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ROLE OF RETURN RATE, INFLATION & DEPOSITS IN LOAN SUPPLY: AN EMPIRICAL STUDY OF BANKING SECTOR IN PAKISTAN

In Pakistan, banks are experiencing a significant increase in loan supply. Trend of financing through banks is increasing in time. The purpose of this research paper is to investigate the major factors which determine role of the supply of loans at the local market of Pakistan. Statistical techniques have been used to relate the supply of loans with deposits, weighted average rate of returns on loans, and rate inflation. The data used was collected from various published reports of the State Bank of Pakistan, Federal Bureau of Statistics, and Economic Survey of Pakistan on monthly basis for the period of 1991 to 2009. The results reported that the supply of loans is positively related with the inflation and negatively associated with the weighted average rate of return on loans sanctioned by banks. Moreover, the amount of deposits is found positively predicting the loan supply by the banking sector of Pakistan.

Keywords: *weighted average rate of return; deposits; inflation; consumer price index; Pakistan; banking system.*

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РОЛЬ СТАВКИ ДОХІДНОСТІ, ІНФЛЯЦІЇ ТА ДЕПОЗИТІВ У КРЕДИТУВАННІ (ЗА ДАНИМИ БАНКІВСЬКОГО СЕКТОРУ ПАКИСТАНУ)

У статті показано, що банківський сектор Пакистану переживає суттєве зростання об'ємів кредитування. Вивчено ключові фактори, що визначають роль кредитування у Пакистані. Для виявлення взаємозв'язку між об'ємами кредитування і депозитами, середньою ставкою дохідності в кредитуванні, темпами інфляції використано статистичні методи. Дані для аналізу взято зі звітів Державного банку Пакистану, Федерального бюро статистики та Економічного опитування Пакистану — щомісячна статистика з 1991 по 2009 роки. За результатами, об'єми кредитування знаходяться у позитивній залежності від темпу інфляції та в негативній — від середньої ставки дохідності у банківському кредитуванні. Більш того, за об'ємами депозитів можна визначити об'єми кредитування у майбутньому періоді для банківського сектору Пакистану.

Ключові слова: *середня ставка дохідності; депозити; інфляція; індекс споживчих цін; Пакистан; банківська система.*

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РОЛЬ СТАВКИ ДОХОДНОСТИ, ИНФЛЯЦИИ И ДЕПОЗИТОВ В КРЕДИТОВАНИИ (ПО ДАННЫМ БАНКОВСКОГО СЕКТОРА ПАКИСТАНА)

В статье показано, что банковский сектор Пакистана переживает существенный рост объемов кредитования. Исследованы ключевые факторы, определяющие роль

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кредитования в Пакистане. Для определения взаимосвязи между объемами кредитования и депозитами, средней ставкой доходности в кредитовании, темпами инфляции использованы статистические методы. Данные для анализа взяты из отчетов Государственного банка Пакистана, Федерального бюро статистики и Экономического опроса Пакистана — ежемесячная статистика с 1991 по 2009 годы. По результатам, объемы кредитования находятся в позитивной зависимости от темпа инфляции и в негативной — от средней ставки доходности в банковском кредитовании. Более того, по объемам депозитов можно определить объемы кредитования в будущем периоде для банковского сектора Пакистана.

Ключевые слова: *средняя ставка доходности; депозиты; инфляция; индекс потребительских цен; Пакистан; банковская система.*

1. Introduction. The significance of financial sector for economic growth can not be denied. Banking sector, in the capacity of intermediation between borrower and lender, facilitates the economic activities as a part of financial sector (Nazir et al., 2010). Evaluating financial conditions and performance of banks has been a considerable issue in the recent years, particularly in developing countries. This phenomenon is attributed to the crucial role of commercial banks in the economy, which is a result of the generally accepted fact that commercial banks are dominant financial institutions and the prime source of financial intermediation in these countries (Hussain, 2005). The assessment of banking sector is important for depositors, owners, potential investors and, of course, for the policy makers as the banks are the executors of monetary policy of a government.

In Pakistan 2 different banking systems are operating simultaneously. First, the conventional banking system based on interest is in practice for many years, and the other one is the Islamic banking system which is considered to be the substitute of the conventional banking system nowadays. Pakistan started Islamic banking in 1980s by changing the banking laws and regulations to accommodate the non-interest transactions. Islamic banking is considered to be the fastest growing segment of the credit market in Muslim countries. In Pakistan, Islamic banks are less in numbers and their operations are not parallel to the conventional banking system operating at the same market.

