Integration between bank and insurance: effects on concentration and competition in the Italian life insurance markets

Maria Claudia Schneider
University of Udine

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Abstract

The aim of this work is to analyse the impacts of cross-industry consolidation on competition in Italian life insurance market. The focus is on *bancassurance* linkages and on how they affect the structure of the life insurance market. In this work we investigate the effect of cross-ownership linkages on scale economies within the industry for the span 1998- 2009. We found that companies equally participated by banks and insurers act at their optimal scale level (showing constant returns to scale), while companies which have not cross-sector ownership links show overall economies of scale. In particular the level of scale economies is statistically significant for insurers that have not ties with banks.

JEL classification: D4, G22, L44
Keywords: Bancassurance, Scale Economies, Competition, Antitrust

1 Introduction

The relevance of cross-industry consolidation for competition within life insurance markets has been raised up by the Italian antitrust authority (AGCM). In 2006 the Authority opened a file concerning the merger of two major banking groups: Banca Intesa and San Paolo IMI[1]. The AGCM investigation points out that the conduct of the firms within the banking industry, through affecting concentration in the deposit market, shapes the structure of specific life insurance markets. From the analysis emerges that the effect is amplified by cross-sector and inter-sector *structural links* (i.e. joint venture agreements, ownership ties). Looking at competition, structural links between firms such as cross-ownerships, would give firms a stake in each others' performance, thus threatening competition (see CPB, 2005). Another danger for competition is the existence of non-exhausted scale economies. Indeed, this is an indicator that the potential to reduce costs has not been fully employed and, therefore, can be seen as an indirect indicator of (lack of) competition (see CPB 2005 and Bikker and Van Leuvenstejin, 2008). Financial conglomerates enhance the structural links effects, reducing competition. At the same time, allowing for exploitation of scale economies, they enhance competition.

In this study we analyse the effect of bancassurance[2] ownership linkages on scale economies in the Italian market for life insurance.

[1] AGCM, Provvedimento n. 16249

[2] Convergence and integration between bank and insurance may take several forms (see Hoschka, 1994 ; Herring and Santomero, 1990; Koguchi, 1993). In this work, the word bancassurance is used to describe any agreement to sell insurance products through bank branches through selling agreements, joint venture, cross- ownership linkages or creation of captive companies.

2 Literature Review

Extensive literature underlines the strict connection between the expansion of the life insurance sector and the process of convergence between bank and insurance (see Locatelli et *al.*, 2003; Genetay and Molineux, 1998; Van der Berghe, Verweire and Carchon, 1999). Locatelli et al. (2003) following Hoschka (1994) individuate five bancassurance strategies , characterized by a growing level of integration between banks and insurers: cross selling agreements, Joint Ventures, acquisitions, creation of captive companies and mergers. Cross selling can be considered as the weaker form of integration which account only for the distribution channel. Joint ventures, M&A and captive companies allow for integration at back office levels. Convergence in the financial services industry takes place on two different levels. The first and most evident is the convergence at the distribution level (cross-selling). In this regard, looking at the Italian case, in 2009, the bank branches represent the main distribution channel of life insurance products, reaching approximately 60% of total collected premiums (ANIA 2009). This form of integration can be achieved mainly through cross selling agreements. The second form of integration is on the back-office level activities. This is the case for the asset management activities, human resources management, and information technology. In order to gain a lasting competitive advantage on this level, firms will have to do more than merely cross-sell the different products and reach stronger forms of integration, such as joint ventures or M&A. Thus, these two forms of integration enhance cost and profit economies both on the demand and on the supply side. On the demand side, financial conglomerates can exploit economies of scale through the distribution process, taking advantages of different distribution channels. On the supply side, cost advantages derive from ICT management, centralization of risk management and asset management.

