Effect of Bai Mua'jjal Transactions on Interest Rate under Sukuk-Backed Open Market Operations Conducted by SBP for Liquidity Management of IBIs in Pakistan

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Abstract

The assessment provides the statistical evidence that the State Bank of Pakistan interest rate is also being affected by the Sukuk- backed Open Market Operations conducted by SBP for liquidity management of Islamic Banking Institutions through Bai' Mua'jjal Transactions (in outright sale of GoP Ijara Sukuk to IBIs in order to mop up the excess liquidity) likewise OMS conducted by SBP for conventional banks which is contrary to Sharia compliant theme. Further, this paper analyzes the mechanism of Sukuk-backed Bai Mua'jjal transactions that statistically shows that (outright purchase of GoP Ijara Sukuk) does not affect quantum of money in circulation, as result OMOs effect is quite negligible on interest rate which also does not fulfill the purpose of OMO, rather it is merely accounting entries passed by SBP in the accounts of IBIS and GoP accounts maintained with SBP, for recording purpose. This study is based on Bai Mua'jjal transactions conducted by SBP during the period from Oct, 2014 to June, 2016 for facilitation of Islamic banking Institutions to manage their liquidity issues through Sukuk-backed OMOs and its impact on interest rates as a ratio to the total amount of OMOs conducted by SBP for conventional banks during the same period. This study emphasizes the need of a revision of Sukuk-backed OMOs being conducted by SBP for IBIs to manage their liquidity through Bai Mua'jjal transactions and emphasis on the need of proper monetary policy tools for this purpose.

Keywords: Bai Mua'jjal, Open Market Operation (OMO), Repo, Reverse Repo, Outright Sale, Outright Purchase, Sukuk, policy rate/Interest Rate.

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1. Introduction

State Bank of Pakistan uses targeted monetary aggregates of the banking industry for its monetary management function. For this purpose, SBP uses "Indirect instruments" for regulating its own liabilities' quantity and price i.e. reserve money, which ultimately affects "interest rates", "quantity of money" and "credit" in the entire banking system. Open Market Operations (OMO) is one of the "Indirect Instrument" through which SBP manages the daily liquidity position of the whole financial market by injecting money to the market through lending against collateral and/or through an outright purchasing, or by conducting repo transactions, or through selling securities to mop-up money from the market. These OMOs ultimately affect SBP Interest Rate (Target Rate). SBP has so far conducted many Sukuk-backed OMOs since the introduction of this concept in October 2014 and IBIs have positively responded to it.

As Bai Mua'jjal started recently in the year 2014, this study is useful in bringing forth the effects on interest rate by SBP's OMO transactions for IBIs Liquidity management. Since this research evaluating the impact of Sukuk-backed OMO transactions on an Interest rate that ultimately becoming the rational and contribute its significance for assessing the policy/ interest rate by SBP whereas the mechanism of OMO through Bai Mua'jjal transaction in its second leg requires revision as it does not fulfill the purpose of OMO.

Previously, Bai Mua'jjal transactions have been evaluated in various studies but this research is analyzing its aspect in OMO transaction by SBP which has not been found before.

Excess liquidity management has been the problem for IBIs and the investment avenues of this excess liquidity is limited which urged SBP to facilitate IBIs by providing them Sukuk based OMO transaction on Bai Mua'jjal basis. The mechanism of the Bai Mua'jjal transaction is coherent with **price** stability objective[1] **and** contains the overall monetary growth (M2) within secure limits. SBP, keeping in view the need of Islamic financial market, develop and monitor the policy instruments which are sharī'ah compliant and useful to achieve the purposes of monetary policy to manage liquidity position in the banking system considering to retain the Interest Rate within the SBP specified interest rate corridor. This entails the liquidity management (injection or mop ups the money) at apposite periods in time. While evaluating the liquidity position and examining the open market operations, it is imperative to consider the overall position of the quantum of money in the system and its alignment with the interest rate.

Liquidity injection is to be treated as ineffective only when given the inflationary viewpoint and monetary policy stance; the excessive monetary expansion is contributed. Further, an irregular impact in the growth of money supply monetary management more complicated[ii].

