Post Draw Effects of Prize Bonds' Investment on Bullion Returns

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SUMMARY

The study was conducted with the view to test the impact of cash out flow from the Pakistan Prize Bond market to Gold and Silver markets as a result of the bonds' draw. The data from July 2007 to June 2019 was selected, which included Returns of Gold and Silver Markets. The data was tested with Event Study and AR, AAR & CAR were calculated. The results of AR & CAR did not endorse both the hypotheses on the basis that significant readings were found both in pre and post draw dates, to rule out any impact of cash flow from Prize Bond market into Gold and Silver markets. Whereas, AAR results were insignificant as such, hence fortifying the inference of rejection of both the hypotheses. So, both the hypotheses of having different returns on prize bond draw dates in Gold and Silver markets were not supported. Though the results were incongruent with the hypotheses, yet study outcomes as such are significant enough to propose regulators to contemplate legislations to fetch more funds from this comparatively cheaper source through enhanced documentation, which ultimately would make the economy more compliant.

Till June 2019 Govt of Pakistan had issued prize bonds worth Rs 893.9 Billion, states the report issued by State Bank of Pakistan, 'Central Govt Debt' (http://sbp.org.pk). Every month Govt issues new prize bonds to meet its financial requirements in the name of enhancement in public savings. The process of purchase/sale is executed through designated bank branches only and no broker transactions are authorized. The immeasurability of the black market, which exists and acknowledged by the State Bank of Pakistan (http://sbp.org.pk), makes it impossible to make it part of the study. Prize money is paid as per the denomination, i.e., higher the denomination higher the prize. Currently the 1st prize money for the lowest denomination of Rs100 is Rs 700,000 and for the highest denomination of Rs 40,000 is Rs 75,000,000. Total financial outlay of prizes against all 24 draws at current level of prize monies is Rs 8.89 Billion per annum (1.006%) against the total circulation of prize bonds of Rs 893.9 Billion (http://sbp.org.pk). The bonds in circulation as of the end of study period stand almost 7.3% of Govt's Permanent Long Term Debt of Rs 12,080 Billion on the same date. Since prize bonds are being issued on monthly basis whereas, the level of prize will stay as such for a certain period so the ratio of 1.006% will go further down with every new issue and hence making it the cheapest source of public debt. For the Govt this 1.006 % is 9 time cheaper source of borrowing viz-a-viz 9.04%, weighted average rate of 'Outstanding Deposits', issued by SBP for the month of June 2019 (http://sbp.org.pk). This borrowing rate has also to be viewed in juxtaposition of Special Price Index of 7.75% as of study ending period. Levy of tax on the prize money makes this transaction even more lucrative and feasible for the Govt. As such the study on the Prize Bonds, especially in Pakistani perspective, is hard to find for one very conspicuous reason that the prize bond phenomenon in the almost same shape does not exist. However, *Tufano* (2008) and *Kearney, et al.* (2010) are two prominent studies which discussed the prize and lottery linked savings in the shape of bank accounts.

Gold is a precious metal having multiple uses like jewellery and industrial etc. The sheen, scarcity and endurance of it kept it as the medium of exchange for very long period since antiquated times; later, nations kept gold as mandatory reserve of their national treasure like US, France, Germany and UK, especially after World War II (Vuyyuri & Mani, 2005). Despite the market for other commodities, gold has not lost the interest of investors (Gülseven, 2016). There can be different forms of investments in gold like jewellery, metal, coins, shares of mining companies and other gold related assets like bonds and derivatives. In Pakistan, however, the investment opportunities related to gold are restricted to metal, jewellery and futures only, since no shares of mining company and bonds are known to be in circulation as of today. *Aleemi, Tariq & Ahmed* (2016) found that there exists a positive combined relationship between prices of gold & interest and inflation in Pakistan. Despite the fact that jewellery usage of gold in Pakistan is enormous yet the investment in gold carries bigger share. Other than documented transaction through Pakistan Mercantile Exchange, the trading of gold is Over the Counter (OTC) transaction. So, easy trading makes it even easier to invest and disinvest in the gold market.

