

Environmental Economic Factors Affecting Banking

Sector of IRAN:

An Empirical Assessment Using the VEC Model

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ABSTRACT

This working paper has aimed to investigate the impacts of environmental economic factors affect the volume of banking deposit and loan with yearly data (1978-2013). We employed Vector Error Correction (VEC) model to estimate short-run and long-run relations. Detection of cointegration between variables was tested by Johansen cointegration test which indicates the deviation from long-run equilibrium. The empirical findings of this study show that total private and public consumption has adverse impact on volume of deposit and loan but GDP affects positively on them in the long-run. Moreover, the error correction part which represents the short run relations reveals that if the value of GDP lies above its long run equilibrium, then the volume of deposit and loan will increase next period. As well as, we forecast the volume of these two variables for 2014 and 2015. So it demonstrates that the volume of loan will grow about 24% for 2016 while loan growth rate will be 30%. According to our findings, we can suggest to policy makers that expansionary policies cause banking sector to be stable.

Key Words: Banking sector, financial intermediaries, IRAN, volume of deposit and loan, GDP, VEC

JEL: E23, P24, E42

1. INTRODUCTION

Banking sector, through its saving and loan allocation mechanism, has played a very momentous role in creating stable and valid economic performance as indicated by higher Gross Domestic Product. Its primary task is to move scarce funds from those who save to those who borrow for consumption and investment (Min B. Shrestha, Khorshed Chowdhury (2005)). In addition, Todaro and Smith (2003) list 5 other functions that are important at the firm level and for the economy as a whole. These include: provision of payments services, generation and distribution of information, allocation of efficient credit, pricing, pooling and trading of risks and lastly, increasing liquidity of assets. So there should be a banking system that allocates loan (scarce funds) to all economy sectors (i.e.: service, trade, industrial sector and so on) effectively and equally in order to get more GDP. In other words, the lack of a full-fledged banking system has often been identified as a major weakness of the centrally planned economies (Jacek Rostowski, (2006)). Schumpeter (1911) believed that efficient allocation of savings through identification and funding of entrepreneurs (loan) would motivate more productivity and is subsequently supported by McKinnon (1973), Shaw (1973), Fry (1988), and King and Levine (1993) by suggesting the above postulation about the significance of banks to the performance of the economy. Frederic S.Mishkin (2004) emphasize on banking system. He believes that, the operations of individual banks (how they acquire, use, and manage funds to make a profit) are roughly similar throughout the world. In all countries, banks are financial intermediaries in the business of earning profits. When you consider the structure and operation of the banking industry as a whole, however, the United States is in a class by itself. In most countries, four or five large banks typically dominate the banking industry. But Iran uses Islamic banking system which prohibits usury and lacks a competitive financial market as well as low number of banks.

On the other hand, banking sector, like so many other organizations, is affected by internal and external factors which can modify the performance of this crucial economic element for each country's economy. Generally we can divide these factors into two groups: Political and Economic factors. Political factors can be constructed by central bank. Among the most important players in financial markets throughout the world are central banks, the government authorities in charge of monetary policy. Central bank actions affect interest rates, the amount of credit, and the money supply, all of which have direct impacts not only on the financial markets, but also on the aggregate output and inflation (Frederic S.Mishkin (2004)). In contrast, economic factors (like GDP, Consumption etc.) also are influenced by Political factors, they can affect banking variables such as volume of deposit and loan. There is an assumption stated that economic growth increases higher savings rate as supported by some researchers like: Sinha (1998), Saltz (1999), Agrawal (2001) and others¹.

Hence, we consider these environmental impacts on banking variables and scrutinize this economic interaction. The main purpose of this paper is to estimate relationship between variables. So we employ VEC model to estimate separately long-run and short-run relationship. In the second part of this paper, we briefly look into background of the issue and literature review. The objectives of study will be discussed in the third part. Next part demonstrates empirical results. Finally, section five will conclude the paper.

¹ .We will explain more about it later.

1.1. CRUCIAL ROLE OF BANKS AS FINANCIAL INTERMEDIARIES

The importance of financial development and its role in improving the economic situation is considered in many economic schools. The results of these considerations and studies confirm a constructive relationship between them. The large parts of these studies examine the role of financial sector in economic growth. Stiglitz (2003) emphasized on the role of credit as a facilitator of economic activity in the broad sense referred. However, in the early twentieth century, Schumpeter (1912) mentioned the banks as key to economic development. He considered credits as order in the economic system that harmonizes it with entrepreneurial purposes. From the perspective of Fry (1995) in developing countries, the financial systems in these economies are dominated by commercial banks. View of baking- oriented approach (in contrast with market-oriented approach) emphasizes on the role of banks in variety of fields, A. gathering information about firms and their managers (Diamond 2000) B. Credit risk management and increasing the efficiency of investment (Bencivenga, V. R. and Smith, B. D 1991). C. Mobilizing savings in order to benefit from economies of scale (Peter.Tufano and Erik R. Sirri.1995). Iran, as a developing country, also has a bank –based (Islamic banking) financial system. Table- 1 shows the role and position of the banking system in Iran's economy¹. As can it be seen on the following table, variables of the banking system are always larger than capital market variables. The information of this table is the testimony of the importance of the role of banks in Iran.