Bank lending is considered to be the main function of a bank which is dependant upon the rate of return it charges its borrowers. Commercial banking system, also known as conventional banking system, mostly depends upon the interest means predetermined and guaranteed rate of return, whereas the Islamic banking system is based on the profit-loss sharing. Because return rate in Islamic banking is not fixed, funds suppliers become investors instead of creditors. A provider of financial capital and an entrepreneur share business risks in return for shares of profits. In commercial banking, the rate of interest is set through money market operations in which government financial instruments when sells increase the money supply increasingly forcing the conventional bank to lower its interest rate. On the other side buying the government financial securities contracts the money supply hence increase the return rate. Low return rate has an effect on the economy as a whole. Whereas in Islamic banking system, monetary policy can be implemented through an open market operation using traded equities in private firms instead of government bonds. Many researchers call for the low interest rate because that tends to lending in larger and larger amounts.

As the Islamic bank system is in competition with the conventional banking, they are eager to give their investment holders a return that is comparable to the prevailing interest rate (Roy, 1991). The returns of creditors in Islamic banking is tied up with a business or project. The greater the profit earned in a business or project, greater would be the return to creditors. Their lending activities can be affected by many other factors including return rate, total deposits, and inflation. In this paper our primarily focus is on the return rate effect on loan supply in both banking systems.

The volume of literature work has been done on the effect of return rate on the loan supply. In this section we intend to review some of the leading research studies to see what previous studies say about the effect of return rate on loan supply. The amount of bank lending declines with inflation (Boyd and Champ, 2006). Inflation or even mere uncertainty, have a strongly adverse impact on long-term lending. Movements in open market interest rates are fully and quickly transmitted to commercial loan customers (Slovin and Sushka, 1983). The importance of the bank health variable suggests that a credit channel working through something other than interest rate differentials, or the level of the federal funds rate (Peek et al., 2003). As demand for a restricted supply of loans increased, the interest rates for loans would also increase, acting to restrict demand for loans, and the eventual impact of the bubble (Jacky, 2009).

Loan commitment size was found to be positively correlated with the risk premium or interest markup, commitment fee, length of a contract, existence of collateral requirement, higher firm current rations (indicative of a better credit rating), and firm size (Melnik and Plaut, 1986) whereas decline in deposit supply reduces loan supply (Staharn and Loutskina, 2008). Credit losses lead to a stronger reduction in credit supply when monetary policy is tight than when it is loose (Nier and Zicchino, 2006). Banks receive direct instructions about the volume of their lending operations; enabling monetary authorities to manage without the discount rate (Khan and Mirakhor, 1990). The evidence presented contradicts the notion that indexing loan rates to the prime rate results in an increase in the relative cost of borrowing for nonprime borrowers (James, 1982). Central bank can slow the real activity by raising bank funding cost and thereby constrain the credit supply. A lower rate of return usually means larger amounts of loans, which drips down to the customer and vice versa (Alfredo, 2001).

This paper carries out the analysis of the effect of return rate on the loan supply in banking systems with respect to Pakistan. In addition to this, we analyze the effect of inflation and deposits on advances. In developing countries like Pakistan, inflation is hardly controlled. This unchecked inflation affects the savings of people adversely, resulting in the fluctuated interest rate and deposits in banks. On the other hand, state bank utilizes the tool of interest rate to control the inflation. And this interest rate also affects the deposits and advances in banks. So, all these variables are interrelated and this study incorporates the effect of these variables in order to find their impact on the level of loans/advances in Pakistan for period of 1991-2009 on the monthly basis.

2. Research Methodology. The objective of this research paper is to investigate the effect of return rate, deposits and inflation on the loan supply in Pakistani banking sector. Our concern is that if there is any impact of ROR, inflation and deposits on advances in Pakistani financial sector. If there is any relation of ROR, CPI and deposits with advances, then what is the nature of this relation? Which variables are significant in impacting the loan supply in Pakistan? In order to look into this relationship, we use the regression analysis. For this purpose loan supply is regressed against the weighted average rate of return on advances, consumer price index and deposits for the study period of 1991-2009.

2.1. Research design: This study has been designed in a way to analyze the trend of loan supply in Pakistan along with its factors like deposits, interest rate and inflation. We take weighted average return rate on advances as interest rate which is shown by rate of return in model. For inflation, we considered the weighted average consumer price index. In present study, we have included all the scheduled banks in Pakistan. In Pakistan, a total of 6 full-fledge Islamic banks and 23 commercial banks are currently operating. In order to make this research more reliable, we use the secondary sources for collection of relevant information.

