Insurers' Expansion into Banking: A Look at Operating Returns

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Abstract: We investigate whether insurers can improve their operating risk-return profile by adding commercial loans, a banking product, in the traditional insurance product mix. This analysis is important for two reasons. First, the Gramm-Leach-Bliley Act of 1999 allows insurers to buy and operate banks. Second, existing research finds that banks can improve their risk-return profile by adding insurance products, but offers no guidance on whether insurers might benefit from an expansion into banking. We use individual product data to construct insurance-only portfolios of products and insurance-banking portfolios of products. Analysis of portfolio operating returns and their standard deviations indicates that insurer-banks are unlikely to outperform full-line insurers that have carefully selected their product mix. The mere expansion of an insurance firm into banking does not necessarily result in a competitive operating risk-return profile. [Key words: bankinsurance, risk, return]

INTRODUCTION

Insurers, banks, and other financial firms can now coexist in the same economic family under the Gramm-Leach-Bliley Act of 1999 (GLB). The GLB allows the establishment of financial holding companies that may engage in a broad array of financial activities, including insurance underwriting and commercial banking. Among the several arguments advanced in favor of financial services integration are those associated with risk reduction and enhanced returns. In this paper, we introduce a banking product into the property-liability insurance product mix and examine the likely effects on operating returns and their volatilities. We conclude that insurers' expansion into commercial banking is unlikely to improve their

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operating risk-return profiles over and above what could be achieved with a carefully selected insurance product offering. Improvements in the operating risk-return profile of individual insurers may occur when a commercial lending function is added, but in many of these cases, commercial loans may have to dominate the insurer-bank's product mix.

Our results are consistent with existing research that finds the integration of banking and insurance to benefit bankers, but not necessarily insurers. Previous analyses of the risk-return profiles of integrated firms, however, use aggregate firm-level data and adopt a bank's perspective. Our study verifies the conclusions of the existing research from an insurer's perspective using product line data. The use of individual product data allows for unconstrained changes in the product mix and, thus, makes it possible to explore if selected insurance products combined with a specific banking product can provide any risk-return benefits to insurers. Our findings suggest that if there are net gains to insurers from the integration of insurance and banking, these gains would have to come from informational synergies, economies of product scope, creation of strategic options, and other revenue-enhancing factors, which we are not able to analyze with the available data.

In the next section, we outline relevant parts of the Gramm-Leach-Bliley Act and discuss why potential benefits from insurance-banking integration may or may not exist. A summary of selected prior research results is followed by a description of our data and empirical methodology. We then present and discuss our results. The conclusion summarizes the implications of our findings for insurer-bank integration.

INSURER-BANK INTEGRATION

The Gramm-Leach-Bliley Act

Overview of the GLB. The GLB allows the establishment of financial holding companies that can engage in a broad array of financial activities. The GLB is notable for its repeal of the vestiges of the Glass-Steagall Act of 1933, which separated commercial banking from investment banking. The GLB further modified the Bank Holding Company Act of 1956 and its 1970 amendment to allow affiliations between banks and insurers. The provisions of the GLB are evolutionary rather than revolutionary, since insurers made substantial forays into the banking business before the GLB. The GLB, however, provides a more straightforward path toward financial integration.

The GLB allows bank holding companies and foreign banks to become financial holding companies. An insurance company (or securities firm)

that acquires a bank must apply to be a bank holding company when filing for financial holding company status. Financial holding companies can establish subsidiaries that engage in underwriting and selling insurance and securities, commercial and merchant banking, investing, and developing real estate. Furthermore, financial holding companies, with the permission of the Federal Reserve Board, can engage in other activities that are financial in nature or incidental to financial activities, and in nonfinancial activities complementary to a financial activity. As of December 2001, 582 banks (including 21 foreign banks) and two insurers have elected to be treated as financial holding companies.

The GLB continues the historical practice of relegating the regulation of traditional insurance products to the states, and the regulation of separate account insurance products to the Securities and Exchange Commission. The Federal Reserve receives umbrella authority over the financial holding company.

The GLB limits the flow of funds between the bank subsidiary and the other financial subsidiaries of the financial holding company. One reason for this limitation is the desire to ensure that subsidiaries of banks that elect a financial holding company structure cannot obtain funds at favorable rates as compared to subsidiaries of financial holding companies established by financial firms other than banks. Another reason is the concern that funds might be siphoned off from an insurer (banking) affiliate in the hope that state guarantee funds (the Federal Deposit Insurance Corporation (FDIC)) will cover the policyholder liabilities (deposits).[1]

Unitary thrift institutions under the GLB. Before the GLB was passed in 1999, forming a unitary thrift holding company was the only method by which an insurer could engage in banking. Unitary thrift holding companies, defined as holding companies owning only one thrift subsidiary, were allowed to engage in any business activity, provided the activity did not pose a safety and soundness risk to their thrift subsidiary. So far, only two insurers have elected to be treated as financial holding companies. A possible explanation is that the GLB continues to allow any holding company to own a unitary thrift institution. According to the GLB, unitaries established before May 4, 1999, may engage in any type of financial or commercial activity, while unitaries established after this date may engage only in the activities permitted for financial holding companies. By December 2001, 45 insurers had established unitary thrifts, including eight that came into existence after May 4, 1999.

