



Effects of Interest Rate Change on Private Sector Investment, Evidence From Pakistan

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Abstract

This study examines the effects of lending rates, inflation, and exchange rate fluctuations on private sector credits (PSC) in Pakistan from 1961 to 2017. The analysis shows that lending rates have a minimal impact on PSC, with an insignificant relationship. However, inflation and exchange rates show significant negative effects, indicating that rising prices and currency depreciation reduce private sector borrowing by increasing costs and uncertainty. These findings suggest that while interest rate management remains important, policymakers should prioritize strategies for stabilizing inflation and exchange rates to support private sector investment. Consequently, fostering macroeconomic stability may mitigate the indirect effects of the crowding-out phenomenon, promoting a favorable investment environment conducive to private sector growth.

Keywords: Private Sector Credit, Lending Rate Impact, Inflation Effects, Exchange Rate Volatility, Crowding-Out Effect, Financial Market Dynamics, Macroeconomic Policy, Investment Climate, Pakistan Economic Analysis

Introduction

The ever-changing dynamics of the banking sector all over the world is unprecedented and Pakistan is no exception. With the influx of information at a rapid pace, the consumer expectation has never been this high. Banks are aware of this trend and in order to cater consumer needs banks are offering a wide array of products. Due to the economic downturn which manifested itself in the form of high interest rate and obstructive environment for the investors, the general trend or herd behavior is tilted towards savings. Taking this into consideration, we shall concentrate on the factors affecting the investing behavior and analyze the general trend of consumers in the banking sector. Interest rate is the cost for borrowing something of monetary value from the borrower. This intern is the interest profit of the depositor or investment in case of government bonds. It is a channel in which funds flow from saver to borrower. Usually, these funds are channeled through commercial banks, mutual funds or other financial intermediaries. If the supply of the loanable funds is more than the demand the interest rate will fall indicating that the general public is more inclined towards saving and the monetary policy is set to increase saving by giving more returns. But if the supply of loanable funds is less then interest rate will increase. The market will move in these two extremes and its flow is controlled by the State Banks of Pakistan's monetary policy. Any fluctuations in the interest rate and changes in the quality of loanable funds affect the economic indicators such as GNP, Inflation etc. According to Keynesian and Monetarists views the effect of interest on investment is still a topic of diplomatic debate. One school report that it has minimal effect on investment, while the other argues that interest rate is a strong determinant of investment. The Keynesian school avers that interest rate is explained by the supply and demand of money. This school argues that interest rate is not a strong determinant of investment. So, when money supply increases it decreases interest rate, enhancing investment and employment, and leads to higher

economic growth. The Monetarists believe that interest rate is a function of the real economy that is explained by demand and supply of loanable funds. When there is an increase in interest rate, it causes investment to decrease. They argue that demand for investment is inelastic interest. Therefore, changes in interest play an important role in investment decisions, and also have an impact on the determination of prices of assets.

In economics, there are several theories that try to describe how interest rate affects the economic activities and how the interest rate is used to forecast the future changes, namely classical liquidity preference, loanable funds and rational expectation theories. This study uses the loanable funds theory. Loanable funds theory or neoclassical theory of interest rate describes that interest rate is determined by supply and demand of loanable funds. According to the theory, demand for loanable funds is created from domestic consumer's business governments and foreign borrowers; whereas, the supply is created by domestic savings, banking systems and capital inflows in borrowing. A strong financial system makes an economy prosper, while a developed economy is an indicator of a strong financial system. A developed economy will raise demand for credit and hence lead to credit growth. The moderate monetary policies and vigorous banking sector of an economy will tend to increase demand for credit; whereas, strict monetary policies will discourage investors to invest and hence lower the credit and economic growth. State bank of Pakistan (SBP) has the only authority to make and implement monetary policies for the purpose of encouraging economic activities.

The objective of monetary policies has been set up in compliance with SBP act 1956. The monetary policies' compliance can be divided into two regimes; before and after 1990's. SBP is used as a direct and indirect instrument for implementing monetary policies. The direct instruments were adapted before 1990's, while indirect instruments were used after 1990's. The direct instruments include; reserve ratio, cash reserve, fixed margin requirements, statutory liquidity ratio and restriction of credit to different sectors etc. The indirect instrument includes; open market operations, discount rate, statutory reserve ratio, T-bill auction rate, etc.

