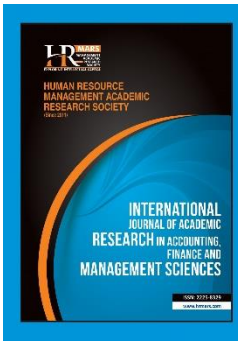

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Assessment of the Influence of Interbank Information Exchange Network (Shetab or Acceleration System) on Commission Revenues of the Banks Listed in Tehran Stock Exchange

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Abstract
In recent years, the use of technology information in Iranian industries service, particularly banking industry, has been dramatically increased. Acceleration or handling payment system as a basic platform to transfer electronic funds provides technology-based banking conditions by creating a center via the banking network. Accordingly, in this paper, the impact of accelerated network establishment duration on the commission incomes of Iranian banks was evaluated. The results were indicative of the positive impact of "Shetab" network on commission revenues of Iranian banks.
Keywords: Electronic Banking, Payment System, Interbank Information Exchange Network (Shetab or Acceleration System), Commission Incomes.

Introduction

Changes in the field of e-banking development have left a significant effect on the banks' activities to increase incomes diversities. Not so long ago, the major part of the banks' incomes was earned through bank facilities, but in recent years, banks have succeeded to reduce their income dependencies on the interest rates associated with high fluctuations by turning to earning from banking services and commissions.

By collecting, classifying, and analyzing the data from the customers' transactions, creating a mix of products and a distinctive brand, development and improvement of financial services, banks have been able to earn significant revenues (Botshekan, 2013).

The beginning of the 80s (solar calendar) coincided with the definition and advance of a plan, which later took the name of a comprehensive payment system. At the same time, in 2001, the Bank of International Settlements (BIS) finalized and published 10 principles of the "Basel Committee" in terms of the payment and settlement systems with the participation of the world's major central banks.

Comprehensive payment system plan based on the principles of the "Basel Committee" consisted of an important document: Payments Strategy. This important document was written and approved by the Central Bank of Iran in 2003. According to this strategy, Satena and Paya, Shetab, and Namad were defined as the mass payment system, switch of national card, security bed, prevention and backup systems, respectively, as their positions were determined in the Iranian banking system. Today, the importance of Shetab, Satena, and Paya systems and their critical infrastructure roles in the Iranian banking system are not unknown to anyone, whether urban or rural people, banking or non-banking agents, or employees, merchants, and businessmen (Ahmadi, 2012).

By creating Shetab center, the cards of all bank's members are useable with the observance of Point of Sale (POS) and Automated Teller Machine (ATM) standards of online payment portals, telephone banking, etc. related to other banks and PINPAD branches. As a result, by optimal investments in POS and ATM networks throughout the country, the banks have been able to use each other's investments, while Shetab (acceleration) center has performed all the controls needs and the necessary barters between the banks. Today, all the Iranian banks, both public and private, have become a member of this center[1].

Through information and culture-promotion in the society, e-banking can be enhanced to reduce physical presence of banks' customers, physical cash flow, costs of printing new banknotes and destruction of old banknotes, numbers of banks' employees and their wastes of time, and consequently banks' operational costs (Allahyari, 2005).

Theoretical Principles

E-banking

Electronic banking is the use of advanced hardware and software technologies based on network and telecommunications to facilitate banking operations. E-banking popular models include electronic banks and their virtual branches (Ghasemi, 2012). Some e-banking services offered on Iranian banks are card services, ATM, funds transfer system at point of sale, PINPAD branches, telephone banking, Internet banking, and mobile banking.

Payment System

By the definition of the Bank of International Settlements (BIS), payment system briefly consists of a mechanism to transfer a fund from an account in a bank to an account in another bank. With respect to its main objectives, the payment system pursues many minor goals at different levels, the three of which could be mentioned as economic, financial, and social objectives (Shirani, 2005).

Payment system in Iran

Implementation of a comprehensive payment system plan incorporates a methodical and systematic process that should be designed and operated with regard to prerequisites. After performing the payment system infrastructure components, intra-banking systems are electronically tested for interbank transactions. The design has been set to be operationalized during the following phases:

- Implementation of the messaging system of Melli (National) Bank via the Public Key Infrastructure;

[1] http://asrebank.ir/news/1198

- Simultaneous implementation of gross and real-time settlement systems and settlement of securities;
- Implementation of electronic bartering;
- Implementation of anti-money laundering system;
- Implementation of check imaging system (Shirani, 2005).