The volume of liquidity injections through OMOs of SBP is in fact necessary to keep money supply coherent with keeping low inflation and assist in growth. It can be observed from the recent monetary data that the overall monetary growth (M2) is not excessive as Rs. 91.7 trillion was injected through Reverse Repo(money injection) as compare to Repo transaction of Rs 1.2 trillion money mop-up from the market through open market operations by SBP during the period from October, 2014 to June, 2016[iii].

1.1 Open Market Operations

Open Market Operations (OMO) is one of the "Indirect Instruments" through which State Bank of Pakistan controls daily liquidity position of conventional as well as Islamic financial market, on the basis of which SBP either injects money to the market by lending against approved securities or by an outright purchasing, or mops-up money from the market by selling securities or by conducting repo transaction. Both of the transactions Repo/ Reverse repo ultimately effects on Policy/ Interest Rate.

1.2 Mechanism of Sukuk-Backed Bai Mua'jjal Transactions:

As per to SBP DMMD Circular No 18/ 2015, For facilitation of Islamic Banking Industry for liquidity management, the federal government, through SBP, decided outright purchase of GoP Ijara Sukkuk on deferred payment (Bai-Mua'jjal) and its sale on ready payment basis through price based competitive bidding auction as per standard. In accordance with the modalities, only Islamic banks and Islamic banking branches of conventional banks are qualified to contribute to these auctions and notice are issued by SBP before one day to the auction date.

The federal government and Islamic Banking Industry are the recipients of this measure as the government is not required to make payment of any amount on maturity of GOPIS and liquidity of Islamic banks is invested for next year at competitive pricing. Moreover, Islamic banks also invest their excess liquidity on short term basis in these GOPIS as the federal government sells these GOPIS on ready payments.

GoP Ijara Sukuk facility was debuted in September 2008 with variable rental rate basis, under the Pakistan Sukuk Ijarah Rules 2008, issued in the market which has helped Islamic banks in managing their liquidity position and improving the earnings. In addition to the said GOPIS facility, State Bank of Pakistan also introduced the Shari'ah Compliant Open Market Operations (Bai Mua'jjal of Sukuk) in order to provide multiple solutions for liquidity management for the industry in order to mop up excess liquidity from the market which was the main demand from the Islamic banking industry to accommodate their excess funds. However, in view of the increasing trend of Islamic banking industry this instance was good but not sufficient enough to accommodate the growing needs of IBIs to manage their excess liquidity.

In February & March 2016, the government announced new GoP Ijara Sukuk (GIS) facility with the fixed rental rate (FRR), and auctioned FRR-GOPIS with overall bids of PKR 245.37 billion & PKR 198.76 billion respectively accepted for a target amount of PKR100 billion and PKR 80.40 billion respectively with cut-off fixed rental rate of 6.10% and 5.59% for February and March, 2016.

2. Problem Statement

Sukuk-baked Bai Mua'jjal transaction (in the outright sale of Sukuk to IBIs on deferred payment basis) under OMOs are being conducted by SBP has sufficient impact on money quantum in circulation that ultimately leads to an impact on SBP interest rate/ policy rate. The contribution of such transactions is significant (as a ratio to the total amount of OMOs conducted by SBP for conventional banks) in determining the interest (Riba) rate process which is against the principle of Sharia compliant Islamic Banking. There is a need for real monetary policy tools through which SBP can facilitate IBIs to manage their excess liquidity in sharia compliant manner without affecting the interest rate. Further, outright purchase of GoP Ijara Sukuk under Bai Mua'jjal transaction does not fulfill the purpose of OMO because it does not affect the quantum of money in circulation which is the prime purpose of the OMO, rather it is merely an accounting entry in the books.

