Article QR

Title:	**The effect of Multidimensional Aspects of Monetary Policy of SBP on the Large Scale Manufacture**

Author (s):	Jawad Khan[1]*, Bushra Maryam[2], and Aqib[2]
Affiliation (s):	[1]Xi'an Jiaotong University, China [2]Pakistan Institute of Development Economics, Islamabad, Pakistan

UMT

A publication of

Department of Economics and Statistics, Dr. Hasan Murad School of Management
University of Management and Technology, Lahore, Pakistan

The Effect of Multidimensional Aspects of Monetary Policy of SBP on the Large Scale Manufacture

Jawad Khan[1*], Bushra Maryam[2], and Aqib[2]

[1]School of Economics and Finance, Xi'an Jiaotong University, Shaanxi, China
[2]Pakistan Institute of Development Economics, Islamabad, Pakistan

Abstract

The current study empirically investigated the multidimensional aspects of information pertaining to the monetary policy of the State Bank of Pakistan (SBP). This policy comprises monetary policy statements (MPS) published by Monetary Policy Committee (MPC) and policy rate. Monetary Policy Department (MPD), one of the core policy related departments of the State Bank of Pakistan (SBP), provides informative and analytical support for the formulation, dissemination, and implementation of the bank's monetary policy. The tone and effect of monetary policy communication was investigated on macroeconomic variables, fiscal variables, and financial variables, that is, inflation, policy rate, credit intake, LSM, imports, exports, and trade deficit. The analysis was carried out by using time series data collected from MPS over the time period 2005-2021. The empirical model was estimated by using Granger causality test and Autoregressive Distributed Lag (ARDL) technique. The results showed a significant and positive relationship between large scale manufacturing (LSM) and policy rate and vice versa. The study provided specific evidence to policymakers that would help them to improve and further enhance their transparency and credibility regarding monetary policy formulation. Furthermore, this research would also help the SBP to review the policies and incorporate key components and its imply that the SBP's adoption of a market-based flexible exchange rate would increase the efficiency of the exchange rate channel used to transmit monetary policy.

Keywords: autoregressive distributed lag, granger causality test, monetary policy, State Bank of Pakistan

Introduction

Different researchers have explained the importance of central bank's transparency and its strategy for industry sector (Binder, 2008; Dincer & Eichengreen, 2009; D'Acunto et al., 2018). They explained the impact of

---

* Corresponding Author: jawadmarwat47@gmail.com

communication on the financial sector and how transparency and communication eliminate uncertainty. Hanif et al. (2014) find the impact of organizational resistance to change on Business Process Reengineering implementation and proposed that Human related factors, Organization related factors and IT training were responsible for explaining the organizational resistance and have a positive impact on the success of BPR implementation. The current study explained the importance of multidimensional aspects of information pertaining to the monetary policy of the State Bank of Pakistan (SBP). This policy comprises monetary policy statements (MPS) published by Monetary Policy Committee (MPC) and policy rate. Monetary Policy Department (MPD), one of the core policy related departments of the State Bank of Pakistan (SBP), provides informative and analytical support for the formulation, dissemination, and implementation of the bank's monetary policy.

Background

The main aim of monetary policy is price stability, and this goal remained the same throughout the history of central banks (Auclert, 2019). The objective of economic policies is public welfare and to attain this objective, the government implements several policies including fiscal and monetary policy. Monetary policy helps to attain welfare by focusing on output and price stabilization (Blanchard & Gali, 2010). It is the responsibility of monetary authorities to maintain a balance between inflation and unemployment since excessive demands cause inflation. In the developing countries, monetary policies help to stabilize the price level, improves balance of payments and external value of currency, increase savings, and through proper allocation decrease disparities among sectors. As far as Pakistan is concerned, the State Bank of Pakistan (SBP) targets to stabilize inflation rates set by government, sustains the financial markets, tries to maintain Pakistan's foreign exchange reserves, and boosts the investment activities.

Ronald (1967; as cited in Ahmed et al., 1990) discussed in his study that in Pakistan, during the era of 1947-1965, monetary policies failed to achieve the goals determined by the government, as they were weak and ineffective. A change in policy instrument causes a change in macroeconomic conditions, such as real GDP and inflation. However, in Pakistan, the target variables of monetary policy were inflation and budget deficit (Ahmed et al., 2014). To achieve monetary policy goals other than price stabilization,

it is important to adjust the value of money with the changes in macroeconomic variables (inflation, balance of payment, GNI and unemployment), fiscal variables (budget deficit), and independent financial variables (interest rate). In Pakistan, SBP Act 1956 provides legal framework for monetary policy. This act ensures to regulate monetary policy; credit system, and it also aims to increase monetary stability. SBPs' readings report that it not only focuses on economic growth and price stability, however, it also focuses on exchange rates. Historically, the objectives of monetary policy remained the same, however, the policy contents have changed over the years.

