12. A merger in the insurance industry: much easier to measure unilateral effects than expected

Christian Gollier and Marc Ivaldi

1. Introduction[1]

This Chapter reports an econometric analysis conducted for a real case, but the identities of the firms have been suppressed for confidentiality reasons. The merger was eventually approved by the relevant national authority. The study is aimed at providing a measure of unilateral effects of the proposed acquisition of A by B on an insurance market in a national market in Europe by means of an econometric model. In other words, it provides a measure of the impact of this notified merger on the insurance price and the consumer surplus. It is expected that the preservation of competition on insurance markets makes insurance premia closer to the actuarial values of the risk transfers, therefore improving the insurability of individual risks and their diversification through mutualisation. This yields a direct welfare gain due to the risk aversion of consumers. But insurability is also favourable to economic growth by disentangling investment decisions from risk aversion. The aim of this study is to determine whether the planned merger could jeopardise those collective benefits. This requires us to examine the recent evidence on prices, costs and market shares in order to estimate how much competition would be taken out by the merger and how competition would remain from continuing rivals.

The econometric model describing the functioning of the non-life insurance markets is based on several facts which are drawn from a descriptive analysis. First, for most segments of the market, mainly those concerning the individual consumer, it is observed that market shares are correlated among different lines of insurance. Consequently, what really matters is the strategy of each insurance firm taken as a whole, rather than in narrowly defined

[1] The authors acted as advisors to the competition authority.

markets. Second, with respect to potential antitrust concerns, what matters is the decision of consumers to choose among insurers based on their average commercial offering; inasmuch as insurers are applying second-order price discrimination should affect the analysis marginally. Third, differentiation in this market is significant, in particular the risk level, as measured by the loss ratio, i.e. the ratio of the number of claims to the number of policies, varies among insurance firms. Fourth, after having experienced a wave of mergers before 2000, this insurance industry has since experienced a more stable situation.

The model is built to account for these facts. It is based on the recent literature on the econometrics of differentiated-products markets. It comprises a logit model to represent consumer choice and to explain market shares measured in terms of the number of policies, a Bertrand–Nash pricing equation to explain the average premium and a cost function that serves to obtain a measure of marginal costs from the observation of total claims and administrative costs. The model is estimated on an annual data set over the period 2000–3. The number of policies for each firm includes all insurance contracts on personal accidents and travel, fire and other damage to property, motor vehicle liability and general liability, because these insurance segments represent 90 per cent of the market and because data associated with these segments are more reliable. Thirteen insurance groups (firms) are represented in the data set on the period of estimation.

The model serves as a tool to simulate the merger. If all customers of A and B stay with their insurers after the merger and if competitors do not react, then one predicts a very high price. It is not a sustainable situation. One reasonably expects that some customers of B and A could move to other insurance companies and that they might change their pricing strategy. Hence it is required to simulate the new equilibrium after merger, as if all customers re-compute the optimal choice of insurance. This can be achieved using our estimated own- and cross-price elasticities and marginal costs.

Section 2 provides a descriptive analysis of the industry and section 3 sets out the model and its estimation. Section 4 simulates the merger and section 5 concludes.

2. Descriptive analysis

Annual panel data are available for the period 1990–2003. They concern all insurance companies present on the market and all segments of the market. For each year, firm and segment, data is available on the following variables:

total amount of claims, administrative costs, total amount of premia and number of policies. The amount of missing data is relatively small. In addition, for some segments (employers' liability, fire and other damage to property, motor vehicle liability, and general liability) the number of accidents is available.

A descriptive analysis allows us to stylise five important facts that are useful to understand the working of the insurance market.

2.1 Correlation among insurance segments and their relative weights

First we can report on the market shares of insurance groups computed in terms of number of policies for the whole market and for different segments of market over the period 2000–3. The merger concerns the first two groups, each representing slightly more than 20 per cent of the whole market.[2] It would provide to the combined entity a much larger market share than the other groups present on the market since the largest followers have market shares around 10 per cent of the whole market.

The descriptive analysis mainly shows that the market shares of each group in the different market segments are similar. We do not observe a group having a strong position in one segment and having no activity in another segment. The ranking among groups is almost identical from one segment to another. There is clearly a strong correlation between the market shares in each segment and the overall market shares. It is confirmed by Figure 12.1, where the market shares of groups in the fire and motor insurance segments are displayed together with their overall market shares.

Figure 12.2 shows that the shares of different insurance market segments are stable over time and four segments – personal and travel, fire, motor, general liability – together represent almost 80 per cent of the total number of policies. Given that the demand for insurance by business customers is more complex to estimate, setting aside the other segments – in particular employer's liability – should not involve a large distortion in the statistical results. For this reason, the econometric model below bears on the total number of policies for these four types of insurance. This solution avoids treating the question of policies for business groups. The analysis will therefore be made as if insurers offer an 'umbrella policy' covering these four insurance lines at the same time. The economic theory of insurance provides some arguments for why providing this bundling of contracts is optimal for policy holders.

[2] For confidentiality reasons, the ordering of firms is changed from one graph (or table) to the other. What it is important here is to compare firms.