For insurance firms that already have a nationwide network of offices, the thrift charter provides the opportunity to offer banking products through their existing distribution channel.[2] A large overlap of skills and expertise among insurers and thrifts promises additional cost savings.

However, substantial differences between these two businesses also exist, according to an analysis of insurance-banking operations by Saunders and Walter (1994) and Santomero (1997). For example, the operating cost structures of insurers and the effective spread they earn places them at a disadvantage to depository institutions. In addition, insurance firms have developed an expertise in managing actuarial risk, while banks manage financial risk. For the integrated firm, the problem of financing overall risk exposures is one that depends less on the statistics of actuarial risk and more on financial risk pricing. It is therefore questionable whether an insurer-bank can generate economies of product scope from jointly producing insurance and banking products.

These incompatibilities may explain why fully developed integrated financial institutions do not exist, even in Germany, where regulation permits full integration (Herring and Santomero, 1990; Hoschka, 1994; U.S. Congress, 1997). An integrated financial institution, at its most developed, seamlessly manufactures and retails all financial services products, including insurance (Morgan, 1994). The GLB does not permit such a seamless organization. It does allow, however, the sharing of customers' private information within a financial holding company.

Privacy provisions of the GLB. The GLB allows subsidiaries of a financial holding company to share non-public information about their customers. The financial holding company may also share information about its customers with third parties, if the information is necessary for those third parties to perform services for the financial holding company. However, financial holding companies must disclose their information policy to their customers on an annual basis. Customers of the financial holding company may prohibit the disclosure of their non-public, personal information to third parties.

The ability to collate customers' financial and insurance profiles holds value potential and may provide a strong motivation for including insurance and banking within the same financial holding company. We propose that the value potential from integrating financial and insurance information is greater for commercial customers than for individual consumers. Banks and insurers already heavily profile individual consumers and aggressively try to cross-sell them products (Seroka, 2000). Competition in this market segment is fierce, so that any profit potential that may have existed has likely been whittled away. Furthermore, the industry press is replete with announcements of financial product innovations for commercial customers, but not for individual consumers.

As an example, for commercial customers, a financial holding company may use its new information-sharing powers to alleviate moral hazard when customizing a financial product. Doherty (2000, pp. 616–624)

discusses how the issuers of catastrophe bonds design the bonds' trigger to correspond with the severity of moral hazard, and how this affects the tradeoff between the cost of the bond and its trigger. Catastrophe bonds are corporate debt whose payoff is indexed to property losses suffered by the bond issuers from natural causes such as earthquakes or storms. The issuance of catastrophe bonds requires the close collaboration of an investment banker, an insurance firm, and the borrower.

The financial holding company may also use its new information-sharing powers to build long-term relationships with commercial borrowers. Sharpe (1990), for example, shows that relationship lending allows the lender to extract monopolistic rents because the borrower is "informationally captured." The borrower willingly pays higher lending rates or fees as long as this increased cost is less than the cost of negotiating a loan with a different lender. A relationship loan thus creates value (analogous to the savings from a SWAP transaction) that may be shared by the borrower and the lender.

The ability of a financial holding company to share information about the financing needs and risk exposures of its commercial customers may also allow the financial holding company to structure a so-called multi-year, multi-line policy for its customers. Several insurers are already integrating insurance and banking products in underwriting these polices. Multi-line, multi-year policies pay in the event of losses from such diverse exposures as property damage or unfavorable interest rate movements. Losses from each exposure covered by the policy are not likely to occur simultaneously. In addition, losses from property damage may be offset by interest rate gains. Thus, the overall risk of multi-line, multi-year policies is low, even if the potential loss on each individual exposure in the policies is high.

The Power of Diversification

Multi-line, multi-year policies are applications of portfolio theory. Markowitz's (1952) main theme is that the risk-and-return characteristics of a portfolio of assets (such as insurance and banking products, for example) may differ greatly from the risk-and-return characteristics of the individual assets. The attraction of a diversified portfolio is that its return is equal to the average return of its individual holdings, but the volatility of its return is less than the average volatility of its individual holdings. This means that diversification allows an investor to combine a group of risky individual assets into a relatively low risk portfolio of assets, as long as the investor can minimize the correlation among the returns of the individual assets. Professor Markowitz defined as "efficient" those port-

folios with a maximum return for a given level or risk, or a minimum level of risk for a given return.

The main challenge for the insurer-bank is to internalize the benefits from portfolio construction and fuse the best practices of insurance and banking management. For example, the risk management models of Froot, Scharfstein, and Stein (1993) and Tufano (1998) agree that managing risk is less valuable when a firm's operations contain natural hedges. These natural hedges can arise from a positive correlation between the firm's investment opportunities and its cash flow. They can also arise when losses in one part of a firm due to unexpected changes in the firm's environment are offset by gains in another part of the firm. Integrating commercial loans in an insurer's product mix may create such natural hedges, resulting in reduced operating risk for the insurer-bank.