3. Significance of Study:

Since Shari'ah compliant liquidity management is still a critical issue for Islamic banking industry not only in Pakistan but globally wherever it is being practiced with shari'ah compatibility. Keeping in view the said issue, central banks of various countries are using different techniques in accordance with their defined rules/ regulation and as per the guiding principles of Islamic Financial Services Board (IFSB-12) wherever applicable to facilitate Islamic

Banking Industry. Likewise in Pakistan Islamic banking sector is also having the same problem of liquidity management along with other related issues which are being addressed by the central bank and Ministry of Finance GoP to provide the best possible solution in line with its Shari'ah Board decisions. In Oct, 2014 SBP introduced Sukuk-Backed Bai Mua'jjal transactions to mop-up excess liquidity from the domestic Islamic banking market, through which SBP on behalf of government of Pakistan, in first leg of Bai Mua'jjal transaction, purchases GOPIS (Government of Pakistan IjaraSukuks) from Islamic Banks on deferred payment basis by using OMOs, usually for a period of one year. SBP always conducts OMO to readily mop-up or inject money in the banking sector generally to keep maintains interest rate/ Interest Rate as per requirement, but in Bai Mua'jjal transactions which are being conducted by SBP under umbrella of open market operations (OMO) to mop-up excess liquidity from the banking sector, apparently does not readily effects on the quantity of money in the market and thus assumed that it does not ultimately effect on interest/ Interest Rate of central bank. Our statistical analysis with the help of available OMO's data would reveal the effect of Bai Mua'jjal transaction in relation with OMOs of Reverse Reo, Repo and outright purchase conducted by SBP during the period from October 2014 to June 2016. Statistically results would imply whether the use of Sukuk-Backed OMOs through Bai Mua'jjal transaction is really a tool of monetary policy for injection or contraction of money that fulfils the purpose of OMO or it is merely a crutch provided by SBP to Islamic Banks to support the system on adhoc basis and still there is a need of more better alternative monitory policy tool to manage the growing liquidity position of Islamic Banking Industry in Pakistan.

4. Limitations

This paper does not discuss the Shari'ah implications of Bai Mua'jjal transactions. Moreover, the data is limited as Bai Mua'jjal transactions are being conducted SBP after its inception in October 2014.

5. Literature Review

As expressed by El Hamiani Khatat (2015), at initial stage the problem for Islamic Banks is the issuance of structured Islamic government securities and instruments of money market. Further, authors in this paper are encouraging to rationalize the various instruments that are similar in nature. These strategies for development of Islamic Banks have been criticized. Sukuk market has developed well and is playing its role in liquidity management for Islamic Banks so other

liquidity instruments can gradually be introduced as tool of Shariah Compliant Liquidity management.

Abdul Latin A. Rahim Janahi, (2015), there are three types of financial contracts:

1) Commutative contracts that are also known as M*uawadat*. For example S*alam*, *istiṣnā* and *Ijārah*.
2) Contributing contracts that are also known as *mushārakah*. For example *muḍārabah* and *mushārakah*;
3) Gift and donation contracts that are also known as T*abarruat*. For example Hiba etc.

Commutative contracts can be financial and Non-Financial in nature. The financial contracts are of the nature of sales of wealth against wealth or against usufruct. Sales include spot sale, option, auction sale, the trust sales, currency exchange, the advance payment sale, goods made to order sale and sale of usufructs.

A.A.Sarker (2006) discussed that in OIC countries, the central banks may implement the suggested instruments in their monetary policy management. The support of Bangladesh Bank has been evaluated that is offering investment in Sharī'ah-compliant monetary policy instruments to IBIs to manage excess liquidity. Further, Bank of Bangladesh has positive because it manages is monetary reserves effectively and it helps it to cover the overall budget deficit of the country.. For this, The Bank of Bangladesh has issued various investment instruments like Government Islamic Investment Bond (BGIIB) in 2004 on *Muḍārabah* basis to promote Islamic Banks and to provide an investment space to manage excess liquidity through this bond. The basic objective of this liquidity management failed because it was the replacement of *ribā* with Sharī'ah-compatible modes in government transactions and that put intensive challenges in case of using this fund by the government. Although they issued an amendment in Government Islamic Investment Bond (BGIIB) in 2014 but that did not affect the Shariah related issues.