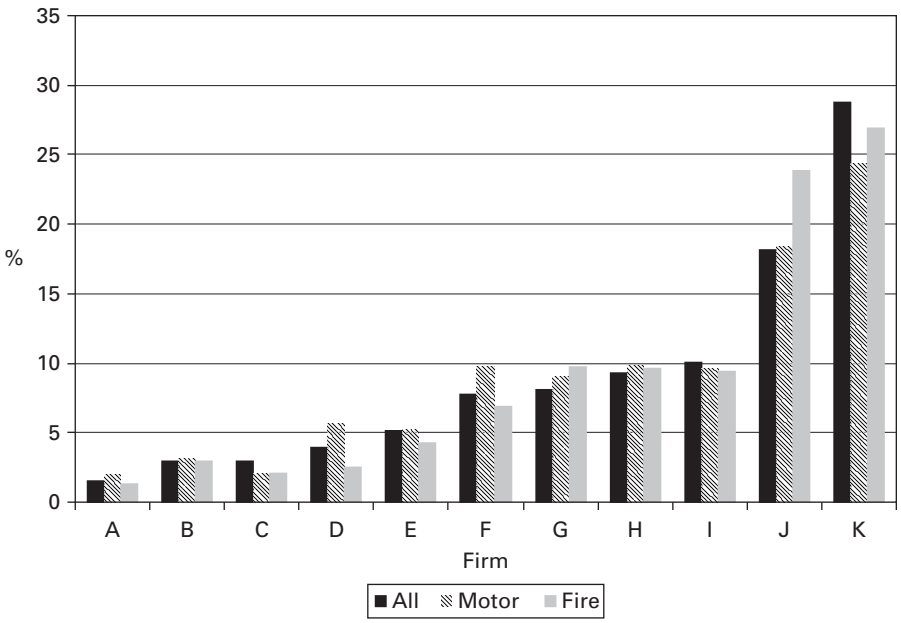

Figure 12.1 Market shares: motor and fire insurance segments vs overall insurance market

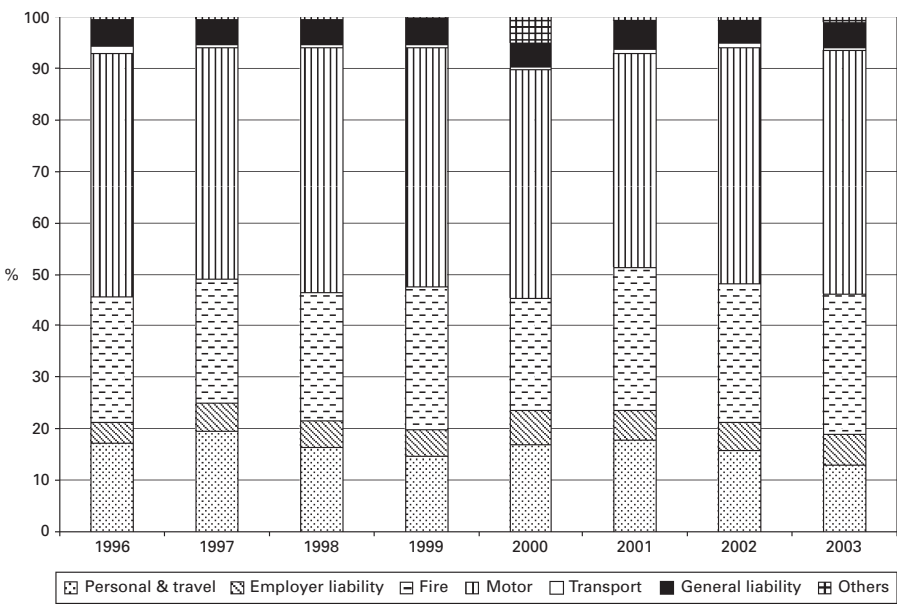

Figure 12.2 Distribution of insurance segments (by number of policies)

Without asymmetric information, an umbrella policy is an optimal risk-sharing arrangement. (See Arrow, 1971; Gollier and Schlesinger, 1995.) Under asymmetric information, bundling risks can alleviate the adverse selection problem when the various individual risks are correlated.

2.2 Correlation between number of policies and amount of premia

A standard problem in the measurement of market shares in insurance is related to the definition of the unit of service. Two methods can be used that are based respectively on the number of policies sold, or on the aggregate premium. Neither of them is completely satisfactory. However, Figure 12.3 shows that there is a strong correlation of market shares of insurance groups whether they are computed with respect to the number of policies or with respect to the total amounts of premia collected. Figure 12.4 also shows that the distribution among segments is not modified when this distribution is based on the amounts of premia instead of the numbers of policies as in Figure 12.2.

Together with the facts described in section 2.1, it appears that what really matters is the strategy of each insurance firm taken as a whole. With respect to potential antitrust concerns, what matters is the decision of consumers to