When an insurer develops the capacity to make commercial loans, it may find that its operating risk decreases because the operating return from banking products is imperfectly correlated with the operating return from insurance products. This imperfect correlation of returns reduces the volatility of the operating return for the insurer-bank. A reduction in the volatility of the operating return, however, does not necessarily result in higher stock valuations because the firm's systematic risk may not decrease. Nonetheless, a reduced volatility of operating returns will lower the amount of costly surplus the insurer-bank must hold to ensure a given probability of insolvency. The insurer-bank also benefits from an ability to increase the prices of its insurance products since, according to Phillips, Cummins, and Allen (1998), the price of property-liability insurance increases as an insurer's default risk decreases.

The largest gains from the integration of financial services appear to be associated with risk reduction from diversification, not with economies of scale or scope. As part of their empirical study on economies of scale and scope in the international insurance industry, Katrishen and Scordis (1998) reviewed the insurance literature on economies of scale and scope. Scale or scope economies were found primarily for small insurers. No economies or diseconomies of scale were found for large insurers. It seems that the advantages a large, diversified insurance firm may enjoy are offset by the increased costs of operating a more complex organization. To benefit from size and diversification, insurers must develop new organizational systems to manage their increasingly complex operations. Berger (2000), who provides a comprehensive review of the banking and insurance literature on financial services integration, reaches a similar conclusion. The benefits of integration from size, scale, or scope, if they exist at all, are hard to find. The emerging consensus in the literature appears to be that the integration of financial services destroys rather than enhances value for shareholders

and customers. Berger (2000) concludes that the largest possible gains for a diversified firm, such as an insurer-bank, stem from its ability to contain risk. Such a firm may increase the proportion of its operations in higher return activities without increasing the riskiness of its total operations. Indeed, our paper investigates whether the mechanics of diversification alone (i.e., adding commercial loans to an insurance product mix) can generate risk-return benefits to operating profits.

An explanation for the elusiveness of the gains from diversification of insurers into banking (and vice versa) is that benefits may largely result from strategic options with contingent payoffs in future periods. Milbourne, Boot, and Thakor (1999) have developed this proposition. Currently, it is not clear which product combinations or organizational structure will dominate as the financial services industry continues its integration and globalization. Financial firms that now fail to develop expertise in additional financial segments may not be able to catch up later, because their managers will not have sufficient expertise unless they are lucky enough to have selected the ultimately successful strategy in advance. Thus, the benefits of an insurer's diversification into banking may not be measurable until after the industry reaches a stable environment in terms of product offerings and organizational structure. A first-mover strategy is high risk, as compared to a successful imitation strategy, and requires commensurate payoffs. Whether adding commercial loans to an insurance product mix improves the operating risk-return profile because of the imperfect correlations in the operating returns of banking and insurance product is an important empirical question. If this is the case, the integrated firm could expect a relatively certain and immediate benefit. Contingent future payoffs that are more difficult to quantify would represent an additional bonus.

PREVIOUS STUDIES

Previous studies adopt a banking firm's perspective in examining the effect of combining bank and nonbank financial activities into a single economic entity.[3] Analyses of firm-level data indicate that commercial banking appears to be one of the least risky activities in financial services, as measured by the coefficient of variation of the return on equity (ROE) or the return on assets (ROA). Even though the low-risk combination of products changes over time, as the empirical findings of the previous studies suggest, the empirical consensus is that the greatest potential for risk reduction is a combination of banking with some segment of the insurance industry. For example, Reichert and Wall (2000), studying the

period from 1990 to 1997 (a period that overlaps the time period used in this study), find that a bank can reduce the coefficient of variation of its ROA from 42.6 to 31.4 by investing 38 percent of its assets in insurance agency activities and 27.7 percent in regulated investment company activities.

The existing studies identify banking and nonbanking activities that, once combined, result in lower risk than the average risk of the individual financial activities. To integrate financial activities, these studies combine individual firms (e.g., Citicorp Bank, SmithBarney Securities and Travelers Insurance) or individual industries (e.g., bank holding companies, life insurers, and insurance agents) from data published by the Internal Revenue Service. The majority of these studies measure risk as the coefficient of variation of a firm's (or industry's) accounting return on equity (ROE) or accounting return on assets (ROA). The coefficient of variation is the standard deviation of the return divided by the expected return. Product combinations that reduce the coefficient of variation are desirable, because less risk is associated with each unit of the expected return.

Examples of studies that measure risk with the coefficient of variation and accounting data are Heggestad (1975), Litan (1985), Rose (1989), Wall, Reichert, and Mohanty (1993), Saunders and Walter (1994), Allen and Jagtiani (2000), and Reichert and Wall (2000).[4] In contrast, Rose (1989), Saunders and Walter (1994), and Allen and Jagtiani (2000) use stock returns from individual firms rather than accounting ratios to construct their risk measure. Furthermore, Allen and Jagtiani (2000) also measure systematic risk during the period from 1986 to 1994 (a period that overlaps the time period used in this study). Consistent with the results of previous studies, they find that a bank can reduce the coefficient of variation of its monthly stock returns from 6.9 to 6.7 by allocating 9 percent of its assets to security firm activities and 23 percent of its assets to insurance company activities.