Silver is another metal, though not costly as gold yet occupies a reasonable share of domestic and industrial usage. Unlike gold, which has less industrial use, the silver has more industrial use. Due to its physical features the main uses of silver in industry are in batteries, dentistry, glass coating, LED chips, medicines, nuclear reactors, photography, solar energy, RFID chips, touch

screens, semiconductors, touch screens, water purification and wood preservation, to name a few. *Baur & Tran* (2014) found that prices of silver travel with the prices of gold, with the latter in the driving seat. Silver, along with gold has been used as currency for a long period in history (Baur & Tran, 2014). Over the period of time silver has become the metal of various industries like, electronics, X-Ray and photography (Ciner, 2001). The prices of silver are determined by the market forces, like supply and demand. However, demand and supply are subject to multi reasons like domestic, industrial and investment usage etc. Therefore, like for the Gold, there is a room for the silver market to be influenced by the short cash flow/availability created by the post prize bond draw scenario.

In the rest of the world prize linked products are though available yet they differ primarily from the characteristics of prize Bonds. Different mindset of investor of Pakistan may be because of low education, less knowledge of investment opportunities, religious reasons and social ethos etc. can be the reasons of this product being present in this country. Kearney, Tufano, *Guryan* & *Erik* (2010) & Tufano (2008) studied the prize linked bank accounts, which had periodical returns in addition to periodical prizes, and not as such the prize bonds. Further, the advent of Anti Money Laundering Act 2010 of Pakistan has opened an avenue for the research that the sectors with less or little requirement of documentation are prone to be used as money laundering ponds. In current Govt's anti corruption drive it becomes imperative for the Govt to identify such areas which have the potential to be used as conduit of black money. Further, being a tax starving country this study will give the Govt to reform and broaden the tax net, given the quantum of flow of investment in the variables of study.

The quantum of amount in circulation in prize bond market is big enough to assume as an anomaly that in few days after the draw, unsuccessful prize bond investors do try their luck in the bullion market. More so, since the Pakistani economy is properly documented, so there is a need to trace the direction (short term utilization) of the flow of liquidity created, for a few days in post draw perspective, which delineated in this study. Continuing from the last paragraph, there are two questions of this research:

❶ Whether, in post draw scenario the liquidity so created significantly affects the Gold returns in Pakistan?

❷ Whether, in post draw scenario the liquidity so created significantly affects the Silver returns in Pakistan?

Kemal & Qasim (2012) tried to estimate the undocumented economy, given the importance it has in Pakistan. They established that undocumented economy is 91% of the recorded economy (2007-08). This study can be a potential tool for the Govt to attract the tax by regulating the bullion market since based on the work by Kemal & Qasim (2012) the tax to GDP ratio of Pakistan with the above mentioned state of unrecorded economy element is merely 10.26% (2007-08) and if this portion is also tracked and taxed then this ratio can jump to 19.64% (based on the ibid period data). Not only Tax to GPD ratio can be improved but also the Budget Deficit can be brought down from 7.59% to 2.7% of GDP, Kemal & Qasim (2012) observed. Anti Money Laundering Act 2010 (AML) describes a 'fiscal offence' as any offence committed in any of the Pakistani Tax Laws. In the recent move by US for putting the name of Pakistan on the watch list of Financial Action Task Force (FATF) the importance of this work is of higher level, whereby the results will identify the flow of cash coming into the

these three markets from yet another least documented sector. It becomes critical when corruption factor has international rankings, which at times could have drastic negative effect on a country's economy, if corruption is not scientifically and methodologically measured (Németh, Vargha & Pályi, 2019). While it is helpful for the Govt for Tax and Liquidity objective, it has significance for the Asset Managers to be more informed about the a new 'anomaly' and be better placed to decide the time and quantum of asset allocation towards the different investment opportunities like, stocks, gold and silver etc.

PRIZE BONDS FINANCING MECHANISM

For raising debt from the common public, Section 2 (2) (a) (iii) of Public Debt Act 1944 empowers Government of Pakistan to issue 'Bearer's Bonds'. The Govt of Pakistan, whenever needs debt, issues different kinds of bonds like 'Interest Bearing Term Bonds' and 'Prize Bonds' etc., by using powers conferred upon her by the legislation. In this work I will focus on the 'Prize Bond' only, because of the uniqueness of its features that it offers a risk free refund of principal plus risk based lottery like return and an unlimited (or undefined) life. The existing work reveals that little attention has been paid on the topic in Pakistan. Prize Bond is a bearer instrument which is considered as good as cash in Pakistan and comes in different denominations. Currently eight denominations are being issued, '100, 200, 750, 1500, 7500, 15,000, 25,000, 40,000', (http://sbp.org.pk). Presently the rules governing the scheme are the 'Prize Bond Rules 1999, which are updated /amended from time to time. In March 2017 Govt has introduced a Registered Premium Prize Bond