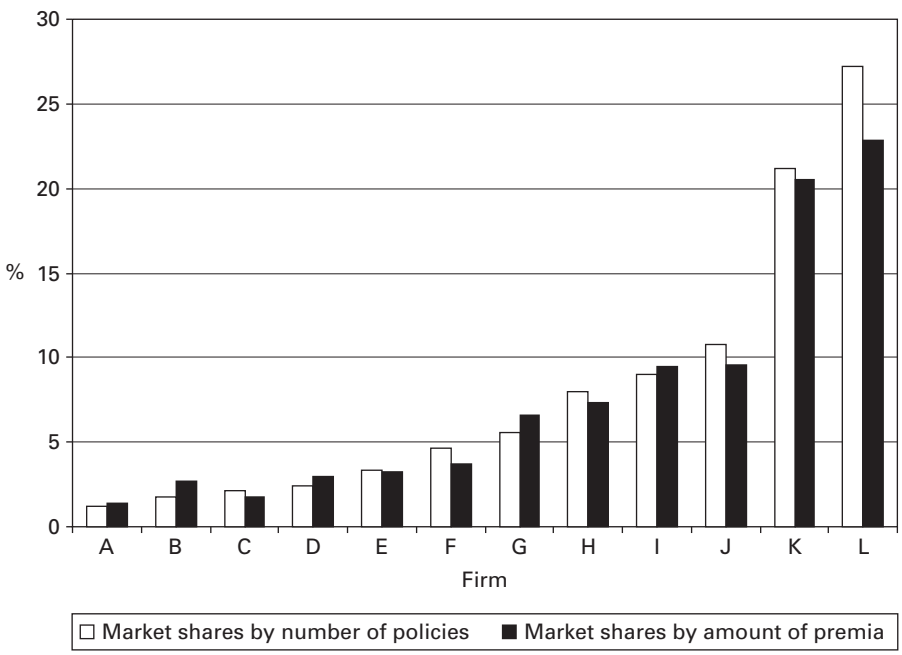

Figure 12.3 Market shares in terms of number of policies versus total amount of premia

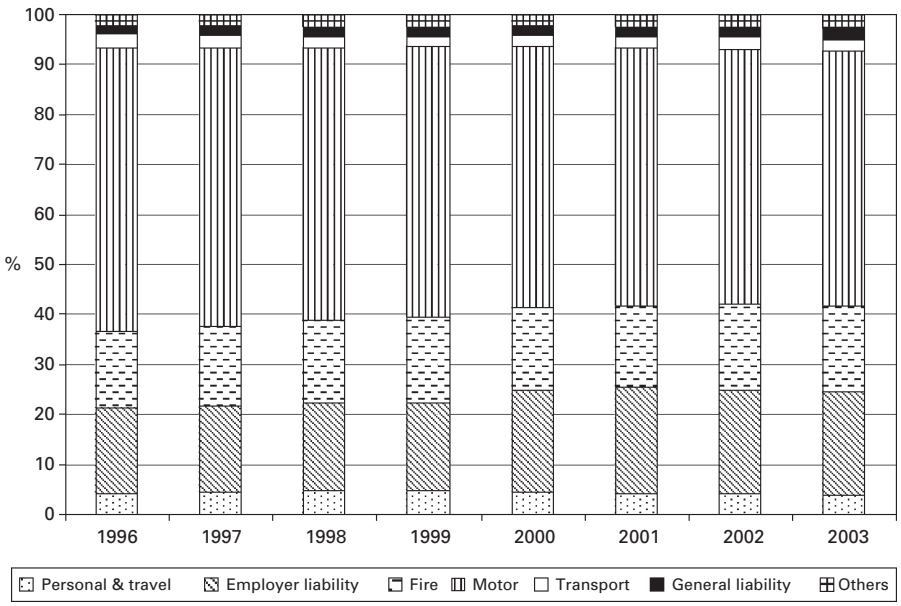

Figure 12.4 Distribution of insurance segments (by amount of premia)

choose among insurers based on their global commercial offering, averaged across the different lines of insurance, that insurers are applying second-order price discrimination should not affect the analysis.[3] In other words, what matters is the decision to enter in a relationship with an insurer based on the average price of its bundle of insurance contracts, i.e. the premium of its virtual 'umbrella policy'.[4]

2.3 Average prices are not rising and margins are fair

Figure 12.5 exhibits the temporal pattern of average premia for some insurance groups and for the insurance industry as a whole. Note that the average premium of B is below the industry average although B's premium rises while A's decreases. Note that the temporal pattern of the average premium for each firm is relatively unstable, which is also a sign of a very active market. The industry average premium has a slight negative trend on this period which could be interpreted as a sign of competition in the industry.

[3] In this context, second-order price discrimination refers to cases where a firm does not have precise information about the preferences of individual customers but it can use menus of contracts in order to extract the relevant information from its customers.

[4] Often customers buy all their insurance contracts from the same firm.

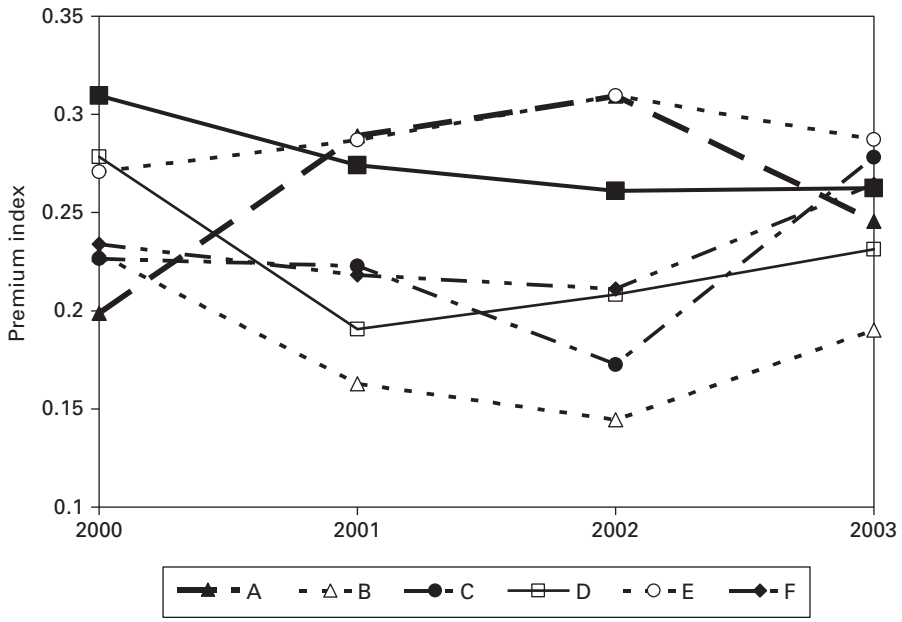

Figure 12.5 Average insurance premium (personal, motor, fire, general liability)