Allen and Jagtiani (2000) further find that while adding insurance company activities to banking activities reduces the bank's total risk, it does not alter the systematic risk of the bank. This finding suggests that shareholders of banks may not be willing to reward bank managers who expand into insurance by accepting a lower rate of return, or alternatively paying more for the stock of the bank-insurer. A firm's required rate of return by investors, its cost-of-capital, depends on its systematic risk, not its total risk. Indeed, Carow and Heron (2001) find that the stock prices of banks were unaffected by the passage of the GLB Act. Thus, risk reduction by itself may not be enough to justify banking expansion into insurance.

DATA AND METHODOLOGY

Previous studies find that a bank improves its risk-return profile when it adds insurance activities to its existing operations and the insurance activities represent a minority of the bank-insurer's operations. If an insurer expands into banking to improve its risk-return profile, does it follow that banking must also dominate the insurer-bank's product portfolio? Our study investigates this question by using product-level rather than firm-level or industry-level data to examine the potential diversification benefits for insurers that develop or acquire the capacity to make commercial (including agricultural) loans.

The use of product-level data disaggregates insurance and banking activities. Such disaggregation has the advantage of increasing the number of different asset classes that can be combined into a portfolio, thus increasing the likelihood of identifying new portfolios with desirable risk-return profiles. More importantly, the use of product-level data allows an analysis of how individual products contribute to the overall risk-return profile of the insurer-bank.

The expected operating returns of the product portfolios in this study equal the weighted average of the operating returns from their individual product holdings:

$$E(r_p) = \sum_{i=1}^{N} w_i r_i \tag{1}$$

where (r) is the return of an individual product and (w) is the proportion of operating return the individual product contributes to the portfolio. The total risk of the product portfolio, as measured by the standard deviation of its operating return, equals:

$$\sigma_p = \left(\sum_{i=1}^{N} w_i^2 \sigma_i^2 + \sum_{i=1}^{N} \sum_{\substack{j=1 \\ i \neq j}}^{N} w_i w_j \rho_{ij} \sigma_i \sigma_j \right)^{1/2} \tag{2}$$

where (σ_i) is the standard deviation of the return of an individual product, (w_i) is the proportion of operating return the individual product contributes to the portfolio, and ($\rho_{i,j}$) denotes the correlation of return of a product

pair. Thus, an insurer can reduce the overall risk of its product portfolio provided two conditions are met: first, the products' operating returns are less than perfectly correlated; and second, the decrease in risk the additional product contributes to the portfolio's covariance ($\rho_{ij}\sigma_i\sigma_j$) offsets the increase in risk the additional product contributes to the portfolio's variance (σ^2_i).[5] The use of product-level data, therefore, allows us to determine if the additional risk any particular product contributes to the insurer-bank overwhelms any possible risk reductions from diversification across the insurance products and banking product offered by the integrated firm.

The sample for this study consists of twenty-two property-casualty insurance products and commercial loans (which include agricultural loans).[6] We are focusing only on commercial loans because we believe that this banking product likely has the largest value-creating potential for the insurer-bank. One source of value for the integrated firm is the ability of a commercial lender to charge "certification premiums" for making loans to creditworthy but unknown borrowers (Cook, Schellhorn, and Spellman, 2002). New or unknown firms are unable to raise funds in the public debt markets, or can do so only at excessively high rates. If these firms manage to secure a loan from a reputable lender who has successfully certified unknown borrowers in the past, the public announcement of the loan agreement reassures investors in the capital market that the borrower is creditworthy. As a result, the terms on which the borrower is able to raise funds from other sources are likely to improve. The implied presumption is that the certifying lender has reviewed the private information of the unknown borrower and granted the loan because the credit standing of the borrower was found to be satisfactory. The lender extracts some of the benefits that accrue to the borrower in the form of a certification premium.

A bank's screening and monitoring skills can also be used in the insurance underwriting process, thus eliminating costly duplication, if the firm borrows funds and purchases its insurance coverage from the insurer-bank. As the insurer-bank interacts over time with the insured-borrower and produces proprietary, private information, the insurer-bank "informationally captures" the insured-borrower, as Sharpe (1990) posits. The insured-borrower willingly pays higher lending rates or insurance fees as long as this increased cost is less than the cost of negotiating a loan or insurance coverage with a different provider. The ability to combine insurance and commercial loans in one economic entity thus has the potential for creating value for the insurer-bank. This potential value, however, is currently difficult to quantify. If adding commercial loans to an insurance product mix improves the operating risk-return profile of the insurer-bank already due to the imperfect correlations in the operating returns, then any other potential advantages will be an added bonus.

Operating return (i.e., underwriting accounting profit plus investment income) for each insurance product is measured as one minus the operating ratio. The operating ratio is a function of three ratios: the sum of the ratio of incurred losses and loss adjustment expenses to net premium earned, and the ratio of underwriting expenses and commissions to net premium written net of the investment yield. Operating ratios for each of the insurance products in the sample are collected from annual editions of *Best's Aggregates and Averages* for each of the years from 1987 through 1996.

Operating return for the commercial loan product is measured as one minus the ratio of the product's losses and expenses to total income after the cost of money. Data for this banking product are collected from annual editions of the Federal Reserve's *Functional Cost Analysis* for each of the years from 1987 through 1996. The data for the insurance products used in our study are industry averages, while the data for commercial loans are averages of commercial loans originated by small, medium-size, and large banks. (The available insurance data are not reported separately for firms of different size.) Small banks have less than $50 million in deposits, medium-size banks have deposits over $50 million but less that $200 million, and large banks have deposits over $200 million.