1.2. THE ROLE OF LOAN IN THE ECONOMY

In the modern economy, most money takes the form of bank deposit. The principal way is through commercial banks making loan. Whenever a bank makes a loan, it simultaneously creates a matching deposit in the borrower's bank account, thereby creating new money (Michael McLeay et al, 2014). Traditionally it was always assumed that in many countries, the volume of loan (credit) is directly related to the volume of deposit in the financial system. But over the last ten to fifteen years, according to financial innovations, the relationship between these two variables is broken because of the rapid increment in the loan (Robert Kelly et al, 2011). This sizeable build-up of credit has been identified by many as being one of the main contributing factors to the financial crisis, which originated in mid-2007(Robert Kelly et al, 2011).

In the empirical literature, there is reliable evidence of a relationship between rapid credit growth and loan losses (credit risk). Thus its aftermath is: *the economic crisis*. For example, Dell'Araccia and Marques (2006) forecasted that episodes of future defaults are more likely in the consequence of periods of strong credit expansion. Segoviano Basurto et al (2006) demonstrated a good predictor of future defaults that is credit to GDP indicator, while Clair (1992), Keeton (1999) and Salas and Saurina (2002) all have investigated the relationship between rapid credit growth and increasing default.

¹ . The goal of this section is not approving View of baking- oriented approach, but to analyze Iran's financial system.

Generally, this relationship between fast credit growth and increasing defaults is linked to over-exuberant lending in economic boost condition (when GDP is increasing). Within this situation, the risk associated with loan may be underestimated. Furthermore, there are evidences that banks' lending mistakes are more common in economic booms than in recessions. There are a number of channels through which this link between rapid credit growth and increasing defaults may operate. As a result, greater attention is now focusing on determining what the steady-state level of credit should be for an economy (Robert Kelly et al, 2011).

Table-1

Variables	The ratio of Stock market value to GDP%	The ratio of Value of share trading to GDP%	The ratio of Non-sight deposit to GDP%	The ratio of Non-sight deposit to Liquidity%	Variables	The ratio of Stock market value to GDP%	The ratio of Value of share trading to GDP%	The ratio of Non-sight deposit to GDP%	The ratio of Non-sight deposit to Liquidity%
Year					Year				
1991	4.7	0.9	28.6	52.4	2002	11.6	2.2	23.2	56.3
1992	3.2	0.5	27.9	54.4	2003	24.9	5.4	24.9	58.7
1993	2.7	0.5	24.2	53.4	2004	24.7	6.6	27.6	63.1
1994	4.7	0.6	22.3	50.8	2005	16.3	2.8	30.3	65.5
1995	10.7	0.9	22.1	51.8	2006	16.4	2.3	36.1	67.7
1996	11.5	1.6	22.2	51.7	2007	14.7	2.3	35.2	67.3
1997	8.6	0.6	22.5	52.9	2008	12.0	3.7	36.8	72.4
1998	7.5	0.9	24.3	53.4	2009	16.7	4.7	45.1	74.5
1999	9.3	1.1	22.4	55.0	2010	23.5	4.6	46.2	74.3
2000	10.0	1.5	21.6	54.1	2011	20.5	3.6	42.3	74.7
2001	11.2	1.1	24.3	55.5	2012	24.1	3.6	48.9	75.3

1.3. LOAN AND FINANCIAL CRISIS

Commercial banks are not so without restrictions to create financial crisis. So the banking supervisory authorities monitor sensitively the performance of banks. They constantly impose standard and monitoring tools such conditions (like risk management standards, presented in the statement of Basel Committee on Banking Supervision1, 2 and 3) that keep pace with economic changes and developments. The main reason for such strict approach is that the nature of the banking industry is often prone to instability and crisis due to the inherent features like high financial leverage, bank capital mismatching with the balance sheet in comparison with other business, deadline mismatching between assets and liabilities and the constant exposure of the systematic and unsystematic risks.

The Basel Committee on Banking Supervision has issued a proposal to incorporate the ratio of private sector credit (PSC) to GDP into the regulatory system in 2010, by using deviation from long-run trend of the PSC/GDP ratio (called credit gap) to calibrate a countercyclical capital buffer. The acceptance and usage of this ratio as a control tool for keeping the volume of the loan is noteworthy. However, due to the existence of such a relationship between the rapid credit growth and increasing default, we can consider "excessive credit growth" as an "Early Warning Indicator" which is based on economic principles.

Journal of Business Management Science

In the empirical literature, many different methods have been taken to estimate this indicator. Perhaps the most prevailing method, in many aspects, is the *signaling approach*, which is employed in Kaminsky (1999), Borio and Lowe (2002), Hilbers et al (2005), Borio and Drehman (2009) and Alessi and Detken (2009). But as we mentioned in the previous issues, the Basel Committee on Banking Supervision has suggested using deviation from long-run trend of the PSC/GDP ratio. In the first step, this method illustrates the relationship between natural credits growth and sustainable economic activity. In other words, with this approach, we can answer this question: Has this ratio been a stable trend over time?

In order to achieve deviation from long-run trend of the PSC/GDP ratio, we can use many econometrics approaches like ARCH, GHARCH, and multivariate (MV) Kalman filter method and so on. But we use Hodrick-Prescott (HP) filter in order to get this trend and its analysis for Iran. Figure 1, shows the annual economic growth rate and credit. What can be deduced from this graph, there is a relatively high correlation between these two variables (although the annual growth rate of loan has always strictly greater than the rate of economic growth). In other words, the period when one of these two variables increases the other variable is repeating the same pattern.

