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Original Research Article

The Effect of Iranian Banks' Merger on Financing

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The merger of banks is one of the methods for reforming the structure of banks, which has attracted Iranian banking policymakers in recent years. In the process of merging, paying attention to its effects can help to integrate banks. In Iran's banking network, financing of production is one of the main concerns of banking policymakers. Therefore, it is important to study the effect of banks' integration on financing. In this paper, considering the importance of this issue, using the financial statements of banks in the period 2006-2018, and the Panel Data method, the effect of the merger of banks on financing has been investigated. The static method has been used to integrate banks. For this reason, banks have been considered in terms of size and health. The results of the survey indicate that the merger of small banks with large banks and the merger of healthy banks, as compared to other options, have a more positive effect on the supply of facilities.

Keywords: Bank Merger, Size, Bank Healthy, Panel Data**.**
JEL Classification*:* C21, G21, G34

1 Introduction

Iranian banking policymakers have considered the merger of banks. What matters in this process is the study of the effects and consequences of integration. In the current Iranian banking and economic situation, finance for the Iranian economy is important, and the merger movement can have significant effects. An important question is whether the merger of banks in Iran improves production financing. To answer this question, it is necessary to consider different theoretical literature in this field.

The available evidence on the effects of bank mergers is mixed. Most studies focus on the effects in terms of bank performance measures; few studies address the impact on customers' welfare by examining the effect on prices. In particular, positive net benefits were found for bank customers on

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the deposit side, but some market power effects were documented as well. (Focarelli and Panetta (2002) and Prager and Hannan (1998)).

The special nature of bank credit suggests that bank mergers may have more complex effects on bank borrowers than the standard efficiency-market power antinomy suggests. The functioning of loan markets is substantially different from markets for relatively homogeneous goods and services because of the greater importance of collecting, preserving, and transmitting information through the establishment of lending relationships. (Ongena and Smith (2000) and Boot (2000)) In general, structural changes in the banking industry are likely to have more complex effects on the lending side of bank customers to the extent that they affect information flows. Borrowers that depend on relationship-intensive lending may face a reduction in credit availability if bank mergers dissipate relevant soft information accumulated within the banking organization that gets restructured. Besides, relationship-based borrowers are potentially more subject to lock-in and the exploitation of an increase in market power (Sharpe (1990) and Petersen and Raghuram, (1994).

The existing evidence on the effects of bank mergers on credit flows is mainly based on bank-level data on outstanding or new loans. An extensive literature focuses on small business loans and suggests that small business lending tends to be reduced by banks that have merged. However, market-level studies tend to find no substantial effect.

One study on individual relationships documents that small borrowers have a higher probability of being severed by banks that have consolidated (Sapienza, 2002). Another study finds that relationship termination increases for target borrowers but not for those of the acquiring bank, after the announcement of the deal. Also, borrowers that experience positive abnormal returns after merger announcement are those with low switching costs, suggesting that the adverse effects of bank mergers may be restricted to borrowers that cannot switch easily across banks (Karceski, Ongena, & Smith, 2002).

Evidence on the behavior of rival banks suggests that other intermediaries may step in and compensate for a reduction in small business lending by consolidated banks (Berger, Saunders, Scalise & Udell, 1998) suggesting that welfare effects for borrowers may be negligible.

This paper examines the effect of the merger of banks on Financing. For this purpose, the financial statements of the Iranian banks for the period 2006-2018 and the Panel Data method have been used. For the integration of banks, the static method (the simple combination of the balance sheet of the desired

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banks) has been used. This article has some points that distinguish them from other studies. In this study, banks are divided into small, medium, and large sizes. Whereas in empirical studies, only the size of the banks is considered small and large. This study also looked at the health of banks, so that banks are divided into two healthy and unhealthy groups. For this purpose, we use CAMELS models for banks 'ranking. To select the appropriate model for combining banks, we use the T-Statistic test to test of equivalent merging coefficient in the current period in different models.

The remainder of this paper is organized as follows: Section two describes theory and literature review, and section three validates our methodology. Sections four represent the results of multivariate statistical tests—section five conclusion.

2 Theory and Literature Review

2.1 Bank Consolidation and Small Business Lending

Small business lending is a prime example of a banking product likely to be affected by bank consolidation. Traditionally this type of lending has been local, often made to firms having idiosyncratic credit needs and risks tied to the prospects of the local economy. Thus, small business lending has generally required local expertise for underwriting and monitoring borrower-specific risks, and this requirement makes it difficult for businesses to obtain credit from lenders that do not have a local presence. In contrast, large commercial loans, consumer credit, and home mortgage lending have become increasingly standardized products transacted in what have become national markets. Although these types of loan products require expertise, they no longer require the same sort of local presence that small business loans do (Avery and Samolyk (2000)).

The local nature of small business lending also appears to suit the inherently more local focus of smaller banks. Small banks continue to hold a disproportionately large share of small business loans, whereas corporate loans, consumer credit, and home mortgage lending have become increasingly concentrated in large banks. These considerations suggest two primary channels through which bank consolidation has adversely affect the provision of small business loans by banks. First, standard market analysis indicates that when there are significant costs incurred in borrowing from nonlocal lenders, bank mergers that increase the concentration of local markets may reduce the availability of bank credit to local small businesses. Second, even if mergers do not affect the degree of local market competition, merging institutions may

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shift their focus to other credit products and reduce small business lending in all the markets they serve (Avery and Samolyk, 2000).