In addition to other priorities, such as foreign exchange rate stabilization, SBP has a dual responsibility to improve market stability and foster production growth. Though, the targets to change expectations between price stability and production growth have not been explicitly prioritized. To minimize the ambiguity pertaining to central bank actions, it is important to understand the long-term goals of central bank and to prioritize them in the presence of multiple objectives. The SBP explicitly reveals the objectives, however, it does not prioritize the various and contradictory goals. The SBP announces inflation and production goals for one year, however, it does not include details on medium-term goals (inflation and output). The goal of transparency (reduction of uncertainty) is not accomplished by disclosing only short-term priorities and, thus, Pakistan's monetary policy in this region is still deficient. No policy has been devised pertaining to the reporting of minutes and voting history of the meeting of the advisory board. After the policy conferences, only decisions to change the policy instruments were announced.

Research Questions

Central banks have changed their strategy through setting certain objectives and implementing monetary policy over time. Therefore, it has become crucial to analyze the effects of SBP strategy. For this purpose, the following research questions should be addressed:

1. What are the Multidimensional Aspects of Monetary Policy of SBP with Large Scale Manufacture Production?

2. Does monetary policy strategy effect on macroeconomics variables?

Objectives

The current study pursued the following specific objectives to investigate the above-mentioned problem statement:

1. To examine the multidimensional aspects of monetary policy of SBP with large scale manufacture production?

2. To investigate the monetary policy strategy effect on macroeconomics variables?

Literature Review

The central bank has changed its communication methods over the last thirty years. Central bankers have targeted financial markets to achieve the bank's objectives (minimize financial volatility and shape long term interest rates) through new communication methods. In these newly introduced communication methods, policy decisions and their prospects were announced. The central bank's main goal is to anchor inflation expectations to influence the households or firms' expectations. However, they failed to achieve it in most advanced economies. In low inflation countries, firms and households believe unanchored inflation expectations, they were unaware of monetary policy announcements and what central bank would do in future. These policies remain inefficacious if firms and households' expectations were insensitive to central banks' announcement and communication (Coibion et al., 2019).

One of the key instruments to manage aggregate demand and tame economic business cycle swings is monetary policy. The exchange rate is one of the key conduits via which monetary policy is transmitted to the actual economy (Mishkin, 1995). Exchange rates were impacted by monetary policy shocks. Moreover, exchange rates also influence the aggregate demand via a variety of channels including trade, finance, and fiscal channels. In comparison with industrialized nations, the transmission of monetary policy is comparatively weaker in emerging nations (Mishra & Montiel, 2013). The common traits that cause these economies to suffer from fear of floating and, thus, fixing or stabilization of exchange rates were one of the causes of less effective monetary policy. Weak fiscal and monetary institutions, currency substitution, dollarization of liabilities, and susceptibility to abrupt halt in capital flows were some of these traits (Calvo & Mishkin, 2003). The exchange rate channel that transmits monetary policy is less effective when it is fixed or stabilized (Bank of International

Settlements, [1998]).

Pakistan's unsustainable economy makes it susceptible to abrupt halts in capital flows. Additionally, the government's international obligations significantly outweigh its foreign assets, and its monetary and fiscal institutions were still in the early stages of development. With this background, there is little room for flexibility in the exchange rate which may have reduced the efficiency of Pakistan's monetary policy transmission via a weak exchange rate channel. However, many developing countries were now permitting more latitude in the currency rate due to their shift to utilize interest rates as operational objectives under inflation targeting regimes (Brandao-Marques et al., [2020]). Gaining monetary autonomy and improving the efficiency of monetary policy transmission were positively correlated with allowing for more exchange rate flexibility (Li & Tsai, [2013]). The SBP has stated that as part of its plans to transition to a flexible inflation targeting regime, it would also be implementing a market-based flexible exchange rate system starting in May 2019. Furthermore, as of February 2021, SBP has further liberalized foreign currency rules pertaining to investment and trade policy. SBP has updated its foreign exchange handbook to make it easier for exporters, fintech's, and start-ups. Moreover, SBP has also created an online site to offer necessary permissions for foreign exchange to ease commerce where they were needed. Roshan Digital Accounts (RDAs) were successfully introduced by SBP in association with commercial banks on September 10, 2020, for overseas Pakistanis. These accounts provide cutting-edge banking options for paying energy bills, investing in real estate, stocks, and Naya Pakistan certificates for overseas Pakistanis. Pakistan is expected to become a part of the international financial system by following these steps. The transmission of monetary policy via currency rates is strengthened by global financial integration (Gudmundsson, [2008]; Meier, [2013]).