of 40,000 denomination with dual benefits, i.e. periodical profit (approx 3% annual) and quarterly prize of Rs 80 Million, (http://sbp.org.pk) & (http://savings.gov.pk). It is transferable and pledge-able. These will be registered prize bonds, unlike others already in circulation, and will be issued in investors name and monthly profit and quarterly prize will be credited directly in the account of investor. However, this bond will not be part of this study. There are a number of reasons for non-inclusion in the analysis; primarily it has recently been issued whereas the rest of the denominations are in circulation for decades. Further, it's buying and selling is through registered means and is not considered as liquid as the rest. Therefore, the impact of this on the dependent variables requires a separate study. Germane to mention here that in June 2019 the Govt had restricted the sale of Rs 40,000 bearer prize bond; however, our study period included its impact till last draw in June 2019.

Each denomination has four draws in a year (Two denominations i.e. 100 & 25,000 are concurrently drawn with 1,500 and 7,500 respectively); one in each quarter for each denomination to make them 24 altogether. Every year a schedule of draw is issued by the State Bank of Pakistan. Draws are conducted twice a month with 15 days gap; 1st in the first week of the month and 2nd at the end of second week or 1st day of third week of the month. Draws for high value prize bonds (40,000, 25,000, 15,000 & 7,500) are conducted in the first half of the month of draw whereas, the draws for lower values (1,500, 750, 200 & 100) are conducted in the second half of the month (http://savings.gov.pk/schedule.asp). There is a shut period of two months before the day of draw, in which purchase or sale of that particular denomination is not allowed. Implying thereby that after every 15 days the

amount of any one denomination will be fully held by the bank for next two months and for 4 draws in a year the money will remain with Govt for at least 8 months; and the same cycle goes for each denomination. Resultantly each denomination has at maximum 4 months in a year, a month falling due after every two months, to remain in the form of cash in the market which is assumed to be invested in short run wherever the opportunity arises or is available.

LITERATURE REVIEW

Post-Draw scenario and Gold Returns in Pakistan

There are different forms of investment in gold like, metal itself, gold derivatives, shares of gold mining and exploration, gold ornaments and bullion futures etc. In UK perspective, metal itself could be bought and held, but due to security reason the banks could be relied upon, against a certified receipt of holding gold on behalf of client, of course for certain charges. Gold coins after having been widely available and held by individuals, and transacted easily at bank outlets in UK are now mostly held by small investors, and banks are also reluctant to offer them OTC (Coulson, 2005). During mid 70's and early 80's people invested heavily in gold ornaments for personal usage and also for earning profit, in case the value appreciated. Due to value addition factor, jewellery of Gold as such was not preferred for investment in West however, in countries like India and Turkey the situation was different because of low factor of value addition. Investing in gold jewellery and then holding it in the countries like India and Turkey was also due to lack of confidence in the soundness of the local banking system. Another way to invest in gold

is Gold Derivatives, which is mostly preferred by miners rather than investors and carry greater risk market fails to perform. Shares of gold exploration, mining & other allied activities related companies are also common in investors' circle. Amongst all the shapes of investment in gold the best performer with leveraged risk was the investment in shares of gold related companies, *Coulson* (2005) established.

Bosch & Pradkhan (2015) emphasized that gauging the impact of speculative activity upon the Gold market (Inter-alia other precious metal markets). They also regarded the Gold as financial asset that thwart financial instability. Their study could not, however, find that speculation had the potential to affect the gold prices in long run. *Dani & Ambavale* (2015) concluded that due to high risk in stocks and equity based mutual funds small investors switch over to gold and real estate. *Grynberg, Kaulihowa & Singogo* (2019) investigated that macroeconomic and structural factors such as China demand, global economic risk assessments along with quantitative easing have been crucial to understand the almost uninterrupted price increase and the long term bullish trend in the gold price over the last decade or so.