Figure:1- Loan and Economic Growth

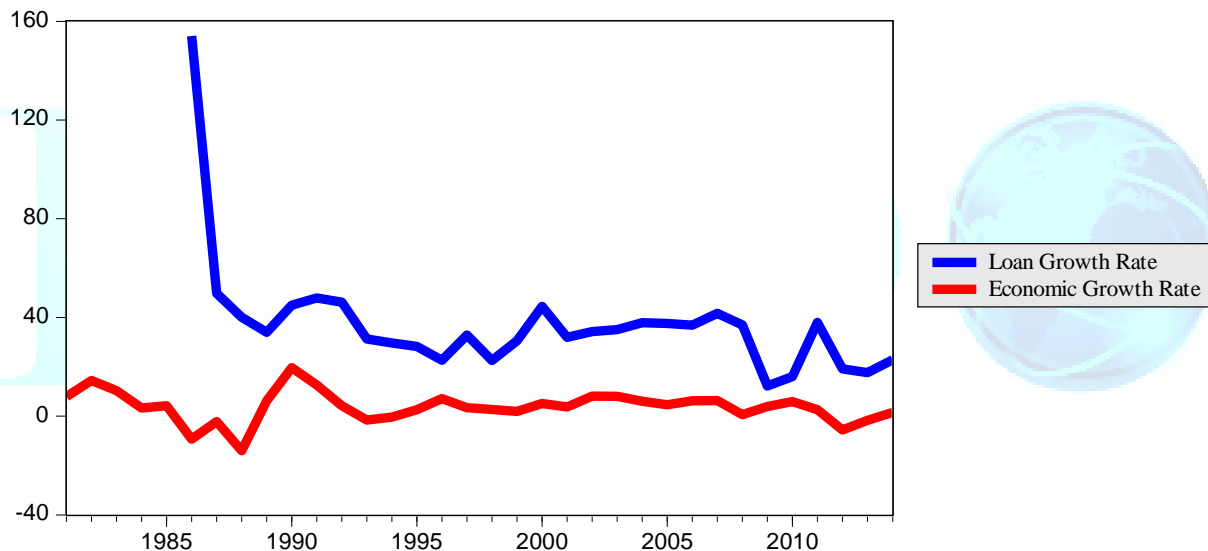
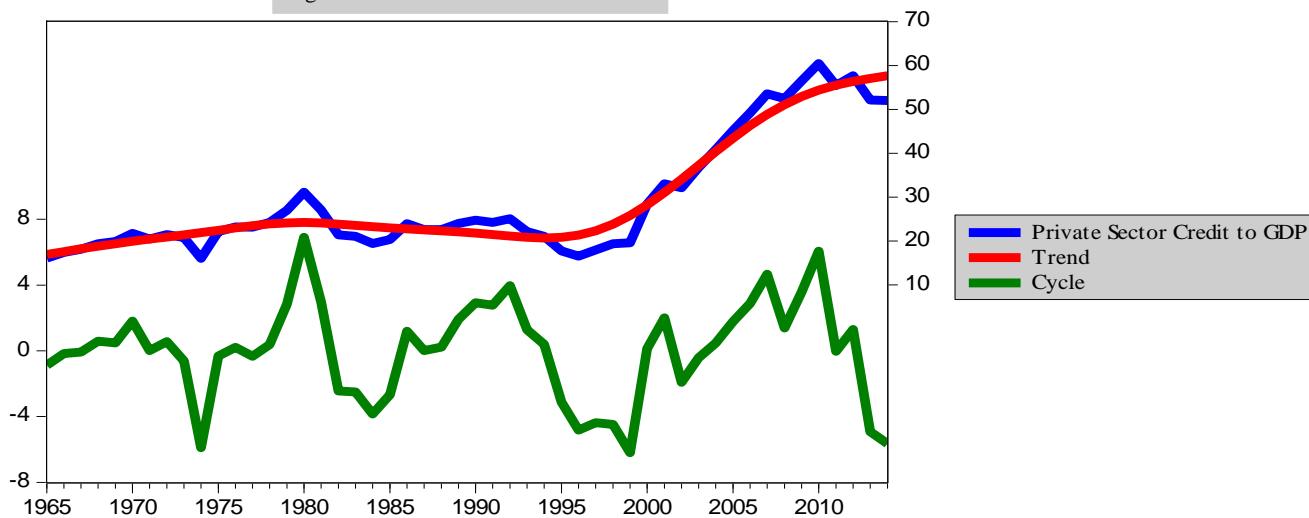


Figure-3 represents three variables: 1. PSC/GDP ratio 2. Trend of this ratio 3. Cycle (credit Gap). The outcome from a HP filter is sensitive to the smoothing parameter (lambda) which is used. It means that change in smoothing parameters has a significant impact on the volatility of the detrended series. To avoid this problem, we use a lambda of 100, the typical smoothing parameter for yearly data. According to Figure 2, it can be stated that the trend of this ratio has two turning points The first turning point is in 1989, until this point the concave curve is downward (The second derivative is negative). Although to reach the second turning point (2005) the trend grows with increasing acceleration, we can forecast a decreasing acceleration for future. Because the third concave will be shaped. This ratio has the greatest deviation from the trend in 1980, 1998 and 2010.

The important point here is how the credit gap behaves. This variable has a sine -like behavior so that it has experienced positive and negative values (shock) in different periods. Positive values of this variable (almost the entire last decade) can be considered as an indicator which documents that credit spreads on GDP and thus it causes financial crisis. It is

clearly evident that the deferred banking system (default) reached its peak in recent years. In contrast, while credit gap is negative, economic growth has been grown with an increasing acceleration.