Scale economies within the insurance sector have been investigated by various studies. Considering the Italian insurance market (both life and non-life), Focarelli (1992) employs a translog cost function with cross section data for the year 1987 finding modest scale economies, moderately increasing with company size. Fecher et *al.* (1991) analyze the French insurance market addressing the issue of optimal scale and productive efficiency, arguing that scale economies contribute to relatively high prices. Their study focus on both life and non life sector taking into account the institutional form of the various companies (stock, foreign, mutual and public). Within the life insurers, Fecher et *al.* (1991) find overall scale economies except for the public ones. Looking at competition in the Dutch market for life insurance, Bikker and Van Leuvensteijn (2008) study the relationship between performance and market structure and, in order to assess the degree of competition, look at scale economies measured through a translog cost function, observing increasing return of scale for most of the Dutch life insurers. Concerning the U.S. market, Grace and Timme (1992), analyzing a sample of 423 U.S. life insurers for the year 1987, find evidence of increasing scale economies for all but the largest agency firms which display approximately constant return to scale. Fiordelisi and Ricci (2009) carry out the first quantitative analysis that deals with bancassurance into the Italian life insurance market. They employ a stochastic frontier method to analyze the effects of bancassurance models on the cost efficiency and profit efficiency dealing with both the distribution and the ownership perspective, finding strong evidence in favor of bancassurance in terms of cost efficiency. Although efficiency and stochastic frontier analysis are beyond the aim of this work, we refer to Fiordelisi and Ricci (2009) for the specification of the ownership ties between banks and insurance companies.

There is not agreement on the choice of the output proxies for insurance companies. Indeed, the output metric widely differs among studies on insurance industry. The core literature emphasizes

two main approaches to the choice of how to measure the flow of services produced by financial institutions: the production approach and the intermediation approach (see Berger and Humphrey, 1997). The majority of the works concentrating on insurance adopts the production approach (see Fiordelisi and Ricci, 2008, Bikker and Van Leuvensteijn, 2008, Fenn et *al.*, 2008), basically following Cummins and Weiss (1998 and 2000), who define insurance output according to the value added approach. Quoting Cummins and Weiss (2000), insurers carry out three main activities:

1. **Risk pooling/risk bearing activity***: by insuring, consumers and business exposed to losses can engage in risk reduction through a risk pooling mechanism. In life insurance the principal risks are the risk of death (life insurance) and the risk of longevity (annuities).The actuarial, underwriting, and related expenses incurred in risk pooling are important components of value added in the industry. Insurers also add value by holding equity capital to bear the residual risk of the pool.*

2. **Real financial services relating to insured losses***: Insurers provide a variety of real services for policy holders including personal financial planning and the administration of group life annuity and health insurance plans. By contracting with insurers to provide these services, policyholders can take advantage of insurers' specialized expertise in managing insurable risk.*

3. **Intermediation***: Insurers issue insurance and annuity contracts and invest in traded securities as well as assets that are not available to most investors, such as privately placed bonds and structured securities. Insurers' principal source of value added is reflected in the net interest margin between the rate of return earned on invested assets and the rate credited to policyholders (see Cummins and Weiss, 2000).*

The definition of output within this framework is mainly based on the importance of the risk bearing and risk pooling activity. Generally, within the production approach, the output grasps both the risk poling / risk bearing activity and the intermediation activity. According to Cummins and Weiss (1998), the purpose of insurance is the redistribution of funds from the insured people that have not suffered a loss to those who have suffered a loss. In this framework, the quantity of insurers' output can be proxied both by premium income or by the present value of incurred losses. Incurred benefits are also useful proxies for the expected present value of the future claims that may be paid on policies, as they measure the amounts of funds pooled and redistributed as compensation for insured events. A further step to take into account the intermediation function, is to consider additions to reserves and add them to the incurred claims obtaining a proxy of output consistent with the value added approach. Premiums can also be taken into account as proxies for output.

There is a minor stream in the literature on insurance industry which refers to the intermediation approach (see Focarelli, 1992). This alternative approach sees financial institutions as primarily intermediating funds between savers and investors. Accordingly, the main insurers' activity is *borrowing funds and transforming liabilities into assets, receiving and paying out interest to cover the time value of funds used in this capacity.*

The present analysis is oriented to the production approach even if intermediation function is particularly important for life insurers. Indeed, while supporting the production or value added approach, Cummins and Weiss (1998) stress the importance of intermediation for the life insurance sector. Thus, even if this research is not concerned with the intermediation approach, the analysis could be further developed in this sense.

