



Applying the consistent fuzzy preference relations to select merger strategy for commercial banks in new financial environments

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ABSTRACT

Generally, financial mergers can bring some advantages in terms of improving financial structures, and promoting the operating performance of financial organizations. Meanwhile, official reports demonstrate that the policy of bank mergers has fallen short of expectations, and the choice of managerial strategies remains a major issue for bank administrators. This investigation establishes an analytical hierarchy framework to help banks choose merger strategies based on six main criteria, including management performance, staff rights and interests, customer orientation, financial analysis, government policy and risk management. The consistent fuzzy preference relation is used to improve decision making consistency and effectiveness. The analytical results demonstrate that risk management and financial composition of banks are the major considerations for banks in strategy selection. Furthermore, analytical results demonstrate the best futuristic policy is “merging with other financial organizations to become part of an existing bank.”

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1. Introduction

Soon after the Taiwanese government lifted its ban on the establishment of new banks in 1992, numerous new banks began operations. In 2001, the government responded to the excessive number of banks in the market by encouraging the establishment of financial holding companies. However, various forms of competitive pressure, such as retaining new customers, providing new financial services and holding available businesses, resulted from the Asian Financial Crisis and the WTO (Min, Kim, Kim, Min, & Ku, 1996). The rapid development of new banks created an unprecedented managerial and competitive crisis.

Numerous enterprises have encountered problems of economic instability, fierce competition, reduced budgets and diverse customer requirements during the past decade (Mihelis, Grigoroudis, Siskos, Politis, & Malandrakis, 2001). Owing to its small organizational scale and lack of financial liberalization, the innovativeness and variety of financial products have failed to reach expectations. By using mergers to increase operational scale of organization, 14 financial holding companies were formed from among the 47 domestic banks and 31 credit cooperatives that had previously existed. The Ministry of Finance is encouraging these companies to conduct further mergers to reduce the number of banks and improve national competitiveness. Therefore, either financial holding

companies or domestic banks will face pressure to reorganize or merge.

Mergers of financial organizations are closely linked to organizational performance, government policy, shareholder rights and customer satisfaction. It is essential for financial organizations to select their merger strategy carefully. Factors requiring consideration include various internal, external, qualitative and quantitative attributes, indicating that the selected problem is an analytical hierarchy issue (Kerzner, 1989). A well-known approach that can effectively deal with this problem is the analytic hierarchy process (AHP) proposed by Saaty (1980). The AHP methodology involves separating a complex decision issue into elemental problems to establish a hierarchical model. When the decision problem is divided into smaller constituent parts in a hierarchy, pairwise comparisons of the relative importance of elements are conducted at each level to establish a set of priorities. Although AHP is widely employed in diverse fields (Choi & Hartley, 1996; Ngai, 2003; Saaty, 1980; Salmeron & Herrero, 2005; Wang & Chen, 2005a, 2005b; Wei, Chien, & Wang, 2005; Yu, Lee, & Chang, 2005), inconsistency occurs given increasing hierarchies of criteria or alternatives. To alleviate this dilemma, Herrera-Viedma, Herrera, Chiclana, and Luque (2004) presented the consistent fuzzy preference relations for facilitating decision making, thus enhancing its effectiveness and accuracy of selections. This study utilizes this method as the basis for selecting merging financial organizations.

Financial organizations (primarily banks) face more government restrictions than other enterprises. Financial organizations

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have been widely studied, but few of these studies have examined the strategies used by banks for making decisions regarding mergers under a new financial environment. Numerous factors influence the selection of financial merger policies, including the focus on improving operating performances, customer satisfaction (Gerson, 1993), government policies, shareholder rights, risk management and so on. In this study, the influences were derived from an investigation conducted by several experts, including bank superintendents (Department of Finance), economists, shareholders, customers, executives and staff. The main objectives of this study include: (1) examining what criteria should be encompassed in evaluating and examining the importance weightings of influential criteria when choosing organizational mergers in new financial environments; (2) to establish a decision making model for selecting from among different financial merger policies.