The time period over which we collected the sample is dictated by the availability of comparable data. The insurance products for which data are reported have changed over time, while the actual banking data have been substantially revised. For example, there are data for sixteen more insurance products in 1997 than in 1986.

The product-specific accounting data used in this study allow an analysis of the potential diversification benefits that accrue to insurers that develop or acquire the capacity to make commercial (including agricultural) loans. However, this accounting information is issued once a year, and its reporting guidelines have changed over time. Thus, the number of available observations, ten years of data, is small compared to stock market data.

From these annual observations of operating returns, we estimate the geometric average return and the returns' standard deviation for each product, as well as the correlation coefficients for each product pair. The average operating returns, their standard deviations, and correlation coefficients are used to construct product portfolios. We rank the portfolios using the coefficient of variation.

RESULTS

Using our set of insurance and banking products, we analyze the risk-return profiles of twelve hypothetical product portfolios. We then add

commercial loans to the actual product portfolios of two representative insurance companies, Allstate and Progressive, to examine the impact of an expansion into banking on the risk-return profiles of these insurers.

Four hypothetical portfolios are created using all twenty-two property-casualty insurance products, first without commercial loans and then with commercial loans originated by small, medium-size, and large banks. The second four product groupings are combinations of short-tail insurance products, first without commercial loans and then with commercial loans originated by small, medium-size and large banks. Finally, the third four product groupings are combinations of long-tail insurance products, first without commercial loans and then with commercial loans originated by small, medium-size, and large banks.[7]

An analysis of the results by bank size appears appropriate, given that lending patterns differ significantly across bank size. Compared to large banks, small banks invest a much larger percentage of their assets in nonagricultural small-business loans and develop customer relationships by emphasizing customer service (Payne and Franck, 2001). Small banks are also more likely than large banks to hold agricultural loans (Levonian, 1996). Large banks, which traditionally lent to large businesses, have experienced a deterioration of their profit margins because of increased competition from the financial markets, foreign banks, and other financial service providers. In response, the largest banks have reduced their involvement in traditional deposit-taking and lending, and emphasized the growth of fee revenue from off-balance sheet activities, such as loan commitments, standby letters of credit, derivatives, and foreign exchange trading (Berger, Kashyap, and Scalise, 1995; Koch and MacDonald, 2000).

Furthermore, for each of the twelve product portfolios, we calculate coefficients of variation for the efficient portfolio with minimum risk, the efficient portfolio at the midpoint of the risk scale under the efficient frontier, and the efficient portfolio with maximum risk. Out of these different risk efficient product portfolios, a rational economic agent would prefer the portfolio with the lowest coefficient of variation because it provides the highest expected return per unit of risk or, equivalently, the lowest risk per unit of expected return. The portfolio with the lowest coefficient of variation is the "preferred" portfolio because it offers the highest expected return per unit of risk. Thus, although the full set of results is available (upon request), we report here only our findings relating to these "preferred" portfolios.[8]

For the portfolios involving all property-casualty insurance products and the portfolios involving short-tail insurance products, the preferred portfolios with the lowest coefficients of variation are the efficient minimum-risk portfolios. For the portfolios involving long-tail insurance prod-

Table 1. The Preferred Portfolios for Unconstrained Combinations of all Property-Casualty Insurance Products with and without Commercial Loans

	Product Proportion in Portfolio			
	Insurance products only	Insurance products and small-bank commercial loans	Insurance products and medium-bank commercial loans	Insurance products and large-bank commercial loans
Fire	12.38	12.38	12.38	12.38
Earthquake	0.09	0.09	0.09	0.09
Farmowner multi-peril	20.04	20.04	20.04	20.04
Worker compensation	7.84	7.84	7.84	7.84
Other liability	7.16	7.16	7.16	7.16
Medical malpractice	3.58	3.58	3.58	3.58
Commercial auto liability	34.70	34.70	34.70	34.70
Private auto physical damage	1.22	1.22	1.22	1.22
Other lines	12.98	12.98	12.98	12.98
Commercial loans				
Portfolio operating return	3.29	3.29	3.29	3.29
Portfolio standard deviation	0.11	0.11	0.11	0.11
Coefficient of variation	0.03	0.03	0.03	0.03

ucts, the efficient minimum-risk portfolio is the preferred portfolio only when commercial loans are excluded. When long-tail products are combined with commercial loans, the portfolios with the lowest coefficients of variation are the efficient medium-risk portfolios.

Table 1 shows the preferred portfolios for the combinations of all property-casualty insurance products with and without commercial loans originated by small, medium-size and large banks. The product composition of these portfolios is identical regardless of the size of the bank generating the commercial loan. None of these portfolios in fact, contain

any commercial loans. Thus, a full-line insurer does not need to add commercial loans to its product mix to improve its operating risk-return profile. The insurer can improve its operating risk-return profile by offering selected long-tail insurance products and short-tail insurance products.