These two channels have different policy implications. Merger-related changes in small business lending due to reduced local competition suggest that the concern with consolidation should not be that banks are getting larger, but rather that there are fewer banks in some markets. These anticompetitive effects can be addressed through the bank merger-approval process. In contrast, merger-related changes in credit availability attributable to the lending technologies associated with bank scale may lead to long-term changes in the allocation of business credit. Although other lenders should take advantage of profitable lending opportunities foregone by merging institutions, if there is a fundamental shift in the credit extension process—for example, toward standardized credit technologies—the inherent nature of small business credit availability may be irrevocably altered(Avery and Samolyk, 2000).

Hence, as institutions become larger, they may be able to make more loans in general, including more small loans. Besides, larger banks may be better able to absorb the fixed costs associated with new small business lending technologies (such as credit scoring models) than their smaller counterparts. These arguments suggest that consolidation may not adversely affect small business lending.

It has also been argued that a bank's credit culture is a key determinant of its commercial lending activities. If small business lending is an important (or a desired) product line for acquiring institutions, they may increase the small business loan focus of their acquisitions over the longer term (Peek and Rosengren, 1998). When it is not, acquirers are likely to cut back on the small business lending activities of an acquisition that are deemed to be excessive. Even if credit cultures do not vary radically, bank consolidation may disrupt small business lending if it dislocates bank personnel who have the expertise and experience with small business customers. All else equal, however, these "dislocation effects" are expected to be relatively short term.

In tandem, these arguments suggest that the processes through which bank consolidation affects small business lending are complicated, and the implications for small business credit availability are complex, as well. To assess the empirical significance of these hypotheses, previous studies have generally compared the small business loan-to-asset ratios of banks involved in merger and acquisition activity with those of a control group of banks that did not(Berger, Demsetz, and Strahan, 1999; Berger and Udell, 1998; and Samolyk, 1997).

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2.2 Effects of Banking Mergers on Loan Contracts

Sapienza (2002), make an essential distinction between in-market mergers, which combine banking organizations in the same local market, and out-of-market mergers, in which the acquirer penetrates a new market through the acquisition. These two types of mergers are likely to produce different effects on market structure and efficiency, which in turn affect prices and quantities supplied. In-market mergers increase the ability to restrict output and raise prices more than mergers between banks that previously operated in different geographical areas. The result is a reduction in borrower welfare because both the consolidated institutions and their rivals will set higher prices after the merger. Thus, prices will increase.

On the other hand, in-market mergers offer many more opportunities for cost savings than do out-of-market mergers, because when there are overlapping operations, the least efficient can be eliminated. For example, when branch offices of the merger partners are located near each other, the least efficient can be eliminated, and the customers shifted to the better-managed office. If some of these efficiency gains from consolidation are passed on to consumers, the higher concentration can benefit them.

In the banking industry, the interaction between market structure, competition, and prices is complicated by the nature of the loan contract. The literature on financial intermediation emphasizes that banks produce valuable financial information about borrowers (Diamond (1984, 1991), Ramakrishnan and Thakor (1984)). If such information cannot be transferred easily to new, potential lenders, then banks acquire information-based market power on those borrowers who suffer most from asymmetric information (Rajan (1992), Sharpe (1990)).

Sapineza (2002), shows if the market-power effect increases with the market share of the merger, then interest rates will be higher after in-market mergers that bring banks a larger market share. A change in interest rates by the merging banks is likely to affect other banks that serve the same market. If market power prevails, then rival banks might be able to raise loan rates. However, if the efficiency effect dominates, then rival banks might reduce loan rates to maintain their market share. The impact of out-of-market mergers is less clear. For unchanged levels of competition, if less efficiency is generated through out-of-market mergers, then the interest rates of the consolidated banks should decrease less after consolidation than they do with in-market mergers.

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2.3 Size Effect and Relationship Lending

Size differences in the merging banks also indicate differences in organizational structure, objective functions, and even in the level of efficiency. Recently, concerns have been raised that the formation of larger and more involved banking organizations could come at the expense of some traditional banking services, mainly lending to small businesses (Sapineza (2002)). Small banks tend to lend to small businesses, and large banks tend to lend to large businesses. It is because the delivery of banking services to small businesses could be a fundamentally different activity from the delivery of services to large borrowers. Petersen and Raghuram (1994, 1995) show that lending to small businesses tends to be relationship-driven. Since there is little public information available on firms that have a less developed reputation, small and brand-new firms are more likely to be credit rationed. However, with continuous interaction, these firms could be able to provide a lender with enough information to increase the availability of credit.

Berger and Udell (1995) argue that small banks have better technology for lending to small businesses than do large banks. Small-business loans require tighter control and oversight than do loans based on ratio analysis and readily observable information about loans to large firms. The complexity of large banks can lead to organizational diseconomies that make relationship loans to small businesses more costly. In contrast, senior management of small banks can monitor lending decisions closely and authorize more nonstandard, relationship loans.