Figure:2- Private Sector Credit to GDP



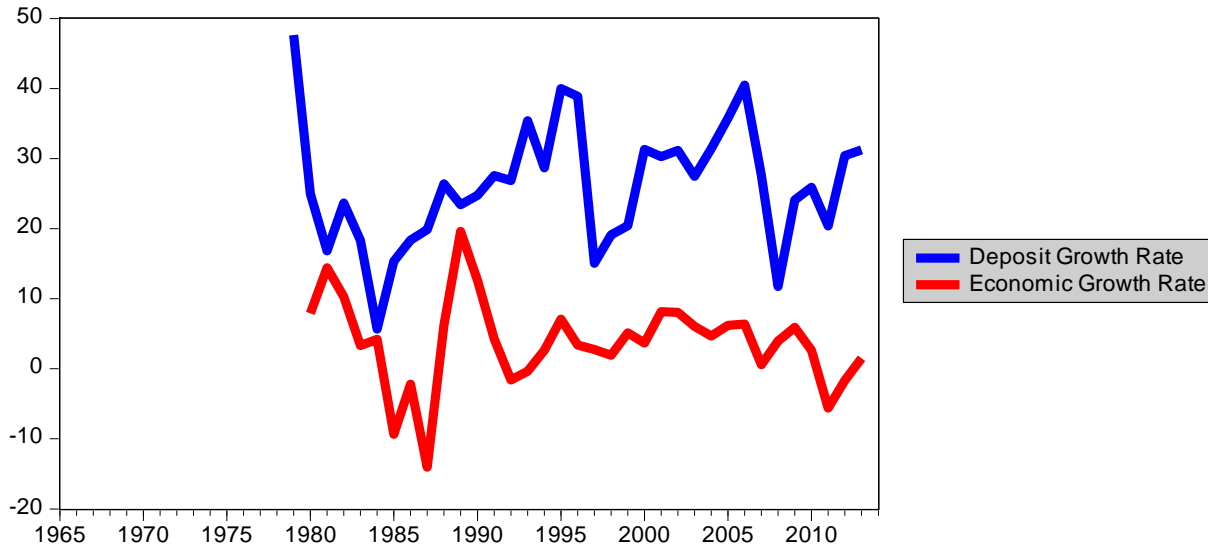
1.4. THE ROLE OF DEPOSIT IN THE ECONOMY

Savings and deposit can be considered as important economic factors and resources to invest in physical capital (Min B. Shrestha, Khorshed Chowdhury (2005)). According to neoclassical growth theory, an increment in long-term savings rate increases the level of capital and production. Thus, the consequence of an increment in savings rate will decline dependence on outside and external shocks and volatility. Lewis (1992) believed that an increase in interest rate causes two financial effects: 1.Savings Effect.2.Portfolio (investment) Effect. The first one suggests that when the interest rates increase; it will increase the rate of return on real savings and reduce the consumption so the supply of deposit (savings) will increase. While the latter indicates that if interest rates increase by more than the increment in the rate of return, investors will shift (modify) their portfolios and new resources will be given to banks. Fry (1988) showed that when the real rate of interest has any significant effect on the national savings rate, that policy won't be important. In other words, he argues that savings rates. Can be increased only in countries where the real interest rate is negative.

Despite all the above, there is evidence showing that any kind of money (created and otherwise) plays an important role in producing business cycle¹. Figure 3 (corresponds to a growth rate of deposit in the banking system and the economy's growth rate) shows that during the period 1979 to 2013, the growth rate of banking deposit which has slowed at the same time or before the beginning of the recession, has fallen. In other words the economic downturn has associated with a reduction in the growth rate of deposit and vice versa. This similarity supports the theory of credit. It suggests that changes in the volume of savings and deposit (the majority of these changes are due to the operation of commercial banks) can be a factor in the creation of business cycle fluctuations.

¹ . See also, Muhammad Fadli Hanafi1, Berly Martawardaya and M. Alfian Parewangi (2014).

Figure:3- Deposit and Economic Growth Rate



2. BRIEF BACKGROUND AND LITERATURE REVIEW

Although, extensive studies have been done to identify and scrutinize the role of the banking system in economy, the effects of financial development on economic growth and so on, the lack of attention to the effects of environmental economic factors influence the banking variables such as deposit and loan is evident and clear. However, some of the researches that can have common ground on this issue, as follows:

Sami Nabi and Osman Suliman (2009) developed an endogenous growth model where the institutional environment is captured through two indicators: judicial system efficiency and easiness of informal trade by analyzing 22 Middle Eastern and North African countries over the period 1984–2004. They showed that an improvement in the institutional environment has two effects. First, it intensifies the causality direction from banking to economic growth through a reduction in defaulting loan. Second, it reduces the interest rate spread. They found bidirectional causality, the first, which runs from banking development to economic growth, is more intense in countries with more developed institutional environment. While the latter, runs from economic growth to banking and indicates that a more developed economy has a more developed banking system. Gabriel Jimenez, Steven Ongena, Jose-Luis Peydro and Jesús Saurina (2009), explored and investigated the impacts of economic and monetary conditions on loan supply in Spain. They analyzed individual loan-level data matched with complete firm and bank information. Moreover, they employed a uniquely comprehensive micro-dataset that includes for the last seventeen years quarterly information on all granted loan to non-financial firms by all banks and for the last seven years monthly information on