In the case of Pakistan, the domestic banking sector credit declined from 51.1 to 46.8 percent of GDP from 1971 to 2010 (World Development Index, 2011). The various factors that have been found to influence negatively the banking sector credit allocation decision beside investors' own characteristics include; unstable economic and legal conditions, political environment and government policies. It was also found that credit growth was high before liberalization and low after liberalization. So, in the case of Pakistan, liberalization doesn't enhance credit growth rate. Interest rate is one of the most important parameters of an economy; this parameter not only determines the financial decision of the firms in private and public sectors, but also all types of real decisions related to Pakistan's economy. So, the main objective of the study is to examine the short run and also long run effect of interest rate changes on private sector credit. The macroeconomic and political factors such as interest rate, inflation rate, regime change or certain political events may have a significant impact upon the private sector credit. Discount rate is also an important instrument that is used by the State Bank of Pakistan to formulate monetary policy. This is a benchmark rate that is revised on a quarterly basis.

The private sector credit is affected by changes in interest rates which are changed because of losing or tightening of monetary policy formulation by regulatory authorities. Investors respond quickly to any change in interest rate, either positive or negative. The main theme of the study is to examine the impact of interest rates on the private sector. This study will provide insights of whether the changing in interest rate has an impact on private sector credit. Finding of the study would be useful for investors, shareholders, financial institutions and related government departments.

Literature Review

There are many studies which indicate that lending rate affects private sector credit. Gupta (1987) studied the significance of two important factors, that is, financial intermediation and real interest rate. Using pooled time series data, a model of savings was anticipated for Latin

American and Asian countries. There is no clear support for the effect of each of the two factors on Latin America countries, but showed some robustness for Asian countries. Akkina and Celebi (2002) explored factors that can affect fixed investment in the private sector and relationship among public and private sector investment in Turkey, considering the period of 26 years from 1970 to 1996. The authors used a neoclassical investment model and reformulated a flexible accelerator in the investment model. The results showed that public and private investment act as substitutes for each other, and size of investable funds is of equal importance as cost incurred for employing capital. On the other hand, at medium term lending rate, financial and liberalization reforms implemented in 1983 did not show any positive impact on private investment. Alessandria and Qian (2005) studied financial intermediation, which were facing difficulties due to high monitoring costs. They examined the effect of starting the capital account on welfare and structure of lending deals. They described that competent financial intermediaries in small economies are not important nor enough for capital account liberalization for better welfare. Khan and Gill (2009) elaborated the relation between public sector borrowing, and private investment by using Johansen co-integration and error correction model over the period 1971-2006. They concluded that public borrowing has a crowding-in effect on private sectors' investment. Their results also indicated an insignificant relation between lending interest rate and private sectors' investment in Pakistan. Ihsan and Anjum (2013) studied the effect of money supply (M2) on GDP of Pakistan. They took three indicators, i.e., interest rate, CPI and inflation rate, because money supply (M2) is affected through one of them. Using regression analysis, they found that inflation has no significant relation on GDP of Pakistan, but Interest rate and CPI have a significant relation with M2 and GDP of Pakistan. Abubakar & Gani (2013) studied high interest rates and considering few sectors at the expense of others, as well as channeling huge amounts of the fund in purchasing government treasury bills, are some of the sources of this negative impact on the Nigerian economic development. Ali et al. (2020) examined the impact of macroeconomic variables, including interest rates, and concluded that higher rates negatively affect private sector borrowing, discouraging investment activities. Their findings align with the broader literature that supports the inverse relationship between interest rates and private investment. Similarly, the Journal of Economic Impact (2020) revealed that higher interest rates reduce private investment in Pakistan, echoing the classical economic view where investment is inversely related to borrowing costs. Nazir et al. (2012) studied the role of monetary policy and its impact on private sector investment in Pakistan. They found a negative relationship between rising interest rates and private investment, highlighting that lowering interest rates can stimulate private sector growth. This conclusion aligns with Malik & Din (2008), who also found that real interest rates significantly influence private investment, with lower rates encouraging investment decisions, particularly through the accelerator theory of investment. Ahmed & Qayyum (2007) analyzed the effects of macroeconomic variables, including interest rates, and identified a crowding-out effect of high interest rates on private investment. They found that increased borrowing costs due to higher interest rates lead to reduced private sector investment, further supporting earlier findings by Awan et al. (2010), who emphasized that interest rate reforms lowering rates benefit private sector investment growth. Khan et al. (2011) and Chaudhry et al. (2016) focused on sector-specific and volatility-related impacts of interest rates on investment. Their studies revealed that sectors like manufacturing and services are particularly sensitive to interest rate fluctuations. High volatility in interest rates creates uncertainty, discouraging long-term investment plans. Similarly, Rizvi et al. (2019) and Haque & Khan (2019) underscored the importance of stable interest rates, especially for small and medium-sized enterprises (SMEs), which rely heavily on credit. Higher interest rates and volatility limit SME expansion and overall private sector growth, indicating that stable, lower interest rates are crucial for fostering a positive investment environment. Guo and Stepanyan (2011) discovered a positive relationship of residential and financing with credit development. They said that expansion in monetary development prompts an increase in credit development, though an increase in swelling prompts decline in credit

