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BETWEEN BANKS AND INSURANCE COMPANIES FROM
A SUPERVISORY POINT OF VIEW

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Abstract

In this paper we have studied alternative alliance structures between banks and insurance companies from the point of view of bank and insurance supervisory authorities in Finland. Together with leaders and experts of the bank and insurance supervisory authorities, eight criteria were introduced for the evaluation of six alternative structure models for such alliances. The evaluation was carried out by an expert panel consisting of the representatives of the supervisory authorities. As a supporting tool, we used the Analytic Hierarchy Process (AHP). Even if there was a slight variation between the evaluation of the bank and insurance supervisory authorities, the alliance models based on plain cross-selling agreements received the highest ranks. The financial conglomerate preferred by bank and insurance executives in our earlier research to the other alternatives was the third best one. Under certain conditions, it might be an acceptable compromise alternative to the supervisory authorities as well.

Keywords: Financial alliances, financial conglomerates, multiple criteria decision making, Analytic Hierarchy Process, bank and insurance supervision

1 Introduction

Alliance formation has been a growing trend among the financial industry during the last decades. The insurers in an alliance can be life and/or non-life companies. Alliances between banks and non-life insurance companies with no life counterparts are in practice rare. On the other hand, synergies between retail banking and life insurance are so significant that one often encounters alliances between banks and life insurers without non-life counterparts.

Financial alliances often include units like mutual fund managing companies, asset management companies, securities brokerages and corporate finance companies. In most European countries banks are allowed to be "universal". Consequently, it is customary that they include the above mentioned functions. The same holds more and more often for insurance companies as well.

The existing literature on financial alliances is strongly concentrated around alliances created by cross-sector ownership (see, for the survey, Voutilainen [2004]). Korhonen and Voutilainen [2004] examined whether ownership really is superior to looser alliance models. According to their study with Finnish bank and insurance executives, the tight ownership models received the highest scores, if risk factors were not specially emphasized.

In this paper, we have further studied alliances between one or several banks and one or several insurance companies. We concentrate on the retail market

although alliance formation also has significance in relation to other customer segments. The point of view is that of bank and insurance supervisory authorities. Our ultimate goal is to search for the alternative which bank and insurance supervisory authorities and bank and insurance management might accept as a solution to the alliance problem.

The problem is formulated as a multiple criteria decision making task. In the first phase, we defined six different possible structure models for financial alliances and eight criteria used to evaluate the models. The models and the criteria were introduced together with supervisory officers. In comparison with the earlier study by Korhonen and Voutilainen [2004], the alliance models were kept the same, but the criteria became totally different. Each officer was interviewed individually. In the second phase, the same officers were used as a panel to find the most preferred model for a financial alliance. As a decision support system we used the Analytic Hierarchy Process (AHP) developed by Saaty [1980]. Currently, the AHP is a widely-known and used standard method for solving multiple criteria evaluation problems. Typically such problems consist of few alternatives and several criteria, possibly having a hierarchical structure. The AHP is a straightforward and transparent method that is also able to consider subjective and judgmental information.

Although the number of the applications of the AHP is numerous, it has not been applied much to financial problems (Steuer and Na [2003]). Among the four examples that Steuer and Na mention, Arbel and Orgler [1990] and Ossadnik [1996] are relevant with respect to this paper. Arbel and Orgler [1990] apply the AHP to the mergers and acquisitions process of a bank (targets are other banks), and they conclude that the AHP methodology can be applied to other complex and ill-defined strategic issues faced by banks. Ossadnik [1996] uses the AHP to allocate synergy to the partners in a merger, not necessarily between financial enterprises.

Among the literature covering business substance relevant to this problem may be mentioned Cybo-Ottone and Murgia [2000] and Carow [2001] who study shareholder aspects, and Boyd and Graham [1988], Boyd et al. [1993], Laderman [1999], Lown et al. [2000] and Estrella [2001] who discuss management and especially diversification of a financial business portfolio. Various aspects of financial services integration are covered by e.g. Smith [2000], Berger [2000], Daniel [2000] and Skipper [2000]. The merger trend among life insurance companies is studied by SIGMA [1999]. Prudential supervision of financial conglomerates is discussed by Thom [2000], and prudential supervision of insurance companies is covered by Sharma [2002].

The paper is organized as follows. Section 2 describes our decision alternatives and criteria. In Section 3, we provide a brief introduction to the AHP and describe our problem by using the AHP presentation. Section 4 presents a decision making process and the results of the experts' meetings, our experiment, and the results. We also search for the solution which could be accepted by both executives and supervisors if certain conditions are met. Finally, in Section 5, we conclude the paper with general remarks and ideas for further research.

2 Structure Models for Financial Alliances and Evaluation Criteria

2.1. Structure Models

Alliance structures can be classified in three main categories according to the degree of closeness of the members. The categories were derived together with representatives of the executive management of Finnish banks and insurance companies. (See, for more details, Voutilainen [2004]). The categories in the increasing order of closeness are

Cross-selling agreements. The parties agree to sell each other's products to their own customers. The cross-selling is frequently one-sided. Most often a bank sells an insurance company's products to its customers. In principle, it could be vice versa as well. The alliance category can still be divided into two subcategories depending on whether the parties' service channels are overlapping or not. Non-overlapping service channels can be achieved, for example, if the parties actively try to organize cross-selling in such a way that there is no competition between the parties.