loan applications. Their findings show that robust evidence that both adverse economic and contractive monetary conditions reduce loan supply, particularly for firms and banks with lower capital- and liquidity-to-total-assets ratios. Maximilian J. B. Hall, Karligash A. Kenjegalieva and Richard Simper (2008), studied the effects of environmental factors (including private consumption and housing rent) on Hong Kong banking system. As well as they the examined evolution of Hong Kong's banking industry's efficiency and its macroeconomic determinants through the prism of two alternative approaches to banking production based on the intermediation and services-producing goals of bank management over the post-crisis period with using non-parametric truncated regression analysis. They found that there was a significant adverse impact on Hong Kong bank efficiency in 2001, which they attributed to the fallout from the terrorist attacks in America in 9/11 and to the completion of deposit rate deregulation that year. Kiminori Matsuyama (2006), in an article entitled "credit trap and credit cycle" developed and discussed a simple model for credit market imperfections. A market in which firms access to a variety of investment projects which differ in productivity, in the investment size, and in the severity of the agency problems behind the borrowing constraints. His model suggests how investment-specific technological change affects borrower net worth may occur endogenously through credit channels. Finally he concluded that these interactions could lead to a variety of nonlinear phenomena, such as credit traps, credit collapse, leapfrogging, credit cycles, and growth miracles in the joint dynamics of the aggregate investment and borrower net worth.

3. OBJECTIVES OF THE STUDY AND THEORETICAL FRAMEWORK

The main objective of this paper is to scrutinize and investigate the effects of environmental economic factors affect the volume of deposit and loan through the *vector error correction model*. But before that, the existence and number of the cointegrating relations must be tested by Johansen cointegration test. After all, long-run relationships for each variable (volume of deposit and loan) separately are estimated. Finally we will use this model to forecast those variables under a variety of settings.

Banking sector has played a very important role in enhancing of economic efficient performance as indicated by higher GDP (Muhammad Fadli Hanafi et al, 2014). Jung (1986); and Levine, Loayza, and Beck (1999) demonstrated that in less developed countries, financial development causes economic growth while, in developed countries, it is vice versa. Also there have been so many studies concentrating on arguing the role of deposit and loan on economic growth and conversely the role of economic growth on financial development. The relationship between national savings, banking sector and economic growth is bilateral and is often taken as an axiomatic in the development literature (Deaton, 1992). Modigliani and Cao (2004) believe that the explosion of household saving ratio reached a high level in the recent years leads the high economic growth. Moreover McKinnon (1973), Shaw (1973), Fry (1988), and King and Levine (1993) supported Schumpeter (1911) opinion who believed that efficient allocation of savings through identification and granting loan would motivate more productivity. Lin (1992) who studied the Malaysia economy showed that economic development of a country strongly depends on its ability to mobilize their savings to increase the national productivity. Empirical findings of Lean and Song (2008), in their working paper entitled "*Domestic Saving and Economic Growth in China*", documented that household and enterprise savings growth have played a principal role in increasing the economic growth. Muhammad Fadli Hanafi et al (2014) imply that savings and loans can be counted and optimized to promote better economic performance in Indonesia.

On the other hand, lots of studies have been done by economic researchers like Sinha (1998), Saltz (1999), Agrawal (2001), Anoruo and Ahmad (2001), and Narayan (2006) who supported the view stated that economic growth causes higher savings rate. This point of view was emphasized by Baumol, Blackman, and Wolfe (1991), Deaton and Paxson (1992), and Bosworth (1993) who suggested that in the long-term, higher savings rate would be motivated by higher economic growth rate. So whenever this happened, there will be more savings that permit extending new loan (Demetriades, Andrianove. (2004)). Numerous developing countries, especially those identified as the third world including Iran, have professed their potential savings would be able to stimulate the growth rate on real GDP (Liu and Guo, 2002). Here it can be argued that an increase in total production (income) may lead to an increase in bank deposit. Since the bank deposit that constructs almost all of savings volume in these economies, has play a significant role. For sure, in this paper, the effect of GDP on deposit will be measured.

4. EMPIRICAL RESULTS

4.1. IDENTIFICATION OF ENVIRONMENTAL FACTORS

First of all, we must identify the economic environmental factors to evaluate their effects on the volume of deposit and loan. Thus according to the above mentioned studies and the importance or significance of the variables, we use Stepwise Regression -Forward & Backward approach that includes regression models in which the choice of predictive variables is carried out by an automatic procedure to identify the affecting variables (Efroymson, M. A. (1960)). The frequent practice of fitting the final chosen model followed by reporting estimates and confidence intervals without adjusting them to take the model building process into account has led to calls to stop using stepwise model building altogether or to at least make sure model uncertainty is correctly reflected ((Harrell (2001), Flom and Cassell (2007) and Efron and Tibshirani (1998)). Therefore, according to the output of this approach, economic environmental factors affecting the volume of deposit and loan include: liquidity, the private sector and government consumption and the GDP.

4.2. SPECIFICATION THE VEC MODEL

In Vector Autoregressive models we have generalized the univariate autoregressive model to the multivariate case which gives us some beneficial features like: 1. Take into account the data generating process for all included variables. 2. Estimate and model the dynamic interrelation between variables. 3. Perform cointegration test without the shortcomings of the Engle-Granger cointegration procedure. 4. Be indifferent about the choice of dependent variable (Anders Thomsen et al (2013)). If the time series are not stationary then the VAR framework needs to be modified to allow consistent estimation of the relationships among the series. The vector error correction (VEC) model is just a special case of the VAR for variables that are stationary in their differences (i.e., $I(1)$). The VEC can also take into account any cointegrating relationships among the variables. It restricts the long-run behavior of the endogenous variables to converge to their cointegrating relationships while allowing for short-run adjustment dynamics (Johansen (1991)). The model used in this paper estimates a unique and stable long-run cointegrating vector between annual data for volume of deposit and loan, liquidity, the private sector and government consumption and the GDP. Before