The current study focused on two goals considering the above mentioned circumstances. The first goal was to evaluate how well Pakistan's monetary policy is transmitted via the exchange rate channel. On the other hand, the second goal focused on determining how this varies during periods of more exchange rate flexibility. The current study differs from the earlier research in certain ways. This research first took exchange rate regimes into account. Secondly, it also considered the worldwide economic climate by regulating global interest rates, global food prices, and

global economic growth. Thirdly, it recognized the influence of fiscal dominance on monetary policy. The amount of money was likewise restricted to what the public sector borrowed from the banking system. The findings indicated that the shock to monetary policy was very weakly transmitted via the exchange rate channel. However, the exchange rate channel functions better when there is more exchange rate flexibility. Additionally, the research determined that the domestic economic activity had a less influence on inflation as compared to the exchange rate channel. This represents the effect of inflation expectations and the pass-through of exchange rate fluctuations to domestic prices via imported goods in the consumer basket. An increase in exchange rates of one standard deviation lowers inflation by around thirty basis points (Hussain & Ejaz, 2022).

Kokh and Kokh (2019) conducted a survey to determine which means were the most effective for policy communication, that is, media, newspaper, political leaders, friends, or other sources to which 20,000 consumers responded. The purpose of this survey was to determine the central range of randomized information treatment. The results indicated that most of the people relied more on friends and coworkers instead of newspapers and social media since most of the households do not read newspapers. Some of them who read newspapers misinterpret policy information. The results also indicated that communication could change consumers' expected inflation beliefs. Transparency is the key to independence of central banks as the public supports transparent banks (Mishkin, 2004). Efficient monetary policy communication can influence public expectations, reduce uncertainty, and offer political accountability for central banks' transparency (Stiglitz, 1998; Dincer et al., 2009; Blinder et al., 2008).

Mathur and Sengupta (2019) observed the impact of different features of monetary policy communication on financial markets by using language tools. The results indicated that Indian central banks used difficult language for communication purposes. The efficient banking system determines a major part in customers' life and guides them how much to save, spend, and invest. Nowadays, banks were fulfilling customers' needs with the help of technology (Alagarsamy & Wilson, 2013). Long-term relationships with the public can be maintained with the help of customer satisfaction, loyalty, and quality (Siddiqui, 2011). Customer satisfaction and retention were positively interlinked with each other, and banks should gain the public's confidence.

Educated customers were not satisfied with one bank, therefore they move to another bank (Cohen et al, 2010). Service quality has a strong link with the expected and perceived quality. Countries that understand customer needs move faster towards economic growth and prosperity (Naik et al., 2010). Non-monetary news is broadcasted via news channels, newspapers, and through other social media channels daily (Cieslak, 2019).

Methodology and Data

Research design refers to the structure of methods and techniques chosen by a researcher to integrate various research components in a logical way to effectively manage the research problem. This offers insights into how research can be conducted by using a common approach. Many researchers have a list of research questions to be answered and these questions can only be answered through a research design. It not only shows the data collection methods, however, it also explains the logic behind it. In the current study, the data collected from MPS (2005-2021) was used to determine the connection between policy rate, large scale manufacturing, credit intake, exports, imports, inflation, and trade deficit. Approximately, 75 observations were utilized in the dataset since monetary statements were released six times a year. However, in 2006, 07, and 08, monetary statements were released twice a year. In 2009, MPS were released after every three months.

Data Source

Time series data was used over the period (2005-2021) to statistically explore the connection between specified variables. Bi-monthly data was used with 75 observations which were suitable for the time series data regression analysis. The analytical information is derived from secondary sources, "MPS" and "Monetary Policy Compendium (MPC)". MPS collects the data on policy rate, credit intake, trade deficit and inflation, while the data on imports, exports, and large-scale manufacturing is acquired from MPC. Large-scale manufacturing (LSM) is used as a proxy of GDP. LSM has been used as the dependent variable (DV) for the present analysis, while policy rate, credit intake, trade deficit, inflation, imports, and exports were used as independent variables (IV). All the suggested independent variables were expected to have a significant connection with economic growth.

Econometric Modeling

Single Equation Model

To empirically investigate the relationship between LSM, CI, X, M, PR, TD, and π, where LSM is a dependent variable, while CI, X, M, PR, TD, and π were independent variables.

$$LSM_t = \alpha^\circ + \alpha_1 PR_t + \alpha_2\ CI_t + \alpha_3 \pi_t + \alpha_4\ X_t + \alpha_5 M_t + \mu t \qquad (1)$$

Where,

LSM_t = Large Scale Manufacturing

PR_t = Policy Rate

CI_t = Credit Intake

π_t = inflation

M_t = imports

X_t = Exports

μ_t = error term

t = Years (2005, 2006 , 2021)

$\alpha 0, \alpha 1, \alpha 2, \alpha 3, \alpha 4$ and $\alpha 5$ = Partial slope coefficients.