As Table 1 shows, the preferred efficient insurance product mix enjoys an operating return and standard deviation of 3.3 percent and 0.1 percent, respectively. Note that this product mix is a combination of just nine insurance products. Four products (fire, farmowner multi-peril, commercial auto liability, and other lines) contribute 80.1 percent of the total operating return, and each of the five other insurance products contributes less than 10 percent of the total operating return.[9]

Insurers specializing in short-tail products have a risk-return profile that is slightly worse than that of a full-line insurer. The preferred portfolio for a short-tail insurer offers a higher expected return than the preferred portfolio for a full-line insurer (27.7 percent versus 3.3 percent), but the short-tail preferred portfolio imposes disproportionately higher risk (1.1 percent versus 0.1 percent). The coefficient of variation for the short-tail insurer is 0.04 percent compared to 0.03 percent for the full-line insurer.

The short-tail insurer's risk-return profile improves slightly with a limited expansion into commercial lending. The expected return for the short-tail insurer-bank increases and the standard deviation of the return falls. The expected return increases most when large-bank lending is added, and the standard deviation falls most when small-bank lending is added. As Table 2 shows, each insurer-bank portfolio displays a unique operating return and standard deviation of operating return, but the coefficients of variation are identical at 0.03 percent, which equals the coefficient of variation for the preferred portfolios of full-line insurers. Thus, short-tail insurers may improve their operating performance with a modest expansion into commercial lending (the weight of commercial loans remains below 15 percent in all three portfolios). However, the risk-return profile of the short-tail insurer-bank is no better than that of a full-line insurer with an efficient minimum-risk product offering.

In addition to commercial loans, all preferred efficient portfolios of short-tail insurer-banks include fire insurance, private auto physical damage, surety, and burglary and theft insurance, regardless of the size of the commercial loan originator. Only the product portfolio containing commercial loans originated by small banks includes fidelity insurance as a small fraction. While the proportions of the products vary across the three different product combinations, the product composition of the portfolios consisting of short-tail insurance products and commercial loans appears to be independent of the size of the bank originating the loans.

Table 2. The Preferred Portfolios for Unconstrained Combinations of Short-Tail Insurance Products with and without Commercial Loans

	Product Proportion in Portfolio			
	Insurance products only	Insurance products and small-bank commercial loans	Insurance products and medium-bank commercial loans	Insurance products and large-bank commercial loans
Fire	13.03	12.64	10.07	8.56
Private auto physical damage	11.94	23.14	21.74	20.13
Commercial auto physical damage	7.53			
Fidelity		0.72		
Surety	13.14	7.16	9.99	12.11
Burglary and theft	54.36	42.40	43.77	46.58
Commercial loans		13.93	14.44	12.62
Portfolio operating return	27.72	31.34	32.58	33.14
Portfolio standard deviation	1.06	0.91	0.93	0.96
Coefficient of variation	0.04	0.03	0.03	0.03

Compared to the preferred portfolio of a full-line insurer, the preferred portfolio of an insurer specializing in long-tail products offers a lower expected return (1.5 percent versus 3.3 percent) and higher risk (0.2 percent versus 0.1 percent). While the risk of a long-tail insurer compares favorably with the risk of a short-tail insurer (0.2 percent versus 1.1 percent), the expected return of the long-tail insurer is substantially lower (1.5 percent versus 27.7 percent). The long-tail insurer has the highest coefficient of variation and, thus, the least attractive risk-return profile when compared to the full-line insurer, the short-tail insurer, and the short-tail insurer-bank (0.14 percent versus 0.03 percent, 0.04 percent, and 0.03 percent, respectively).

When the long-tail insurer expands into commercial lending, its risk-return profile improves. The expected return increases much more than the standard deviation, regardless of the size of the bank originating the loan, so that the coefficient of variation falls from 0.14 percent to 0.05–0.06

Table 3. The Preferred Portfolios for Unconstrained Combinations of Long-Tail Insurance Products with and without Commercial Loans

	Product Proportion in Portfolio			
	Insurance products only	Insurance products and small-bank commercial loans	Insurance products and medium-bank commercial loans	Insurance products and large-bank commercial loans
Farmowner multi-peril	20.55	11.22		
Homeowner multi-peril	2.71			
Ocean marine	4.16			
Worker compensation	6.70			
Other liability	11.99			
Medical malpractice				14.42
Private auto liability			10.27	20.71
Commercial auto liability	39.07		21.79	
Boiler and machinery		15.79	1.70	
Reinsurance	0.63			
Other lines	14.19			0.08
Commercial loans		72.99	66.23	64.80
Portfolio operating return	1.54	51.43	46.67	51.05
Portfolio standard deviation	0.22	2.53	2.13	3.04
Coefficient of variation	0.14	0.05	0.05	0.06

percent. Nonetheless, the risk-return profile of the long-tail insurer-bank is less desirable than the risk-return profiles of both the full-line insurer and the short-tail insurer-bank. In fact, the risk per unit of expected return for the long-tail insurer-bank is almost twice as high.

As Table 3 shows, the preferred product combinations of long-tail insurance lines with commercial loans include commercial loans, with weights of 73.0 percent, 66.2 percent, and 64.8 percent for small-bank, medium-bank, and large-bank commercial loans, respectively. Thus, com-

mercial lending dominates the preferred portfolios of the long-tail insurer-bank regardless of the size of the originating bank. It may be argued that the integrated firm effectively exits the insurance industry to become a commercial bank that offers a few long-tail insurance products to complement its commercial lending function.