Nakamura (1993) shows that small banks have an informational advantage in dealing with small borrowers because they have more detailed information on local economic conditions. Also, loan officers of small banks are not required to follow the standardized, objective criteria for renewing loans that large banks implement to avoid moral hazard problems between branch managers and the main office.

Cole, Goldberg, and White (1999) find that large banks rely more on observable firm characteristics in making a lending decision than do small banks. Thus, in evaluating loans, the loan officers at small banks use all the special information available to them. Such special information is precious in lending to small businesses with primarily local customers. In contrast, large banks cannot efficiently serve small firms because they cannot efficiently monitor the employee. Thus, they see that small banks are more efficient at lending to small firms. It could also be possible that small banks are intrinsically less efficient than large banks and that most of their small loans

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are not valuable to start with; that is, they do not meet an opportunity cost test for the use of funds.

In the past, geographic restrictions on banking and limits to the market for corporate control have created barriers to entry into local markets and perhaps reduced competition. These limitations on market discipline might have allowed some negative net present value loans to be made. Thus, the decision to cut these loans could improve welfare and release resources to other valuable borrowers (Berger et al. (1995)).

The theories that Sapineza (2002) present above predict different empirical results. If larger banks reduce the supply of credit to small borrowers, then controlling for borrowers' quality and other exogenous conditions, either a reduction of credit available to these borrowers or a denial of credit line renewals will occur. Alternatively, if the reduction of credit to small borrowers is related to the poor quality of these loans, then controlling for borrowers' characteristics, smaller borrowers would not face a higher probability of having their lending relationship with the bank severed.

Banerjee et al. (2017), studies the real consequences of relationship lending on firm activity in Italy following Lehman Brothers' default shock and Europe's sovereign debt crisis. They use a large data set that merges the comprehensive Italian Credit and Firm Registers. They find that following Lehman's default, banks offered more favorable continuation lending terms to firms with which they had stronger relationships. Such favorable conditions enabled firms to maintain higher levels of investment and employment. The insulation effects of tighter bank-firm relationships were still present during the European sovereign debt crisis, especially for firms tied to well-capitalized banks.

Gao et al. (2018) investigate loan prices in mergers and acquisitions (M&As), using hand-matched loan in-formation for a sample of 330 U.S. M&A transactions. They find the loan price measured by the all-in-drawn spread (AIDS) increases significantly with the relative size of a deal and decreases with the proportion of stocks offered in the consideration. These results are robust to several specifications that address endogeneity concerns. They posit that deal size is a major concern for lenders because it involves more uncertainties, greater business complexity, and greater integration difficulties. Further, the contingent pricing mechanism built-in stock offers significantly lowers the lender's concerns.

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3 Methodology

In this section, considering the existing theoretical and empirical literature, we are going to evaluate the effect of the merger of banks on production financing. For this purpose, the financial statements of the Iranian banks for the period 2006-2019 and Panel Data Method have been used.

According to the theoretical and empirical literature, the effect of mergers of banks on financing has been examined from various dimensions, such as the effect of banking merger on microloans, macro loans, and sectional facilities with different types of mergers, including mergers between banks with different sizes, and banks with varying types of ownership. Due to the lack of access to micro and macro-sized facility data in the Iranian banking system, we use total Loan (production financing) and, the Iranian banks are divided into three small, medium, and large sizes. The division of banks into three sizes is based on real experience in Iran. There are six models for combining banks with different sizes (see table (1)).

Table 1
Merging with Different Sizes

Definition	Banks sizes	Small	Medium	Large
Share of total Banking system assets<=1%	Small	1		
1<Share of total Banking system assets<=5%	Medium	2	4	
Share of total Banking system assets>5%	Large	3	5	6

On the other hand, the health of banks also affects the integration quality that has effects on the supply of facilities. Therefore, in this paper, we have identified safe banks using the CAMELS method. CAMELS' indicators are introduced in table 2. The United States first introduced the criteria in 1979, and the IMF introduced its updated version in 1996.

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Table 2
CAMELS Indicators

CAMEL	Ratios	Formula
Capital adequacy	Capital Adequacy Ratio	((Tier 1 Capital – Goodwill)+Tier 2 Capital)/ Risk Weighted assets
	Equity Capital to Total Assets	Total Capital /Total Assets
Asset Quality	NPLs to Total Loans	NPLs/total Loans
	NPLs to Total Equity	NPLs/total Equity
	Allowance for Loan Loss Ratio	Allowance for Loan Loss / Total Loans
	Provision for Loan Loss Ratio	Provision for Loan loss/ total loans
Management Quality	Total Asset Growth Rate	Average of Historical asset Growth Rate
	Loan Growth Rate	Average of Historical Loan Growth Rate
	Earnings Growth Rate	Average of Historical Earning Growth Rate
Earning Ability	Cost to Income Ratio	Operational Expense(Excludes Provision Loss)/(net interest income + non-interest income)
Sensitivity to risk	Sensitivity to Market Risk	Currency open position to Capital

Using the following steps, this research calculates the measure of the **combined CAMELS ratio**. First, each CAMELS ratio is normalized using the minimum and maximum ratios.

$$\left(\frac{a_i - L}{U - L}\right) \tag{1}$$

Where a_i, L, U are, minimum and maximum of CAMELS ratio. Then, to derive an indicator for the combined CAMELS, the sum of these normalized indices is calculated.

$$Cs_i = \sum \frac{a_i - L}{U - L} \tag{2}$$

Where CS_i is the combined CAMELS ratio. CS_i is between zero and one. Zero is the worst situation, and one is the best situation in this criterion (Prasad. K.V.N & G. Ravinder, 2012). Table 3, Shows the ranking.