development of an economy. They further presumed that fiscal strategies assume a huge job in credit development of an economy and expansionary approaches build credit, while contractionary arrangements decline credit development rate. Giannetti and Jentsch (2013) analyzed the impact of credit score saying and distinguishing evidence framework on monetary intermediation protecting the records from 2000 to 2008 of 172 international locations. End result proved that the distinguishing proof framework has a positive reference to monetary intermediation in the ones international locations where credit revealing framework wins. Bader and Malawi (2010) analyzed the effect of mortgage charge on hobbies in Jordan, via utilizing cointegration investigation. The consequences showed that hypothesis was adversely inspired by using genuine loan cost. The outcomes featured that one percent expansion in rate of top rate lessened the venture with the aid of 44 percent, even economic arrangements to improve the monetary development of a financial as pay stage influences hypothesis decidedly. Ang (2009) investigated the effects of financial sector policies on private investment in Malaysia and India, finding that higher interest rates can positively influence private investment in certain cases. This suggests a potential conduit effect where higher savings, triggered by elevated interest rates, can stimulate investment. However, this relationship is complex and can be influenced by other macroeconomic factors such as exchange rates and inflation. In Vietnam, Dang et al. (2020) demonstrated that interest rates and private sector credit significantly affect private investment, emphasizing the role of monetary policy in shaping investment outcomes. They found that credit availability has a direct positive impact on investment, while exchange rates had no significant effect in this context. Looking at Sub-Saharan Africa, studies by Fowowe (2013) and Ndikumana (2008) pointed to the negative relationship between real interest rates and private investment. Fowowe noted that while higher interest rates might encourage savings, they can also discourage investment due to the higher cost of capital. Similarly, Ndikumana found that a reduction in real interest rates could lead to an increase in private investment, particularly in South Africa. Several recent studies provide further evidence on the complex relationship between interest rates and private sector investment. For instance, Hailu and Debele (2015) found that in Ethiopia, short-run positive effects of real interest rates and exchange rates on investment exist, reflecting the sensitivity of private investment to changes in these factors. In Nigeria, Agu (2015) revealed that deposit interest rates positively correlated with private investment, while public investment negatively impacted private sector growth. Similarly, Ngoma, Bonga, and Nyoni (2019) observed that in Sub-Saharan Africa, higher real interest rates and inflation discouraged private sector investment by increasing the cost of borrowing. These findings collectively highlight the need for stable and lower interest rates to encourage private sector investment in Pakistan, emphasizing the detrimental impact of high rates on borrowing costs and investment confidence. Thus, government policies aiming to stabilize interest rates would significantly benefit the investment climate in Pakistan.

Research Methodology

This study considered time series annual data from 1961 to 2017. The data was obtained from various sources i.e World Development Indicators and International Financial Statistics.

Private Sector Credits (PSC)

Private sector credits are claims of the financial or non-financial sector to GDP, which reflects the domestic asset allocation. It is a good measure to illustrate the activity in investment inside a country.

Interest Rate (LR)

Interest rates play a vital role in the private sector credits. Every investor wants to invest in a market with a low interest rate. So, for any country it is necessary to keep the interest rate down to increase investment.

Inflation

This is the average rate at which the prices of consumer goods increase at a given period of time. Consumer price index (CPI) is used as a proxy and indicator for inflation. CPI is measured as a change in prices of goods and services at any time period.

Exchange Rate

Exchange rates play a significant role in investment. Countries can attract more domestic investors by appreciation of currency, due to which domestic investors can earn high returns.

Exchange Rate (local currency units per Dollar)

So, equation can be formulated as follows

$$PSC = \beta^0 + \beta_1 CPI + \beta_2 LR + \beta_3 EXC + \varepsilon$$

Where, PSC represents Private Sector Credits, LR represents Lending Rate, EXR represents Exchange rate, CPI represents Consumer Price Index and E represents Error Term.