The current study applied Augmented Dickey-Fuller (ADF) test to verify the null hypothesis, $u = 1$. The presence of a unit root cannot be denied if the null is unacceptable. There were two variations of this test, one with an intercept and the other with a trend, as was previously described (Mushtaq, 2011). If there is mixed unit root stationery, then ARDL model would be applied. Additionally, ARDL) models were often used to analyze the dynamic relationships with time series data in a single-equation framework. If an AR model includes lagged values of both Y and X, it is known as the ARDL model. While ARDL models were technically AR-X models, the key difference is that ARDL models focus on the exogenous variables and selecting the correct lag structure from both the endogenous variable and the exogenous variables (Nkoro & Uko, 2016).

ARDL models were often used to analyze the dynamic relationships with time series data in a single-equation framework. These models are

linear time series models in which both the dependent and independent variables were related not only contemporaneously, however, across historical (lagged) values as well. In particular, if Y_t is the dependent variable and $X_1 \ldots \ldots X_k$ are k explanatory variables, a general ARDL $(p, q_1, \ldots \ldots \ldots q_k)$ model is given by:

$$y_t = a_0 + a_1 t + \sum_{t=1}^{p} \psi_i y_{t-i} + \sum_{j=1}^{k} \sum_{i=0}^{q_1} \beta_j, i, x_{j,t-i}, + \varepsilon_t \qquad (2)$$

Where, ε_t were the usual innovations, a_0 is a constant term, and $a_1 \psi_t$ and $\beta_{j_{l,j}}$ were respectively the coefficients associated with a linear trend, lags of y_t, and lags of the k regressors $x_{j,t}$ for j = 1, …… k. Alternatively, let L denote the usual lag operator and define as the lag polynomials:

$$\psi(L) = 1 - \sum_{i=1}^{P} \psi_i L \text{ and } \beta_j(L) = \sum_{i,=0}^{q_j} \beta_{j,1,} L^i$$

Then, equation (2) above can also be written as:

$$\psi(L) y_t = a_0 + a_1 t + \sum_{j=1}^{k} \beta_j (L) x_{j,t} + \varepsilon_t \qquad (3)$$

Although ARDL models have been used in econometrics for decades, they have gained popularity in recent years as a method to examine co-integrating relationships. Two seminal contributions in this regard were by Pesaran and Shin (1998), and Pesaran et al. (2001). They argued that ARDL models were especially advantageous in their ability to handle co-integration with inherent robustness to misspecification of integration orders of relevant variables.

Model Estimation and Discussion

Descriptive Statistics

To explain the details of the descriptive statistics have been used which were numbers that help to summarize the results. Table 1 presents the number of observations (*N*) and the summary statistics (mean and median values, maximum and minimum values, and standard deviation values) for all the variables to be used in the current empirical analysis. This dataset includes 75 observations for all the variables. Some of the values were missing from variables that were estimated through interpolation. The data was collected from the last sixteen years having bi-monthly observations for the time period 2005-2021.

Table 1

Summary Statistics

Variables	Mean	Median	Max	Min	Std. Dev.	Observations
Manufacturing	3.828	4.4	13.2	-8.2	4.067	75
Policy Rate	9.296	9.5	14	5.75	2.612	75
Inflation	7.838	7.9	19.56	-0.4	4.259	75
Credit Intake	22.797	17.957	55.8	15.305	12.051	75
Exports	7.753	8.5	17.5	-13.4	5.896	75
Imports	12.263	15.3	45.2	-15.2	10.423	75
Trade Deficit	4.230	4.4	16	0.41	2.924	75

Unit Root Test

To achieve reliable results, it is necessary to avoid spurious regression analysis for the stationarity of data because if the data is non-stationary, it would be impossible to conduct forecasting. Table 2 shows E-views' results for the Dickey-Fuller Augmented unit root test on all the variables. The results were provided with trend and without trend at level and at the first difference. The inclusion of trend option means that a linear time trend was included in this model.

Table 2

Results of Dickey-Fuller Augmented Unit Root Test at the Level and First Difference

Variables	Level		First Difference		Decision
	t-Statistic	Prob.	*t*-Statistic	Prob.	
Manufacturing	-3.613089	0.0362**			I(0)
Policy Rate	-1.881923	0.6540	-11.29171	0.0000***	I(1)
Inflation	-2.886391	0.1727	-8.284909	0.0000***	I(1)
Credit Intake	-1.297980	0.8811	-8.863661	0.0000***	I(1)
Exports	-4.725081	0.0014**			I(0)
Imports	-3.733966	0.0260**			I(0)
Trade Deficit	-6.076620	0.0000***			I(0)

Note. Unit root tests were performed with restricted intercept and trend for all the variables, that is, large-scale manufacturing, policy rate, credit intake, trade deficit, and imports and exports.