Since the study is based on financial and economic data, the main source of data was the reports of the State Bank of Pakistan. The secondary data is collected from annual reports of the State Bank of Pakistan and data base of Federal Bureau of Statistics. The amount of Advances, Deposit and Weighted Average Rate of Return was taken from Quarterly Statistical Bulletin (Statistic and data warehouse department, the State Bank of Pakistan), whereas statistics on Inflation was taken from Federal Board of Statistics. The period of study is spread over 18 years from 1991 to 2009. In order to comprehend our results, monthly data was used, we got 216 monthly observations for 23 commercial banks operating in Pakistan.

2.2. The Model of Study. Following Makiyan (2003), it is expected that loan supply has a positive relationship with Inflation and Deposits in banks, and no relationship with Rate of Return. This means, supply of loan increases with the increase of inflation and deposits. On the other hand, there is no impact either rate of return increases or decreases. We use the following variables to investigate the relationship between supply of loans and its determinates:

$$Loans = \alpha + \beta_1 Dep + \beta_2 ROR + \beta_3 INF + \varepsilon \qquad (1)$$

Where:

Loans = Monthly supply of loans by the banks in Pakistan during 1991-2009;

Dep = Deposits in banks in Pakistan during 1991-2009;

ROR = Weighted Average rate of Return on Advances for 1991-2009;

INF = Inflation which is Consumer price index during 1991-2009 and ε are the constant and residuals, respectively.

3. Results and Discussion. The statistics of data collected has been described in Figures 1, 2, and 3. In 1991 interest rate is 10.73% and the amount of advances is Rs. 2409301 mln. In 1992 there is minor increase in interest rate, i.e. 10.73% to 10.94% and there is also increase in advances. In 1993 interest rate and advances both increased side by side. But in the next year the trend is totally opposite. In 1994 the interest rate decreased from 13.01% to 12.86%, but there is still increasing trend in the amount of advances regardless the decrease in interest rate. From year 1995 to 1999 interest rate and advances both showed the increasing trend. In 2000 interest rate decreased significantly, but it did not affect the historic increasing trend of advances. They showed the consistent increasing trend from 1991. Similarly, in 2004 interest rate was as low as 7.4%, but advances amount was higher than in previous years. So, the analysis shows there is no effect of interest rate on loan supply.

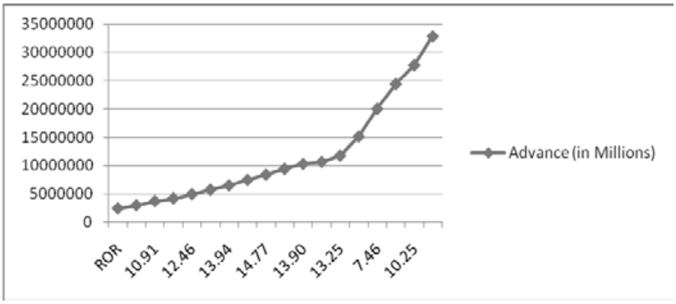

Figure 1. **Relationship of Advances and ROR of Commercial Banks**

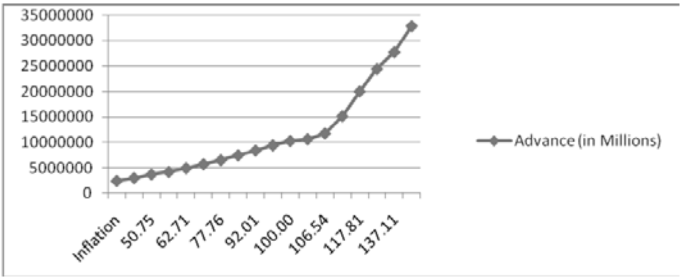

Figure 2. **Relationship of advances with Inflation, 1991-2009**

Figure 2 shows that inflation and advances are positively correlated, both show similar behavior. From 1991 in Pakistan inflation always increased. Inflation of one year is always greater than the inflation of the previous year. Same is the case with the deposits. Degree of increase may be less than that of the previous year, but there is never decrease in inflation and deposits from the base year. From 1991 to 2001, the rise in inflation and advances is steady. It is also straight line after that. But from 2002, at the CPI of 106.54, there is more rise in advances than before and this rise is consistent afterwards. Relationship of deposits and advances is quite logical. Liabilities and assets are always equal. Banks can do lending up to the extent of holding deposits. So, if deposits increase with time, loan supply also increases or vice versa, as shown in Figure 3.