Here a service channel can be a branch office network, but also a call center, website etc. Especially in the case of overlapping branch networks one easily faces channel conflict: the alliance members do not co-operate effectively in the fear of losing their customers to the other party and consequently the sales provisions etc. Non-overlapping service channels often means that the other party has no service channel at all.

Thus the two different sub-models are

- Cross-selling agreement, no overlapping service channels (abbreviated CSA1)
- Cross-selling agreement, overlapping service channels (CSA2)

Alliance of independent partners. The alliance type is a special case of a cross-selling agreement where the alliance is tightened by cross-ownership and/or joint ownership in third parties. Cross-ownership means a minority stake of the other party's shares. If the ownership were one-sided, it would probably be a sign of asymmetry and one party's dominance of the alliance. An example of joint ownership is a mutual fund management company owned jointly by a bank (banks) and an insurance company (insurance companies). One could also think about cross-ownership/joint ownership without a cross-selling agreement, but such a model seldom occurs in practice.

The degree of overlapping is also used to divide this category into two different sub-models:

- Alliance of independent partners, no overlapping service channels (AIP1)

- Alliance of independent partners, overlapping service channels (AIP2)

Control by ownership. In both the previous models, earnings and costs are divided. The third category means the model, where all the control is in the hand of one party: a bank can simply own (a control of) an insurance company or vice versa, or a third party owns the both ones.

This category is divided into two sub-models depending on the controller:

- Control by ownership, when a bank owns an insurance company or vice versa (CBO1)
- Control by ownership (financial conglomerate): a holding company owns one or several banks and one or several insurance companies (FC)

We can notice that the classification of the different alternatives is based on the closeness of the alliance and the degree of the overlapping of the service channels.

2.2. Evaluation Criteria

The evaluation criteria for assessing the alliance models were introduced by co-operating with the leaders and experts of the Finnish bank and insurance supervisory authorities. To find the relevant criteria is an important task and crucial for the success of the decision making. Keeney and Raiffa [1976, p. 50], present the following desirable properties of the set of criteria:

- complete, it covers all the important aspects of the problem,
- operational, it can be meaningfully used in the analysis,
- decomposable, all aspects of the evaluation process can be simplified by breaking it down into parts,
- non redundant, so that the double counting of impacts can be avoided, and
- minimal, so that the problem dimension is kept as small as possible

Keeping these properties in our minds, we introduced the following eight criteria:

1. Equality of the member companies of the alliance,
2. System risk management,
3. The capability of the authorities to supervise the alliance as well as possible,
4. The flexibility of the alliance with respect to changes in its environment,
5. Optimal functioning of insurance and finance markets,
6. Synergies brought about by the alliance,
7. Sufficiency of capital,
8. Dependency of the alliance on the competence of executive management.

A brief explanation of the criteria is given as follows:

1. *Equality of the member companies of the alliance*

It should be found out how different alliance structure alternatives support the following of various moral and ethical principles especially in the decision making of the member companies of the alliance. The underlying risk can be e.g. discrimination of one alliance member in the division of costs and revenues. This can violate the interests of the clients of this member. The alliance member may also be forced to business transactions which it would avoid, if it were allowed to decide independently.

2. *System risk management*

The finance supervisory authorities are generally concerned about system risks which can threaten both individual companies and the whole industry. It has to be evaluated how safe the alternative alliance models are considering the system risks. The most serious system risks can cause a “too big to fail” situation where a financial institution must be saved by the society, or even a “too big to save” situation where the resources of the society are not sufficient to do so. One possible trigger for a system risk is reputation risk: One can ask how different alliance alternatives prevent the escalation of reputation risk.

3. *The capability of the authorities to supervise the alliance as well as possible*

The critical issue here is how the various alliance alternatives enable the efficient supervision of the target companies. The supervision of an alliance should be as efficient and unambiguous as possible. Supervision includes evaluation of risk positions, evaluation of the sufficiency of risk management and ensuring the sufficient solvency margin. There shall always be mutual understanding between the bank and insurance supervisors. In CSA and AIP models there is only one supervisor, in CBO models the principal supervisor can bring efficiency to the supervision. On the other hand, there are differences between supervision cultures and methods. In CBO models the supervision is maximized while its efficiency is minimized. Finally, the possible international dimension of an alliance brings more complexity to supervision.

4. *The flexibility of the alliance with respect to changes in its environment*

The question here is: Which alliance models are most flexible concerning changes in the operational environment ?

5. *Optimal functioning of insurance and finance markets*

Optimizing this criterion is supported above all by increased competition. This, in turn, is realized when cross-selling is as efficient as possible.

6. *Synergies brought about by the alliance*

The question to be considered is: Which alliance structure alternatives are best in contributing the achievement of cost and revenue synergies ? This is the only criterion which is essentially the same as one of the criteria in the research by Korhonen and Voutilainen [2004] in which the executive perspective was adopted.