Dr. M. Umer Chapra (1985), evaluated the problem in Islamic monetary policy. Further, the results show the increase the money demand if we transact in Islamic Economy system. It was observed that Individuals and firms holding money in the case of decrease in interest rate. The elimination of interest rate at the rate of 2.5% p.a minimizes the money demand that ultimately nullify the impact of reduction of interest rate. It is suggested to central banks to gear its Islamic monetary policy for the generation of a growth in money supply.

Basu and Redrigues (2015) discussed the need of liquidity management for Islamic Banks in light of BASEL III and stated that in a high-stress scenario, the requirements for the banks are to have sufficient HQLAs for covering the net cash outflows for a period of 30 days, as per Basel III. To calculate the Outflows, different weights (run-off rates) are applied to sources of funds including PSIAs.

The bigger amount of HQLAs will be required to cover the more risky source of fund. To a great extent, it will be dependent on the weights (run-off rates) the national regulators will choose to assign to the PSIAS. The responsibility to implement the Basel III lies with the national regulators in their own jurisdictions. As the Regulators are more interested in developing the Islamic Banking Industry in their respective jurisdictions, so it is doubtful that they will assign punitive run-off rates. The Regulators have not provided any clue of the expected weight, but they will not be able to treat the PSIAs on the same grounds as of deposits of the conventional banks. PSIAs, are of shorter maturities, held by the Islamic Bank. The treatment of the PSIAs will be dependent on the several items e.g., how was it acted in past stress situation, and the how Islamic banks under their contract passed the losses to their deposit holders; and these items will be country specific. Finally, each and every country's regulator will make decision about the treatment of the PSIAs, it is assumed that the recently issued Islamic Financial Services Board (IFSB) guidance note will be of immense assistance to the national regulator in their treatment of the PSIAs.

In Malaysia, its central bank has classified the PSIAs in two categories viz., General PSIAs, and Specific/Restricted PSIAs. General PSIAs are generally comparable to conventional bank's retails deposits, and Specific/Restricted PSIAs are equivalent to managed investment accounts. Malaysia's central bank has provided a two-year changeover period to Islamic banks to differentiate between these two categories of General PSIAs, and Specific/Restricted PSIAs. The Central Bank has not declared the HQLAs requirement or run-off rates for PSIAs; even though the central bank has announced the capital adequacy's weights and ratios for Basel III requirement.

Run-off rates between the range of 3 percent to 5 percent can be assigned by the national regulators to Stable conventional bank's deposit and maximum of 10 percent can be assigned to lesser stable bank deposit of conventional banks, as per the statement of the Basel III. It is understood that most of the Islamic Banks will receive the run-off rates between the above stated range. Keeping in view the

magnitude of the deposits, variation of the run-off rates can provide a great difference in the HQLAs requirements of the various banks.

6. Methodology

6.1 Research Methodology

This research is based on quantitative research and secondary time series data is gathered. This research is useful to explore the relationship between the Interest/ Policy Rate (Dependent Variable) and amount of GoP Ijara Sukuk issued, Repo, Rev Repo, Outright sales and Outright Purchase (Independent variables). This study finds out the correlation between the variables.

6.2 Research Purpose

Explanatory research is basically an attempt to find out the solution to the research hypothesis and problems. In this study, explanatory research purpose is applied. Explanatory research explores the facts and concepts relationship among the variables. It helps us to find the relationship between the variables.

6.3 Research Design

This research is based on various statistical techniques to evaluate the impact of Sukuk-backed OMOs and other variables on Interest/ Policy Rate.

6.4 Data Source and Sample Size

Data for various variables used in this research is collected from website of State Bank of Pakistan. Data from October 2014 is collected as Sukuk-backed OMO is initiated in October 2014. Sample size is 21 Bai Mua'jjal transactions of OMO between SBP and IBIs executed during October, 2014 to June, 2016.

6.5 Statistical Technique

In the time series data, for calculation, correlation stats were run. Further, J.J Co integration, regression analysis techniques are used. Regression Analysis are used (Ordinary Least Square Method) to determined impact of independent variables on dependent variable.