Journal of Business Management Science

making the VAR model we should check whether our variables are stationary or not, so we avoid spurious regression. Table-2 shows the Augmented Dickey-Fuller unit root test:

Variables	Calculated ADF Level	Critical level
D ¹ (Deposit)	4.606494	0.05
D(Loan)	-3.297120	0.05
D(GDP)	-3.656259	0.05
D(Liquidity)	4.837944	0.05
D(the private sector and government consumption)	1.385402	0.05

4.3. SPECIFICATION OF THE EQUATIONS

As mentioned earlier in this article, we specify and estimate separately equations. The equations as follows:

$$Deposit = \alpha_0 + \alpha_1 Liquidity + \alpha_2 Consumption + \alpha_3 GDP + \epsilon_t$$

$$Loan = \beta_0 + \beta_1 Liquidity + \beta_2 Consumption + \beta_3 GDP + \delta_t$$

The model specified should have the right number of lags included. The determination of lag length is a trade-off between the curse of dimensionality² and reduced models, which are not appropriate to indicate the dynamic adjustment. If the lag length is too short, autocorrelation of the error terms could lead to apparently significant and inefficient estimators. Therefore, one would receive wrong results (Anders Thomsen et al (2013)). So first of all we must compute various criteria to select the lag order of VAR. Schwarz information criteria shows optimized lag for each equation is two. Now we can test the existence and number of cointegrating relations by Johansen cointegration test in a way that does not have the shortcomings of the Engle-Granger approach. The following tables contains the results of cointegration test (Trace and maximum Eigenvalue test) demonstrates two cointegration relationships in both tests.

λ_{trace} Test				λ_{Max} Test			
Hypothesized No. of CE(s)	Con Theory	Statistics Test	Critical quantity 95%	Hypothesized No. of CE(s)	Con Theory	Statistic Test	Critical quantity 95%
R=0	R≥1	194.24	63.87	R=0	R=1	140.10	32.11
r≤1	R≥2	54.145	42.91	r≤1	R=2	29.82	25.82
r≤2	R=3	24.31	25.87	r≤2	R=3	15.06	19.38

- Note: Trace test indicates 2 cointegrating eqn(s) at the 0.05 level.
- Max-eigen value test indicates 2 cointegrating eqn(s) at the 0.05 level.

¹ .D shows first Difference.

² . Even with inclusion of a small lag length interval we will have to estimate many parameters. Increasing number of parameters causes the degrees of freedom to decrease.

Journal of Business Management Science

Table-4: Trace and maximum Eigenvalue test, Loan Equation.

λ_{trace} Test				λ_{Max} Test			
Hypothesized No. of CE(s)	Con Theory	Statistics Test	Critical quantity 95%	Hypothesized No. of CE(s)	Con Theory	Statistic Test	Critical quantity 95%
R=0	R≥1	158.27	63.87	R=0	R=1	74.50	32.11
r≤1	R≥2	83.77	42.91	r≤1	R=2	47.54	25.82
r≤2	R=3	36.23	25.87	r≤2	R=3	26.02	19.38

- Note: Trace test indicates 2 cointegrating eqn(s) at the 0.05 level.
- Max-eigen value test indicates 2 cointegrating eqn(s) at the 0.05 level.

Now we can estimate the equations. Table-5 represents the long run equilibrium relations.

Table-5: Long-run Relationships.

Deposit				Loan			
Variables	Coefficient	Std-Error	T-Statistics	Variables	Coefficient	Std-Error	T-Statistics
Liquidity	1.19	0.01475	-81.0944	Liquidity	0.001	1.9E-05	-65.7452
Consumption	-56.29	22.2220	2.55057	Consumption	-0.4	0.02754	14.8135
GDP	78.35	23.7735	-3.31713	GDP	0.83	0.05436	-15.3681
Constant	17324003	-	-	Constant	3537.557	-	-

According to the results, we can say that GDP and liquidity have a positive and significant impact on deposit and loan while consumption (total private and public sector consumption) has negative effect on them. In addition the positive long-term effect of GDP on deposit is stronger than its effect on the loan. The error correction part which represents the short run relations has been summarized in the table-6.

Table-6: Short-run relationships.

Co-integration Equation(Vector) of Deposit					Co-integration Equation(Vector) of Loan				
Error Correction	D(Deposit)	D(Liquidity)	D(consumption)	D(GDP)	Error Correction	D(Deposit)	D(Liquidity)	D(consumption)	D(GDP)
cointEq1	-0.271824	-0.122707	-0.005202	0.000153	cointEq1	-0.271824	-0.122707	-0.005202	0.000153
Std-Error	0.32230	0.29236	0.00015	0.00015	Std-Error	0.32230	0.29236	0.00015	0.00015
T-Statistics	-0.84338	-0.41971	-34.9657	1.01227	T-Statistics	-0.84338	-0.41971	-34.9657	1.01227
R-squared	0.993446	0.994957	0.998814	0.502088	R-squared	0.993446	0.994957	0.998814	0.502088

Journal of Business Management Science

Adj. R-squared	0.990764	0.992894	0.998328	0.298396	Adj. R-squared	0.990764	0.992894	0.998328	0.298396
F-Statistic	370.5012	2058.234	2.464943	4832.2607	F-Statistic	370.5012	2058.234	2.464943	4832.2607

CointEq1 relates GDP with Deposit (in left) and loan (in right). We can see that if the value of GDP lies above its long run equilibrium, then deposit and loan will increase in the next period.