The ***, **, and * asterisks indicate the level of significance at 1%, 5%, and 10% respectively

Table 2 presents the results of unit root tests. To determine the stationarity of the variables, the Dickey-Fuller Augmented unit root test was employed. The results of Dickey-Fuller test indicated that the policy rate, inflation, and credit intake are non-stationary at level I(0). However, they are stationary at first difference I(1), while the remaining variables, that is, large-scale manufacturing, imports, exports, and trade deficit are stationary at level I(0). The null hypothesis of Augmented-Dickey Fuller test showed that all the data contained unit root. The null hypothesis is rejected because all variables are not stationary at level I(0). By considering the first difference I(1) of variables containing unit root, the problem of non-stationarity could be sorted out. Now, all variables have become stationary for further process. In the current circumstances, the variables are stationary at level and first difference, and this is mixed unit root. Therefore, according to Pesaran et al. (2001), the most suitable technique for this estimation is ARDL.

Johanson Cointegration Test

Cointegrating correlations between several non-stationary time series data are tested using the Johansen test. The Johansen test allows for more than one cointegrating association, in contrast to the Engle-Granger test (Poh & Tan, 1997).

Table 3

Cointegration Test for long-term Effect

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.6480	180.6099	125.6154	0.0000
At most 1 *	0.5152	114.8340	95.7537	0.0013
At most 2	0.3958	69.2211	69.8189	0.0557
At most 3	0.2525	37.4760	47.8561	0.3254
At most 4	0.1562	19.1434	29.7971	0.4826
At most 5	0.1059	8.4422	15.4947	0.4194
At most 6	0.0218	1.3878	3.8415	0.2388

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* Denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.6480	65.7759	46.2314	0.0002
At most 1 *	0.5152	45.6129	40.0776	0.0108
At most 2	0.3958	31.7451	33.8769	0.0879
At most 3	0.2525	18.3326	27.5843	0.4677
At most 4	0.1562	10.7011	21.1316	0.6771
At most 5	0.1059	7.0545	14.2646	0.4827
At most 6	0.0218	1.3878	3.8415	0.2388

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level

* Denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Note. The ***, **, and * asterisks indicate the level of significance at 1%, 5%, and 10% respectively

Table 3 presented the Engle-Granger test statistic for cointegration reduces to the Augmented Dicky fuller unit root test of the residuals of the cointegration regression: the results shows that there is cointegration in the data and this means that long term effect is exit in the data.

ARDL Error Correction Model

Table 4

ARDL Error Correction Model

Dependent Variable	Large-Scale Manufacturing			
	Coefficient	Standard Error	*t*-Statistic	*p*-Value
D(Policy rate)	-0.258984**	0.211334	-1.225471	0.0253
D(Credit intake)	0.127435*	0.067807	1.879383	0.0651
D(Inflation)	-0.373876***	0.128753	-2.903816	0.0052
D(Imports)	0.134397**	0.069126	1.944237	0.0566
D(Exports)	-1.093270	1.975063	-0.553537	0.5820
D(Trade deficit)	0.352722***	0.090911	3.879853	0.0003
R-squared	0.721601	Prob(*F*-statistic)		0.00000
Adjusted *R*-squared	0.664978	Durbin-Watson stat		1.80596

Note. The ***, **, and * asterisks indicate the level of significance at 1%, 5%, and 10% respectively

Table 4 presented that one kind of ARDL model with an error correction term is the regression ARDL error correction model. The rate at which the variables settle back into their long-run equilibrium after a shock is captured by the error correction term.

ARDL Model

The results of ARDL model are shown in table 5. Since, some of the variables were stationary at level 1(0) and the rest were at first difference 1(1). Therefore, ARDL model was the most appropriate technique to determine the relationship between large-scale manufacturing, policy rate, inflation, credit intake, imports, exports, and trade deficit.

Table 5

Results of ARDL Model

Dependent Variable: Large-Scale Manufacturing				
Variable	Coefficient	Std. Error	*t*-Statistic	Prob.*
Short Run				
Policy Rate	0.250416	0.242232	1.033785	0.3055
Credit Intake	-0.084932*	0.075125	-1.130544	0.0628
Inflation	0.297246	0.134734	2.206171	0.0313
Exports	0.147843**	0.071311	2.073217	0.0425
Imports	0.052580	0.049846	1.054842	0.2958
Trade Deficit	-0.050494	0.112669	-0.448161	0.6557
Long Run				
Policy Rate	0.196294**	0.184112	1.066163	0.0420
Credit Intake	0.984731***	0.313600	3.140084	0.0030
Inflation	0.270305***	0.107444	2.515782	0.0155
Exports	0.278651***	0.044763	6.225063	0.0000
Imports	0.153321***	0.049368	3.105657	0.0033
Trade Deficit	-0.973564*	0.515053	-1.890223	0.0652