6.6 Research Model

Following two equations were used to examine the impact of Islamic OMO and Conventional OMO separately.

$$PR/IR = B1RREPO + B2REPO + B3OS + B4OP + B4GIS$$

6.7 Model Hypothesis

The paper tests the central hypothesis empirically by running regressions of measures of Repo, reverse repo and GoP Ijara Sukuk. Ho is calculated as

independent variables increase and interest/policy rate will decrease. Following Hypotheses were tasted.

H1= IR/PR increases if reverse repo increases.
H2= IR/PR decreases if repo increases.
H3= IR/PR decreases if outright sale (OS) increases.
H4= IR/PR decreases if Outright Purchase (OP) increases.
H5= IR/PR increases if GOPIS (GoP Ijara Sukuk) decreases.

6.8 Variable Description

i. Interest Rate

In May 2015, SBP has introduced a 'Interest/Target Rate' for overnight money market repo rate, as a new 'Policy Rate' to unambiguously signal SBP's stance of monetary policy. OMO transaction through Mop ups and injection of money effects on the Interest rate.

ii. Repo

For **SBP Repo**(Floor) facility, **SBP** sells GOP Ijara Sukkuk to banks availing the facility to park excess liquidity with **SBP**[iv].

iii. Reverse Repo

At the time of liquidity shortage IBIs can access SBP Reverse repo facility to borrow funds and to manage the liquidity.

iv. Outright Purchase

SBP has introduced outright purchase of GoP Ijara Sukuk for the facilitation of IBIs and IBB in their liquidity management either on deferred payment basis that is known as Bai-Mua'jjal or on ready payment basis through OMO.[v]

v. Outright Sale

Opposite to Outright purchase, SBP introduced Outright sale, again for facilitation of IBIs and IBBs for excess liquidity management and more effective transmission of monetary policy. The same instrument is used for outright sale i.e Government of Pakistan Ijara Sukuk (GIS) through Open Market Operations (OMOs) based on multiple price competitive bidding auction process.

vi. GOPIS (IjaraSukuk issued by Government of Pakistan)

GOP Ijara Sukuk are based on the guidelines of Shariah and approved by **SBP** Shariah Board for IBIs to invest their excess liquidity.

6.9 Data Analysis

Data of this research was analyzed on the basis of descriptive statistics. The descriptive analysis describes the variables' properties to determine the

relationship among them.First Table (Table 1) describes the basic statistical techniques used to determine the data.

Table. 1: Descriptive Statistics

	IR/PR	REPO	REVREPO	OS	OP	GOPIS
Mean	7.1250	55,064.2900	4,365,896.0000	4,285.7140	8,565.4760	20,606.6000
Median	6.5000	28,000.0000	4,553,500.0000	-	-	-
Maximum	10.0000	303,100.0000	6,943,700.0000	90,000.0000	47,400.0000	198,759.0000
Minimum	5.7500	-	603,750.0000	-	-	-
Std. Dev.	1.4577	76,811.3600	1,828,391.0000	19,639.6100	18,114.3300	53,834.0900
Skewness	0.8371	1.8263	(0.4086)	4.2485	1.5849	2.3933
Kurtosis	2.1394	6.2016	2.3031	19.0500	3.5256	7.3960
Jarque-Bera	3.1008	20.6434	1.0092	288.5772	9.0329	36.9560
Probability	0.2122	0.0000	0.6038	-	0.0109	-
Observations	21.0000	21.0000	21.0000	21.0000	21.0000	21.0000

There are total 21 observations of 21 months from October 2014 to June 2016. Interest Rate has been in the minimum site of 5.75% (Current) and maximum to 10% in 2014. While, average Interest Rate has been 7.125% for last 21 months. Repo transactions has been maximum to PKR 303 billion with average monthly transaction is 55 billion in last two decades. Mean Repo transactions are 1.25% only of reverse repo in 21 months which means injection of money supply has been increasing. Outright purchase has been almost double to outright sales by SBP. Islamic Mop up by SBP for liquidity management of IFIs is PKR 198.76 Million.