3 Model specification and data

3.1 *Sample definition*

We exploited the database *INFOBILA* managed by ANIA (Italian National Association for Insurance Companies). The database gathers financial statement data, and market share data about 90% of the registered companies in the Italian market. Technical accounts and financial statements are given separately for life and non-life branches. The row sample draws together all the direct insurers which collect premiums within the life insurance market in the span 1998 -2009. We started from a sample of 1104 units, selecting from the database *INFOBILA* those firms which collected premiums into the life insurance markets. Then, we eliminated units which show unreliable or missing data, or units that show negative or zero values (as our models is developed in logarithms), and finally we came to 1000 units. Companies are divided into groups in order to grasp the ownership linkages with banks, and within insurers. We reconstructed the history of the ownership linkages from 1998 to 2009 through four main sources of information:

- the publicly available data from "*Le Principali Società Italiane*" edited by Mediobanca;
- the database *Zephir* (Bureau Van Dijk);
- the web sites of the various companies;
- the Italian Antitrust Authority (AGCM) regulations.

Thus, companies are divided into six groups:

I. independent both from other companies into the life insurance market and from banks;

II. linked with other companies into the life insurance market but are independent from banks;

III. controlled by banks but are independent from other insurance companies;

IV. jointly and equally held by banks and insurance companies (JV);

V. controlled by other insurance companies with minority stake held by banks;

VI. controlled by banks with minority stake held by insurance companies.

Links are intended on national market basis. Therefore, if an insurer has ownership links with other insurers active in other national markets but has no links with insurers or banks active in Italy, it is considered independent.

3.2 The Model

In order to analyze scale economies we use a translog cost function which is one of the most traditional and general cost functions used in the literature (see Christensen et *al.*, 1973), which can be written, for the *s-th* company as:

$$\begin{aligned} \ln TC_s &= a_0 + \sum_i a_i \ln y_{is} + \sum_k b_k \ln p_{ks} + (1/2) \sum_i \sum_j s_{ij} \ln y_{is} \ln y_{js} \\ &\quad + (1/2) \sum_k \sum_l g_{kl} \ln p_{ks} \ln p_{ls} + \sum_i \sum_k d_{ik} \ln y_{is} \ln p_{ks} + \varepsilon_s \end{aligned} \tag{1}$$

where y_i denotes the *i-th* output, p_k denotes the *k-th* input price, a_0, b_k, s_{ij}, g_{kl}, d_{ik} are the parameters to be estimated.

We employed a *random effect panel data model*, which is aimed at grasping *(i)* the group effect, *(ii)* the company effect and *(iii)* the time effect. The group, the translog function independent variables and time effects are treated as fixed effects, while the company effect is treated as a random effect. In this setting, the individual specific constant terms are seen as randomly distributed across cross sectional units.

The basic equation of the model in matrix form becomes:

$$\ln \mathbf{TC}_{st} = \boldsymbol{\alpha} + \boldsymbol{\gamma}_t + \mathbf{D}_{st}\boldsymbol{\psi} + \mathbf{x}_{st}\boldsymbol{\beta} + \boldsymbol{\varepsilon}_{st} + \boldsymbol{\upsilon}_s \tag{2}$$

$$\boldsymbol{\upsilon}_s \sim N\left(0, \sigma_{\upsilon}^2\right)$$

$$\varepsilon_s \sim i.i.d.\ N\left(0, \sigma_{\varepsilon}^2 \Lambda\right)$$

Where, γ_t is the time effect, D is a dummy for the groups, $\mathbf{x}_t$ includes the logs of translog function independent variables and $\boldsymbol{\upsilon}$ is the random disturbance. We can estimate the above model using a restricted maximum likelihood estimator ($RMLE$):

In order to check for the existence of scale economies or diseconomies, we need to prove that

$$\sum_i \frac{\partial \ln TC_s}{\partial \ln y_i} \tag{3}$$

to be significantly different from the unity (see Clark, 1988). Indeed:
$\sum_i \frac{\partial \ln TC_s}{\partial \ln y_i} > 1$ indicates diseconomies of scale and $\sum_i \frac{\partial \ln TC_s}{\partial \ln y_i} > 1$ indicates economies of scale. The statistical significance is intended for a Wald Chi-square test with the null hypothesis being equal to one and with constraints vectors fixed to the means values for each group.