4.4. FORECASTING THE VOLUME OF DEPOSIT AND LOAN

After estimating the short and long term relationships between the environmental economic factors and the banking variables now we can forecast the volume of deposit and loan for 2014 and 2015. Out-of-sample forecasting uses all the data from the sample, and forecasts in periods ahead of the sample, this is considered real forecasting (Anders Thomsen et al (2013)). It is possible to use two different types of simulation dynamics, dynamic solution and static solution. Static dynamics fore-casts one period and updates the information in the forecast, and thereby uses a ‘rolling window’ of data. Dynamic solution constructs an h-period forecast based on data in the sample, and thus does not update the information after each forecast. According to the following table, the point that it can be noted here is that the growth rate of deposit and loan is grown with increasing acceleration.

Table-7:Out-sample Forecasting-Trillion Rial.

Year Variables	2009	2010	2011	2012	2013	2014	2015	Growth Rate of 2014	Growth Rate of 2015
Deposit	2163.58	2723.72	3279.34	4276.77	5612.55				
Forecasted Deposit	-	-	-	-	-	7226.41	8956.82	29%	24%
Loan	2103.916	2903.482	3458.157	4067.591	4996.707				
Forecasted Loan	-	-	-	-	-	6462.7	8424.23	28%	30%

5. CONCLUSION

This paper has examined the economic effects of environmental factors on the bank variables (deposit and loan) during the period (1978 to 2013). First the importance of the volume of deposit and loan was scrutinized and then theoretical issues and empirical results have been presented. Afterwards the long-term relationship between time series variables was confirmed by Johansen and vector error correction (VEC) estimates long-term and short-term coefficients. Finally, according to the findings of this study we can acclaim that: 1. The economy of Iran is banking oriented 2. When the ratio of credit to private sector to GDP does not deviate from its long-term trends the stability of the banking system performance will increase. 3. The growth rate of deposit always overlaps with economic growth rates. That is the changes in the money and deposit volume can be a factor in the creation of business cycle

fluctuations.4. GDP and liquidity have a positive and significant effect on deposit and loan while consumption has adverse effect on them.5. If the value of GDP lies above its long run equilibrium, then Deposit and loan will increase in the next period.6. The volume of loan has been grown about 24% for 2015 while loan growth rate will be 30%.Finally, it is suggested that, due to the risk aversion of the Iranian people and the effect of GDP on the volume of deposit, policy makers should take economic policies which increase the rate of economic growth.

6. REFERENCE

1. Agrawal, P., "The Relation between Savings and Growth: Cointegration and Causality Evidence from Asia", *Applied Economics*, No.33, (2001).
2. Alessi, L. and C. Detken, "Real time' early warning indicators for costly asset price boom/bust cycles: A role for global liquidity", *European Central Bank, Working Paper Series*, No. 1039, (2009).
3. Anders Thomsen ,Rune Sandager ,Andreas Vig Logerman ,Jannick Severin Johanson and Steffen Haldrup Andersen, "Introduction to EViews 6.0",Aarhus University,(2013).
4. Anoruo, E. and Ahmad, Y. "Causal Relationship between Domestic Savings and Economic Growth: Evidence from Seven African Countries," *African Development Bank*, No. 13, (2001).
5. Baumol, W.J., Blackman, S.A.B., and Wolfe, E.N., "Productivity and American Leadership: The Long View." Cambridge: MIT Press, (1991).
6. Bencivenga, V. R. and Smith, B. D., "Financial intermediation and endogenous growth", *Review of Economics Studies* 58(2), (1991).
7. Borio C. and P. Lowe "Assessing the risk of banking crises", *BIS Quarterly Review*, December, (2002).
8. Borio C., and M. Drehmann, "Assessing the risk of banking crises - revisited", *BIS Quarterly Review*, March, (2009).
9. Bosworth, B. "Saving and Investment in a Global Economy." Washington: Brookings Institution, (1993).
10. Clair, R. T. "Loan growth and loan quality: Some preliminary evidence from Texas banks", *Economic and Financial Policy Review*, Q3, Federal Reserve Bank of Dallas (1992).
11. Deaton, A.S. and Paxson, C.H., "Saving, Growth, and Aging in Taiwan, mimeo," Princeton University, (1992).
12. Dell'Ariccia and Robert Marquez, "Lending Booms and Lending Standards," *Journal of Finance*, Vol. 61, No. 5, (2006).
13. Demetriades, P.O. Andrianove, S. "Finance and Growth: What We Know and What We Need to Know?" in C. A. E. Goodhart (Ed). *Financial Development and Growth: Explaining the Links*, Basingstoke: Palgrave Macmillan. (2004).
14. Diamond, D. W., and R. G. Rajan, "A Theory of Bank Capital", *Journal of Finance* No. 55, (2000).
15. Efron, B. and Tibshirani, R. J. "An introduction to the bootstrap, " Chapman & Hall/CRC, (1998)
16. Efron, M. A. "Multiple regression analysis, " *Mathematical Methods for Digital Computers*, Ralston A. and Wilf, H. S., (eds.), Wiley, New York, (1960).
17. Flom, P. L. and Cassell, D. L. "Stopping stepwise: Why stepwise and similar selection methods are bad, and what you should use," (2007).
18. Frederic S. Mishkin, "The economics of money, banking, and financial markets", *The Addison-Wesley series in economics*, 7th Ed, (2004).
19. Fry M.J., "Money, Interest and banking in Economic Development", Birmingham, UK University of Birmingham, (1995).