Implementation of payment system plan in Iran

Since a change in the Iranian payment system further necessitates a change in the management and administration infrastructure of banking network, creation of an organization corresponding to change management requirements is a priority based on the given objectives. Some important payment systems that have reached implementation and operational phases include inter-banking information exchange network, Real-Time Gross Settlement (RTGS) system (Satena), electronic bank transfer system (Sahab), electronic securities settlement system (Taba), electronic payment card network (Shaparak), electronic bartering (Paya), and digital signature management system (Namad).

Shetab (acceleration) Center

Since 2002, Shetab Network has begun working aimed at integrating card systems of all the country's banks. Today, “Shetab” center plays a role as a national switch for the bank cards while all the country's banks are its members. Shetab operations involve a wide range of transactions such as cash withdrawals, electronic purchases, funds transfer, bill payments, and balances. Shetab center performs an average daily processing of more than two and a half million transactions. Membership in the mentioned center occurs under the rules governing Shetab Center[2].

Payments based on bank cards are usually known as a symbol of e-banking. Hence, to save costs and share investments in devices, use of a common switch for bank cards known as a national switch or so to connect the banks together is desired. Use of a switching system as mentioned above leads firstly to the feasibility of transactions of card payments on the same bed and in the banking network, apart from the card issuing bank or its acceptor POS and secondly to the significant reduction of costs of investments in the installation and operation of POSs and their maintenances. In practice, the national switch must be run together with the bartering software of inter-bank accounts to ultimately settle card micro-transactions through particular systems at the end of each bartering period (Shirani, 2005).

Shetab system tasks:

- Transaction routing and guidance to the relevant bank card system;
- Recording transactions and events in the system;
- Creating a transaction amendment in case of the main transaction failure;
- Providing end-of-day settlements between member banks;
- Creating an interface to switch between the banks abroad;
- Regulating network management and security.

Commission Incomes

At the international level, with increased competition, bank managers’ have orientated towards other directions, i.e. maximum revenues from the services. On the other hand, the provisions of the "Basel Committee" and its heavy emphasis on compliance with capital

[2]http://www.cbi.ir/page/2421.aspx

adequacy ratio have resulted in a rather low interest of the banks in the sharp rise of risky assets such as facilities. Therefore, taking charge of commissions in different ways has been considered with respect to risk types. By a general classification, it is possible to increment bank commissions via three ways:

A) Income from temporal commissions: Obtaining such a commission is determined according to its duration. With regard to the fact that the domestic and international credits lie in this group, a large portion of bank commissions originates from this section. Time and money are the main variables in this method. In other words, the more the amount and time of providing banking services are, the greater the commissions are collected.

B) Commission due to foreign exchange: This commission is obtained from the difference between buying and selling of foreign currencies. By establishing Treasury Department and Department of Monetary Transactions, many advanced banks in the world have proceeded to buy and sell all kinds of exchanges at the international level while providing coverage of the present risks including those of exchange rate fluctuations and earned substantial incomes.

C) Other commissions: From among these commissions, those relevant to a variety of Iranian rial services such as issuing money orders and drafts could be noted. Recently, banks have begun to earn money through income-based activities and left earning through profit-based methods. Apart from deposits and loans, the banks offer insurance services, investment banking services, stock brokerage, mutual funds, asset management, and a variety of financial services to their clients. By the development of the field of electronic banking, the banks receive commissions from their customers through the issuance of magnetic cards, ATMs and POS services, telephone banking systems, Internet banks, mobile banks, etc. This means that the banks do not need to expand their branch networks for all their clients any more. These banks can also receive more commissions from their customers for their ease and convenience[3].

Bank Transaction Commission Structure

All the transactions within Shetab center include commissions. The following is how to receive and divide some commissions based on the latest changes:

1. Money transfer or card-to-card money transfer is an operation which includes commissions. Funds transfer ceiling through ATMs is 30 million rials. Funds transfer commissions is 5000 rials for the first 10 million rials and 2000 more rials are added to the second and third 10 million rials each. Of the commission obtained, 1000, 500, 3,000 rials, and the rest are allocated to Shetab, card issuer, ATM holder's bank, and the destination bank card, respectively[4].

2. For the balance using ATMs, 1000 rials are deduced from the customer's account for commission, while no commission is subtracted for the balance service on the point of sale or port of Internet bank, except that a cost of 1206 rials is paid to Shetab and the accepting bank by the card issuing bank, i.e. 706 and 500 rials for the accepting bank and Shetab, respectively.