7. *Sufficiency of capital*

Different alliance models permit different kinds of capital strategies. It is essential to ask how easy it is to obtain fresh capital in different alliance models. According to one risk scenario a subsidiary eats up wealth of an “upper” company in a supervisory hierarchy – the group solvency may be threatened by acquiring a new subsidiary or a capital injection required by a subsidiary. (In the earlier study by Korhonen and Voutilainen [2004] there was a solvency criterion which referred to, on the one hand, minimizing the required solvency capital by adjusting the product assortment, and, on the other hand, minimizing the long term fluctuations in business profitability by diversifying the business portfolio.)

8. *Dependency of the alliance on the competence of executive management*
The important question here is: Are there differences between the various alliance models as for their vulnerability to the incompetence of the top management ?

3 Problem Formulation

3.1. Analytic hierarchy process

Choosing the most preferred alliance structure is a typical multiple criteria evaluation problem. Six alternatives presented in sub-section 2.1 are evaluated using the eight criteria introduced in sub-section 2.2. We shall use the Analytic Hierarchy Process (AHP) by Saaty [1980] as a decision support system to solve the problem. The AHP provides us with a simple tool first to evaluate the mutual importance of the criteria, then to compare the alternative alliance structures on each criterion, and finally to synthesize the results onto one scale.

The basic assumption in the Analytic Hierarchy Process (AHP) is that a human being makes comparisons between objects on a ratio scale (see, e.g. Saaty [1980]). For instance, the expression: A is “twice better” than B means that the utility (value) $v(A)$ of A is two times higher than the utility (value) $v(B)$ of B. Even a “softer” expression like A is “much better” than B is interpreted in the AHP to mean that $v(A) = kv(B)$, where $k \gg 1$. It does not matter, whether the objects are concrete or abstract. It is easy to believe that a human being compares the weight of stones on a ratio scale, but not all researchers agree that, for example, the expression: “today it is much warmer than yesterday” can be evaluated on a ratio scale. Actually, it is quite plausible that even in this case people make a comparison on a ratio scale presenting their internal value scores for different temperatures. The scale naturally depends at least on the person making the comparison and on the time.

A central element in the AHP is a full set of $n(n - 1)/2$ pairwise comparisons, where n is the number of objects. Because it is difficult for a person to distinguish simultaneously more than 7-9 different levels of preference, Saaty (see, e.g. Saaty [1980, p. 54]) has proposed the use of the following verbal descriptions and the corresponding scores in making comparison:

Table 1: Verbal descriptions and the corresponding original numerical scores

Score	Description	Explanation
1	equal importance	Two activities contribute equally to the objective
3	moderate importance of one over another	Experience and judgement slightly favor one activity over another
5	essential or strong importance	Experience and judgement strongly favor one activity over another
7	demonstrated importance	An activity is favored very strongly over another; its dominance is demonstrated in practice
9	extreme importance	The evidence favoring one activity over another is of the highest possible order of affirmation.
2,4,6,8	Intermediate values between adjacent values	When compromise is needed

If object i has one of the above nonzero numbers assigned to it, when compared with object j , then j has the reciprocal value when compared with i . Intermediate scores of 2, 4, 6, and 8 are used, if a person thinks that for example object i is at least moderately better than object j , but (s)he is not comfortable with saying that i is strongly better than j . Then his or her view might be represented by the score 4. If object j is at least moderately but not necessarily strongly better than object i , then the score $1/4$ would be assigned to the comparison of i with j . As a result of pairwise comparisons, the following matrix is obtained:

$$A = \begin{pmatrix} 1 & a_{12} & \dots & a_{1n} \\ 1/a_{12} & 1 & \dots & a_{2n} \\ & & \dots & \\ 1/a_{1n} & 1/a_{2n} & \dots & 1 \end{pmatrix}$$

Having recorded the quantified comparisons on pairs i and j as numerical entries in the matrix A , the problem now is to find numerical value scores w_i , $i = 1, 2, \dots, n$, for objects such that $a_{ij} \approx w_i/w_j$. However, in practice, it is unrealistic to expect this relation to be exact. Part of the deviation is caused by the score used for a_{ij} , but the main part of the deviation is caused by the inability of a human being to be precisely knowledgeable and consistent. For example, if one prefers object 1 to object 2 by 2:1, and object 2 to object 3 by 3:1, consistency means that one should prefer object 1 to object 3 by 6:1, otherwise the comparison is inconsistent. Saaty [1994] provides some measures for evaluating the degree of inconsistency.

When the objects i and j are compared in a pairwise manner, one hopes that the final values derived from the paired comparisons of the objects are better than those obtained by direct assignment of numbers to all objects at once.

How good the estimates are for value scores depends on the scale used to interpret verbal descriptions referring to the ratios of the value scores.