It is also interesting to note that the four preferred product portfolios involving long-tail insurance products and commercial loans consist of different insurance products. In contrast to the portfolios involving short-tail products, the product composition of the preferred portfolios involving long-tail products does appear to depend on the size of the bank originating the loans.

Farmowner multi-peril insurance, for instance, appears with a positive weight (11.2 percent) only in the preferred portfolio containing commercial loans originated by small banks. This finding is interesting because farmers also obtain their loans mostly from small banks. In 1995, for example, 48 percent of small banks' total commercial loan volume represented agricultural lending, while medium-size banks allocated 22 percent of their commercial loans to agricultural customers. For large banks, agricultural lending represented a mere 4 percent of their total commercial lending activity. When an insurer-bank involved in agricultural lending incurs losses in connection with its farmowner multi-peril policies, the events leading up to these losses may increase farmers' demand for bank loans, which creates a welcome addition to the insurer-bank's revenues.[10]

A similar argument may explain the combination of commercial auto liability insurance with commercial loans originated by medium-size banks. For small (agricultural and nonagricultural) businesses, one might think of insurance policies and bank loans as substitute solutions for the problem of covering unexpected losses. Unlike large corporations, small and medium-size businesses typically lack affordable access to the capital markets. Thus, these firms must cover their unexpected losses with funds from financial institutions, primarily insurers and banks. While unexpected businesses losses tend to reduce the operating return to the insurer, they potentially increase the operating return to the bank lender as long as the borrowing firm is able to service the needed loans. It is the negative correlation between the operating returns of insurance policies and loans sold to the same firm that promises potential diversification benefits for the insurer-bank.

The large, corporate customers of large banks, on the other hand, are not dependent on financial institutions for their funding needs. Unexpected losses may be covered by insurance policies, bank loans, commercial paper, or other sources. Therefore, it is not surprising that the negative correlation between the return on corporate insurance policies (e.g., com-

mercial auto liability) and the return on corporate bank loans is much weaker for the large banks than for the small or medium-size banks.[11] The preferred portfolio of a long-tail insurer who has aggressively expanded into large-bank commercial lending thus includes primarily insurance products that are unrelated to commercial lending, such as medical malpractice and private auto liability.[12]

To examine the impact of an expansion into banking on the risk-return profiles of two representative insurance companies, we add commercial loans to the actual product portfolios of Allstate and Progressive. We chose these two insurers because they differed substantially with respect to operating returns and risks during the period of our study. The expected operating return for Allstate was 0.49 percent with a standard deviation of 6.15 percent and a coefficient of variation of 12.56 percent. For Progressive, the expected operating return was substantially higher at 11.04 percent, while the standard deviation was substantially lower at 3.46 percent. Progressive's coefficient of variation equals 0.31 percent.

Despite these differences in the risk-return profiles of the two insurers, the preferred portfolios for the hypothetical insurer-banks were surprisingly similar. In both cases, the preferred portfolios (the portfolios with the lowest coefficients of variation) were those that combined commercial loans originated by medium-size commercial banks with the actual insurer product portfolios. Medium-size banks tend to lend to nonagricultural small and mid-sized businesses. The mid-sized borrower is potentially most profitable for a commercial lender. Default risks may be assessed without too much difficulty if the firm has been operating for a while, so that data on historical performance are available. And competition from other funding sources is likely limited, since all but the larger corporations usually find it impossible, or very costly, to borrow in the financial markets. Furthermore, for both Allstate and Progressive, the preferred portfolios required an involvement in commercial lending that exceeded by far either firm's involvement in insurance activities.

Table 4 shows the preferred insurance-banking portfolios for Allstate and Progressive. These results were obtained by combining the actual insurer product portfolio with commercial loans originated by small, medium-size, and large banks. The minimum constraints imposed on insurance holdings were 0, 25, 40, 55, 70, and 85 percent.[13]

The expansion into banking results in an even more dramatic improvement of the risk-return profile for Allstate than for Progressive. Allstate's coefficient of variation falls by 12.50 percentage points, from 12.56 percent to 0.06 percent, whereas Progressive's coefficient of variation decreases 0.25 percentage points from 0.31 percent to 0.06 percent. However, to achieve this result, Allstate would have to give up almost all of its insurance

Table 4. The Preferred Portfolios for Constrained Combinations of Insurers with Commercial Loans Originated by Medium-Size Banks

	Allstate	Progressive
Insurance	5.78	19.20
Commercial banking	94.22	80.80
Portfolio operating return	65.94	58.64
Portfolio standard deviation	3.96	3.41
Coefficient of variation	0.06	0.06

business and replace it with commercial lending. Similarly, Progressive would have to create a product portfolio that consisted of at least 80 percent commercial lending. Effectively, these firms would have to exit the insurance industry and would be considered commercial banks.

CONCLUSION

The Gramm-Leach-Bliley Act of 1999 permits an insurance firm with excess capital to register as a financial holding company and to establish a banking affiliate with which it can cooperate to manufacture and distribute both insurance and banking products. The analysis described in the previous sections has singled out commercial loans as the banking product of choice not only because of its potential to lower risk through product diversification, but also because of possible profitability enhancements from synergies and relationship banking. While we are aware of the latter, our empirical analysis addresses only the former. We do not examine whether an expansion into banking creates any long-term strategic benefits for the insurer-bank.