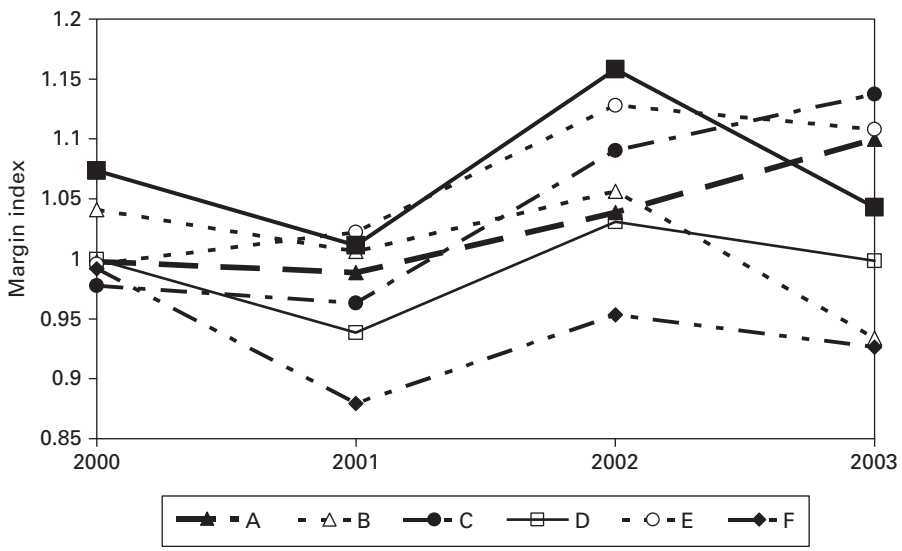

Figure 12.6 Average commercial margin (personal, motor, fire, general liability)

However, a change in the aggregate premium collected can originate from a reduction of the insured risks rather than from more effective competition between insurers. Therefore, it is better to examine commercial margins (see Figure 12.6). The commercial margin is computed as the ratio of total premia to

total costs (i.e. the sum of total claims, administrative and acquisition costs) so the break-even reference point is one. Note that B is about to break even, in the sense that its average premium paid by its customers just covers the cost of their accidents. This ratio is an indicator of profitability of the sector. This profitability takes into account two important components of the balance sheet of insurance companies. First, selling insurance generates administrative and acquisition costs (including selection costs, monitoring costs and auditing costs) that are usually estimated to equal between 20 per cent and 30 per cent of the insurance premium in the non-life sector. Second, because of the inversion of the production cycle in this sector (i.e. premiums come in before claims go out), insurers can invest insurance premia on financial markets before paying indemnities to policy holders who have incurred an insured loss. This activity yields a return that must be taken into account to measure the overall efficiency of insurance companies. In the absence of information about the return of the financial reserves of the various insurance companies, it is not easy to infer whether the evolution of the technical results observed on Figure 12.6 comes from increased competition or from other factors, such as changes in anticipated returns on insurance reserves.

This ratio is also a good indicator of the insurability of risks in the economy. When it is close to unity, insurance premia are actuarially fair. This induces risk-averse households to purchase full insurance. This complete transfer of individual risks to insurers is efficient from the viewpoint of risk diversification. Insurance companies and mutuals wash away uncorrelated individual risks either by pooling in a mutual or by the transfer to financial markets in a shareholding insurance company. A loss ratio around unity is also useful for the growth of the economy, because the efficient risk transfer that it yields allows for disentangling investment decisions from risk aversion, both at the individual level and at the level of firms. Figure 12.6 reveals that this objective is approximately fulfilled by the insurance markets.

2.4 Insurance firms are differentiated in terms of risk level

Firms attempt to diversify their commercial strategies. There is an objective reason for this behaviour. In Figure 12.7, it is noticeable that the firms are differentiated in terms of their average risk level, measured by the frequency of accidents, as measured itself by the ratio of the number of claims divided by the number of policies. Note that B and A are among the firms having the lowest risk level. It is fair to say that the reason for their relatively low risk level should be related to the combined effects of their seniority and their large presence on the insurance market.