In Pakistan gold related investment opportunities are not many. These include gold Biscuits, Jewellery, and lately made available by gold futures through Pakistan Mercantile Market. Given the Pakistani culture of dowry (the gifts given to daughters and sisters on their marriages by their family members), the trend of jewellery buying makes it prominent amongst all. However, professional investors prefer company stamped biscuits, which come in different weights in grams. *Gülseven* (2016) described that gold can act as a stabilizer in currency fluctuation, besides being used as hedge and diversifier. Whereas, *Tully & Lucey*

(2007) say that it is the US Dollar that critically impacts gold prices. *Jaffe* (1989) through testing four hypothetical portfolios established that gold whenever added to the portfolio cause an increase in returns. Rather, gold stocks are better choice than the gold itself, he argued. The work of *Hameed, Kang & Viswanathan* (2010), as was also referred while discussing stock market, that liquidity has a spill over impact on other markets as well, so though gold market is bit different avenue for an investor of stock market however, easier entry and exit than stock and bond market it is equally subject to have the effects which those markets are exposed to. *David, Chaudry & Koch* (2000) found that certain macroeconomic news releases do have impact on gold prices like GDP, CPI, Capacity utilization etc. Another fact which must be kept in view, given the literacy rate in Pakistan that most of the investors tend to prefer such investment opportunities which require less educational skills, basic and relevant. The same fact has also been emphasized in a different study conducted in Hungary that financial literacy is important viz-a-viz the business susceptibility (Németh, Zsótér & Béres, 2020). This study also found the relationship between attitudes of investors and their susceptibility of investment. They also found the connection between the worries and results of financial decisions of investors. Since investment in PBs and bullion as such does not require advance level education and phenomenon of multiple worries and fidgeted behaviors also seem to be present in Pakistan, therefore, results of this study will be quite interesting to trace any correlation with the study just referred.

Given the above it is hypothesized that:

H_1= The returns of Gold Market are different on Draw date than other days.

Post-Draw scenario and Silver Returns in Pakistan

The discovery of Silver has no credible traces in the history however, like Gold, Silver has also been an important metal in the history of mankind. After the centuries old practice of crops trading through exchanges, the bullion (Silver, along with Gold) also started to be traded in the US mercantile in the late 1960s. *Pradkhan* (2016) found Silver as more liquid market as compared to Platinum and palladium. She assumed that participants of silver market have different investing behavior altogether from those who invest in other industrial metals like platinum and palladium. It takes time and a sequence to reach information to all investors in the market. In the study of Bullion products, returns of Silver market could not be predicted, when market behaves Bullish (Pradkhan, 2016). *Batten, Ciner & Lucey* (2010) concluded that silver as a metal cannot be classed as one asset along-with other precious metals like gold, platinum and palladium. Bosch & Pradkhan (2015) found no stout evidence of impact of speculative activity on returns of gold and silver in short term, however, the case of long term was inversely proven. Baur & Tran (2014) after having analyzed the data of 40 years revealed that despite the vigorous notion otherwise, the relationship of the silver and gold prices is not strong. *Burdekin, Mitchener & Weidenmier* (2012) while examining *Fisher* (1920) the famous theory of 'Stabilizing the Dollar' reaffirmed that commodity (silver) based strategy to fix the prices is more effective. Given the different economic uses, the prices of gold and silver don't follow the same pattern in long run in Japanese Commodity Market (Ciner, 2001). However, in contrast Tully & Lucey (2007), based on their 25 years data analysis, proved that despite of certain disintegration patches, there exists a long run unwavering relation between gold and silver prices. *Hameed,*

Kang & Viswanathan (2010) also referred while discussing other markets, that liquidity has a spill over impact on other markets as well, so though silver market is different other markets however, easier entry and exit than stock and bond market it is equally subject to have the effects which those markets are subjected to.

So goes the study hypothesis as:

H_2: = The returns of Silver Market are different on Draw date than other days.

METHODOLOGY

Event Study

In line with the work of *Oberndorfer, Schmidt, Wagner & Ziegler* (2013) the phenomenon under study was tested through Event Study, though they also applied GARCH model but in here only Event Study will be applied. Abnormal Returns (AR), Cumulative Abnormal Returns (CAR) and Average Abnormal Returns (AAR) will be calculated and their results will be reported and discussed in the light of Hypotheses.

Data Collection & Research Design

Secondary data, from January 2007 to June 2019, for almost 12 and a half years draws of different denominations, (http://savings.gov.pk) and returns on Gold and Silver (http://bullion-rates.com) were used for this study. For the sake of simplicity Per Gram rates of Gold and Silver were used from the referred sources.