To estimate the value scores w_i , $i = 1, 2, \dots, n$, on the basis of the pairwise comparison matrix, Saaty [1980, pp. 49-53] proposed the use of the eigenvalue method. As discussed in Saaty and Vargas [1984], other estimation criteria, such as least squares or logarithmic least squares, are also proposed in the literature.

An ultimate goal in the AHP, is to estimate a vector $w = (w_1, w_2, \dots, w_n)$, $w_i > 0$, $i = 1, 2, \dots, n$, which usually is scaled so that $\sum_i w_i = 1$ whereby w_i represents the relative value score of object i . The positivity condition $w_i > 0$ on the components of the vector w require that the objects be comparable on a ratio scale.

The objects to be compared may be for instance forces, actors, criteria (objectives) or alternatives (scenarios). In the AHP, the evaluation problem is presented in a hierarchy. At each hierarchy level, we have the objects of the same type. For instance, at the criterion level, we compare the criteria. At the lower level in the hierarchy, we may have the alternatives which are compared on each criterion.

3.2. Alliance structure evaluation hierarchy

The hierarchy of our problem is simple. In addition to the top level "Attractiveness", we have only two levels. In many problems, the criteria have a hierarchical structure as well, but in our problem, the criteria C_1, C_2, \dots, C_8 are all at the same level. In the hierarchy below the alliance structure alternatives are at the lowest level in the order $CBO_1, FC, AIP_1, AIP_2, CSA_1$, and CSA_2 .

4 Evaluation Process and Results

4.1. Original evaluation

Our expert panel consisted of six experts from the Finnish financial supervisory authorities, three from the banking supervision and three from the insurance supervision. The participants did not know the method beforehand, therefore an example on the areas of some geometric figures was used as an introduction to the AHP. After the short introduction, we agreed about the decision making process. When a group is a decision maker, there are two different methods to be applied. Each group member can make his/her own evaluations, and then an external facilitator makes a synthesis of the evaluations. Another way is to ask the group to make comparisons as a group. To find the joint opinion, the group may apply a majority rule or a consensus principle. Our group decided to try to negotiate until reaching a consensus.

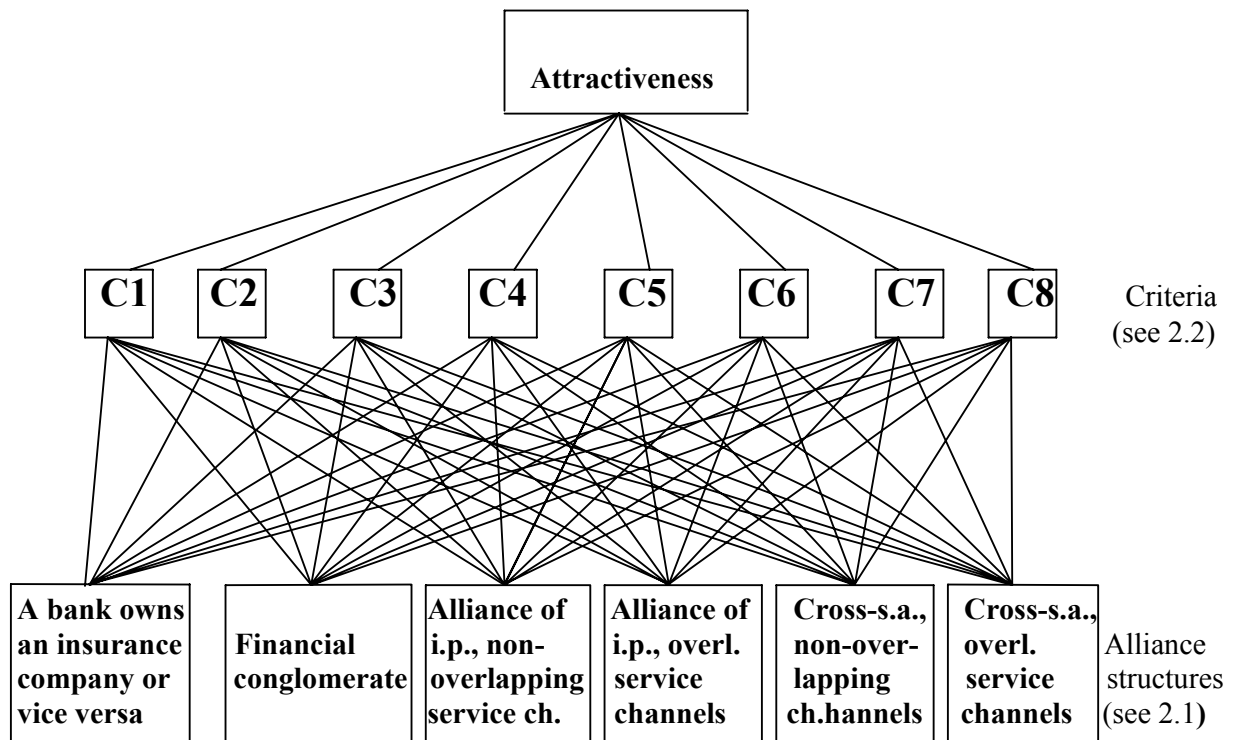


Figure 1: Criteria and Alternative Hierarchy

The group had a preliminary discussion about the semantics of the criteria to ensure a common perception. In that occasion the initial interpretation of certain criteria was adjusted. As mentioned above, we discussed the criteria beforehand with each member.

