we show that bancassurance deals do not significantly affect the total and idiosyncratic risk of acquiring institutions, per se. Nonetheless, we provide evidence of an increasing exposure of banks to systematic risk following bancassurance partnerships. At this point, we stress the need to take due care when evaluating the results, as factors like the nature of the bidder and target can realize dissimilar effects on the respective risks. For example, investors and regulators should be careful when banks combine with insurance agencies as this will expose the former to considerably higher systematic risk compared with cases of bank acquisitions of insurance underwriters and vice-versa. Another interesting result arises from comparing the risk components of banks and insurance companies. We suggest that banks are face heavier exposure to idiosyncratic risk than to systematic risk, whilst the exposure of insurance companies is relatively even across risks. One possible advantage, in the context of the present analysis, is that bancassurance offers institutions opportunities to rebalance risk exposures; that is, to shield themselves from idiosyncratic exposures albeit at the expense of bearing greater systematic exposure.

The analysis of the determinants of risk yields interesting insights with respect to the diversification benefits of bancassurance. The additional non-interest income accruing from bancassurance operations is no longer positively correlated with systematic risk following M&A announcements, which suggests that it is not diversification into insurance activities per se that drives up systematic risk, but rather it is the increasing scale of bank operations. On the other hand, when we consider idiosyncratic risk, bank acquisitions of insurance agencies offer superior benefits to acquisitions of insurance underwriters. The negative, significant relationship between diversification and idiosyncratic risk fades away following acquisitions of insurance underwriters, but remains significant after acquisitions of agencies. Finally, further analysis reveals that the determinants of risk vary with bank size.

Our empirical evidence implies that investors should welcome bancassurance deals. Although bancassurance deals appear to increase the systematic exposures of bancassurance partnerships, further tests reveal that the increase in risk does not relate to additional income accruing from insurance activities, but instead relates to size, something that is common to any type of deal. Finally, depositors/policyholders and large shareholders should prefer deals between banks and insurance agencies, as the latter are superior to bank deals with insurance underwriters with respect to the diversification of idiosyncratic risk.

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Table 1: Sample distribution of bidders and targets by country and deal type.

	All Deals		Bank-Insure		Insure-Bank		Bank-Agency	
Region/Country	Bidders	Targets	Bidders	Targets	Bidders	Targets	Bidders	Targets
Europe (ex. UK)	56	51	33	31	19	17	4	3
United Kingdom	6	6	6	5	0	1	0	0
United States	129	132	42	45	1	0	86	87
Canada	8	5	8	5	0	0	0	0
Australia	5	5	5	4	0	0	0	0
Asia	5	5	5	6	0	0	0	0
L.America	1	5	1	3	0	2	0	0
Africa	0	1	0	1	0	0	0	0
Total	**210**	**210**	**100**	**100**	**20**	**20**	**90**	**90**

The table presents the distribution of the sample of bidders and targets by country and by deal type. The sample consists of available international data collected for 210 publicly announced deals between 1990 and 2006. Information on deals is obtained by Thomson One Banker. The sample of Bank-Insure announcements consists of 100 deals where the bidder is a bank and the target an insurance company, while the sample of Bank-Agency announcements consists of 90 deals where the bidder is a bank and the target an insurance agency. Finally, the sample of Insure-Bank announcements consists of 20 deals where the bidder is an insurance company and the target a bank.