3.3 The functional form: output and input prices metric

The following table (Table 1) shows a brief summary of the main studies and of the main output and inputs prices variables and proxies employed in the literature on insurance.

Table 1
Input and Output Metric

	Outputs	**Output proxies**	**Inputs/netputs**	**Input prices proxies**
Focarelli (1992)	(i) the flow of direct insurance management (ii) the flow of reinsurance management (iii) the flow of financial management and (iv) the flow of real estate management	Divides the technical account (Revenues – Costs) into the four areas, without considering the extraordinary accounts.	Labour Capital Commercial network	HP of perfect competitive labour and capital markets. Given that the analysis is on cross section data (one year), he considers only the cost of commercial network as commercial expenses on premiums.
Fiordelisi and Ricci (2010)	Expected present value of the future of the future claims that may be paid on policies	Gross claims less claims paid by reinsurers plus bonuses and rebates, plus addition to reserves.	Equity Technical provisions (as netputs) Business services and materials (as inputs) Investments	Net operating expenses + technical charges/total assets (technical costs) Investment charges/total assets (investment costs)
Fenn et *al*. (2008)	Expected present value of the future claims that may be paid on policies.	Gross claims less claims paid by reinsurers plus bonuses and rebates, plus addition to reserves.	Total capital and reserves Total technical provisions Debt capital	Hp of competitive input mkts: Nominal wages in insurance sector Long term government bond rates as price of debt capital
Bikker and Van Leuvensteijn (2008)		Premium income	Reinsurance Distribution	Reinsurance ratio Acquisition ratio
Fecher et *al*. (1991)		Premium income Claims	Reinsurance Distribution	Reinsurance ratio Acquisition ratio

We took total collected premium as output (y) and the acquisition ratio ($distr$) and administrative expenses on total collected premiums (amm) as prices. The distribution ratio is the price of the distribution channels and the ratio administrative expenses/premiums proxies for human resource management, marketing activities and ICT price. In this way we tried to account both for the first and the second form of integration as described in the introduction. The analysis does not take into account the reinsurance activity, as all the variables are calculated gross of reinsurance.

Data by ISVAP (2010) show that the ratios commercial costs/ premiums and administrative expenses/ premiums are lower for the distributional channels that are based on bank branches (Circolare ISVAP 21.10.2010). A limitation of the present analysis is that it does not take into account the distributional channel through specific proxies. The model can be further developed taking into account the share of premiums collected by bank branches, as in Fiordelisi and Ricci (2009).

3.4 Descriptive statistics

The table below shows the sample size and the size of the six different groups.

Table 2

SAMPLE SIZE	
Sample	1000
Group I	214
Group II	457
Group III	151
Group IV	94
Group V	53
Group VI	31

Looking at the descriptive statistics in Table 3 - 9, it can be noticed that the mean of the dependent variable (i.e. total costs), for the span 1998-2009 is higher for groups III, IV and V, which are all linked to banks, in comparison to the sample mean. The same pattern can be noticed for the output (i.e. total collected premiums). In particular the joint venture group (IV) shows superior performance in this regard.

Table 3
Mean

	TC: total costs gross of reinsurance	**Y: total collected premiums**	**DISTR: distribution expenses/ total collected premiums**	**ADM: other administrative expenses/ total collected premiums collected premiums**
Sample	748.360	515.710	0,09	0,06
Group I	325.413	238.540	0,12	0,90
Group II	825.640	514.851	0,09	0,20
Group III	790.567	581.837	0,07	0,02
Group IV	1.210.940	966.016	0,05	0,02
Group V	1.063.940	787.378	0,05	0,02
Group VI	380.998	189.698	0,04	0,01

Table 4
Coefficients of Variations (CV)