The group started the evaluation process by comparing pairwise the mutual importance of the criteria. The importance was interpreted as a strength of the focus. (Unfortunately, the more precise definition is difficult to give.)

It turned out that it would be very difficult if not impossible to reach a consensus about the comparison of the criteria. To be more exact, the insurance supervisors and the bank supervisors had clearly different opinions about the mutual importance of especially the first and the third criteria. It was agreed that the pairwise comparison of the criteria is first carried out according to the bank supervisors' decisions, then the alliance models are prioritized by the whole group according to each criterion and the overall ranking of the models is thereby obtained. After that the insurance supervisors adjust the criterion comparisons to suit their opinions, and an analysis of its effect on the model ranking is carried out. The latter part of the research is reported in ch. 4.2.

Table 2: The original pairwise comparisons of the criteria

Criteria	C1	C2	C3	C4	C5	C6	C7	C8
C1 <i>Equality of the members of the a.</i>	1	0.143	0.143	0.200	0.143	1	0.200	0.333
C2 <i>System risk management</i>	7	1	1	3	1	7	4	5
C3 <i>Capability to supervise the a.</i>	7	1	1	6	1	5	6	5
C4 <i>Flexibility of the a. in changing env.</i>	5	0.333	0.167	1	0.250	3	1	1
C5 <i>Optimal functioning of the markets</i>	7	1	1	4	1	7	3	5
C6 <i>Synergies</i>	1	0.143	0.200	0.333	0.143	1	0.200	0.200
C7 <i>Sufficiency of capital</i>	5	0.250	0.167	1	0.333	5	1	1
C8 <i>Dep. on the competence of mgmt</i>	3	0.200	0.200	1	0.200	5	1	1

By solving the eigenvalue problem of the matrix consisting of the pairwise comparisons to evaluate the mutual importance of the criteria, we will find the value score (priority) vector for the criteria. We standardize the vector by summing its elements to one:

$$w = (0.025, 0.232, 0.269, 0.071, 0.231, 0.027, 0.077, 0.068)^T.$$

The consistency ratio CR (cf. Saaty [1994], pp. 84-85) was 0.043. If the consistency ratio is below 0.10, it is fully acceptable.

Next the group compared the various alliance models on each criterion. The value scores of the criteria C1 (*equality of the members of the alliance*) and C6 (*synergies*) are so low (0.025 and 0.027) that their effect to the final composite score is insignificant. Therefore we drop them from further analysis.

The results of the pairwise comparisons and the corresponding value scores for the various alliance models are given below:

C ₂	CBO1	FC	AIP1	AIP2	CSA1	CSA2
CBO1	1	1	0.200	0.200	0.125	0.125
FC	1	1	0.200	0.200	0.125	0.125
AIP1	5	5	1	1	0.333	0.333
AIP2	5	5	1	1	0.333	0.333
CSA1	8	8	3	3	1	1
CSA2	8	8	3	3	1	1

$$v_2 = (0.034, 0.034, 0.136, 0.136, 0.331, 0.331)^T, \text{ CR} = 0.014.$$

C_3	CBO1	FC	AIP1	AIP2	CSA1	CSA2
CBO1	1	0.250	0.143	0.143	0.111	0.111
FC	4	1	0.200	0.200	0.143	0.143
AIP1	7	5	1	1	0.500	0.500
AIP2	7	5	1	1	0.500	0.500
CSA1	9	7	2	2	1	1
CSA2	9	7	2	2	1	1

$$v_3 = (0.024, 0.048, 0.169, 0.169, 0.295, 0.295)^T, CR = 0.028.$$

C_4	CBO1	FC	AIP1	AIP2	CSA1	CSA2
CBO1	1	1	0.250	0.333	0.143	0.167
FC	1	1	0.250	0.333	0.143	0.167
AIP1	4	4	1	2	0.333	0.500
AIP2	3	3	0.500	1	0.333	0.500
CSA1	7	7	3	3	1	2
CSA2	6	6	2	2	0.500	1

$$v_4 = (0.043, 0.043, 0.164, 0.117, 0.383, 0.250)^T, CR = 0.013.$$

C_5	CBO1	FC	AIP1	AIP2	CSA1	CSA2
CBO1	1	0.500	5	6	7	8
FC	2	1	5	6	7	8
AIP1	0.200	0.200	1	3	2	3
AIP2	0.167	0.167	0.333	1	2	4
CSA1	0.143	0.143	0.500	1	1	2
CSA2	0.125	0.125	0.333	0.500	0.500	1

$$v_5 = (0.332, 0.420, 0.103, 0.055, 0.055, 0.035)^T, CR = 0.029.$$

C_7	CBO1	FC	AIP1	AIP2	CSA1	CSA2
CBO1	1	0.333	5	5	6	6
FC	3	1	5	5	6	6
AIP1	0.200	0.200	1	1	3	3
AIP2	0.200	0.200	1	1	3	3
CSA1	0.167	0.167	0.333	0.333	1	1
CSA2	0.167	0.167	0.333	0.333	1	1