Note. The ***, **, and * asterisks indicate the level of significance at 1%, 5%, and 10% respectively. R-squared: 0.896733 Adjusted R-squared 0.860016

Table 5 reports the ARDL estimation results of the model. According to this model, the coefficient value of policy rate is positively and significantly associated with large scale manufacturing. These findings are in line with Lombardo and Pagano (1999), Asongu (2012), and Ajide (2014). The partial slope of the coefficient for policy rate suggests that a 1% increase in

policy rate would lead to an improvement in LSM by 19%. According to this model, the coefficient value of credit intake is positively and significantly associated with large scale manufacturing. The partial slope of the coefficient for credit intake suggests that a 1% increase in credit intake would lead to improvement in LSM by 98%. The coefficient value of inflation rate is positively and significantly associated with large scale manufacturing. The partial slope of the coefficient for inflation rate suggests that 1% increase in inflation rate would lead to improvement in LSM by 27%.

The coefficient value of imports is positively and significantly associated with large scale manufacturing. The partial slope of the coefficient for imports suggests that a 1% increase in imports would lead to improvement in LSM by 27%. The coefficient value of exports is positively and significantly associated with large scale manufacturing. The partial slope of the coefficient for exports suggests that a 1% increase in exports would lead to improvement in LSM by 15%. The coefficient value of imports is positively and significantly associated with large scale manufacturing. The partial slope of coefficient for imports suggests that a 1% increase in imports would lead to improvement in LSM by 27%. The coefficient value of trade deficit is negatively but significantly associated with large scale manufacturing. The partial slope of the coefficient for trade deficit suggests that a 1% decrease in trade deficit would lead to improvement in LSM by 97%.

Table 6

ARDL Cointegrating And Long Run Form

Dependent Variable: large scale manufacturing
Selected Model: ARDL(1, 1, 1, 1, 1, 1, 1)

Cointegrating Form				
Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
D(Policy Rate)	0.344382	0.212669	1.619335	0.1109
D(Credit Intake)	-0.026164	0.059071	-0.442931	0.6595
D(Inflation)	0.246996**	0.100931	2.447170	0.0175
D(Imports)	0.081095*	0.043075	1.882667	0.0649
D(Exports)	0.145098***	0.051735	2.804656	0.0069
D(Trade Deficit)	0.039254	0.075025	0.523207	0.6029
CointEq(-1)	-0.61471***	0.077773	-7.903970	0.0000

Cointeq = Large Scale Manufacturing - (-0.2367*Policy Rate + 0.1185 *Credit Intake_ -0.1611*Inflation + 0.0519*Imports + 0.4752 *Exports + 0.0112*Trade Deficit + 0.3603)

	Long Run Coefficients			
Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
Policy Rate	-0.236690	0.279028	-0.848266	0.3998
Credit Intake	0.118472*	0.063470	1.866591	0.0671
Inflation	-0.161075	0.181687	-0.886550	0.3790
Imports	0.051869	0.097879	0.529936	0.5982
Exports	0.475167***	0.160310	2.964051	0.0044
Trade Deficit	0.011183	0.242585	0.046101	0.9634
C	0.360297	2.633416	0.136817	0.8917

Note. The ***, **, and * asterisks indicate the level of significance at 1%, 5%, and 10% respectively

Table 6 presented the ARDL limits method was first presented by Pesaran et al. (2001) as a means of assessing cointegration. This method has the benefit of allowing regressors to have unknown or mixed orders of integration, I(0) or I(1), which is not allowed by traditional cointegration testing.

Conclusion and Recommendations

The current study attempted to examine market uncertainty through monetary statements. Moreover, it also determined the impact of multidimensional aspects of monetary policy of SBP with large scale manufacture production and macroeconomic variables. This study also investigated peoples' understanding with monetary policy and explored the relationship between large scale manufacturing, policy rate, imports, exports, credit intake, and trade deficit. Bi-monthly time series data was used for the time period 2005-2021 in the current study. Additionally, some values were missing from the data which were generated by interpolation. The current study used large scale manufacturing as proxy of GDP.