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Table 2
Ranking

Rank	criterion
1	$0.8 < Cs_i < 1$
2	$0.6 < Cs_i < 0.8$
3	$0.4 < Cs_i < 0.6$
4	$0.2 < Cs_i < 0.4$
5	$0 < CS_i < 0.2$

Banks that are ranked 1 and 2, are good healthy banks. If the rank of banks is 3, they are medium health and banks with 4 and 5 ratings, they are at high risk and have poor health.

We define three models based on healthy. Model 7 is a combination of healthy and healthy banks, model 8 is a combination of healthy and unhealthy banks, and model 9 is a combination of unhealthy and unhealthy banks.

For the merge of banks, the smallest bank, the largest bank, the first medium-sized banks, banks ranked first, and banks ranked 5th have been selected. Then, to create a merged bank, the financial statements of the banks are combined. The assets and liabilities of the merged bank are the totals of the assets and liabilities of the banks concerned.

After grouping the banks, an appropriate model is selected, using the F-Limer and Husman test. Also, the unit root test has been performed to ensure that the unit root is not present. In the end, the model is also estimated using fixed-effects methods for grouping banks in terms of size and health.

To select the appropriate combination of banks, the equality test for the coefficient of merging in the current period has been used. For the selection of the best model between the first six models, the following assumptions have been tested.

Hypothesize 1: A combination of banks based on model 1 has a more positive effect on the supply of loans Compared with model 2.

Hypothesize 2: The combination of banks based on Model 1 compared with Model 3 has a more positive effect on Loans.

Hypothesize 3: The combination of banks based on model 3 has a more positive effect on the supply of Loans Compared with model 2.

Hypothesize 4: The combination of banks based on model 4 compared with model 5 has a more positive effect on Loan.

Hypothesize 5: The combination of banks based on model 4 compared with model 6 has a more positive effect on the supply of Loans.

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Hypothesize 6: The combination of banks based on model 6 compared with model 5 has a more positive effect on facility availability.

Hypothesize 7: The combination of banks based on Model 5, in comparison with Model 3, has a more positive effect on loans.

Then it's necessary to choose between models 7, 8, and 9. Therefore, the following Hypothesizes are tested.

Hypothesize 8: Model 7 has a more positive effect on loans compared with model 8.

Hypothesize 9: Model 7 has a more positive effect on the supply of loans compared with model 9.

Hypothesize 10: Model 8 has a larger positive effect on supply compared with model 9.

3-1. Selection Method of Panel Data Regression

Various tests are used to determine the type of panel data model. The most general test is the F-Limer test for using the fixed effects model against the estimated model of pooled data. Consider the following model:

$$Y_{it} = \alpha_i + \beta X_{it} + \mu_i + \cdots + v_{it} \quad (3)$$

The disturbance term, v_{it}, has a normal distribution, and all i's and t's are independent of X_{it} and are not correlated with it (Johnston and Dinardo, 1997). So, it must be checked first to see whether there are heterogeneity or individual differences. If there is heterogeneity, the panel data approach will be used; otherwise, the ordinary least squares (OLS) models are used to estimate the model. The μ_i, represents the individual effects of heterogeneity in the cross-sections and appears in the form of random effects or fixed effects. Comparison of the panel data method with the ordinary least squares method is evaluated in the framework of the following hypothesis:

$$H_0 = \mu_1 = \mu_2 = \mu_3 = \cdots = \mu_N = 0 \quad (4)$$
$$H_1 = At\ least\ one\ of\ the\ u_i' sis\ non\ zero.$$

To test the above hypothesis, the F-Limer statistic is used (Baltagi, 2005).

Table 4 provides the calculated statistical value for the F-Limer test. The results of this table indicate we can use the panel data method to estimate the model. The numbers in parentheses are p-values.

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Table 3
F-Limer Test

Kind of Banks Merging	Cross-section F	Cross-section Chi-square
Small- Small	37.294791 (0.000)	346.696724 (0.000)
Small- Medium	34.866264 (0.000)	337.718480 (0.000)
Small- Large	34.440772 (0.000)	336.087793 (0.000)
Medium- Medium	33.914681 (0.000)	331.911309 (0.000)
Medium- Large	34.087171 (0.000)	334.718825 (0.000)
Large-Large	34.103462 (0.000)	334.782175 (0.000)
Healthy- Healthy	34.065621 (0.000)	334.634983 (0.000)
Healthy –Un Healthy	35.404118 (0.000)	339.754406 (0.000)
Un Healthy – Un Healthy	35.209211 (0.000)	336.826671 (0.000)

Hausman Test (1978) is used for choosing between the fixed effects model and the random effect model. The statistic of this test (H) has a chi-squared distribution with k (the number of explanatory variables) degrees of freedom. Given that an important assumption about the disturbance components of the regression model is that $E(U_{it}|X_{it})$, that is the same assumption of the independence of disturbance components of the explanatory variables, Hausman suggests that both effects be compared under the null $H_0: E(U_{it}|X_{it}) = 0$. The random effect estimator is consistent and asymptotically efficient just if the null hypothesis is not rejected, while the fixed effects estimator is consistent whether the null be rejected or not (Hadad and Sadegh, 2012).