3. For each bill the customer settles using ATM, the card issuing bank pays 1500 and 563 rials to the accepting bank and shetab, respectively, instead of him. This is while in our

[3]http://banki.ir/bank-ha/21115

[4]http://newbanking.mihanblog.com/post/tag

commission system, no tariff has been basically set to urge the customer to pay a commission for this service[5].

4. Minimum commissions for withdrawal, shopping, and gift cards and in general all those, for which the equivalent usable funds have been deposited in their relevant banks, are calculated as follows:

4.1. Minimum "acceptor" commission of 1% of the transaction amount is up to 2000 rials. This commission belongs to the provider of payment services.

4.2. Inter-bank commission for each successful transaction is the purchase of 706 rials, which is received from the card issuing bank and shared as follows: 250, 250, and 206 rials are allocated to Shetab center, Shaparak, and the provider of payment services, respectively.

4.3. Minimum commission for the credit cards issued within the guidelines of the Central Bank is 1% of the transaction amount plus a fixed sum of 2000 rials. This amount is shared as follows: 1% of the transaction amount, 250, 250, and 1,500 rials for the credit card issuing bank, Shetab center, Shaparak, and the provider of payment services, the POS of which has been used, respectively. The difference of the commission received from the acceptor and the minimum above-mentioned commissions belong to the provider of payment services.

5. To develop electronic payments and reduce cash uses, a fraction of 2.5 per 1000 of each transaction amount of “Shetab” funds withdrawal has been set to be deduced from the commission of “Shetab” funds withdrawal of the accepting banks and deposited into a special fund since 22/02/2012. Since the mentioned date, cash withdrawal commission from ATMs has been determined to be 0.85% for the accepting bank. The fund balance at the end of each quarter is divided by the total number of “Shaparak” successful transactions and the value obtained is defined as the "subsidy for each e-cash transaction". After evaluating each quarter performance of the provider of payment services in accordance with Service Level Agreement (SLA), applying coefficient of performance, and obtaining the opinion of the Central Bank, “Shaparak” calculates the above-chosen number for every successful purchase transaction and credits it to the accounts of the providers of payment services[6].

Commission of failed bank transactions

Failed transactions

This transaction refers to the use of a bank card at an ATM or physical or virtual POS of another bank while passing through the accepting bank card and Shetab center switches and to the bank card issuing switch but no response has returned from it to Shetab center and the customer has not received the requested service due to one of the following reasons:

- Disconnection of bank card issuing switch and Shetab center;
- Issuer down of the related systems with the issuing bank card;
- Time out of the bank card issuing switch to respond to the transaction.

Seeking for commissions from failed bank transactions

The central bank of the Islamic Republic of Iran takes commissions from banks for their “failed transactions” as reported to their managing directors within 15-day periods. The amounts collected are spent for public culturalization in the field of e-banking development. The method of calculating such commissions is as follows:

[5] http://way2pay.ir

[6] www.cbi.ir

1. If a bank's ratio of failed transactions to its total Shetab's transactions is more than 5%, the card issuing bank would be charged with a commission of 500 rials for each failed transaction.

2. If a bank's ratio of failed transactions to its total Shetab's transactions is more than 10%, the card issuing bank would be charged with a commission of 1000 rials for each failed transaction.

3. If a bank's ratio of failed transactions to its total Shetab's transactions is more than 15%, the card issuing bank would be charged with a commission of 1500 rials for each failed transaction.

Literature Review

Statistics indicate a dramatic growth of electronic banking in the world (Shakib, 2000, p. 97). Benefits of e-banking in providing customers with better services and improving productivity indices within banks have attracted the attention of many worlds' researchers. Some of the relevant latest studies are as follows:

In a study conducted in Oman, 225 participants responded to the questions about the adoption and application of new banking methods including Internet banking. The results of this study indicated that individuals' traditional practices, lack of governmental supports, weaknesses of communication systems, and low network speed are of the major obstacles to the development of new ways of banking in Oman (Al-sabbagh et al., 2004).

Borzekowski et al (2006) examined users' applications of debit cards in the United States. Based on the results of this study, debit cards serve as a primary alternative to cash and checks. The probability of using debit cards decreased with increasing age and increased with the level of education, while women's application rate of such cards was higher than that of men. Convenience was expressed as the most important reason for using debit cards.

In an article which is entitled "The Impact of the Plurality of ATMs on Cost Performance: An Empirical Study in Taiwan", Ou *et al* (2009) investigated the effect of ATMs on the cost efficiencies of Taiwanese banks and expressed that the use of ATMs is able to reduce costs and enable the banks to achieve higher performance levels. China believes that the use of ATMs will reduce operating costs by eliminating manual operations.