Unit root test was used as an estimation technique for the analysis, Granger causality, and ARDL model. This technique incorporates all the regression equations and is more efficient in estimation as compared to other techniques. The research findings are compatible with previous literature. The analysis provided different results for the study's objectives. According to the results of the current study, the coefficient value of policy

rate was positive and significantly associated with large scale manufacturing. These findings are in line with Lombardo and Pagano (1999), Asongu (2012), and Ajide (2014). The partial slope of the coefficient for policy rate suggests that 1% increase in policy rate would lead to improvement in LSM by 19%. According to this model, the coefficient value of credit intake is positively and highly significantly associated with large scale manufacturing. The partial slope of the coefficient for credit intake suggests that a 1% increase in credit intake would lead to improvement in LSM by 98%. The coefficient value of inflation rate is positively and significantly associated with large scale manufacturing. The partial slope of the coefficient for inflation rate suggests that 1% increase in inflation rate would lead to improvement in LSM by 27%.

The coefficient value of imports is positively and significantly associated with large scale manufacturing. The partial slope of the coefficient for imports suggests that a 1% increase in imports would lead to improvement in LSM by 27%. The coefficient value of exports is positively and significantly associated with large scale manufacturing. The partial slope of the coefficient for exports suggests that a 1% increase in exports would lead to improvement in LSM by 15%. The coefficient value of imports is positively and significantly associated with large scale manufacturing. The partial slope of coefficient for imports suggests that a 1% increase in imports would lead to improvement in LSM by 27%. The coefficient value of trade deficit is negatively but significantly associated with large scale manufacturing. The partial slope of the coefficient for trade deficit suggests that a 1% decrease in trade deficit would lead to improvement in LSM by 97%.

Future Suggestions and Recommendations

Monetary policy statements should be understandable so that people who do not have financial backgrounds can easily understand the message. The transmission of monetary policies to financial markets is likely to be weak if the statements are on average too long or too difficult to interpret. These results imply that the SBP's adoption of a market-based flexible exchange rate would increase the efficiency of the exchange rate channel used to transmit monetary policy. Moreover, Pakistan would become more integrated into the global financial system with SBP initiatives to progressively liberalize the foreign currency regulations. Moreover,

Pakistan will become more integrated into the global financial system with SBP initiatives to progressively liberalize foreign currency regulations. Additionally encouraging for the operation of the exchange rate channel is global financial integration. To be an independent and credible central bank that achieves monetary and financial stability and inclusive financial sector development for the long-term benefit of the people of Pakistan.

References

Ahmed, Q. M. (1990). Monetary Problems of Pakistan. *Pakistan Economic and Social Review*, *28*(1), 41–68.

Ahmed, Q. M., Muhammad, S. D., Noman, M., & Lakhan, G. R. (2014). Determinants of recent inflation in Pakistan: Revisit. *Pakistan Journal of Commerce and Social Sciences*, *8*(1), 170–184.

Ajide, K. B. (2014). Determinants of economic growth in Nigeria. *CBN Journal of Applied Statistics*, *5*(2), Article e8.

Alagarsamy, K., & Wilson, S. (2013). A study on customer behavior towards banking services with special reference to public sector banks in Sivagangai dist. *Asia Pacific Journal of Marketing and Management Review*, *2*(2), 183–196.

Asongu, S. A. (2012). Government quality determinants of stock market performance in African countries. *Journal of African Business*, *13*(3), 183–199. https://doi.org/10.1080/15228916.2012.727744

Auclert, A. (2019). Monetary policy and the redistribution channel. *American Economic Review*, *109*(6), 2333–2367. https://doi.org/10.1257/aer.20160137

Bank of International Settlements. (1998). *The transmission of monetary policy in emerging market economies* (Bank of International Settlements Policy Paper No. 3). https://www.bis.org/publ/plcy03.pdf

Binder, C. C. (2021). Political pressure on central banks. *Journal of Money, Credit and Banking*, *53*(4), 715–744. https://doi.org/10.1111/jmcb.12772

Blanchard, O., & Galí, J. (2010). Labor markets and monetary policy: A new Keynesian model with unemployment. *American Economic Journal: Macroeconomics*, *2*(2), 1–30. https://doi.org/10.1257/mac.2.2.1

Blinder, A. S., Ehrmann, M., Fratzscher, M., De Haan, J., & Jansen, D. J. (2008). Central bank communication and monetary policy: A survey of theory and evidence. *Journal of Economic Literature*, *46*(4), 910–945. https://doi.org/10.1257/jel.46.4.910

Brandao-Marques, M. L., Gelos, M. R., Harjes, M. T., Sahay, M. R., & Xue, Y. (2020). *Monetary policy transmission in emerging markets and developing economies*. International Monetary Fund. https://www.imf.org/en/Publications/WP/Issues/2020/02/21/Monetary-Policy-Transmission-in-Emerging-Markets-and-Developing-Economies-49036

Calvo, G. A., & Mishkin, F. S. (2002). The mirage of exchange rate regimes for emerging market countries. *Journal of Economic Perspectives*, *17*(4), 99–118. https://doi.org/10.1257/089533003772034916