As Table 5 shows, based on the calculated probability value for the Hausman test, we find out that the Fixed effects model must be used to estimate the model because the p-value is less than 0.05. The numbers in parentheses are p-value.

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Table 4
Hausman Test

Kind of Banks Merging	Chi-Sq.Statistic
Small- Small	74.088794 (0.000)
Small- Medium	58.035495 (0.000)
Small- Large	59.480321 (0.000)
Medium- Medium	59.873031 (0.000)
Medium- Large	61.749348 (0.000)
Large-Large	59.871195 (0.000)
Healthy- Healthy	59.333768 (0.000)
Healthy –Un Healthy	58.356140 (0.000)
Un Healthy – Un Healthy	65.808999 (0.000)

3.1 Unit Root Test

The results of the unit root test are shown in Table 6. For the unit root test, four statistics, PP-Fisher, ADF- Fisher, Im, Pesaran and Shin W-Stat, Levin, Lin, and Chu were used. The results show that the variables used in this paper are static at the level and inference, so significance at the level of 5%

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Table 6
Unit Root Test

	Levin, Lin& Chu t	Im, Pesaran, and Shin W-stat	ADF-Fisher Chi-square	PP-Fischer Chi-square
Loan	-12.9655 (0.000)	-3.42295 (0.0003)	82.6185 (0.0281)	123.835 (0.000)
Loan to Agriculture and Export Sector to Total Loan	-29.5959 (0.0000)	-10.0528 (0.000)	128.017 (0.000)	118.147 (0.000)
Loan to Services and Commerce Sector to Total Loan	-56.8709 (0.000)	-13.2239 (0.000)	130.560 (0.000)	151.168 (0.000)
Loan to Industrial Sector to Total Loan	-32.0380 (0.000)	-5.56464 (0.000)	71.2142 (0.0260)	80.7614 (0.0038)
Loan To Building and Housing Sector to Total Loan	-23.9069 (0.000)	-6.33102 (0.0000)	101.335 (0.0001)	109.420 (0.000)
Deposit	-15.6141 (0.000)	-6.76924 (0.000)	134.455 (0.000)	170.431 (0.000)
Investment Deposit to Total Deposit	-268.478 (0.000)	-59.7471 (0.000)	120.141 (0.000)	127.293 (0.000)
Currency Deposit to Total Deposit	-57.003 (0.000)	-11.0042 (0.000)	117.282 (0.000)	118.698 (0.000)
Non-Performing Loan to Total Loan	-15.9265 (0.000)	-6.77878 (0.000)	128.961 (0.000)	136.791 (0.000)
Liquidation Assets to Short Debts	-96.0812 (0.000)	-55.5154 (0.000)	112.385 (0.000)	123.225 (0.000)
Capital Adequacy	-18.2569 (0.000)	-5.48640 (0.000)	120.722 (0.000)	145.968 (0.000)
Deposit Interest Rate	-21.7976 (0.000)	-12.3592 (0.000)	250.882 (0.000)	587.461 (0.000)
Inflation	-11.5643 (0.000)	-4.67184 (0.000)	124.393 (0.000)	64.0627 (0.2723)
Exchange Rate	-13.4821 (0.000)	-6.51104 (0.000)	147.310 (0.000)	147.488 (0.000)

4 Research Finding

The results of the model estimation are presented in Table 7. The numbers in () are the statistics t, and the numbers inside [] are probabilities. Loans are the dependent variables. To select independent variables, we have tried to use previous experiences in identifying the factors affecting the supply of facilities

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and selecting repeat variables as final independent variables. As can be seen, the ratios of non-performing loans to total loans, liquid assets to short-term debts, and capital adequacy have a negative relationship with loans. As the proportion of non-performing loans increases, the banks' blocked resources will increase in the economy, and banks will be deprived of the resources available for facilities. It will reduce the supply of loans. In this paper, the effect of this variable on loan is not significant.

On the other hand, an increase in the ratio of liquid assets to short-term debts indicates that the bank has taken a risk-taking approach, thereby reducing the profitability of the bank while decreasing its supply of loans. Capital adequacy is one of the banking health variables that banks are obligated to follow the principles of Basel, which in term of Basel guidelines, it is 8 percent. In Iran, according to the capital adequacy guidelines, banks are required to comply with the threshold of 8%. Adhering to this principle will make banks block their resources to increase capital, so banks' supply of loans will be reduced. However, in the long run, the health and stability of the bank will be maintained, and the supply of loans will also increase.

Three types of virtual variables have been used to investigate the effect of banks merging on the loans. A virtual variable related to the merger takes one if it is merged in the current period. Otherwise, it will take zero. The second virtual variable is related to one period after the merger, which is for one period after the merge, the number is one, and otherwise, the number is zero. The third virtual variable is defined for two periods after the merger, which is for the two periods after the integration of the number is one, and otherwise, the number is zero.