Figure 1: Composition of sample of deals by year and deal type

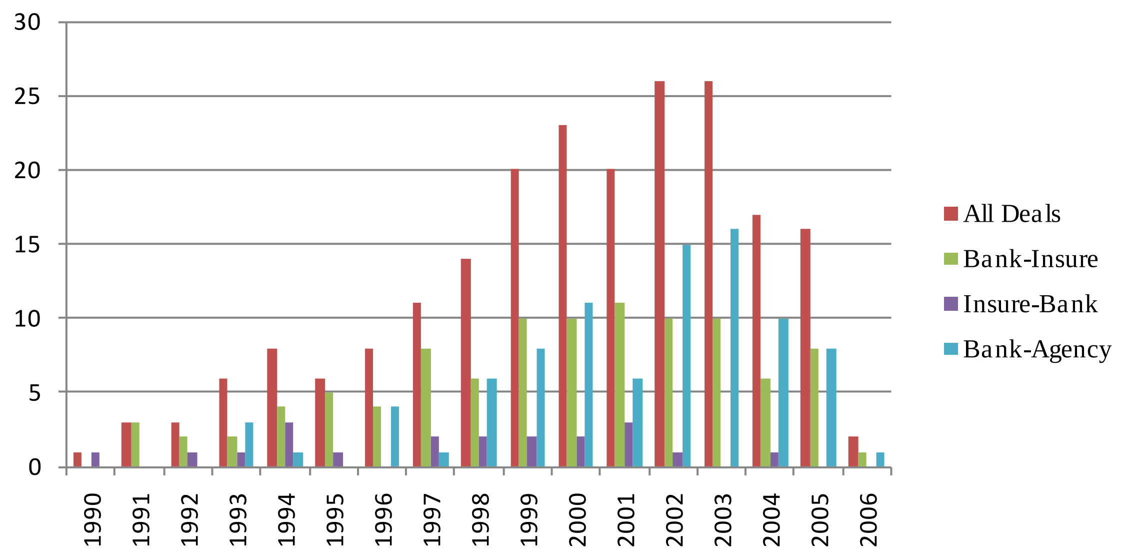

Table 2. Decomposition of total return risk of acquiring institutions

	All Deals	Bank-Insure deals	Insure-Bank deals	Bank-Agency deals
Panel A: period before announcement (day -250 to day -1)				
$\sigma^2 R_i$	4.007	3.985	4.130	3.852
	(100%)	(100%)	(100%)	(100%)
$\beta^2\sigma^2_{Rm}$	1.427	1.316	2.052	0.646
	(35.62%)	(33.04%)	(49.68%)	(16.78%)
$\sigma^2_{\varepsilon i}$	2.580	2.668	2.078	3.206
	(64.38%)	(66.96%)	(50.32%)	(83.22%)
B	0.819	0.802	0.911	0.589
$\Sigma\beta$	0.423	0.417	0.459	0.386
$\bar{R}_i$	0.041%	0.041%	0.041%	0.042%
$\bar{R}_m$	0.015%	0.014%	0.017%	0.008%
σ^2_{Rm}	1.646	1.613	1.832	1.536
Panel B: period after announcement (day +1 to day +250)				
$\sigma^2 R_i$	4.080	3.834	5.470	3.729
	(100%)	(100%)	(100%)	(100%)
$\beta^2\sigma^2_{Rm}$	1.506	1.239	3.012	0.743
	(36.91%)	(32.32%)	(55.05%)	(19.93%)
$\sigma^2_{\varepsilon i}$	2.574	2.595	2.459	2.986
	(63.09%)	(67.68%)	(44.95%)	(80.07%)
B	0.857	0.846	0.922	0.704
$\Sigma\beta$	0.386	0.369	0.480	0.491
$\bar{R}_i$	0.033%	0.036%	0.019%	0.039%
$\bar{R}_m$	0.025%	0.026%	0.017%	0.028%
σ^2_{Rm}	1.721	1.669	2.015	1.375
Panel C: Changes in risk pre- and post-announcement[1]				
$\Delta\sigma^2 R_i$	0.073	-0.151	1.340	-0.123
% change	1.83%	-3.79%	32.45%	-3.19%
$\Delta\beta^2\sigma^2_{Rm}$	0.079	-0.077	0.959	0.097
% change	5.51%	-5.87%	46.76%	15.03%
$\Delta\sigma^2_{\varepsilon i}$	-0.005	-0.074	0.381	-0.220
% change	-0.21%	-2.77%	18.32%	-6.86%
$\Delta\beta$	0.038	0.043	0.010	0.115[a]
% change	4.69%	5.41%	1.14%	19.60%
$\Delta\bar{R}_i$	-0.008%	-0.005%	-0.022%	-0.003%
% change	-19.15%	-13.19%	-53.57%	-6.67%
$\Delta\sigma^2_{Rm}$	0.075	0.056	0.184	-0.161
% change	4.58%	3.49%	10.02%	-10.46%