Our results show that the mere expansion of an insurance firm into banking, as represented by the ability to originate commercial loans, does not appear to improve the insurer's operating risk-return profile beyond what the insurer can achieve by offering selected short-tail and long-tail insurance products. In fact, an insurer specializing in long-tail insurance lines must offer a product mix that consists mostly of commercial loans in order to achieve a competitive risk-return profile. And even under the best of circumstances, the long-tail insurer's exposure to operating risk per unit

of expected operating return appears to be almost twice that of a full-line insurer with a carefully selected product offering.

For two representative insurers, Allstate and Progressive, we find that significant improvements in their operating risk-return profiles are possible. However, to achieve those improvements, the firms would have to abandon a great majority of their insurance operations and replace them with commercial lending, thus effectively exiting the insurance industry. Our research suggests an alternative course of action, which could lead to even greater improvements in the firms' risk-return profiles. Rather than expanding into commercial banking, insurers might review their existing product offerings and carefully select a mix of long-tail and short-tail insurance products that promises less operating risk per unit of expected operating return.

NOTES

[1]The fear that state or FDIC guarantees could be abused, however, may be unfounded. An empirical study by Benston, Hunter, and Wall (1995) on bank mergers fails to support the hypothesis that banks merge in order to increase the probability of FDIC bailout under a too-big-to-fail policy. Instead, the study finds that bank mergers appear to be motivated by a desire to generate higher levels of cash flow for the same levels of overall risk.

[2]Today, thrifts can offer virtually the same bundle of products as banks. But unlike banks, thrifts can lend no more than 20 percent of their assets to commercial clients, of which half must be to small businesses. Thrifts, however, have yet to confront this limitation, since their aggregate commercial and industrial loans represent less than 2 percent of their total assets.

[3]For a recent review of this literature, see Kwan and Laderman (1999). Wall, Reichert, and Mohanty (1993, pp. 2–7) also provide an excellent chronological review of the empirical literature, the various methodologies, and the principal tradeoffs of each methodology.

[4]Rather than using the coefficient of variation as a risk measure, Boyd and Graham (1988) and later Boyd, Graham, and Hewitt (1993) estimated the probability that a financial firm will experience losses that exceed its return on assets.

[5]Reeb, Kwok, and Baek (1998) find that both of these conditions can influence the risk of a portfolio. They find that as United States firms expand internationally, their systematic risk increases because the systematic risk of international operations overwhelms benefits from geographic diversification.

[6]The insurance products are Fire, Allied Lines, Earthquake, Farmowner Multi-peril, Homeowners Multi-peril, Commercial Multi-peril, Ocean Marine, Inland Marine, Workers Compensation, Other Liability, Medical Malpractice, Aircraft, Private Auto Liability, Commercial Auto Liability, Private Auto Physical Damage, Commercial Auto Physical Damage, Fidelity, Surety, Burglary and Theft, Boiler and Machinery, Reinsurance, and Other Lines.

[7]Long tails refer to insurance products in which losses requiring the insurer to indemnify the insured are slowest to manifest. Short tails refer to insurance products in which losses requiring the insurer to indemnify the insured are fastest to manifest. Long tails make an estimation of expected losses more difficult and, thus, expose the insurer to greater risk.

[8]The accounting data we use, unlike market data, do not reflect market participants' views regarding an insurer's expected future performance. Thus, this study ignores any potential future benefits from synergies created by the combination of different products. To the extent that these future synergies are small, the interpretation of our results remains unchanged. Empirical studies of economies of scale and scope, for instance, find no broad product synergies in the operations of United States property-casualty insurers.

[9]The smallest weight (0.1 percent) is assigned to Earthquake. For this insurance product, the return for 1994 was reported as –778 percent, which made it impossible to calculate a geometric average for the period 1987–1996. In order to avoid having to exclude this insurance line from our analysis, we replaced the actual return reported for 1994 with the average return for 1993 and 1995. To the extent that we overstated the expected return and understated the risk for Earthquake, the weight of this insurance line in the efficient portfolio may be overestimated.

[10]The correlation coefficient of return for small-bank commercial loans (which include a significant amount of agricultural loans) and farmowner multi-peril is –0.54, compared with –0.02 for medium-bank commercial loans and farmowner multi-peril, and +0.38 for large-bank commercial loans and farmowner multi-peril.

[11]The correlation coefficient of return for medium-bank commercial loans and commercial auto liability insurance is –0.62, compared with –0.30 for large-bank commercial loans and commercial auto liability insurance. The corresponding correlation coefficient for small-bank commercial loans is –0.44.

[12]The correlation coefficients of return are –0.37 and –0.58 for large-bank commercial loans and medical malpractice, and large-bank commercial loans and private auto liability, respectively.

[13]Both Allstate and Progressive are able to achieve a coefficient of variation of 0.06 percent by giving up their insurance business altogether and becoming a bank. Since we are examining the risk-return profile of an insurer-bank (not a bank-insurer), we do not further consider this possibility.

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