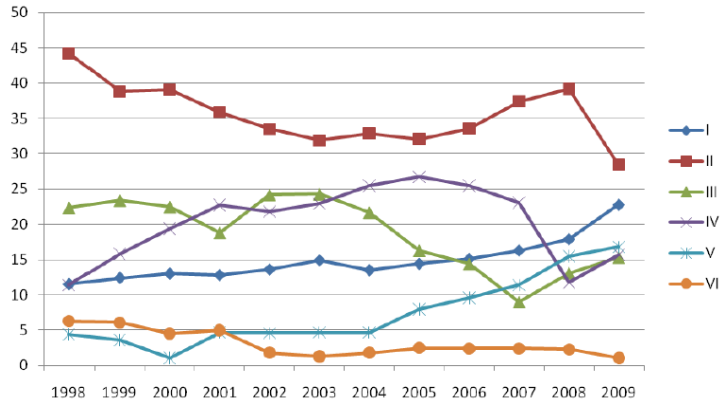
	TC: total costs gross of reinsurance	**Y: total collected premiums**	**DISTR: distribution expenses/ total collected premiums**	**ADM: other administrative expenses/ total collected premiums collected premiums**
Sample	1,71	1,69	2,74	3,91
Group I	1,76	1,69	0,99	1,55
Group II	1,73	1,74	3,72	4,29
Group III	1,39	1,22	1,42	0,82
Group IV	1,52	1,53	0,95	0,94
Group V	1,21	1,09	0,72	1.05
Group VI	0,76	0,79	0,32	0,53

From the tables above also emerges that the distributional and administrative costs are lower for all groups linked to banks.

In order to examine output difference across groups, the next graph (Chart 1), shows the time path of the average market share premium for the six groups (which is calculated on the raw panel). Despite its small sample size in respect to those that are not linked with banks, the joint venture group (IV) shows a constant market share growth for the years 1998 – 2005, reaching the 27% in the year 2005. Group II has the higher average market share. As can be noticed from table 2, it is the most numerous group, it considers companies linked with other life insurance companies but not with banks, and shows the higher market share. Group III, which represents companies totally owned by banks, remains almost constant between 1998 and 2003, then shows a downward slope for the span 2004 – 2009.

From the chart below also emerges a peculiarity regarding the years 2007 – 2009. Indeed, market share for group II and IV considerably decreases, while for group III (totally owned by banks) increases after a period of sharp decline. The time pattern of market share and output may be explained by considering separately the different product markets, or the product differentiation of the various companies. The path is also influenced by the periodicity of soft and hard market cycles. Another variable to be considered is policy redeem. The present analysis may be further developed by considering these aspects.

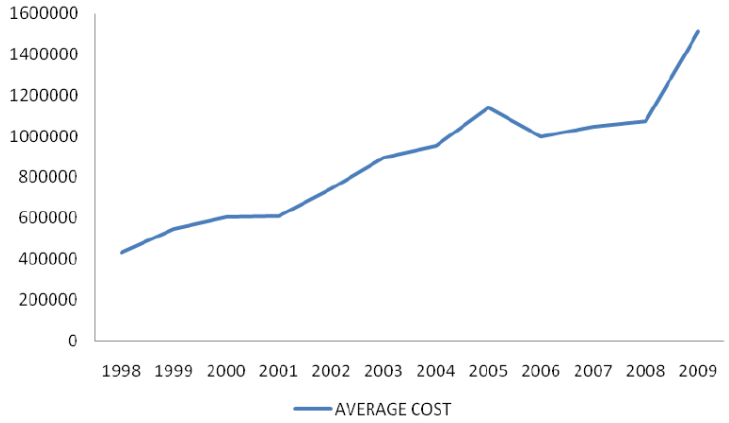
Chart 1



Average Market Share per Group (Percentages)

The graph in the next page (Chart 2) shows the temporal pattern of total costs and average costs for the raw sample as found in the ANIA database *INFOBILA*. The average cost significantly increased in the analysed span. In particular, it can be noticed the steep upward sloping during the crisis in the years 2007 to 2009. This is due to the change in companies' number through time. Indeed, from 2007, the market for life insurance has seen a sharp decrease of the actors on the supply side, due to a wave of mergers and acquisitions.

Chart 2



Average Cost (Thousand of Euros)

4 Results

Prices and outputs are all positively and significantly related to total costs. The translog function allows us to check for the cross products effects. The cross products are all negatively and significantly related to total costs. In particular, taking into account the price and output cross products it can be inferred that a positive variation in output lowers the effect of the marginal increase of price on total costs. The table below (Table 4) shows the main results for the variables regarding the cost function.