Table 12.1 Statistics on the industry structure

	All firms			Firms having a market share higher than 1%	
	Maximum	Mean	# firms	Mean	# firms
1996	15%	4%	27	4%	15
1997	16%	4%	25	4%	16
1998	14%	4%	28	4%	16
1999	15%	4%	27	4%	16
2000	26%	5%	22	5%	12
2001	28%	5%	21	5%	13
2002	27%	5%	20	5%	14
2003	28%	6%	18	6%	12

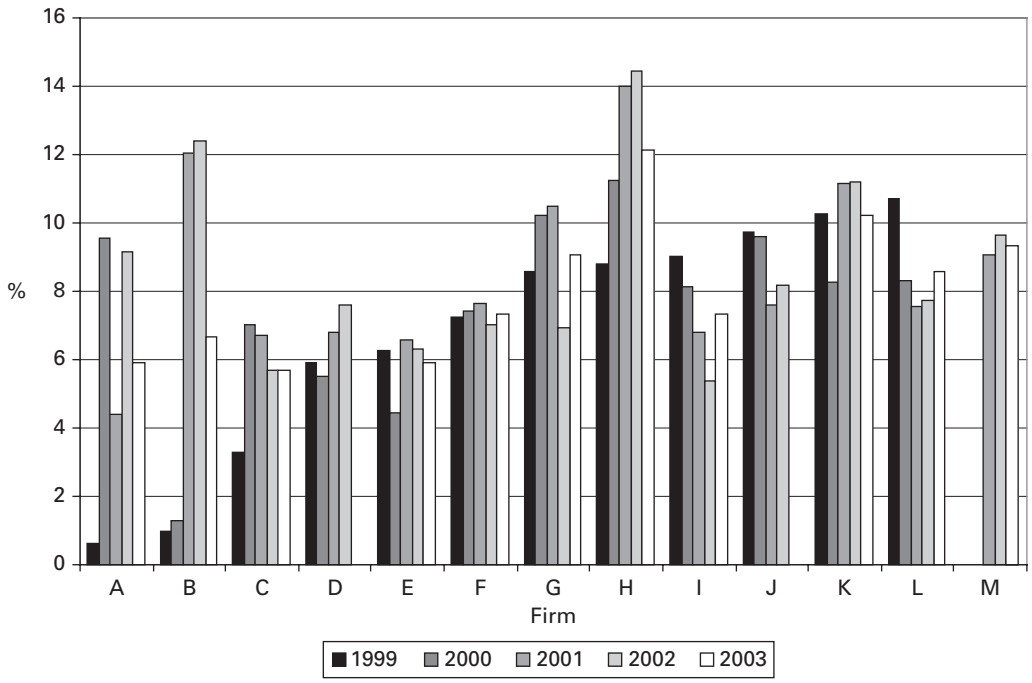

Figure 12.7 Annual claim frequency per firm

2.5 The structure of the insurance sector is stable since 2000

Finally Table 12.1 shows that, after having experienced a wave of mergers and consolidation before and during 1999, the industry remains relatively stable both in terms of average market share and number of active firms. The

stability of the industry structure since 2000 invites us to fit the model only on the data covering the period 2000–3.

3. Empirical analysis

An econometric model of the insurance market is specified and estimated on the basis of available data and facts derived in the preceding section. This model is a particular case of a wider class of models that are used in econometrics of differentiated product markets to evaluate the impact of mergers.

3.1 Specification of the econometric model

The model comprises three main ingredients: a demand model to describe the choice of insurance by individual consumers, a cost model to approximate how claims are affected by the activity level of firms and a pricing behaviour that describes the conduct of firms in Bertrand-Nash competition.

Demand

The theory of insurance demand has been developed by Mossin (1968). Its main result is that full insurance is optimal only if insurance premia are actuarially fair. However, because insurers must cover their administrative costs, insurance premia entail a positive loading factor. This induces households to optimally retain some of their risks. This can be done either by some coinsurance clauses (deductibles, caps on indemnities) or by leaving some of their risks uninsured. Under some weak assumptions on preferences, the insurance demand is decreasing in the premium rate, i.e. in the insurance price. Moreover, the demand for insurance is decreasing with wealth. Because of the cost incurred by switching insurer, it may be optimal for policyholders to stay with an inefficient insurer, as long as the inefficiency index does not exceed some small threshold. These switching costs may have a positive effect on the efficiency of insurance markets. Indeed, they imply some degree of loyalty of the policy holders to their insurer, which is beneficial for long-term risk sharing. These switching costs imply also that the demand addressed to each individual company is not completely elastic and that competition is imperfect. An important goal of this study is to examine these cross-price elasticities of insurance demand.

These ingredients are introduced in our econometric model in the following way. The preference structure of a representative consumer is represented