20. Hilbers, P. I. Otker-robe, C. Pazarbasioglu and G. Johnson, "Assessing and managing rapid credit growth and the role of supervisory and prudential policies", International Monetary Fund, WP/05/151, (2005).
21. Jacek Rostowski, "Feasibility of the German-type models of Universal Banks in the Post-Communist Economies the Case of Russia "central European university department of economics, (2006).
22. Jimenez, G. and J. Saurina "Credit cycles, credit risk and prudential regulation", International Journal of Central Banking, Vol. 2, No. 2, (2006).
23. Johansen. "Estimation and Hypothesis Testing of Cointegration Vectors in Gaussian Vector Autoregressive Models," *Econometrica*, No.59, (1991).
24. Joseph E. Stiglitz, "Globalization and Its Discontents", published by W.W. Norton & Company, United States, (2003).
25. Jung, W. S. "Financial development and economic growth: International evidence". *Economic Development and Cultural Change*, No.34, (1986).
26. Kaminsky, G. L. "Currency and banking crises: The early warnings of distress", IMF Working Paper 99/178, (1999).
27. Keeton, W. R. "Does faster loan growth lead to higher loan losses?" *Economic Review*, Q2, Federal Reserve Bank of Kansas City, (1999).
28. Kiminori Matsuyama, "Credit Traps and Credit Cycles", *American Economic Review* 97, (2006).
29. King, R.G., & Levine, R. "Finance and Growth: Schumpeter Might Be Right." – *Quarterly Journal of Economics*, 108, (1993).
30. Lean, Hooi. Song Yingzhe. "Domestic Saving and Economic Growth in China," *Asian Business and Economic Research Unit Discussion Paper* 64, 2008.
31. Levine, R. Loayza, N. and Beck, T. "Financial Intermediation and Economic Growth: Causes and Causality" *Journal of Monetary Economics* No. 46, (2000).
32. Lewis, W. Arthur. *Autobiography*. In *Nobel Lectures: Economic Sciences, 1969–1980*, ed. Assar Lindbeck, Singapore, World Scientific Publishing Co, (1992).
33. Lin, S.Y. "Malaysia: saving-investment gap, financing needs and capital market development." *Malaysia Management Review*. Vol.27, No.4, (1992).
34. Liu, J.Q. and Guo, Z.F. "Positive analysis of causal relationship between saving rate and economic growth in China's economy." *Zhong Guo Ruan Ke Xue*, Vol.2. (2002).
35. Mankiw, Gregory, David Romer and David Weil. "A Contribution to the Empirics of Economic Growth." *The Quarterly Journal of Economics* 107 (2), (1992).
36. Maximilian J. B. Hall, Karligash A. Kenjegaliev and Richard Simper, "Environmental Factors Affecting Hong Kong Banking: A Post-Asian Financial Crisis Efficiency Analysis", *Loughborough University*, (2008).
37. McKinnon R. "Money and Capital in Economic Development." Washington, the Brookings Institute, (1973).
38. Michael McLeay, Amar Radia and Ryland Thomas, "Money creation in the modern economy", *Quarterly Bulletin*, Q1, (2014).
39. Min B. Shrestha, Khorshed Chowdhury "ARDL Modeling Approach to Testing the Financial Liberalization Hypothesis", *University of Wollongong Research Online*, (2005).
40. Modigliani, F. and Cao, S.L. "The Chinese saving puzzle and the life-cycle hypothesis." *Journal of Economic Literature*, Vol.42, No.1, (2004).
41. Muhammad Fadli Hanafi, Berly Martawardaya and Andi M. Alfian Parewangi, "The Contributions of Savings and Loans on GDP Growth: The Case of Indonesia", *University of Indonesia*, (2012).
42. Narayan, P. K. and Narayan, S. "Savings behavior in Fiji: an empirical assessment using the ARDL approach to cointegration," *International Journal of Social Economics*, 33, No. 7, (2006).
43. Peter Tufano and Erik R. Sirri. "The Economics of Pooling. IN the Global Financial System": *A Functional Perspective*", Cambridge Mass, Harvard Business School Press, (1995).

44. Robert Kelly, Kieran McQuinn and Rebecca Stuart, "Exploring the Steady-State Relationship between Credit and GDP", Central Bank of Ireland, - Financial Stability Department, North Wall Quay, Spencer Dock, Dublin 1, Ireland, (2011).
45. Salas, V. and J. Saurina. "Credit risk in two institutional regimes: Spanish commercial and savings banks", Journal of Financial Services Research, Vol. 22, No. 3, (2002),
46. Saltz, I.S. "An Examination of the Causal Relationship between Savings and Growth in the Third World," Journal of Economics and Finance, No.23 (1999).
47. Sami Nabi and Osman Suliman, Institutions; Banking; Economic growth; Middle Eastern and North African countries, Institute of Developing Economies Vol 47, (2009).
48. Shaw, E. S. "Financial Deepening in Economic Development." Oxford University Press New York,(1973).
49. Shaw, E. S. "Financial Deepening in Economic Development." Oxford University Press, New York, (1973).
50. Schumpeter, J. The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle, Cambridge: Harvard University press, (1912).
51. Segoviano Basurto, M.A., C. Goodhart and B. Hofmann, "Default, credit growth and asset prices" IMF Working Paper 06/22.3, (2005).
52. Sinha, D. and Sinha, T. "Cart before the Horse? The Saving-Growth Nexus in Mexico," Economics Letters, No.61, (1998).
53. Stiglitz, J. E., and B. Greenwald, "Towards a New Paradigm in Monetary Economics" Cambridge University Press, (2003).