Cieslak, A., & Schrimpf, A. (2019). Non-monetary news in central bank communication. *Journal of International Economics*, *118*, 293–315. https://doi.org/10.1016/j.jinteco.2019.01.012

Cohen, J. T., Neumann, P. J., & Weinstein, M. C. (2008). Does preventive care save money? Health economics and the presidential candidates. *New England Journal of Medicine*, *358*(7), 661–663. https://doi.org/10.1056/NEJMp0708558

Coibion, O., Gorodnichenko, Y., & Ulate, M. (2019). Is inflation just around the corner? The Phillips curve and global inflationary pressures. *American Economic Association Papers and Proceedings*, *109*, 465–469. https://doi.org/10.1257/pandp.20191055

D'Acunto, F., Liu, R., Pflueger, C., & Weber, M. (2018). Flexible prices and leverage. *Journal of Financial Economics*, *129*(1), 46–68. https://doi.org/10.1016/j.jfineco.2018.03.009

Dincer, N., & Eichengreen, B. (2009). *Central bank transparency: Causes, consequences and updates* (National Bureau of Economic Research Working Paper No. 14791). https://www.nber.org/system/files/working_papers/w14791/revisions/w14791.rev0.pdf

Gudmundsson, M. (2008). *Financial globalisation: Key trends and implications for the transmission mechanism of monetary policy*. Bank

for International Settlements. https://ideas.repec.org/h/bis/bisbpc/39-03.html

Hanif, M., Khan, Y. S., & Zaheer, A. (2014). Impact of organizational resistance to change on BPR implementation: A case of state bank of Pakistan. *European Journal of Business and Management*, *6*(4), 186–196.

Hussain, F., & Ejaz, M. (2022). Effectiveness of the Exchange Rate Channel in Monetary Policy Transmission in Pakistan. *The Pakistan Development Review*, *61*(1), 25–67. https://doi.org/10.30541/v61i1pp.%p

Kokh L. V., & Kokh Y. V. (2019). Analysis of existing approaches to measurement of digital economy. *π-Economy*, *78*(4), 78–89.

Li, S., & Tsai, L. C. (2013). Would a relaxation of the exchange rate regime increase the independence of Chinese monetary policy? Evidence from China. *Emerging Markets Finance and Trade*, *49*(3), 103–123.

Lombardo, D., & Pagano, M. (1999). Law and equity markets: A simple model. *SSRN*. http://dx.doi.org/10.2139/ssrn.209312

Mathur, A., & Sengupta, R. (2019). Analysing monetary policy statements of the Reserve Bank of India. *SSRN*. http://dx.doi.org/10.2139/ssrn.3383869

Meier, S. (2013). *Financial globalization and monetary transmission* (Swiss National Bank Working Paper No. 2013-03). https://www.dynare.org/wp-repo/dynarewp026.pdf

Mishkin, F. S. (1995). Symposium on the monetary transmission mechanism. *Journal of Economic Perspectives*, *9*(4), 3–10. https://doi.org/10.1257/jep.9.4.3

Mishkin, F. S. (2004). *Can central bank transparency go too far?* (National Bureau of Economic Research Working Paper No. 10829). https://doi.org/10.3386/w10829

Mishra, P., & Montiel, P. (2013). How effective is monetary transmission in low-income countries? A survey of the empirical evidence. *Economic Systems*, *37*(2), 187–216. https://doi.org/10.1016/j.ecosys.2012.12.001

Mushtaq, R. (2011). Augmented dickey fuller test. *SSRN*.

http://dx.doi.org/10.2139/ssrn.1911068

Naik, C. K., Gantasala, S. B., & Prabhakar, G. V. (2010). Service quality (SERVQUAL) and its effect on customer satisfaction in retailing. *European Journal of Social Sciences*, *16*(2), 231–243.

Nkoro, E., & Uko, A. K. (2016). Autoregressive Distributed Lag (ARDL) cointegration technique: application and interpretation. *Journal of Statistical and Econometric methods*, *5*(4), 63–91.

Pesaran, H. H., & Shin, Y. (1998). Generalized impulse response analysis in linear multivariate models. *Economics Letters*, *58*(1), 17–29. https://doi.org/10.1016/S0165-1765(97)00214-0

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, *16*(3), 289–326. https://doi.org/10.1002/jae.616

Poh, C. W., & Tan, R. (1997). Performance of Johansen's cointegration test. In J. D. Kendall, P. Donghyun, R. Tan (Ed.), *East Asian economic issues* (pp. 402–414). World Scientific.

Siddiqui, S. A. (2011). Defining economics and Islamic economics. *Review of Islamic Economics*, *15*(2), 113–142.

Stiglitz, J. (1998). Central banking in a democratic society. *De Economist*, *146*(2), 199–226. https://doi.org/10.1023/A:1003272907007