Table.2: Ordinary Least Square (OLS)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REPO	0.000001760	0.000001970	0.891764000	0.386600000
REVREPO	(0.000000448)	0.000000119	(3.770323000)	0.001900000
OS	0.000018500	0.000009090	2.039595000	0.059400000
OP	0.000033900	0.000010500	3.232815000	0.005600000
GOPIS	0.000000657	0.000002970	0.220879000	0.828200000
C	8.601534000	0.627193000	13.714330000	-
R-squared	0.852137000	Mean dependent var		7.125000000
Adjusted R-squared	0.802850000	S.D. dependent var		1.457738000
S.E. of regression	0.647259000	Akaike info criterion		2.202817000
Sum squared resid	6.284171000	Schwarz criterion		2.501252000
Log likelihood	(17.129580000)	Hannan-Quinn criter.		2.267585000
F-statistic	17.289070000	Durbin-Watson stat		1.875141000
Prob(F-statistic)	0.000009000			

Level of Significance 10%

The relationship of dependent and other focus variables is shown in this table where Repo has insignificant impact on dependent variable (Interest/ Policy Rate). Value of 0.3867 shows the insignificance impact. Reverse repo is negatively correlated with Interest Rate which means 1% increase in Interest Rate decreases the reverse repo by 0.00045% which is not a big change. Overall impact of Interest Rate on focus variable is minor. Outright sale has the positive relation but increasing with only 0.00185 % by changing 1 % in Interest Rate. Outright sales have significance impact over Interest Rate. Outright sale although has the significant impact but it is negligible as it has only single transaction in last 21 months. Outright Purchase has significant impact on Interest Rate although only four transactions taken place during the collected period. GoP Ijarah Sukuk started in December 2015 and these three transactions of PKR 432 billion also

have the effect over Interest Rate. 0.0000657% change causes 1% increase in Interest Rate.

Table.3: Correlation

	IR/PR	REPO	REVREPO	OS	OP	GOPIS
IR/PR	1.0000	(0.0555)	(0.8612)	0.4126	0.6602	(0.3102)
REPO	(0.0555)	1.0000	0.0629	(0.1643)	(0.1705)	0.0015
REVREPO	(0.8612)	0.0629	1.0000	(0.4016)	(0.5106)	0.4141
OS	0.4126	(0.1643)	(0.4016)	1.0000	(0.1083)	(0.0877)
OP	0.6602	(0.1705)	(0.5106)	(0.1083)	1.0000	(0.1901)
GOPIS	(0.3102)	0.0015	0.4141	(0.0877)	(0.1901)	1.0000

This table describes the correlation among the variables separately. Interest Rate is positively correlated with Outright sale and outright purchase similarly Repo is positively correlated with GoP IjaraSukuk.

This table discusses the effect of each variable on each other. Repo is causing the Interest Rate where the prob value is 0.0261 which shows that null hypothesis to be accepted. Oppositely, Interest Rate is not causing the Repo. It means Interest Rate and Repo has the unidirectional relationship. Among 19 observations, IR/PR is causing reverse repo but Reverse repo does not cause. Null Hypothesis is to be accepted when PR cause value is 0.0689.

Most importantly, Null Hypothesis is to be accepted in case of outright purchase where poly rate causes outright purchase. Conclusion of this analysis can be defined as provided model is a better fit than the intercept-only model. The relationship among the variable shows the effect on every variable. All the independent variable are considering good to predict the changing in dependent variable. In this analysis number of days for Repo/ Rev Repo transactions are ignored as this research is analyzing impact of amount of transaction only data has been merged on month wise as number of transactions during the period are smaller in term of number of transactions during the period under consideration.

