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## INCREASE IN MONEY SUPPLY AMPLIFIES THE SECONDARY SOURCES OF FINANCE: EVIDENCE FROM PAKISTANI NON-FINANCIAL FIRMS

Muhamad Kashif<sup>1\*</sup>, Umar Farooq Awan<sup>2</sup>, Muhammad Wasif Hanif<sup>3</sup> and Tahira Ajmal<sup>1</sup>

<sup>1</sup>Lahore Business School, The University of Lahore, Sargodha Campus, Sargodha, Pakistan

<sup>2</sup>Lahore School of Accountancy and Finance, The University of Lahore, Sargodha Campus, Sargodha, Pakistan

<sup>3</sup>COMSATS University Islamabad, Abbottabad Campus, Abbottabad, Pakistan

### ABSTRACT

An increase in money supply is a signal to expand the financing system in the economy; thus, non-financial firms with access to capital markets and financial institutions stand by side and play a significant role in this situation. This study aims to investigate the impact of money supply increases on the capacity of secondary sources of financing and to achieve the goals of expansionary monetary policy. In 2011, 399 non-financial firms were listed on the Pakistan Stock Exchange, after excluding those firms that did not provide complete information between our selected periods excluded from the sample. Data from 156 non-financial firms were finally used for analysis. Panel data have been collected from the non-financial firms of Pakistan. After applying the Fixed Effects Model, the results provide evidence that an increase in the money supply in the economy of Pakistan would lead to an enhancement in the financing channels, like trade credit. This study explores the relationship between monetary policy adopted by the central bank and the use of trade credit. Collectively, the results also favor positive relationships between access to the capital market and trade credit patterns. This study recommends that during the time of monetary expansion, firms with better access to financial institutions were more willing to enhance credit sales. For future research, it suggests comparing the use of trade credit during the tight and expansionary monetary policy.

*Keywords: Trade credit; Money supply; Short term financing.*

\* Email: [muhammad.kashif@lbs.uol.edu.pk](mailto:muhammad.kashif@lbs.uol.edu.pk)

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### INTRODUCTION

Non-financial firms engage in the recreation of loan transactions between the banks and eventual consumers (Jain, 2001). Literature on credit transactions and financing channels explained two major forms of financing, formal and informal. First, a type of formal financing includes bank loans, and second, an informal source of financing includes trade credit. Changes in monetary policy affect the borrowing and spending capacity of a non-financial firm (Kiyotaki & Moore, 1997; Bernanke et al., 1996). Ahmed et al. (2015) stated that the use of credit transactions increased due to the financial crisis of 2008. Trade credit helps buyers to remain in a competitive market. In developing and developed economies, it showed effective use of trade credit (Kohler et al., 2000). As per the study of Martínez-Sola et al. (2013), the parameters of credit transactions and characteristics of firms are different in different countries, and it is found that the nature of trade credit shows behavior differently in different cultures. A study conducted by Delannay and Weill (2004) suggested that trade credit and financial motives explain firms' credit behavior but did not find any generalized patterns in the use of trade credit in all transition economies. Hill et al.

(2017) found that trade credit as a source of finance is chosen by those firms that have limited access to financial credit.

A Study by Dang and Huynh (2023) indicated that growth in bank loans may increase as a response to expansionary monetary policy. The Bank lending channel of monetary policy indicates that monetary policy affects the money channel along with the economy by affecting bank lending behavior (Naqvi & Pungaliya, 2023).

The Bank lending channel is mostly available to creditworthy or bigger firms that have the borrowing capacity (Ge & Qiu, 2007). As the central bank decided to increase the level of money supply in an economy, creditworthy firms also played a significant role in implementing such policy. The increasing trend of the account trade credit supply indicates the greater use of trade credit channels as an emerging source of financing (Guariglia & Mateut, 2006). Due to these reasons, the study established the evidence of trade credit in developing and developed countries. All the firms in the United States presented an aggregate of 17.8% as trade credit assets in the early 1990s (Rajan & Zingales, 1995). By keeping this view in mind, the major objective of this study is to investigate the relationship between monetary policy channels and the use of trade credit supply. Formal lending channels are the major source of implementation of the monetary policy, but the question arises of what kind of behavior is adopted by the other sources of informal financing like trade credit. Loi and Dang (2023) conducted a study using bank-level data from 31 commercial banks in Vietnam from 2007 to 2021, which documented that the impact of monetary policy on bank lending is more obvious during COVID-19. It documented that bank loan supply is more sensitive to monetary policy adjustments in the global financial crisis. This research paper permits us to look at the non-financial firm's behavior toward the adoption of monetary policy. A major purpose of this paper is to investigate the relationship between money supply and financing behavior of the non-financial firms of Pakistan.