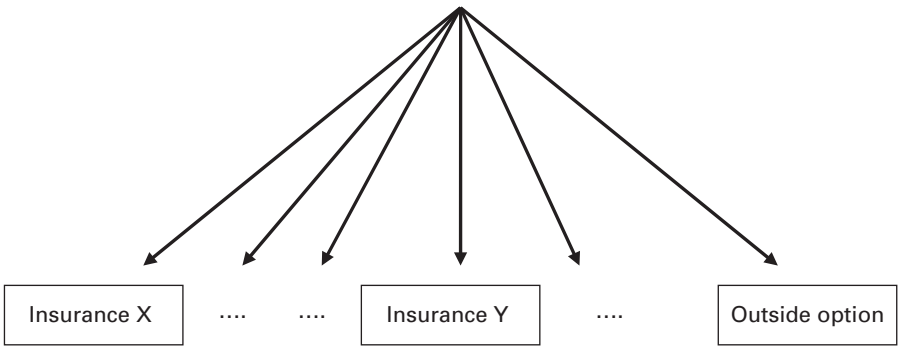

Figure 12.8 Consumer choice

by means of a logit model. (See Werden, Froeb and Tardiff, 1996, or Motta, 2004.) Here the consumer chooses between I different insurance groups. There is an additional choice, called the *outside option*, which is referred by index 0 in the sequel. This choice consists in buying insurance from a set of very small firms representing less than 3 per cent of the market all together or in buying no insurance at all. So there are $I+1$ choices (see Figure 12.8). Each choice, indexed by i, is described by a utility index which itself depends on three components: the price, p_i, a quality index, δ_i, and a random term u_i. First, the price is measured by the average premium. The sensitivity of the quality index to prices is driven by a parameter, that we call the *marginal utility of income*, denoted by α. This parameter is assumed to be function of gross domestic product (GDP) to account for the increase in wealth from one year to the other. Second, the quality index depends on a set of factors, x_i, namely the accessibility to the insurer (measured by the number of offices[5]), the reputation of this insurer (measured by its risk level observed by the consumer one period in advance) and a fixed effect which, among many possible effects, measures the loyalty of consumers to their insurer. Third, the random component combines all variables that are not observable by the analyst and play a role in the consumer choices.

In this context, the choice probabilities are measured in terms of market shares. Indeed, the market share of a product is the observed value of the probability that a representative consumer chooses this particular product. The market share of the insurance firm i, s_i, is obtained as the ratio of the number of policies held by the insurance firm i, namely y_i, over the market size, Y, that is to say:

[5] The number of offices is not necessarily the best proxy for accessibility. The number of agents or brokers was not available for all insurance companies on a systematic basis.

$$S_i = \frac{y_i}{Y} = \frac{y_i}{\sum_{i=0}^{I} y_i}. \quad (1)$$

The number of policies associated with the outside alternative, y_0, is approximated by the number of policies held by the set of small firms. It can be enlarged arbitrarily if one believes that the market size is larger and should take into account all potential customers having no coverage.[6]

Mathematically, by using the logit model, one can write the logarithm of the market share s_i for insurance firm i as:

$$\ln(s_i) - \ln(s_0) = \delta_i - \alpha p_i + u_i, \quad (2)$$

where s_0 is the market share of the outside alternative. Moreover, we specify that

$$\alpha = \alpha_0 + \alpha_1 GDP, \quad (3)$$

and

$$\delta_i = \beta x_i, \quad (4)$$

where α_0, α_1 and the βs are parameters to be estimated. We refer to δ_i as the 'quality index' for each firm. For the sake of completeness, we apply the usual normalisation that the mean utility of the outside alternative, $i = 0$, is zero.

Cost

The insurance activity entails many sources of costs linked to the fight against adverse selection and moral hazard. Because individual risks are heterogeneous, it is essential for insurers to establish an efficient marketing mechanism to select the individual risks that they will accept to insure. The complexity of evaluating these risks on the basis of their observable characteristics may explain the large acquisition costs in the non-life insurance sector. Different companies have developed different marketing strategies, either with independent brokers, with local branches or offices, with bancassurance, or using new information technologies (internet, call centres). In addition to these acquisition and selection costs, the existence of an ex-ante moral hazard problem in insurance requires that insurers monitor the efforts of the policy holders to prevent risks to occur, generating monitoring costs (see Arrow,

[6] The consequences of enlarging the market share of the outside good is to increase the competitive pressure on the inside firms.

1971). Finally, because insured losses may be difficult to observe, there is an ex-post moral hazard problem (insurance fraud). This implies that insurers must invest in sophisticated technologies to audit claims. Selection costs, monitoring costs and auditing costs are estimated to be as large as 20–30 per cent of the insurance premium paid by the policy holder.

In this type of model, it is usual to assume constant marginal costs, i.e. the cost of selling one more policy is assumed to be independent of the size of the company. Here we propose to approximate marginal costs by means of a cost function. First, the assumption of constant marginal costs is unrealistic given what we just explain. Second this assumption involves the estimation of one parameter – the marginal cost – for each firm. This is not ideal when the number of degrees of freedom remains limited as here. Third, estimating a cost function allows us to internalise the question of potential efficiency gains due to a merger within the equilibrium model of the industry.

We assume that, over the estimation period (2000–3), most input factors are fixed and are a function of the number of offices that corresponds to the size of the network. If C_i is the total cost of insurance firm i as measured by the sum of total claims and administration costs, if k_i is the number of offices held by this firm, then we assume that

$$C_i = \gamma_0 + \gamma_1 y_i + \gamma_2 y_i k_i + w_i, \tag{5}$$

where w_i is a random term representing measurement errors and γ_0, γ_1, and γ_2 are parameters to be estimated. The expectation is that the marginal cost of an additional policy is lower if the group has a larger network of offices, so $\gamma_2 < 0$. This simple linear model for the cost provides an excellent fit and permits to approximate the marginal cost, c_i, as

$$c_i = \gamma_1 + \gamma_2 k_i + \omega_i, \tag{6}$$

where ω_i is a random term representing unobserved shocks to marginal costs.