$$v_7 = (0.296, 0.435, 0.092, 0.092, 0.042, 0.042)^T, CR = 0.053.$$

C_8	CBO1	FC	AIP1	AIP2	CSA1	CSA2
CBO1	1	1	0.167	0.200	0.125	0.143
FC	1	1	0.167	0.200	0.125	0.143
AIP1	6	6	1	2	1	2
AIP2	5	5	0.500	1	0.500	1
CSA1	8	8	1	2	1	2
CSA2	7	7	0.500	1	0.500	1

$$v_8 = (0.035, 0.035, 0.279, 0.163, 0.302, 0.186)^T, CR = 0.014.$$

A composite value scale for the alliance structure alternatives is found by computing the weighted sums for each alternative. The separate value scores are multiplied by the re-scaled scores of the criteria. After dropping two criteria, the remaining elements are scaled to sum up to one.

Table 3: The composite priority vector for the alliance structure models for the bank supervisors

	C2	C3	C4	C5	C7	C8	Σ
	0.255	0.307	0.063	0.255	0.063	0.057	
CBO1	0.034	0.024	0.043	0.332	0.296	0.035	0.124
FC	0.034	0.048	0.043	0.420	0.435	0.035	0.162
AIP1	0.136	0.169	0.164	0.103	0.092	0.279	0.145
AIP2	0.136	0.169	0.117	0.055	0.092	0.163	0.123
CSA1	0.331	0.295	0.383	0.055	0.042	0.302	0.233
CSA2	0.331	0.295	0.250	0.035	0.042	0.186	0.213

It can be observed that the differences between the value scores of the alliance models are much smaller than in the study with the executives (Korhonen-Voutilainen [2004]). Here the relation between the highest and the lowest score is 1.89, while in the previous study it was 15.8 in the first meeting and 8.63 in the second meeting with the revised criteria. Thus, there is no such absolute favourite as FC was in the previous study (if the risk is not strongly emphasized). However, the loosely connected CSA models were most preferred by the supervisors partly because they received high scores according to the "heavy" criteria C2 and C3. The tightly connected models FC and CBO1 could significantly compensate this by receiving high scores, for example, according to the important criterion C5. This explains the relatively small differences between the scores. It can also be observed that in both CSA and AIP models separate service channels were slightly preferred to overlapping service channels.

When analyzing the sensitivity of the optimal solution for a change of the weight (=value score) of each criterion, it turns out that the new solution is

always FC instead of the present best solution CSA1, if the optimum changes in the first place. The following list gives the best solution when every criterion in turn is given all the weights from the interval [0;1] and the change in its weight from the optimal situation (see table 3) is added to/subtracted from the weights of the other criteria proportionally:

C2: [0;0,02] : FC, [0,02;1] : CSA1
 C3: [0;0,03] : FC, [0,03;1] : CSA1
 C4: [0;1] : CSA1
 C5: [0;0,38] : CSA1, [0,38;1] : FC
 C7: [0;0,21] : CSA1, [0,21;1] : FC
 C8: [0;1] : CSA1.

As can be expected, if one of the criteria C5 or C7 which strongly favour FC and CBO1 is emphasized sufficiently, FC becomes the most preferred solution.

4.2. Adjusted criterion weights

As stated in ch. 4.1, the presented results depend on the criteria ranking of the bank supervisors, with which the insurance supervisors could not completely agree. Therefore, after achieving the above results, the insurance supervisors were asked to adjust the pairwise comparisons of the criteria as they wished. The following modified comparison matrix was obtained :

Table 4: The adjusted pairwise comparisons of the criteria carried out by the insurance supervisors

Criteria	C1	C2	C3	C4	C5	C6	C7	C8
C1 <i>Equality of the members of the a.</i>	1	0.143	0.200	0.333	0.143	1	0.200	0.200
C2 <i>System risk management</i>	7	1	5	3	1	7	4	5
C3 <i>Capability to supervise the a.</i>	5	0.200	1	6	0.333	5	1	1
C4 <i>Flexibility of the a. in changing env.</i>	3	0.333	0.167	1	0.250	3	1	1
C5 <i>Optimal functioning of the markets</i>	7	1	3	4	1	7	3	5
C6 <i>Synergies</i>	1	0.143	0.200	0.333	0.143	1	0.200	0.200
C7 <i>Sufficiency of capital</i>	5	0.250	1	1	0.333	5	1	1
C8 <i>Dep. on the competence of mgmt</i>	5	0.200	1	1	0.200	5	1	1

$$w = (0.025, 0.302, 0.131, 0.069, 0.268, 0.025, 0.093, 0.087)^T, CR = 0.060.$$

The most important results of these adjustments are the dramatic reduction of the score of C3 (0.269 => 0.131) and the increase of the score of C2 (0.232 => 0.302). The value scores of the criteria C1 (*equality of the members of the alliance*) and C6 (*synergies*) are again so low (0.025 and 0.025) that we can drop them from further analysis.