Literature is very limited on trade credit as a secondary source of finance. Meltzer (1960) was the first author to explain such phenomenon. Schwartz (1974), Ferris (1981), and Cunat (2007) tried to explain the use of trade credit. Jain (2001) reported that non-financial firms play a role of an intermediary between banks and consumers of the goods. Goods received from the seller are a signal to a bank that the buyer is credit-worthy and is able to pay back the loan on the given terms and conditions. A thorough study of the literature on trade credit and the references mentioned above did not explain how the non-financial firms behave in the situation when the access to the funds is favorable or contradictory against the policy adopted by the central bank.

In this research paper, we have tried to explore the relationship between monetary policy adopted by the central bank and the use of trade credit. An increase in money supply is a signal to expand the financing system in the economy. Thus, non-financial firms that have access to capital markets and financial institutions stood by the side and played a significant role in this situation. We have hypothesized that:

H<sub>1</sub>: An increase in money supply enhances the capacity of non-financial firms to provide more goods on credit terms.

## **DATA AND METHODOLOGY**

### **Data and Sample**

Due to the nature of trade-credit transactions, we have only collected the data from the non-financial firms of Pakistan. Financial and services sectors have been excluded from our sample. Data consist of eleven years of observations from the year 2011 to 2021. Secondary data have been collected from the Balance Sheet Analysis (BSA) published by The State Bank of Pakistan. In the year 2011, there were 399 non-financial firms listed at The Pakistan-Stock-Exchange, after excluding those firms that did not provide

complete information between our selected periods excluded from the sample. Data from 156 non-financial firms was finally used for analysis. Observations on money supply (Broad Money M2) have been collected from the International Financial Statistics (IFS).

**Methodology**

Non-financial firms included in this study were different in all aspects like size of the firm, nature of production, location, and capital structure, and in other financial decisions, we have captured such heterogeneity by introducing the fixed effects in the model (Gimenez & Gaillard, 2018).

In general, by estimating panel data, regression equation 1 can be generalized as:

$$Y_{it} = \beta_0 + \sum_{j=1}^n \beta_j X_{j,it} + \varepsilon_{it} \tag{1}$$

Where  $Y_{it}$  represents the dependent variable (DV), and  $X_{j,it}$  represents the list of  $j$  independent variables (IV) that represent the values of the  $i$ th firm at time  $t$ . Data collection from different non-financial firms may lead to the effect of heterogeneity. This study also tried to capture this effect by introducing  $\tau_i$  in the model. By introducing the control and variable of interest in the regression Equation 1, the following Eq. 2 is developed. We have also tried to capture the heterogeneity in the data set by using a fixed effects model (Gujarati & Porter, 2003). Houseman Test has been used to differentiate between the fixed and random effects models. A significant chi-square value clearly indicated that the null hypothesis of using the random effects model should be rejected. Finally, we have developed the following model, and the results are shown in Table 4.

$$TCS_{it} = \beta_i + \beta_1 BM_t + \beta_2 ACP_{it} + \beta_3 INV_{it} + \beta_4 LIQ_{it} + \beta_5 PD_{it} + \beta_6 SG_{it} + \tau_i + d_t + \varepsilon_{it} \tag{2}$$

where,

TCS: Trade Credit Supply (AR/T.Assets) BM: Broad Money

ACP: Average collection period

INV: Inventory (inventory/total assets) LIQ: Liquidity

PD: Price Discrimination SG: Sales Growth

$\varepsilon_{it}$ : Error term

**RESULTS AND DISCUSSION**

**Panel Unit Root Test**

The existence of unit roots in data provides biased results, and because of a large number of observations, it may exist in the panel data set. Unit root test based on the assumption whether there is any restriction on data series or not. In this study, we have used Levin, Lin, and Chu (Levin et al., 2002) and Im, Pesaran, and Shin (Im et al., 2003) as different tests/measures to detect the unit root test in data. Table 1 indicates that unit root does not exist in any of the variables, and the series is stationary at level.

Descriptive statistics of the data collected have been reported in Table 2. The mean value of the trade credit supply explains that the amount of account receivables transactions in the overall assets of the firms is around 2 million. The mean value indicates that almost 2 million of the current assets out of total assets are based on trade credit supply. It can also be explained as, on average, 2 million of the funds have been invested by non-financial firms in trade credit transactions. It is a significant amount of money that indicates that firms in Pakistan are taking an interest in using trade credit as an alternative source of finance. The range of the trade credit supply indicates that there is a greater variation in the decision to assign goods on credit. Some non-financial firms are totally negating by adopting the policy of granting goods on credit. On the other hand, some firms are focusing on investing in account receivables. Results of

the maximum value indicate that there are some non-financial firms that exist in our data set that have 42 percent of their total assets in the form of account receivables.

Table 1. Panel unit root test.