Pricing

Firms adopt a Nash behaviour: they choose the prices of their products to maximise profits, given the prices set by the other firms. In maximising its profit π_i defined as

$$\pi_i = p_i y_i - C_i, \tag{7}$$

each firm trades off two effects when considering an increase in price by one unit: (i) it increases profits proportional to the current sales level of the firm,

Table 12.2 Estimation results

	Variable name	Parameter	Parameter estimate	t-value	1st stage R^2
Cost equation	Constant	γ_0	−160.3250	−0.02	1.00
	Number of policies	γ_1	0.2450	16.14	0.95
	Nb policies * Nb offices	γ_2	−0.0003	−2.34	0.97
Demand equation	Constant	β_0	6.1397	5.87	1.00
	Number of offices	β_1	−0.0028	−0.77	1.00
	Risk level lagged	β_2	−2.6449	−1.18	1.00
	Marginal utility of income				
	Constant	α_0	38.1296	5.33	0.66
	GDP	α_1	−0.1728	−5.12	0.74

(ii) it reduces sales, which lowers profits proportional to the current markup. When the demand is specified as above, this trade-off is summarised by the pricing equation:

$$\frac{p_i - c_i}{p_i} = \frac{1}{\alpha p_i (1 - s_i)} \tag{8}$$

This equation states that the price-cost margin (i.e. the Lerner index) of firm i must be set equal to the inverse of the absolute value of the own price elasticity, that is here equal to $\alpha\, p_i\, (1 - s_i)$.

Equations (2)–(5)–(8) constitute the econometric model to be estimated.

3.2 Estimation

The model, which contains twenty parameters, is estimated by means of non-linear three-stage least squares implemented with the procedure MODEL of the SAS software.[7] It is fitted on a data set covering the period 2000–3 for reasons explained in para. 2.5. Given that there are thirteen significant firms and four years of data, this provides fifty-two observations. As we use the risk level lagged once in the list of exogenous variables, we use the year 1999 for defining the initial conditions. The procedure requires the use of instrumental variables. The set of instruments we have selected contains all exogenous variables as well as the market share and the price lagged once.

Estimation results are gathered in Table 12.2. We report only the most relevant parameters that impact on the simulations. Most parameters are

[7] 3SLS is an instrumental variables technique that simultaneously estimates all three equations.

Table 12.3a Estimated characteristics of insurance groups

Firm	Own price Elasticity	Cross-price Elasticity	Marginal Cost	Average Cost	Return to Scale	Quality Index
A	−3.43	0.31	0.16	0.21	1.39	5.58
B	−3.24	0.06	0.13	0.19	1.45	3.42
C	−3.85	0.39	0.19	0.24	1.33	6.06
D	−3.68	0.68	0.18	0.24	1.47	6.49
E	−2.78	0.12	0.11	0.16	1.49	4.05
F	−3.54	0.39	0.16	0.24	1.47	5.78
G	−2.51	0.85	0.12	0.20	1.66	6.30
H	−3.64	0.05	0.15	0.23	1.51	3.48
I	−3.29	0.12	0.14	0.21	1.55	4.31
J	−4.41	0.10	0.20	0.24	1.19	4.90
K	−3.52	0.09	0.15	0.18	1.23	4.07
L	−4.54	0.06	0.23	0.24	1.23	4.02
M	−4.39	0.25	0.21	0.26	1.22	5.88

significant. The relatively high level of the first-stage coefficient of determination for the parameters of interest α_0 and α_1 indicates that they are relatively well identified by our set of instruments. Note that the effect of the number of offices is not significant on the quality index but it is strongly significant on the marginal cost. Although statistically insignificant, the estimate for the parameter associated with the lagged risk level and the estimated value for the marginal utility of income (parameter α) have the expected sign which should be viewed as the signal of an economically meaningful model.

3.3 Discussion

Table 12.3a gathers estimates for different characteristics of insurance firms. First the own- and cross-price elasticities are relatively high. These numbers suggest that the market is competitive and that insurance firms are perceived as substitutes by their customers. Second, the cost function of insurance firms exhibits increasing returns to scale. The average cost function is much flatter than the marginal cost function and the ratio of average to marginal costs (a standard measure of returns to scale) is substantially above one. Note that the estimated marginal costs range from 0.11 to 0.23, that is to say, almost double among firms, while the range of average costs spreads over the interval between 0.16 and 0.26. A 1 per cent increase in the number of policies (which corresponds to 7,750 policies on average) decreases the average cost

Table 12.3b Estimated versus observed markups

Firm	Estimated markup	Accounting markup
A	29.97	31.16
B	31.40	49.05
C	26.54	33.32
D	30.89	25.54
E	36.80	32.98
F	28.57	27.44
G	40.08	26.84
H	27.54	42.23
I	31.47	42.83
J	22.79	51.98
K	28.51	43.51
L	22.39	50.33
M	22.87	29.18

by only 0.001 per cent. However, a 1 per cent increase in the number of offices brings a 0.2 per cent fall in the marginal cost. This result shows that, although economies of scale are not negligible, economies of density due to a network effect are much more powerful.

Table 12.3a also shows that B has the second lowest marginal costs among insurance companies and both B and A have relatively high-quality index, indicating a high level of loyalty and trust of their customers.

Table 12.3b compares the estimated markups of some firms (i.e. substituting our estimated parameters into equation 8) to the actual ratios of premia to claims. These ratios could be considered as accounting markups. Note that the econometric model underestimates the markups, although the differences are relatively small for the largest companies.