The Table presents the shift in relative importance of risk factors composing total bank bidder return risk before and after Bank-Insure partnership announcements. We cover 210 bancassurance deal announcements between 1990 and 2006. The first column identifies the risk measures and statistics, while each subsequent column contains the results from subsets of the sample. The sample of "all deals" comprises 120 bancassurance deals (excluding deals where the targets are insurance agencies); "Bank-Insure" deals includes 100 cases where banks bid for insurance companies; "Insure-Bank" deals contains 20 cases of insurance company bids for banks; "Bank-Agency" deals consists of 90 cases where banks bid for insurance agencies/brokers. Panels A and B present results from the pre- and post-announcement periods, respectively, whilst Panel C shows the differences in the risk measures before and after M&A announcements.

We calculate the risk measures using equations [1] and [2]. The variance terms have been multiplied by 10^4.

$\sigma^2 R_i$ is total risk, $\beta^2\sigma^2_{Rm}$ is the systematic risk component, $\sigma^2_{\varepsilon i}$ is the idiosyncratic risk component. All risk measures are averaged across firms. β is the average beta, while $\sigma\beta$ the standard deviation of betas. *Ri* is the average company return, *Rm* the average market return and σ^2_{Rm} is the average variance of market returns. *Δs* in Panel C represent changes in the respective variables.

[1]A negative value indicates a reduction in risk or other measures, while positive values indicate an increase.

a/b/c denote statistical significance at the 1%, 5% and 10% levels, respectively.

Table 3. Market beta and idiosyncratic risk regressions of Bank-Insure deals

$$Y_{j,i} = \alpha + \beta_1 DIV_{k,i} + \beta_2 LL_{h,i} + \beta_3 ROA_i + \beta_4 LEV_i + \beta_5 Size_i + \varepsilon_\iota$$

	Panel A: Market Beta		**Panel B: Idiosyncratic risk**[1]	
	Before	**After**	**Before**	**After**
Constant	0.394	0.877	3.950	0.905
	(4.64)[a]	(5.27)[a]	(5.36)[a]	(0.88)
Non-interest income share	0.790	0.262	-3.730	-0.223
	(4.72)[a]	(0.99)	-(2.15)[b]	-(0.12)
Provision for loan losses to total assets	-2.679	-8.413	63.580	290.480
	-(0.28)	-(0.77)	(0.82)	(1.60)
ROA	-0.069	-0.095	0.166	0.770
	-(1.16)	-(1.83)[c]	(0.54)	(1.72)[c]
Leverage	0.013	0.002	-0.032	-0.012
	(3.87)[a]	(0.72)	-(1.36)	-(0.54)
Firm size	0.157	0.112	-0.443	-0.518
	(8.52)[a]	(4.53)[a]	-(3.19)[a]	-(2.00)[b]
N	85	73	85	73
Adjusted R-squared	0.49	0.17	0.13	0.16
F-statistic	15.10	3.90	3.52	3.67