Variables	Levin, Lin & Chu t*		Im, Pesaran and Shin W-stat	
	Statistic	Prob.	Statistic	Prob.
TCS	-380.062	0.0000	-48.7856	0.0000
MP	-35.4289	0.0000	-21.1875	0.0000
ACP	-673.990	0.0000	-79.2422	0.0000
PD	-15.3363	0.0000	-7.75667	0.0000
SG	-66.6952	0.0000	-36.7766	0.0000
INV	-26.0167	0.0000	-12.0139	0.0000
LIQ	-16.5770	0.0000	-7.84025	0.0000

The mean value of the inventory explains that, on average, 20 percent of the assets of non-financial firms in Pakistan are in the form of inventory. The range of the values is also very significant, which indicates that there is a variation in policy regarding maintaining the level of inventory. This variation might be due to the heterogeneity in the data set. The value of standard deviation 1.5506 indicates that the amount of inventory among non-financial firms varies by 1.6 million.

Table 2. Descriptive statistics.

Variables	Obs.	Mean	Minimum	Maximum	Std. Deviation
TCS	1700	1.9277	0.0000	42.4000	5.2884
MP	1700	15.0600	5.6900	20.5100	3.9717
ACP	1700	50.8407	0.0000	991.2000	102.4148
INV	1700	0.2071	0.0000	62.5100	1.5506
LIQ	1700	0.0722	0.0000	8.7000	0.3552
PD	1700	0.0685	-1.8700	0.7800	0.1278
SG	1700	0.1688	-1.3000	9.8100	0.7103

Table 3 enlightens the association among the selected variables. The Pearson correlation test is used to explain the strength and direction of the relationships. The correlation between trade credit supply and monetary policy is positive, which explains that both variable moves in the same direction. Other variables have a negative relationship with trade credit supply. None of the variables in the table show a greater degree of strength among them, and that could be the signal of an absence of multicollinearity.

Table 3. Correlation among variables.

Variables	TCS	MP	ACP	INV	LIQ	PD	SG
TCS	1.000						
MP	0.101	1.000					
ACP	0.157	0.049	1.000				
INV	-0.024	-0.003	0.002	1.000			
LIQ	-0.021	0.0282	0.020	0.340	1.000		
PD	-0.012	0.074	-0.082	-0.029	0.022	1.000	
SG	-0.025	0.021	-0.003	-0.042	-0.066	0.078	1.000

Results reported in Table 4 explain that the increase in money supply makes the non-financial firms in Pakistan provide more goods on credit terms. Non-financial firms that have more access to the capital markets and financial institutions can easily arrange their funds to support their financing activities. These

results align with previous trade credit research (Kashif et al., 2019). The objective of an expansionary monetary policy is to channel funds towards the economy (Cecchetti, 2000). It is noteworthy that non-financial institutions also play a significant role in achieving such goals. It is noticed that the behavior of supplying goods on credit or providing financing to other customers is based on the liquidity position of any non-financial firm (Berger & Bouwman, 2017). Liquidity is positive and significantly indicating the liquidity position of the listed firms in Pakistan during the time of availability of funds and linked those funds to others as well.

According to the results derived, we can make the statement that non-financial firms adopt the same pattern as monetary policy or make parallel decisions according to the monetary policy adopted by the central bank (Meltzer, 1960). In Table 4, trade credit supply is explained from the independent variables with a precise number of R-square. Overall, the model is significant as the probability value of the F-statistics is significant.

Table 4. Fixed effects regression results.

Variables	Coefficient	Std. Error	t-statistics	Prob.
MP	0.1261	0.0281	4.4943	0.0000
ACP	0.0028	0.0013	2.1807	0.0294
PD	2.6789	1.1958	2.2403	0.0252
SG	-0.1593	0.1642	-0.9704	0.3320
INV	-0.1534	0.0816	-1.8795	0.0604
LIQ	0.7698	0.0816	1.9063	0.0568
Constant	-0.3035	0.4383	-0.6925	0.4887
R-squared	0.3287			
F-Statistics	4.6775			
Prob.	0.0000			

## CONCLUSIONS

Recently, non-financial firms from many countries are getting involved in trade credit transactions. The size of trade credit transactions is increasing in the balance sheet of non-financial firms. Most of the recent work on trade credit from European countries has found that non-financial firms are more interested in obtaining financing from their suppliers as compared to financial institutions. Literature on trade credit supply has already proven that firms with access to financial institutions and capital markets are capable of providing financing to their customers. This research paper has also tried to highlight this channel during the time of monetary expansion. This study showed that during the time of monetary expansion, firms with better access to financial institutions were more willing to enhance credit sales. Firms always try to adjust their source of financing; this implies that they move from one source of finance to another and try to rank their sources of financing. Thus, they utilize that opportunity, which has easy access and lower cost.

In the future, more research could be done to explore such channels in detail. A study could be done on how non-financial firms respond to monetary contraction in the transaction of trade credit. Data could be collected to investigate the response of monetary tightens or expansion on non-listed firms.

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