Table.4: Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
REPO does not Granger Cause IR/PR	19	4.7845	0.0261
IR/PR does not Granger Cause REPO		0.3254	0.7276
REVREPO does not Granger Cause IR/PR	19	1.2869	0.3069
IR/PRdoes not Granger Cause REVREPO		3.2590	0.0689
OS does not Granger Cause IR/PR	19	1.0182	0.3865
IR/PR does not Granger Cause OS		NA	NA
OP does not Granger Cause IR/PR	19	0.3901	0.6842
IR/PR does not Granger Cause OP		3.7598	0.0493
GOPIS does not Granger Cause IR/PR	19	0.1169	0.8905
IR/PR does not Granger Cause GOPIS		1.2016	0.3299

7. Conclusion

SBP injected money in the financial sector by conducting conventional OMO through Reverse Repo transactions for Rs. 91.68 trillion and OMO for Islamic Banks in shape of Outright Purchase of GoP Ijara Sukuk on Bai-Muajjal Basis for Rs. 0.18 trillion which is 0.20 percent of conventional OMO (Reverse Repo) during the period from October, 2014 to June, 2016. Statistically, Outright Purchase of GoP Ijara Sukuk on Bai-Muajjal Basis has slight significant impact on Interest Rate, although only four transactions took place during the period from October 2014 to June 2016. In the same period, SBP mopped up money from financial sector by conducting conventional OMO through Repo transactions for Rs. 1.16 trillion and OMO for Islamic Banks in shape of their investment in GoP Ijara Sukuk for Rs. 0.43 trillion which is 37.42 percent of conventional OMO (Repo) during the period from October 2014 to June 2016.

Statistical results of Sukuk-backed OMOs conducted through Bai-Muajjal transactions are showing significant positive co-relation with the Interest/ Policy Rate which is in line with the conceptual approach of Bai-Muajjal transactions conducted by SBP.

In the Sukuk-backed Bai-Muajjal OMO (outright sale) the amount of money mopped up by SBP from IBIs is 37.42% as ratio in respect of conventional banks which is quite significant. It is found that there is significant change in interest rate, which fulfills the purpose of OMO, and it is supported by statistical results.

Whereas in Outright Purchase, the amount involved of IBIs is only 0.2% as ratio in respect of conventional banks, which is too small and quite negligible and implies no real change in quantum of money in circulation. This has insignificant impact on the interest/ policy rate, which is against the purpose of OMO. This is supported by our statistical results.

8. Recommendations

Theoretical approach of Bai Mu'ajjal transactions is required to be assessed in more detail with further research to determine whether the deferment of payment by GoP (1st leg of Bai Mu'ajjal transactions usually for further one year) does really affects immediately on the liquidity position or not, as Bai Mu'ajjal transactions are treated as the part of monetary tools for liquidity management at the time of execution of transaction, and not at the time when deferment payment is executed by government of Pakistan and recorded by SBP. Reasonable quantum of increased Bai Mu'ajjal transactions would enable us to assess better statistical results. Insufficient availability of Shariah Compliant monetary instruments has forced Islamic Banks to hold a considerable amount of excess funds unutilized that hurt their profitability, preventing the flexibility of the SBP monetary operations with Islamic Banks. Therefore, the key challenge is still outstanding and required to be resolved to provide equal level playing field to Islamic Banks with the greater range of Sharia-compliant monetary instruments and build Islamic interbank market.

Furthermore, effective measures and efforts are required to develop Sharia-compliant monetary instruments to enhance the efficiency of monetary operations. A realistic approach and commitment by central bank would help to level the playing field by accommodating IBIs, having them supported by central bank Sharia-compliant lender of last resort facilities that hold both Islamic and conventional banks and is crucial for management of liquidity and supporting monetary policy.

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Appendix

Descriptive Stats						
	PR	**REPO**	**REVREPO**	**OS**	**OP**	**GOPIS**
Mean	7.1250	55,064.2900	4,365,896.0000	4,285.7140	8,565.4760	20,606.6000
Median	6.5000	28,000.0000	4,553,500.0000	-	-	-
Maximum	10.0000	303,100.0000	6,943,700.0000	90,000.0000	47,400.0000	198,759.0000
Minimum	5.7500	-	603,750.0000	-	-	-
Std. Dev.	1.4577	76,811.3600	1,828,391.0000	19,639.6100	18,114.3300	53,834.0900
Skewness	0.8371	1.8263	(0.4086)	4.2485	1.5849	2.3933
Kurtosis	2.1394	6.2016	2.3031	19.0500	3.5256	7.3960
Jarque-Bera	3.1008	20.6434	1.0092	288.5772	9.0329	36.9560
Probability	0.2122	0.0000	0.6038	-	0.0109	-
Observations	21.0000	21.0000	21.0000	21.0000	21.0000	21.0000