The Table presents OLS regressions of bank market beta, β, and bank idiosyncratic risk, $\sigma^2_{\varepsilon_i}$, on a measure of revenue diversification, and proxies for risk, profitability, and size before and after announcements of bancassurance deals. Panels A and B present the results from separate estimation of equation [4] with the dependent variable being market beta or idiosyncratic risk, respectively. Within each Panel, the first and second columns represent the estimations using pre-announcement and post-announcement data, respectively. The sample is 100 "Bank-Insure" deal announcements between 1990 and 2006. The first column identifies the independent variables. Non-interest income share is the proxy for revenue diversification and is expressed as the percentage of non-interest income-to-total operating income. Provision for loan losses to total assets is the proxy for loan risk and is expressed as the percentage of loan loss provisions-to-total assets. We specify three bank-specific characteristics as control variables; ROA, leverage, and firm size. ROA is the percentage of net income-to-total assets; Leverage is the percentage of total assets-to-common equity; and firm size is the natural logarithm of total assets. In cases where independent variables are correlated with one another, we use auxiliary regressions to make them orthogonal. All balance sheet and income statement variables are obtained at the year-end prior to and after the announcement, respectively. The figures in brackets indicate t-values (White errors).

a/b/c denote statistical significance at the 1%, 5% and 10%, respectively.

[1]All betas have been multiplied by 10^4.

Table 4. Market beta and idiosyncratic risk regressions of Bank-Agency deals

$$Y_{j,i} = \alpha + \beta_1 DIV_{k,i} + \beta_2 LL_{h,i} + \beta_3 ROA_i + \beta_4 LEV_i + \beta_5 Size_i + \varepsilon_\iota$$

	Panel A: Market Beta		**Panel B: Idiosyncratic risk[1]**	
	Before	**After**	**Before**	**After**
Constant	0.000	0.587	6.330	4.610
	(0.00)	(3.54)[a]	(4.11)[a]	(5.05)[a]
Non-interest income share	1.716	0.455	-11.600	-5.660
	(4.85)[a]	(1.17)	-(2.57)[a]	-(1.78)[c]
Provision for loan losses to total assets	48.735	28.583	-185.690	222.490
	(2.68)[a]	(0.73)	-(0.71)	(0.92)
ROA	0.188	0.111	0.421	-0.514
	(2.62)[a]	(0.86)	(0.47)	-(0.57)
Leverage	0.012	0.002	-0.044	-0.010
	(1.72)[c]	(0.32)	-(1.11)	-(0.20)
Firm size	0.084	0.103	-0.632	-0.550
	(2.94)[a]	(4.12)[a]	-(1.70)[c]	-(2.74)[a]
N	79	74	79	74
Adjusted R-squared	0.28	0.07	0.03	0.11
F-statistic	7.14	2.12	1.54	2.83

The Table presents OLS regressions of bank market beta, β, and bank idiosyncratic risk, $\sigma^2_{\varepsilon_i}$, on a measure of revenue diversification, and proxies for risk, profitability, and size before and after announcements of bancassurance deals. Panels A and B present the results from separate estimation of equation [4] with the dependent variable being market beta or idiosyncratic risk, respectively. Within each Panel, the first and second columns represent the estimations using pre-announcement and post-announcement data, respectively. The sample is 90 "Bank-Agency" deal announcements between 1990 and 2006. The first column identifies the independent variables. Non-interest income share is the proxy for revenue diversification and is expressed as the percentage of non-interest income-to-total operating income. Provision for loan losses to total assets is the proxy for loan risk and is expressed as the percentage of loan loss provisions-to-total assets. We specify three bank-specific characteristics as control variables; ROA, leverage, and firm size. ROA is the percentage of net income-to-total assets; Leverage is the percentage of total assets-to-common equity; and firm size is the natural logarithm of total assets. In cases where independent variables are correlated with one another, we use auxiliary regressions to make them orthogonal. All balance sheet and income statement variables are obtained at the year-end prior to and after the announcement, respectively. The figures in brackets indicate t-values (White errors).

a/b/c denote statistical significance at the 1%, 5% and 10%, respectively.

[1]All betas have been multiplied by 10^4.