The value scores of the alliance models with respect to each criterion remain unchanged, and we obtain the new composite priority vector :

Table 5: The new composite priority vector for the alliance structure models for the insurance supervisors

	C2	C3	C4	C5	C7	C8	
	0.342	0.133	0.067	0.298	0.084	0.075	Σ
CBO1	0.034	0.024	0.043	0.332	0.296	0.035	0.144
FC	0.034	0.048	0.043	0.420	0.435	0.035	0.185
AIP1	0.136	0.169	0.164	0.103	0.092	0.279	0.139
AIP2	0.136	0.169	0.117	0.055	0.092	0.163	0.113
CSA1	0.331	0.295	0.383	0.055	0.042	0.302	0.221
CSA2	0.331	0.295	0.250	0.035	0.042	0.186	0.197

The changes in the composite priority vector are not very essential: The greatest relative change of the score is 16,1 % for CBO1 and the average change is 9,2 %. The only change in the ranking is that CBO1 outweighs now AIP1 with a narrow margin. Here the score of CSA2 is only 6,5 % higher than the score of FC, whereas this difference was 31,5 % in the previous session. In any case, the adjustment of the criteria comparisons did not have a very significant effect on the solution.

When analyzing the sensitivity of the optimal solution for a change of the weight of each criterion, it turns out that the new alternative solution is again always FC instead of the present best solution CSA1, if the optimum changes in the first place. The following list illustrates the sensitivity in the same way as previously in connection with table 3:

C2: [0;0,25] : FC, [0,25;1] : CSA1
 C3: [0;1] : CSA1
 C4: [0;1] : CSA1
 C5: [0;0,36] : CSA1, [0,36;1] : FC
 C7: [0;0,16] : CSA1, [0,16;1] : FC
 C8: [0;1] : CSA1.

The most important difference between these results and those connected with the solution in ch. 4.1 is that FC becomes the most preferred solution with the weights of C2 which are much closer to its actual weight resulting from the pairwise comparisons of our group. The reason is that the weight of C3 has dropped dramatically from the previous session, and it cannot discriminate FC or CBO1 as strongly as before, when the weight of C2 is decreased.

4.3. Comparison with the assessment of the executives and a suggestion for a compromise solution

In the paper of Korhonen and Voutilainen [2004] representatives of the top management of Finnish banks and insurance companies prioritized the same alliance models as presented here. The final criteria were

Earnings logics (avoid conflicts)

Customer relationship management (maximize efficiency)
 Cost and revenue synergies (maximize)
 Channel conflicts (minimize)
 Solvency capital (optimize the balance)
 Sales management (maximize efficiency)
 Economies of scale (maximize)
 Economies of scope (maximize)
 Risk (minimize).

The value scores of the models became the following :

FC	0.371
CBO1	0.314
AIP1	0.131
CSA1	0.083
AIP2	0.061
CSA2	0.043

The differences between the value scores are essentially bigger than in the case of the supervisors (tables 3 and 5).

The preferences of the executives and the supervisors look quite different, but we wanted to try to find a compromise between them. Therefore we gathered the results together in the following figures :

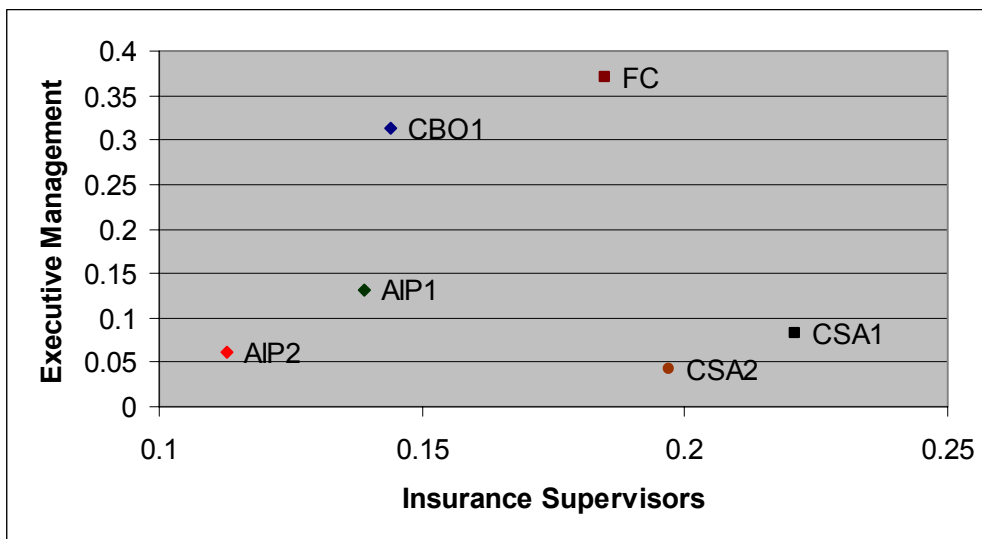


Figure 2: Illustration of Executive Management's and Insurance Supervisors' Preference Order