Table 5
Fixed effects : Cost Function Variables

	Value	**Std.error**	**p-value**
Ln(y)	**0,815**	**0,054**	**0,0000 (***)**
Ln(distr)	**0,224**	**0,055**	**0,0000 (***)**
Ln(amm)	**0,469**	**0,069**	**0,0000 (***)**
Ln(y):ln(distr)	-0,016	0,007	0,0199 (*)
Ln(y):ln(amm)	-0,032	0,009	0,0011 (**)

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05

The time effect is also significant. Looking at the intercepts, it can be seen how total costs, in comparison to year 1998, are significantly higher in 2002 and in 2003, slightly decreasing in 2004 and rising again from 2005 to 2009, with a significant difference for years 2007 to 2009. This pattern reflects the average cost timeline in Chart 2. The table below (Table 5) illustrates the time effect. As can be seen in Table 5, the p-values are lower and the intercepts are higher for years 2007 to 2009 (in bold). This is reflected in the steep sloping of average costs in Chart 2.

Table 6
Fixed effects : Time

	Value	St.error	p-value
Year 2003	0,0479	0,022	0,032 (*)
Year 2004	0,0427	0,022	0,060
Year 2005	0,0664	0,023	0,004 (**)
Year 2006	0,0654	0,023	0,005 (**)
Year 2007	**0,0863**	**0,023**	**0,000 (***)**
Year 2008	**0,1723**	**0,023**	**0,000 (***)**
Year 2009	**0,1821**	**0,025**	**0,000 (***)**

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05

Looking at the group effect, significant difference in average total cost can be observed between groups that are linked with banks and those that are not. Indeed, group IV (joint ventures) and group III, V and VI significantly differ in this respect from the group I (independent) intercept, as can be seen by looking at rows in bold. Group II (linked with insurance companies but not with banks) does not show an intercept significantly dissimilar to that of group I.

Table 7
Fixed effects : Group

	Value	St.error	p-value
Group II	-0,0319	0,028	0,254
Group III	**0,0948**	**0,037**	**0,010 (*)**
Group IV	**0,2218**	**0,045**	**0,000 (***)**
Group V	**0,0803**	**0,041**	**0,050 (*)**
Group VI	**0,0133**	**0,058**	**0,023 (*)**

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05

4.1 Scale economies

We check for the existence of scale economies looking for increasing or decreasing return to scale for every group.

The derivative:

$$\frac{\partial \ln(TC)}{\partial \ln(y)} = \beta_y + 2\beta_{y,,y} \ln(y) + \beta_{distr,y} \ln(distr) + \beta_{amm,y} \ln(amm) \tag{4}$$

is checked to be significantly different from one through a Wald Chi –square test for each group with the constraint vectors fixed to the group means of the variables that appear into the derivative.

The results show modest scale economies for all groups except for the two mixed group IV of joint ventures (equally held by banks and insurance companies) and for the group VI which collects companies controlled by banks with insurance minority stake. These two groups operate with constant return to scale, having reached their optimal scale.

Table 8
Scale Economies

Group	Value	Significance
Group I	0,938	(***)
Group II	0,952	(***)
Group III	0,976	(*)
Group IV	0,982	
Group V	0,976	(*)
Group VI	0,987	

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05

5 Conclusions

We found modest scale economies for groups that are not jointly partecipated by both insurers and banks and constant returns to scale for jointly participated groups IV and VI. From the analysis it may be inferred that jointly held companies are able too better exploit non exhausted scale economies. This result has been reached without taking into account the a specific proxy for the presence of bank branches in the distribution channel, thus, without considering simple cross selling agreements that could add significant information.

5.1 Further research

The analysis presents several limitations. First, it does not take into account specific proxies for the distribution process. A further developement of the analysis may take into account the percentage of premiums collected by bank branches, extending the model.

Also, by considering a relatively long span, the model should be developed in order to take into account the periodicity of soft and hard market cycles, as total costs are strongly influenced by policy redeems.

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