Similarly, mergers in the current period do not have a significant effect on the supply of facilities. Because in the current period and after the merger, banks are still structuring the new bank, and they are restructuring the financial and operational. Therefore, there is not much change in the supply of loans. But after two periods, due to the stability of the banking network and increased customer confidence continued in relationships between customers and the new bank, loans will increase.

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Table 5
Results by Size

Models	1	2	3	4	5	6
Kind of merging and independence variables	Small and Small	Small and Medium	Small and Large	Medium and Medium	Medium and Large	Large and Large
Intercept	4.498890 (33.80853) [0.000]	4.448863 (32.27593) [0.000]	4.464110 (32.47410) [0.000]	4.465888 (31.76123) [0.000]	4.469875 (32.13392) [0.000]	4.471709 (32.31846 [0.000]
Merging in Current Period	0.215137 (0.156330) [0.4001]	0.197490 (0.687170) [0.3204]	0.199886 (0607300) [0.2103]	0.197696 (0.611165) [0.1105]	0.203327 (0.771644) [0.1503]	0.2505005 (0.813489) [0.1202]
One year after merging	0.247509 (4.873116) [0.000]	0.241297 (4.611662) [0.000]	0.240535 (4.607300) [0.000]	0.240770 (4.570237) [0.000]	0.241288 (4.599413) [0.000]	0.241791 (4.607277) [0.000]
Two yer after merging	0.104513 (2.778996) [0.0064]	0.106078 (2.735041) [0.0073]	0.105570 (2.727891) [0.0074]	0.105335 (2.697026) [0.0081]	0.105778 (2.720136) [0.0076]	0.105687 (2.718621) [0.0076]
Three year after merging	0.164588 (4.841833) [0.000]	0.163228 (4.657248) [0.000]	0.162824 (4.657972) [0.000]	0.162881 (4.618419) [0.000]	0.162387 (4.623621) [0.000]	0.162686 (4.630975) [0.000]
Non performing Loan to total Loan	-0.57503 (-1.938060) [0.0649]	-0.047019 (-1.111427) [0.2688]	-0.148717 (-1.136067) [0.2584]	-0.048939 (-1.130244) [0.2609]	-0.047511 (-1.102791) [0.2725]	-0.048640 (-1.124847) [0.2631]
Deposit	0.175972 (5.533224) [0.000]	0.178381 (5.435961) [0.000]	0.176846 (5.345977) [0.000]	0.176156 (5.251225) [0.000]	0.176787 (5.298478) [0.000]	0.176886 (5.322975) [0.000]
Liquid assets to Short term liabilities	-0.278214 (-4.754631) [0.000]	-0.286423 (-4.729437) [0.000]	-0.302512 (-4.904737) [0.000]	-0.303274 (-4.864737) [0.000]	-0.294687 (-4.787818) [0.000]	-0.294257 (-4.787722) [0.000]
Capital Adequacy	-0.225345 (-3.140032) [0.0022]	-0.175134 (-2.421138) [0.0171]	-0.165233 (-2.252449) [0.0263]	-0.167118 (-2.245097) [0.0268]	-0.181776 (-2.517650) [0.0132]	-0.183378 (-2.533734) [0.0127]
R2	0.974408	0.972763	0.972780	0.972569	0.972533	0.972550
R2-Adiusted	0.966108	0.963929	0.963952	0.963509	0.963625	0.963647
D-W	1.824255	1.852144	1.826697	1.724395	1.942112	1.922486

The results of Table 8 show that the combination of healthy and unhealthy banks reduces the supply of facilities in the current period, and then it increases after one period. Because un-healthy banks are more vulnerable to credit risk and liquidity risk than healthy banks, this is the reason, why healthy banks focus on addressing the risks of the bank, at the beginning of the merger, and they seek to attract customers and increase the supply of facilities, in the

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next years. The combination of unhealthy banks also harms the supply of facilities and contrasts with the Central Bank's goal of improving financing.

Table 6
Results by Healthy

Models	7	8	9
Kind of merging and independence variables	Healthy and Healthy	Healthy and un Healthy	Un Healthy and Un Healthy
Intercept	4.473124 (32.18541) [0.000]	4.460483 (32.55247) [0.000]	4.474607 (33.28044) [0.000]
Merging in Current Period	0.202013 (3.742216) [0.0003]	-0.203464 (-3.761620) [0.0003]	-0.214647 (-3.977718) [0.0001]
One year after merging	0.241463 (4.604079) [0.000]	0.241691 (4.610055) [0.000]	-0.239090 (-4.568053) [0.000]
Two yer after merging	0.105526 (2.713548) [0.0077]	0.105525 (2.715271) [0.0077]	0.109070 (2.789984) [0.0062]
Three year after merging	0.162478 (4.627344) [0.000]	0.163068 (4.642803) [0.000]	0.154743 (4.433948) [0.000]
Non performing Loan to total Loan	-0.048448 (-1.121814) [0.2644]	-0.050944 (-1.202883) [0.2316]	-0.057806 (-1.386165) [0.1685]
Deposit	0.176684 (5.313698) [0.000]	0.177595 (5.416052) [0.000]	0.185781 (5.722144) [0.000]
Liquid assets to Short term liabilities	-0.295007 (-4.797450) [0.000]	-0.293541 (-4.859212) [0.000]	-0.323956 (-5.323092) [0.000]
Capital Adequacy	-0.183018 (-2.532752) [0.0127]	-0.176421 (-2.395956) [0.0182]	-0.174494 (-2.417172) [0.0173]
R2	0.972547	0.972719	0.973389
R2-Adiusted	0.963643	0.963872	0.964600
D-W	1.962509	1.953034	1.952441

The result of the appropriate combination of banks selection assumption is in Table (9). We used an equivalent equality test to select a suitable combination. The results of the survey indicate that model 3 compared with

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model 1 and 2, and model 5 compared with model 4 and 6 are more suitable. Also, the comparison between model 5 and model 3 shows the following results.