4. Merger analysis

The model serves as a tool to simulate the notified merger between B and A. If all customers of A and B stay with their insurers after the merger, then one can predict a very high price if competitors do not react, i.e. keep the same prices. It is not a sustainable situation. One reasonably expects that some customers of B and A would switch to other insurance companies and that the latter would change their prices following the merger. Hence it is required to simulate the new Bertrand–Nash equilibrium after merger, as if all customers

Table 12.4a Simulated effects of the notified merger (with efficiency gains)

	Quality Index	Marginal Cost	Pre-merger Price	Post-merger Price	Change In price	Pre-merger Margin	Post-merger Margin
A	6.30	0.21	0.28	0.28	0.86%	26%	26%
B	4.17	0.14	0.21	0.21	0.39%	33%	33%
C	5.99	0.17	0.25	0.25	1.19%	30%	30%
D	6.44	0.14	0.22	0.23	5.21%	37%	40%
E	4.48	0.12	0.19	0.19	0.76%	36%	37%
F	6.17	0.19	0.26	0.27	0.99%	27%	28%
G	6.84	0.14	0.23	0.23	1.61%	39%	40%
H	4.48	0.14	0.21	0.21	0.54%	33%	33%
I	5.17	0.21	0.28	0.28	0.28%	25%	25%
J	5.79	0.29	0.36	0.36	0.12%	19%	19%
K	6.38	0.22	0.29	0.29	0.78%	25%	25%

re-compute their optimal choice of insurance. We also need to consider what happens to costs. The first simulation (Table 12.4a) assumes efficiency gains in the sense that B, by acquiring all offices of A while maintaining the structure of its marginal cost function, can decrease the level of marginal costs. On the basis of the estimated model, it turns out the average premium of B's policies would increase by 1.6 per cent and the average premium of A's policies would increase by 5.2 per cent. Table 12.4a provides the results of the simulated equilibrium after merger. Note that, because of the endogeneity of marginal costs, these are different before and after merger. Using a bootstrap method, we show that neither of these price rises is significantly different from zero because the bootstrapped confidence interval always contains zero.

If there were no merger specific efficiency gains, the price increases would be much higher (see Table 12.4b). The new entity would then lose substantial market share. However, unlike many potential sources of efficiency gain that might be claimed, our assumed source is an existing network so the source of the efficiency is tangible, not speculative. Also, it could not be achieved in the absence of the merger.[8] Thus, the Table 12.4a results are more appropriate.

Consider again the results with efficiency gains in Table 12.4a. Note that each firm increases its price after merger by a non-negligible per cent. It is the sign that, at the present time, the insurance industry is far from the equilibrium. One

[8] In other words, we do not include merger specific efficiency gains. The efficiency gains are just the normal gains due to the cost structure we have estimated for this industry.

Table 12.4b Simulated effects of the notified merger (without efficiency gains)

	Quality Index	Marginal Cost	Pre-merger Price	Post-merger Price	Change In price	Pre-merger Margin	Post-merger Margin
A	6.30	0.21	0.28	0.28	1%	26%	27%
B	4.17	0.14	0.21	0.21	1%	33%	33%
C	5.99	0.17	0.25	0.25	2%	30%	31%
D	6.44	0.14	0.22	0.28	26%	37%	29%
E	4.48	0.12	0.19	0.19	1%	36%	37%
F	6.17	0.19	0.26	0.27	2%	27%	28%
G	6.84	0.14	0.23	0.28	22%	39%	29%
H	4.48	0.14	0.21	0.21	1%	33%	34%
I	5.17	0.21	0.28	0.28	0%	25%	25%
J	5.79	0.29	0.36	0.36	0%	19%	19%
K	6.38	0.22	0.29	0.29	1%	25%	26%

should expect more consolidations and/or more adjustment in terms of pricing and marketing strategies. Meanwhile, the relatively high market share of the merged entity B/A raises legitimate concerns.

5. Conclusions

The econometric modelling of the insurance market pre-merger provides a quantification of some of the key issues in merger analysis. In the present case, we can highlight four such issues. First, B and A have the highest levels of attractiveness as measured by our quality index, but other firms are not lagging far behind. We interpret these results as showing the combined effect of reputation or aggressiveness of firms and/or loyalty of customers. Second, own-price elasticities are high, with an overall level of 3.6 per cent. Cross-price elasticities are smaller, with an overall level of 0.3 per cent. These numbers suggest that the market is competitive and that possibilities of substitution among firms are high. Third, when ranking marginal costs by increasing order, B arrives the second, while A is among the last firms. The estimated marginal costs double between the lowest and highest values. Fourth, the cost function exhibits increasing returns to scale. There is not much saving on cost due to an increase in the number of contracts administered by a single firm. Indeed the average cost is roughly flat as an increase of 1 per cent in the number of policies. However, there is a non-negligible network effect.

Using these findings to examine the effects of the proposed merger once consumers and firms have had time to adjust, it turns out the average premium of B's policies would increase by 1.6 per cent and the average premium of A's policies would increase by 5.2 per cent. Neither of these price rises is significantly different from zero. These results favour an approval of the merger

However, in the very short run, the relatively high market share of the entity B/A raises legitimate concerns because it takes time before customers are able to adapt their decisions, even if the transaction costs incurred when changing from an insurer to another are not so high. In order to facilitate the convergence of the industry to a new equilibrium, several actions could be applied. First, transparency of the merger should be enforced. In particular B's and A's customers should be informed of the operation, the business model chosen by the stakeholders and the consequences in terms of prices and offers. This situation calls for an involvement of the regulator of this industry which is able to monitor and to enforce the transparency of the operation. Second, given that B is cost-efficient, B might be forced to sell some of A's local area offices, in particular where competitors are weakly represented. Although this would involve some costs, it might be compensated by the increased degree of competition. However, a proper appraisal of this type of remedy would require further investigation and additional data.

Finally, in the longer term, the possibility of an investigation for abuse of dominant position if needed constitutes the Sword of Damocles above the merging entity.

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