In their article, Goudarzi and Zobeidi (2008) addressed the impact of e-banking development on the profitability of Iranian commercial banks. Through the examination of the effects of market concentration index, bank size, number of ATMs, and joining of Iranian commercial banks to Shetab network, they concluded that in spite of all the present difficulties and restrictions, e-banking development has been associated with the increasing of commercial banks' profitabilities.

With his case study on Eqtesad Novin Bank, Afshar (2011) investigated the customers' attitudes towards Internet banking based on the developed theory of planned behavior. According to the results of this research, the more the customers perceive information quality provided on the bank website, acceleration of interactions, and banking system security, the more positive their attitudes to the use of such services will be. Based on the results of their research entitled "The Effects of ATMs, POSs, and Branches on the Selected Iranian Banks' Profitability", Asadzadeh & Kayani (2012) argued that the uses of ATMs, POSs, and branches have positive impacts on the profitability of the selected Iranian banks. They explained the number of ATMs employed with a standstill as the main variable of ICT in the field of e-banking leads to an average one-unit increase of 0.0005% in the short-run besides the positive impacts of POSs and branches as sensitivity variables.

Methodology of Research

The main objective of this study was to assess the effect of Shetab network on the commission incomes of the banks listed on Tehran Stock Exchange. To achieve this goal, the overall form of the model used is shown as follows:

$$BCI_{it} = a_i + bSHETAB_{it} + u_{it} \quad (1)$$

$SHETAB_{it}$ is the variable of bank's income arising from the use of Shetab network for unbalanced data in section (i) at time period of (t) for the years of 2008-2013. The banks included Eqtesad Novin, Persian, Pasargad, Tejarat, Saman, Sarmaye, Sina, Saderat, and Mellat. BCI represents the revenue derived from providing services to customers at the selected bank. To evaluate the model and test the research hypotheses, panel data econometric method was utilized. The software used in this research was Eviews.

Assessment of the Research Model using Fixed-effects Method

The Results of model 1 with fixed effects for the selected banks over the period of 2008-2013 is shown as an unbalanced panel in Table 1.

Table 1
The results of model 1 estimation using fixed-effects method

Variable	R-squared value	Std. Error	t-statistics	Sig.	F-statistics	F-probability
Shetab Network	0.683	1.118	3.151	0.003	10.54	0.000

Source: research calculations

The regression equation was extracted as follows:

$$BCI = 1690546 + 3.524517*SHETAB \quad (2)$$

Sensitivity and Reliability of the Results

To evaluate the strength of the results of the effect of Shetab network on the commission incomes of the selected banks, our model was estimated by adding risk variable.

Table 2
The results of model 2 estimation using Shetab network and risk variable

Variable	R-squared value	Std. Error	t-statistics	Sig.	F-statistics	F-probability
Shetab Network	0.683	1.118	3.151	0.003	10.54	0.000
Risk	0.709	0.082	1.936	0.059	10.453	0.000

Source: research calculations

The regression equation was extracted as follows

$$BCI = 1400543 + 3.148587*SHETAB + 0.159355*Risk \quad (3)$$

By entering risk variable, coefficients of the main variables of the research model remain almost unchanged with fixed signs and become statistically significant. Therefore, the results of the research model estimation can be defended.

Conclusion and Suggestions

In the current study, based on the estimation results of the models, the positive impact of Shetab network on commission revenues of the selected Iranian banks was corroborated. Regarding the positive relationship between Shetab network and the banks' commission earnings, it can be stated that despite all the problems and restrictions, the use of Shetab network has led to the increment of the banks' incomes. The low level of Shetab network variable coefficient in earning commission revenues of Iranian banks may be due to low share of this variable compared to the other widespread traditional activities of the country's banks as well as the fines paid for failed bank transactions. Appropriate development of infrastructures commensurate with the increased number of customers and transactions as a preventive factor for failed transactions will cause further enhancement of the banks' commission incomes.

In economic studies, lack of full access to statistical data is the major problem that researchers frequently face. Similarly, in this research, due to the lack of monthly or quarterly statistical variables, annual statistics were inevitably used that means less number of observations to limit econometric work. In case of access to Iranian banks' variable statistics on a monthly basis, better estimates can be made and even the influential variables on each bank can be calculated to examine its situation. Determination of what conditions each bank is involved in in terms of efficient use of Shetab network and in what place and circumstances it is relative to other banks craves for more coherent data and statistics. By employing appropriate studies and statistics, the impacts of ATMs, POSs and branches, telephone banking, and Internet banks on the Iranian commission incomes can be further investigated.

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