Table 9
Equivalent Equality Test in Size

Hypothesis	T- statistic	Prob	Results
Hypothesize (1)	0.148919	0.0000	The Null hypothesis is rejected
Hypothesize (2)	0.163514	0.0000	The Null hypothesis is rejected
Hypothesize (3)	1.277278	0.2052	The Null hypothesis is not rejected
Hypothesize (4)	3.878832	0.0021	The Null hypothesis is rejected
Hypothesize (5)	3.839235	0.0078	The Null hypothesis is rejected
Hypothesize (6)	1.253203	0.2126	The Null hypothesis is not rejected

The result of the Hypothesize 7 test is in Table (10). Therefore, model 3 has a more positive effect on the supply of loans compared with model 5.

Between the 6 estimated models, the third model, the combination of small and large banks, has a more positive effect on the supply of loans. Because the combination of a small bank with a large bank will increase effectiveness and reduce costs. On the other hand, the combination of medium-sized banks with medium and large banks creates the risk that the resulting institution becomes too big to fail, and the combination of small-sized banks with other banks, given the small share of banks in the market, has a less positive effect on the supply of loans.

Table 7
Equivalent Equality Test in Size (Continue)

Hypothesis	**T- statistic**	**Prob**	**Results**
Hypothesize (7)	2.512318	0.0134	The Null hypothesis is rejected

Table (11) indicates the result of the equivalent equality test in terms of health. The results of Table 11 show that for the banks to be selected for merging, they have to pay attention to their health. The combination of healthy

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banks can have a more positive effect compared with other models. It is because healthy banks are better at identifying customers, attracting resources, and managing costs than other banks, and this could have a more positive effect on the supply of Loans.

If the central bank's purpose is to rescue a bank at risk and unhealthy, it is better to choose the combination between an unhealthy and a healthy bank because the proper management of a healthy bank can solve the problems of an insolvent bank.

Table 8
Equivalent Equality Test in Healthy

Hypothesis	T- statistic	Prob	Results
Hypothesize (8)	2.651482	0.4134	The Null hypothesis is not rejected
Hypothesize (9)	0.163514	0.4988	The Null hypothesis is not rejected
Hypothesize (10)	1.277278	0.2270	The Null hypothesis is not rejected

5 Conclusion

The merger of banks has so far attracted interest from Iranian central bankers, and efforts are being made to integrate banks with a similar field of activity. Under the current conditions of Iran's economy, such as conditions of bank sanctions, recession, high inflation, and currency fluctuations, banks are more prone to these conditions. In this context, the reform of the financial and operational structure of banks is more urgent than ever.

One of the ways to improve the financial structure of banks is to integrate these institutions. Banking policymakers hope that the merger of banks could be beneficial, such as improvement in service, absorption in resource, reduction in cost, banks' risk reduction, and improvement in financing by banks. In the current economic conditions, banks are the most important source of funding for firms and businesses of varying sizes. Therefore, one of the things that affect the pooling of banks is the power of bank financing after the merger. Considering the importance of the issue of financing, this paper examines the effects of the merger of banks on the financing, according to the theoretical and empirical literature. Financing is presented as the means of providing the loan.

Existing theoretical and empirical literature of various dimensions, such as the effect of the merger of banks on the size of the loans (such as supply loans

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to small and medium enterprises or large businesses), the effect of the merger of banks on the combination of loans (such as loans to the agriculture sector, industrial sector, etc.). Also, mergers have been studied in a variety of ways, such as merging banks based on different sizes or different types of ownership, merging banks statically or dynamically. The results of empirical studies also indicate a decrease in the supply of loans to small businesses and an improvement in the supply of loans to the agricultural sector.

In this paper, given the data limitations such as lack of the data of merged banks and institutions, so it is not possible to examine the effect of the merger of banks on the supply of loans. Therefore, the simulation method has been used in this paper. So using the financial statements of the Iranian banks from 2006 to 2018, the merger of banks in a static manner (the simple combination of the banks' balance sheet) is examined. Banks are also considered in large, medium, and small size, and in terms of health.

The results of the survey show that the integration of small-sized banks with a bigger effect has a more positive effect compared to the integration of banks with other dimensions. These results are consistent with the results of studies such as Goe et al. (2018), Baberjee et al. (2017), and Sapinza (2002), and similar studies are similar.

The study of the effect of banks' integration on loans in terms of the health of banks, suggests the merger of unhealthy banks reduces the supply of Loans, but the integration of healthy banks can improve the supply of loans. Therefore, it is suggested that if the policymakers' goal of integrating banks is to achieve the goal of financing, they should pay attention to the size of the merging banks. It is better to have large banks merged with small banks and create a larger bank. Because of the benefit from the economic scale, the loans will be improved. Also, policymakers should pay attention to the health of banks. Because of the lack of attention to the health of banks, and the integration of endangered banks with other banks threatens the banking system with systemic risk and bankruptcy risk.