Table 5. Size decomposition of market beta and idiosyncratic risk regressions of Bank-Insure deals

$$Y_{j,i} = \alpha + DS * \left(\beta_1 DIV_{k,i} + \beta_2 LL_{h,i} + \beta_3 ROA_i + \beta_4 LEV_i + \beta_5 Size_i\right) + DL * (\beta_6 DIV_{k,i} + \beta_7 LL_{h,i} + \beta_8 ROA_i + \beta_9 LEV_i + \beta_{10} Size_i) + \varepsilon_i$$

	Panel A: Market Beta				**Panel B: Idiosyncratic risk[1]**			
	Small Banks		**Large Banks**		**Small Banks**		**Large Banks**	
	Before	**After**	**Before**	**After**	**Before**	**After**	**Before**	**After**
Constant	0.256	0.810	0.256	0.810	1.990	-0.140	1.990	-0.140
	(1.53)	(3.03)[a]	(1.53)	(3.03)[a]	(2.31)[b]	-(0.08)	(2.31)[b]	-(0.08)
Non-interest income share	0.854	0.359	0.584	0.143	-4.780	-1.600	-0.363	-0.049
	(3.51)[a]	(0.77)	(1.84)[c]	(0.45)	-(2.28)[b]	-(0.45)	-(0.17)	-(0.02)
Provision for loan losses to total assets	-15.729	-9.388	11.531	16.690	342.730	237.970	-40.340	450.580
	-(0.62)	-(0.50)	(0.96)	(1.31)	(1.76)[c]	(1.58)	-(1.21)	(1.29)
ROA	0.120	0.067	-0.127	-0.189	1.410	1.540	0.374	0.291
	(1.01)	(0.54)	-(1.97)	-(3.67)[a]	(1.65)[c]	(2.20)[b]	(1.87)[c]	(0.53)
Leverage	0.026	-0.017	0.017	0.007	0.021	-0.010	0.004	0.023
	(1.60)	-(0.62)	(3.34)[a]	(1.06)	(0.24)	-(0.07)	(0.12)	(0.45)
Firm size	0.161	0.081	0.196	0.134	-1.050	-0.867	0.294	-0.180
	(3.18)[a]	(1.19)	(4.44)[a]	(2.58)[a]	-(3.75)[a]	-(1.65)[c]	(1.20)	-(0.34)
N	85	73	85	73	85	73	85	73
Adjusted R-squared	0.46	0.15	0.46	0.15	0.26	0.15	0.26	0.15
F-statistic	8.22	2.26	8.22	2.26	3.96	2.24	3.96	2.24

The Table presents OLS regressions of bank market beta, β, and bank idiosyncratic risk, $\sigma^2_{\varepsilon_i}$, on a measure of revenue diversification, and proxies for risk, profitability, and size before and after announcements of bancassurance deals. Panels A and B present the results for market beta and idiosyncratic risk, respectively. Within each Panel, the equation above (equation [4] inflated with size interactions) is separately estimated for the pre- and post-announcement periods, while the application of size interactions allows for the segregation of the results for small banks and large banks, respectively. DS and DL are interaction binary variables that account for bank size; the basis for segregation being the median value of bank total assets. The sample is 100 "Bank-Insure" deal announcements between 1990 and 2006. The first column identifies the independent variables. Non-interest income share is the proxy for revenue diversification and is expressed as the percentage of non-interest income-to-total operating income. Provision for loan losses to total assets is the proxy for loan risk and is expressed as the percentage of loan loss provisions-to-total assets. We specify three bank-specific characteristics as control variables; ROA, leverage, and firm size. ROA is the percentage of net income-to-total assets; Leverage is the percentage of total assets-to-common equity; and firm size is the natural logarithm of total assets. In cases where independent variables are correlated with one another, we use auxiliary regressions to make them orthogonal. All balance sheet and income statement variables are obtained at the year-end prior to and after the announcement, respectively. The figures in brackets indicate t-values (White errors).

a/b/c denote statistical significance at the 1%, 5% and 10%, respectively.

[1]All betas have been multiplied by 10^4.