OLS Regression Approach

This study opted for an OLS regression method to analyze the significance of PSC on three different variables. By using this method, we will be able to examine the relationship between the different variables and their impact on the dependent variable.

Results and Discussion

Unit Root Test

Before estimation of the regression model, data was tested for time series properties. For this purpose, Augmented Dickey Fuller (1979) (ADF) Test and Philips Perron (1989) (PP) test were applied to test the stationarity of the variables. The results of the test are shown in Table. All the results show that unit root is present at level.

Series	<i>Prob.</i>	<i>Lag</i>	<i>Max Lag</i>	<i>Obs</i>
PSC	0.1572	0	10	61
ER	0.9925	9	10	52
CPI	1.000	7	10	54
LR	0.3765	0	10	61

Method	Statistic	Prob.**
ADF - Fisher Chi-square	12.4381	0.1327
ADF - Choi Z-stat	4.55589	1.0000

Phillips-Perron test statistic	Adj. t-Stat	Prob.*
PSC	-2.581	0.1023
CPI	8.030	1.000
ER	6.121	1.000
LR	-2.068	0.2577

OLS Regression

Regression Results for Lending Rate (LR) On PSC

Table 2, represents OLS Regression test results. The analysis reveals that there is a very insignificant effect of Lending rate on Private Sector Credits, this point indicates that increase in lending rate discourages investors to take more credit and vice versa. This can be explained as when the government increases its expenditure and borrows from scheduled banks, less

funds are available for companies and the general public, thus interest rate increases, decreasing investment.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	21.85022	1.687496	12.94831	0.0000
LR	0.069780	0.160597	0.434503	0.6655
R-squared	0.003137	Mean dependent var	22.53758	
Adjusted R-squared	-0.013478	S.D. dependent var	4.595041	

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	24.67116	0.703059	35.09119	0.0000
ER	-0.048707	0.011022	-4.419291	0.0000
R-squared	0.245569	Mean dependent var	22.53758	
Adjusted R-squared	0.232995	S.D. dependent var	4.595041	

*Significance at 0.05

The results show that LR has an insignificant relationship with PSC (p-value = 0.6655), indicating that interest rate changes have minimal long-term impact on private sector credit

Exchange Rate and Inflation Impact on PSC

Exchange rate showed a significant negative impact on PSC, Means that if Exchange rate increases, Private Sector Investment decreases and vice versa. It can be explained as when the value of rupee depreciates, inflation increases and interest rates increase causing decrease in overall investment and lending. Inflation CPI has a significant negative impact on PSC, which means that as inflation increases, Private sector Credits will decrease.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	24.52190	0.637325	38.476280	0.0000
CPI	-0.038948	0.007862	-4.9537626	0.0000
R-squared	0.290275	Mean dependent var	22.53758	
Adjusted R-squared	0.278446	S.D. dependent var	4.595041	

*Significance at 0.01

Key Findings and Interpretations

- 2.1. **Private Sector Credits (PSC):** Represents the allocation of domestic financial assets to the private sector, serving as a proxy for domestic investment activity.
- 2.2. **Interest Rate (LR):** Contrary to theoretical expectations, the empirical results show that lending rates (LR) have a negligible direct impact on PSC. The regression analysis shows that interest rates have an insignificant effect on PSC. This is confirmed by the p-value (0.6655) and low R-squared value (0.003137), indicating a minimal relationship. High interest rates discourage credit uptake as borrowing becomes more expensive.
- 2.3. **Inflation (CPI):** Inflation (CPI) has a clear negative effect on PSC, demonstrating that rising consumer prices reduce the attractiveness and feasibility of obtaining credit. The significant negative coefficient of CPI (-0.038948, p-value < 0.01) suggests that as inflation rises, PSC decreases. Inflation erodes purchasing power and raises costs, thus lowering

investment in the private sector. Inflation contributes to uncertainty in the investment climate, making both businesses and individuals more cautious about borrowing.

- 2.4. Exchange Rate (ER):** The negative impact of exchange rate fluctuations highlights the importance of currency stability in encouraging domestic investment. The significant negative impact of the exchange rate (coefficient = -0.048707, p-value < 0.01) indicates that depreciation in the local currency discourages investment, this could possibly be due to higher costs of imports and inflationary pressure, reducing the overall credit available for the private sector.