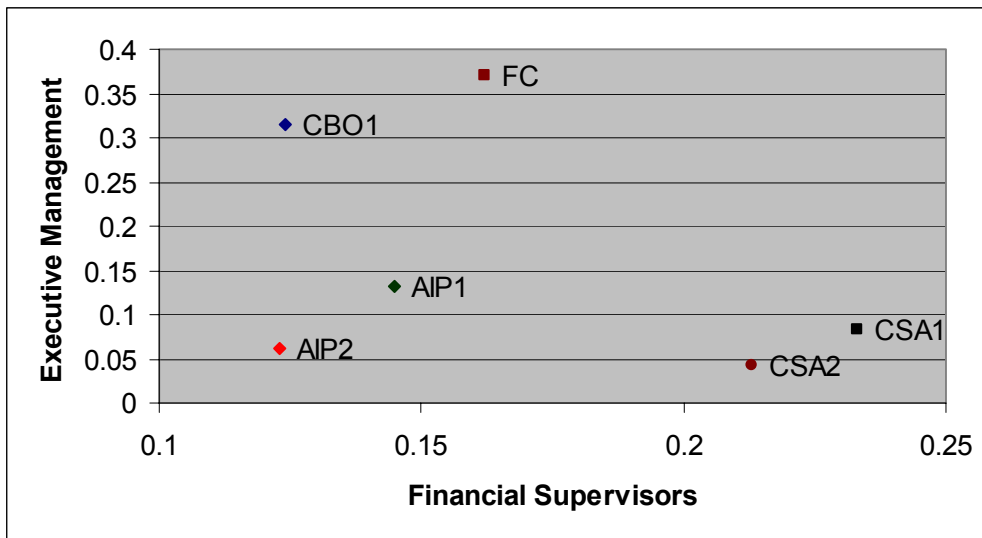


Figure 2: Illustration of Executive Management's and Financial Supervisors' Preference Order

In both cases, either FC or CSA1 dominates the other solutions. Assuming that the executives and supervisory authorities would like to end up with a Pareto optimal solution, so only those two can be considered as a possible compromise solution. Actually, FC is quite up also in the rank order of the list of the supervisory authorities. FC could also be the best solution in their list, provided that they could be sure that system risk could be made better controllable (C2) and supervision remains manageable (C3).

In other words, financial conglomerate could be a feasible compromise for the insurance supervisors if *System risk management* and *Capability to supervise the alliance as well as possible* could be improved in that alliance model in a credible way.

It can also be concluded from the latter diagram that the condition for the financial supervisors to approve FC is that *System risk management* and *Capability to supervise the alliance as well as possible* should be improved relatively more than in the case of the insurance supervisors.

CSA1 does not seem to be a feasible compromise solution since its priority in the executives' assessment is clearly lower than the priority of FC in the supervisors' assessment.

5 Conclusion

We have shown that the expert panel assisted by the AHP was a successful approach in searching for the most preferred alliance structure between banks and insurance companies. In the earlier study the experts were executives of Finnish banks and insurance companies, and in this study they were representatives of the Finnish bank and insurance supervisory authorities. The use of the AHP focused the discussions on pairwise comparisons. The authorities could not agree about all

comparisons of the criteria, but it was decided that the insurance authorities can adjust the comparisons, when the first AHP session was completed. It turned out that these adjustments had only minor effects on the value scores of the alliance models.

Summarizing the results, the loosely connected alliance models CSA1 and CSA2 received the highest overall value scores largely because they got very high scores according to the important criteria *System risk management* and *The capability of the authorities to supervise the alliance as well as possible*. In other words, the control by ownership models were considered far from desirable with respect to these criteria. The difference between the overall value scores of the alliance models CSA2 and FC was much smaller in the insurance supervisors' opinion than in the bank supervisors' opinion.

The result differs sharply from the prioritization made by the bank and insurance executives which favoured very clearly the control by ownership models (if the risk factor was not specially emphasized). The executive point of view is in many ways opposite to the supervisory point of view. Also the criteria were different in seven cases out of eight. Business-driven consolidation seems to be in conflict with the supervisory intresses. Brought synergies do not outweigh the risk that enters into large and complex financial institutions.

However, the differences between the value scores of the alliance models in this study are essentially smaller than in the previous study with the executives. Therefore it would be interesting to obtain a compromise solution acceptable for both the executives and the supervisors. We conclude that financial conglomerate could be a possible compromise for the insurance supervisors if *System risk management* and *Capability to supervise the alliance as well as possible* could be improved in that alliance model in a credible way.

We also conclude that the condition for the financial supervisors to approve FC is that *System risk management* and *Capability to supervise the alliance as well as possible* should be improved relatively more than in the case of the insurance supervisors. In various EU countries the latter criterion has been recently taken into consideration by new legislation on the co-operation between the supervisory authorities in financial conglomerates.

The earlier study and this paper have covered the points of view of the corporate management and the supervisory authorities to the problem of finding the most preferred alliance structure between banks and insurance companies. There is still at least one relevant perspective to this question: the clients'. We plan to return to that point of view in a way or another.

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