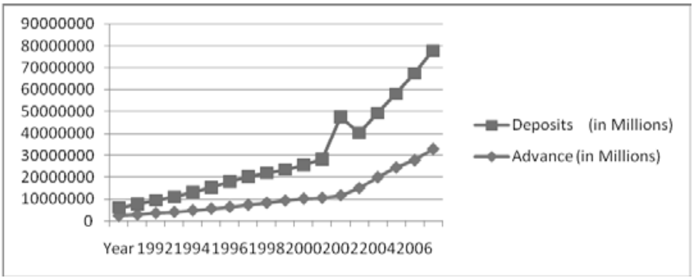

Figure 3. **Relationship of Advances and Deposits 1991-2009**

We run the regression analysis to compute the effect of deposits, advances and interest rate. The results reported in Table 1 show that deposits are affecting the level of advances in Pakistan. However, this relationship is not as much significant as it should be. This means this supply of advances has a positive relationship with the deposits for the same period. On the other hand, weighted average rate of return on advances and inflation are highly significant in Pakistani loan market. This is quite logical. As inflation rate rises, purchasing power parity decreases and people have less money to consume. To meet the expenditures, they borrow more from the banks. So, it is due to rise in inflation, demand for loan increases. In order to meet the increasing demand credit, the banks have to raise their loans supply.

Table 1. **Analysis of loan supply and its determinants**

Dependent Variable: ADV
Method: Least Squares
Included observations: 216

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DEP	0.020823	0.013354	1.559301	0.1204
INF	18037.09	480.1407	37.56627	0.0000
ROR	-67813.47	2952.509	-22.96808	0.0000
R-squared	0.925856	Mean dependent var.		965579.4
Adjusted R-squared	0.925160	S.D. dependent var.		734294.2

It may be predicted from the results that there is positive correlation between consumer price index and loan supply. On the other hand, there is negative correlation between ROR and advances. ROR impacts negatively the loan supply. This means that supply of loans rises with the decrease of ROR or vice versa. This is also logical. When the rate of return is low, people lend more. They try to finance their most expenditures from the banks because they find it cheap and affordable. On the other hand, if interest rate rises, people don't get finances from the banks because they have to return much more at a higher interest rate. In order to further investigate the impact of ROR, CPI and deposits on advances we took the lag of deposits and found the following results, Table 2. Now deposits become significant after taking log. This means that the deposits of previous month are impacting the loan supply of current month. Banks use the previous month's deposits to give loans in next months. For instance, to give loan in February, deposits of January are used. Moreover, there is positive correlation of supply loans with previous month deposits. This means that loans supply increase if last month deposit increases.

Table 2. **Analysis of Loans Supply (with first difference of DEP)**

Dependent Variable: ADV
Method: Least Squares
Sample (adjusted): 1991M02 2009M12
Included observations: 215 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DEP(-1)	0.022683	0.013343	1.699957	0.0906
INF	18006.44	477.4575	37.71319	0.0000
ROR	-67807.14	2955.596	-22.94195	0.0000
R-squared	0.925756	Mean dependent var		969155.2
Adjusted R-squared	0.925056	S.D. dependent var		734120.3

4. Conclusion. The study indicates that the loan supply is largely affected by Pakistan's financial and economic condition. Government policies, through monitoring interest rate and inflation play a vital role in the loan supply. So open market operations, monitory and fiscal policies are responsible for the impacts on demand and supply of advances through banks. From the results it can be concluded that, keeping all other variables constant, the loan supply of a particular month is positively related with the inflation (CPI) in that month and negatively related with the weighted average return rate on advances. Moreover, supply of loan in a particular month is positively related with the deposits of last month. As the inflation rate rises in the country, people are more likely to get advances from banks to maintain their purchasing power and meet their expenses. So inflation and supply of advances are positively correlated in the given economic scenario.

However, in the case of interest rate, trend is reverse. At a higher interest rate, people find it difficult to return the loan. So they are least interested in getting loans from banks. So supply of loan decreases with the increase in the interest rate. In case of deposits, trend is quite different from CPI and ROR. Advances are positively correlated with the deposits of previous period. There is no significant impact of deposits of a particular period, on the advances of the same period. So banks use previous month deposits to give advances in a current month. This conclusion is valid for both Islamic banks and commercial banks. Although interest is not involved in Islamic banking system, these banks do benchmark prevailing rate of return in their major modes of financing like Modarabah, Morabah and Ijarah etc. So determinants of our study (Deposits, ROR and CPI) may have the same impact on Islamic banking system too.

There are some limitations to this study. The study focuses on the simple regression analysis techniques with quite few variables. In future, this limitation may be removed by selecting a more advanced analysis techniques of statistics as well as may include more variables in order to have a more rigorous analysis of supply loans on the level of advances in Pakistan. Moreover, future research may focus on comparing the effect of current model for both Islamic and commercial banks operating in Pakistan which could further enhance our understanding of the objective under study.

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