References

Avery, R. B., & Samolyk, K. (2000). Bank Consolidation and the Provision of Banking Services: The Case of Small Commercial Loans. *Federal Deposit Insurance Corporation*.

Baltagi, B. (2005). *Econometric Analysis of Panel Data*. New York: John Wiley& Sons Ltd.

Banerjee, R. N., Gambacorta, L., & Sette, E. (2017). The Real Effects of Relationship Lending. *BIS Working Papers*, No, 662.

[Downloaded from jme.mbri.ac.ir on 2026-11-02]

[DOI: 10.52547/jme.15.3.273]

Berger, A. N., & Udell, G. F. (1995). Relationship Lending and Lines of Credit in Small Firm Finance. *Journal of Business*, 68(July), 351-82.

Berger, A. N., Demsetz, R., & Strahan, P. E. (1999). The Consolidation of the Financial Services Industry: Causes, Consequences, and Implications for the Future. *Journal of Banking and Finance*, 23, 135–194.

Berger, A. N., Kashyap, A. K., & Scalise, J. M. (1995). The Transformation of the U.S. Banking Industry: What a Long, Strange Trip It's Been. *Brookings Papers on Economic Activity*, (2), 55-218.

Berger, A. N., Saunders, A., Scalise, J. M., & Udell, G. F. (1998). The Effects of Bank Mergers and Acquisitions on Small Business Lending. *Journal of Financial Economics*, 50(2), 187-229.

Boot, A.W.A (2000). Relationship Banking: What do We Know? *Journal of Financial Intermediation*, 9, 7-25.

Cole, R. A., Goldberg, L.G., White, L.J., (1999). Cookie-cutter versus character: The micro structure of small business lending by large and small banks, in business Access to Capital and Credit, edited by J.L. Blanton, A. William, and S.L.W.Rhine, A Federal Reserve System Research Conference, 362-389.

Diamond, D. W. (1984). Financial Intermediation and Delegated Monitoring. *Review of Economic Studies*, 51, 828–861.

Diamond, D. W. (1991). Monitoring and Reputation: The Choice between Bank Loans and Directly Placed Debt. *Journal of Political Economy*, 99, 689-721.

Focarelli, D., & Panetta, F. (2002). Are Mergers Beneficial To Consumers? Evidence from the Market for Bank Deposits, Banca d'Italia. *Temi di Discussione*, n.448.

Gao, N., Hua, C., & Khurshed, A. (2018). Loan Price in Mergers and Acquisitions. *The University of Manchester Research*, 1824.

Hausman, J. A. (1978). Specification Test in Econometrics. *Econometrica*, 46(6), 1251-1271.

Johnston, J., & Dinardo, J. (1997). *Econometric methods*. 4th Edition. New Jersey: MacGraw-Hill.

Karceski, J., Ongena, S., & Smith, D. (2002). The Impact of Bank Consolidation on Commercial Borrower Welfare, Federal Reserve Board, *working paper*.

Ongena, S., Smith, D. C. (2000). Bank Relationships: A Review, in Harker Patrick T., Stavros A. Zenios (Eds.), Performance of Financial Institutions: Efficiency, Innovation, Regulation, 221-258.

Peek, J., & Rosengren, E. S. (1998). Bank Consolidation and Small Business Lending: It's Not Just Size that Matters. *Journal of Banking and Finance*, 22:799–819.

Petersen, M., & Raghuram, G. R. (1994). The Benefits of Lending Relationships: Evidence from Small Business Data. *Journal of Finance*, 49, 3–37.

Petersen, M., & Raghuram, G. R. (1995). The Effects of Credit Market Competition on Lending Relationships. *Quarterly Journal of Economics*, 110, 407–443.

Prager, R., & Hannan, T. H. (1998). DO Substantial Horizontal Mergers Generate Significant Price Effects? Evidence from the Banking Industry. *Journal of Industrial Economics*, December, Vol. 46, n.4, 433-452.

[Downloaded from jme.mbri.ac.ir on 2026-11-02]

[DOI: 10.52547/jme.15.3.273]

Prasad, K. V. N., & Ravinder, G. (2012). A Camel Model Analysis of Nationalized Banks in India. *International Journal of Trade and Commerce*, 23-33.

Rajan, R. G. (1992). Insiders, and Outsiders: The Choice between Informed and Arm's Length Debt. *Journal of Finance,* 47, 1367–1400.

Ramakrishnan, R. T. S., & Thakor, A. V. (1984). Information Reliability and a Theory of Financial Intermediation. *Review of Economic Studies*, 51, 415–432.

Sapienza, P. (2002). The Effects of Banking Mergers on Loan Contracts. *The Journal of Finance*, Vol. LVII, No. 1.

Sharpe, S. A. (1990). Asymmetric Information, Bank Lending, and Implicit Contracts: A Stylized Model of Customer Relationships. *Journal of Finance*, 45, 1069–1087.

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[DOI: 10.52547/jme.15.3.273]