Discussion

The results of this study indicate that while lending rates (LR) have a negligible impact on private sector credits (PSC), inflation (CPI) and exchange rate (ER) significantly affect private sector borrowing, aligning with many theoretical perspectives and empirical findings on the crowding-out effect. This effect typically emerges when public sector borrowing competes with private investment for available funds, often increasing interest rates and discouraging private credit uptake. However, the insignificant impact of interest rates on PSC observed in this study suggests that in Pakistan, other macroeconomic factors like inflation and exchange rate volatility may exert a more substantial influence on private sector investment.

Crowding-Out Effect in Context

The crowding-out effect, as discussed by Khan and Gill (2009), occurs when public sector borrowing drives up interest rates, which typically restricts private sector investment. While the findings here demonstrate that lending rates do not significantly affect PSC, this could imply either limited competition between public and private sector borrowing for available funds or the presence of structural issues within Pakistan's financial market that insulate private borrowers from direct rate fluctuations. This observation is consistent with Akkina and Celebi's (2002) study on Turkey, which found public and private investments acting as substitutes, underscoring that the crowding-out effect may be less direct in developing economies where other factors like inflation and exchange rates play a stronger role.\

Role of Inflation and Exchange Rates

The significant negative impact of inflation on PSC, with a coefficient of -0.038948 and a p-value of less than 0.01, reveals that as inflation increases, borrowing costs for the private sector rise, thereby reducing credit demand. This observation aligns with Ihsan and Anjum's (2013) work, which demonstrated that inflation creates a climate of uncertainty, diminishing investors' confidence. Higher inflation rates erode purchasing power and can lead to higher interest rates, compounding the effects on private sector borrowing. Ahmed and Qayyum (2007) similarly found that inflation erodes private sector borrowing incentives due to higher associated costs, suggesting that inflation management is crucial for promoting credit availability.

Exchange rate volatility also demonstrates a significant negative relationship with PSC, with a coefficient of -0.048707, indicating that currency depreciation increases the cost of imports and inflationary pressures, which in turn suppress private sector investment. This finding mirrors research by Fowowe (2013) and Ndikumana (2008), which highlights how currency depreciation, by making imports more expensive, can further crowd out private investment by raising production costs for businesses that rely on imported inputs.

Rethinking The Crowding-Out Narrative

The empirical insignificance of lending rates on PSC may suggest a limited or indirect role of the traditional crowding-out effect in Pakistan, where financial markets may not respond to public borrowing in the same way as in more developed economies. This is supported by Alessandria and Qian (2005), who argue that in economies with high financial intermediation costs, the mere availability of funds is insufficient to stimulate private sector borrowing;

instead, macroeconomic stability, low inflation, and favorable exchange rates are essential to creating a supportive investment environment.

Implications For Policy

The findings emphasize that while managing interest rates remains important, policymakers in Pakistan should prioritize stabilizing inflation and exchange rates to support private sector investment. This strategy aligns with Ali et al. (2020) and Khan et al. (2011), who found that stable macroeconomic conditions are essential for private sector growth. By addressing inflationary pressures and exchange rate stability, the government could indirectly foster an environment conducive to private sector credit expansion, thereby mitigating the crowding-out effect and enabling more robust private sector growth.

Conclusions and Recommendations

This study analyzed the impact of interest rates, inflation, and exchange rates on private sector credits (PSC) in Pakistan over the period from 1961 to 2017. The results show that interest rates (IR) have an insignificant impact on PSC. This indicates that changes in lending rates do not directly affect private sector investment decisions. This aligns with the findings of Khan et al. (2011) and Ahmed & Qayyum (2007), who reported that in developing economies like Pakistan, interest rate adjustments alone do not substantially alter private sector credit demand. On the other hand, inflation (CPI) shows a significant negative effect on PSC, suggesting high inflation eroding the purchasing power of investors and reducing borrowing activity. These findings are consistent with the findings of Awan et al. (2010) and Malik & Din (2008), who found that inflation creates uncertainty and reduces private sector investment. Furthermore, the exchange rate (ER) also negatively affects PSC, as currency depreciation raises the cost of imports and inflationary pressures, leading to a decrease in investment. This aligns with the work of Abbas et al. (2015), who emphasized the destabilizing effect of exchange rate fluctuations on investment. These results suggest that while interest rates may not significantly drive investment, inflation control and currency stability are crucial for fostering private sector growth in Pakistan. This study also suggests that policy makers may make monetary policies for the purpose of managing interest rates in such a way that the Private Sector Investment can flourish, which is the backbone of a strong economy. Any abrupt increase or decrease in interest rate will adversely affect private sector claims.

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