Table 6. Size decomposition of market beta and idiosyncratic risk regressions of Bank-Agency deals

$$Y_{j,i} = \alpha + DS * (\beta_1 DIV_{k,i} + \beta_2 LL_{h,i} + \beta_3 ROA_i + \beta_4 LEV_i + \beta_5 Size_i) + DL * (\beta_6 DIV_{k,i} + \beta_7 LL_{h,i} + \beta_8 ROA_i + \beta_9 LEV_i + \beta_{10} Size_i) + \varepsilon_i$$

	Panel A: Market Beta				**Panel B: Idiosyncratic risk[1]**			
	Small Banks		**Large Banks**		**Small Banks**		**Large Banks**	
	Before	**After**	**Before**	**After**	**Before**	**After**	**Before**	**After**
Constant	-0.217	0.562	-0.217	0.562	4.140	3.960	4.140	3.960
	-(1.16)	(2.87)[a]	-(1.16)	(2.87)[a]	(3.02)[a]	(3.57)[a]	(3.02)[a]	(3.57)[a]
Non-interest income share	3.839	3.374	2.018	0.761	-28.290	-12.910	-4.420	-5.260
	(3.28)[a]	(2.70)[a]	(7.42)[a]	(2.06)[b]	-(1.90)[c]	-(1.49)	-(1.23)	-(1.78)[c]
Provision for loan losses to total assets	89.151	211.887	53.517	4.670	-690.430	-387.550	0.697	402.660
	(1.41)	(1.42)	(2.43)[b]	(0.27)	-(0.66)	-(0.47)	(0.00)	(2.23)[b]
ROA	0.456	0.465	0.030	-0.045	3.440	-0.871	0.002	0.315
	(3.10)[a]	(1.61)	(0.29)	-(0.33)	(1.16)	-(0.51)	(0.00)	(0.28)
Leverage	0.017	0.001	0.021	0.002	0.457	0.089	-0.065	-0.013
	(0.79)	(0.07)	(1.99)[b]	(0.40)	(1.36)	(0.64)	-(1.44)	-(0.46)
Firm size	0.278	0.452	0.077	0.029	-1.150	-1.200	-0.279	-0.161
	(4.02)[a]	(3.87)[a]	(2.40)[b]	(0.88)	-(0.97)	-(1.65)[c]	-(0.95)	-(0.74)
N	79	74	79	74	79	74	79	74
Adjusted R-squared	0.37	0.20	0.37	0.20	0.09	0.10	0.09	0.10
F-statistic	5.65	2.86	5.65	2.86	1.81	1.77	1.81	1.77

The Table presents OLS regressions of bank market beta, β, and bank idiosyncratic risk, $\sigma^2_{\varepsilon_i}$, on a measure of revenue diversification, and proxies for risk, profitability, and size before and after announcements of bancassurance deals. Panels A and B present the results for market beta and idiosyncratic risk, respectively. Within each Panel, the equation above (equation [4] inflated with size interactions) is separately estimated for the pre- and post-announcement periods, while the application of size interactions allows for the segregation of the results for small banks and large banks, respectively. DS and DL are interaction binary variables that account for bank size; the basis for segregation being the median value of bank total assets. The sample is 90 "Bank-Agency" deal announcements between 1990 and 2006. The first column identifies the independent variables. Non-interest income share is the proxy for revenue diversification and is expressed as the percentage of non-interest income-to-total operating income. Provision for loan losses to total assets is the proxy for loan risk and is expressed as the percentage of loan loss provisions-to-total assets. We specify three bank-specific characteristics as control variables; ROA, leverage, and firm size. ROA is the percentage of net income-to-total assets; Leverage is the percentage of total assets-to-common equity; and firm size is the natural logarithm of total assets. In cases where independent variables are correlated with one another, we use auxiliary regressions to make them orthogonal. All balance sheet and income statement variables are obtained at the year-end prior to and after the announcement, respectively. The figures in brackets indicate t-values (White errors).

a/b/c denote statistical significance at the 1%, 5% and 10%, respectively.

[1]All betas have been multiplied by 10^4.