Dependent Variable: PR

Method: Least Squares

Date: 07/29/16 Time: 10:28

Sample: 2014M10 2016M06

Included observations: 21

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
REPO	0.000001760	0.000001970	0.891764000	0.386600000
REVREPO	(0.000000448)	0.000000119	(3.770323000)	0.001900000
OS	0.000018500	0.000009090	2.039595000	0.059400000
OP	0.000033900	0.000010500	3.232815000	0.005600000
GOPIS	0.000000657	0.000002970	0.220879000	0.828200000
C	8.601534000	0.627193000	13.714330000	-

R-squared	0.852137000	Mean dependent var	7.125000000
Adjusted R-squared	0.802850000	S.D. dependent var	1.457738000
S.E. of regression	0.647259000	Akaike info criterion	2.202817000
Sum squared resid	6.284171000	Schwarz criterion	2.501252000
Log likelihood	(17.129580000)	Hannan-Quinn criter.	2.267585000
F-statistic	17.289070000	Durbin-Watson stat	1.875141000
Prob(F-statistic)	0.000009000		

Pairwise Granger Causality Tests

Date: 07/29/16 Time: 10:30

Sample: 2014M10 2016M06

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
REPO does not Granger Cause PR	19	4.78449	0.0261
PR does not Granger Cause REPO		0.32535	0.7276
REVREPO does not Granger Cause PR	19	1.28691	0.3069
PR does not Granger Cause REVREPO		3.25896	0.0689
OS does not Granger Cause PR	19	1.01823	0.3865
PR does not Granger Cause OS	NA	NA	
OP does not Granger Cause PR	19	0.39006	0.6842
PR does not Granger Cause OP		3.75982	0.0493
GOPIS does not Granger Cause PR	19	0.1169	0.8905
PR does not Granger Cause GOPIS		1.20156	0.3299
REVREPO does not Granger Cause REPO	19	0.16586	0.8488
REPO does not Granger Cause REVREPO		1.18356	0.335

OS does not Granger Cause REPO	19	0.39743		0.6794
REPO does not Granger Cause OS		NA	NA	
OP does not Granger Cause REPO	19	4.46341		0.0317
REPO does not Granger Cause OP		0.60824		0.5581
GOPIS does not Granger Cause REPO	19	0.02132		0.9789
REPO does not Granger Cause GOPIS		0.89016		0.4326
OS does not Granger Cause REVREPO	19	0.0204		0.9798
REVREPO does not Granger Cause OS		NA	NA	
OP does not Granger Cause REVREPO	19	1.1759		0.3372
REVREPO does not Granger Cause OP		1.86449		0.1915
GOPIS does not Granger Cause REVREPO	19	0.57169		0.5772
REVREPO does not Granger Cause GOPIS		1.85714		0.1926
OP does not Granger Cause OS	19	NA	NA	
OS does not Granger Cause OP		2.63678		0.1067
GOPIS does not Granger Cause OS	19	NA	NA	
OS does not Granger Cause GOPIS		0.09032		0.9142
GOPIS does not Granger Cause OP	19	0.05525		0.9465
OP does not Granger Cause GOPIS		0.34951		0.711

Correlation						
	PR	REPO	REVREPO	OS	OP	GOPIS
PR	1.0000	(0.0555)	(0.8612)	0.4126	0.6602	(0.3102)
REPO	(0.0555)	1.0000	0.0629	(0.1643)	(0.1705)	0.0015
REVREPO	(0.8612)	0.0629	1.0000	(0.4016)	(0.5106)	0.4141
OS	0.4126	(0.1643)	(0.4016)	1.0000	(0.1083)	(0.0877)
OP	0.6602	(0.1705)	(0.5106)	(0.1083)	1.0000	(0.1901)
GOPIS	(0.3102)	0.0015	0.4141	(0.0877)	(0.1901)	1.0000