2. Operating environment and merger strategy adopted by financial organizations

2.1. Financial holding company and operational environment

The Taiwanese government passed the Financial Holding Company Law in response to weaknesses of the Financial Organization Merging Law, which limited mergers of organizations sharing similar characteristics, to reduce the number of financial organizations and enhance national competitiveness by establishing financial holding companies. Following rapid economic development and population growth, Taiwan currently has 47 domestic banks and 31 credit cooperatives (Banking Bureau, 2006). The total output value of the Taiwanese financial service industry increased from 9.43% to 11.57% during this decade. To keep up with international financial trends and the domestic economic environment, the Taiwanese government has determined to pursue a second stage of financial innovations and enhancing the overall competitiveness of its financial service industry (Banking Bureau, 2006). Additionally, the Taiwanese government has also supported the establishment of the Financial Organization Merging Law and the Financial Company Holding Law, thus providing a legal structure for the merger of heterogeneous or homogenous financial organizations. Tax incentives along with benefits of scale and increased competition when facing an increasingly internationalized environment are the main drivers of the integration of financial organizations.

Given government encouragement of integrations and mergers of financial organizations to extend their basis and operating scale, 14 financial holding companies were established in Taiwan. In the future, the government intends to establish one or two large and competitive leaders to reduce the total number of financial organizations. Both general banks and large financial holding companies face pressure to reorganize and merge. The establishment of the New Basel II protocol will represent a further test for financial organizations.

2.2. Financial organization merger strategies

Generally, financial mergers can create advantages in terms of improvements in financial structure and the improvement of organization operating performance. Meanwhile, official reports (Peristiani, 1996) indicate that bank mergers have failed to reach expectations regarding improvements in financial structure, and have even increased some types of risks.

Various alternative merger policies exist for financial organizations, namely, (i) merging with other financial organizations to become an existing bank, (ii) merging with other financial organizations to become a merged bank, (iii) focusing on enhancing core business competitiveness to become a specialized and stable

bank (Bank of Kaohsiung Workers Union, 2006). These alternatives are briefly described as follows:

- (i) Merging with other financial organizations to become an existing bank:
Financial mergers help with improving national competitiveness, expanding organizational scale and giving access to favourable tax treatment. Such mergers can be performed via cross-operation and reorganization. Previous experiences indicate that return on equity decreases with increasing capital stock.
- (ii) Merging with other financial organizations to become a merged bank:
Financial mergers, while they generally bring improvements in stock price, fail to consider that not all existing customers will remain with the new bank post merger. Additionally, the merged bank will lose its right to operate independently.
- (iii) Focusing on enhancing core business competitiveness to become a specialized and stable bank:
Both existing and merged banks change their organizational framework through financial mergers. Importantly, such mergers impact the rights of both employees and customers. Focusing on core business competition and becoming a specialized and stable bank can reduce charges for customers and employees.

3. Research methodology

This study is based on the methodology of consistent fuzzy preference relations, which is presented below.

3.1. Consistent fuzzy preference relations

Herrera-Viedma et al. (2004) proposed the consistent fuzzy preference relations in accordance with two preference relations, namely multiplicative preference relation and fuzzy preference relation (Wang & Chen, 2005a, 2005b, 2007).

- (1) *Multiplicative preference relation.* Experts express their preferences regarding a set of alternatives since X can be denoted by a preference relation matrix $A \subset X \times X$, $A = (a_{ij})$, $a_{ij} \in [\frac{1}{9}, 9]$, where a_{ij} denotes the ratio of the preference degree of alternative x_i over x_j . As $a_{ij} = 1$ indicates no difference between x_i and x_j , $a_{ij} = 9$ indicates that x_i is strongly preferable to x_j . A is assumed to be a multiplicative reciprocal, that is

$$a_{ij} \cdot a_{ji} = 1 \quad (1)$$
- (2) *Fuzzy preference relation.* Expert preferences over a set of alternatives where X is denoted by a positive preference relation matrix $P \subset X \times X$ with membership function: $\mu_p: X \times X \rightarrow [0, 1]$, where $\mu_p(x_i, x_j) = p_{ij}$ indicates the ratio of the preference intensity of alternative x_i to that of x_j . Moreover, if $p_{ij} = \frac{1}{2}$ implies indifference between x_i and x_j ($x_i \sim x_j$), $p_{ij} = 1$ indicates that x_i is absolutely preferred to x_j , $p_{ij} = 0$ indicates x_j is absolutely preferred to x_i , and $p_{ij} > \frac{1}{2}$ indicates that x_i is preferred to x_j ($x_i > x_j$). Meanwhile, P is assumed to be an additive reciprocal, given by

$$p_{ij} + p_{ji} = 1 \quad (2)$$

Proposition 1. Reciprocal additive fuzzy preference relation

$$p_{ij} + p_{jk} + p_{ki} = \frac{3}{2} \quad \forall i, j, k \quad (3)$$

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