Returns of Gold & Silver and Draw Dates

With the help of Spreadsheet, first Gold indices, (http://bullion-rates.com), for the period from January 2007 to June 2019 were taken then returns were calculated by taking Natural Log with the help of following formula:

$$R_{it} = ln\ [P_t / (P_{t-1})] \qquad (1)$$

Where

R_{it} = Returns
ln = Natural Log
P_t = Today's Index
P_{t-1} = Yesterday's Index

Then using the draw dates available at (http://savings.gov.pk) each draw day was marked as '1' in juxtaposition of the same day of Return column, to distinguish it from the other days. The denomination of each Prize Bond, for which draw was announced, was also mentioned against the relevant date to mark it. For each draw an Event Window of maximum 7 days (3 days prior to draw day, 1 draw day and 3 days after draw day, however total days adjusted up-to 4 where working days between two draws didn't permit) was used starting from 1st draw in the month of July 2007 to June 2019. First 6 months of year 2007 were taken as the base period to calculate the Average Return. Then while using constant Average Return for the period of 'window' Abnormal Returns (AR) were calculated as under:

$$AR_t = R_t - Average\ Returns \qquad (2)$$

Where
AR = Abnormal Returns

The same process was repeated for each draw till the end of the study period i.e. June 2019. As the period progressed the base for calculating Average Return also increased starting from January 2007 it went along till June 2019 to conclude for the June 2019 for

the final draw for the month. Then Cumulative Abnormal Returns (CAR) was also calculated. For each day of event window CAR was taken by adding last day's returns in today's returns. Then '*T*' Value was calculated and the results ≥ ± 1.96 were considered as 'Significantly' different from Average Return. The '*T*' value was calculated as under:

$$T = AR/Standard\ Error \qquad (3)$$

Where

Standard Error (SE) = σ / Square Root

σ = Standard Deviation of Returns for the Base Period

Square Root = Square Root of Number of Days of Base Period

Then Average Abnormal Returns (AAR) was also calculated. These were calculated year wise for all the draws in a particular year and also denomination wise throughout the study period. Simple Average was calculated for all AR values in that year and then '*T*' value was calculated with the help of Standard Error (SE) and the results ≥ ± 1.96 were considered as 'Significantly' different from Average Abnormal Returns. The '*T*' value was calculated as under:

$$T = AAR/Standard\ Error \qquad (4)$$

Where

Standard Error (SE) = σ / Square Root

σ = Standard Deviation of Returns for the values in a year on draw day

Square Root = Square Root of Number of Draw Days in that year

The same pattern was followed for calculating AAR for denomination wise and results' significance was determined on the basis of '*T*' value ≥ ± 1.96.

The same process was repeated for calculating AR, CAR & AAR of Silver Returns.

RESULTS ANALYSIS & DISCUSSION

Gold

With respect to year wise Abnormal Returns (AR) summary at *Table 1* shows that in years 2007 (6 months only) and 2018 there were 12 and 24 significant against 0 insignificants results respectively. In the year complete years of 2009, 2012, 2013 and 2014 there were 23 event days with significant results against 1 event day insignificant in each year. In the remaining years, though the significant results were in majority yet less than the years mentioned earlier. In years 2008, 2011 and 2016 significant results were 22 against 2 insignificant ones; simultaneously the period of six months in 2019 (Jan to Jun) remained parallel to these years with 11 significant and 1 significant ones. However the remaining three years remained with even lower scores 2017, 21 significant against 3 insignificant and 2010 and 2015, 20 significant and 4 insignificant ones.

Total 266 events have exhibited significant results against the total 288 events of study period of 12 years. Denomination wise Rs 25,000, 7,500 and 200 denominations were the best performer to produce 46 (each) significant results out of 48 events (each). However, phenomenon of same date of draw of Rs 25,000 and 7,500 has blurred the clarity about the exact denomination of yielding an impact. Followed by, Rs 750 with 44 significant(s) against 4 insignificant ones. However, the least performers were 15,000, 1,500, 100 and 40,000 which produced 43 significant results versus 5 insignificant(s). The overall picture seems to support H_1, however, it is worth mentioning that since the event window was of 5 to 7 days and there were significant results on 2-3 prior days of event on most of the occasions, which lead to assume that since the draw dates were pre

decided and the well informed investors, might have created activity before time to grab the opportunity. The same phenomenon also existed in a separate work carried out by *Oberndorfer et al.* (2013). Cumulative Abnormal Return (CAR) has shown the same results as of Abnormal Returns and be construed as such.

As for as Average Abnormal Returns (AAR) are concerned, contrary to the above, neither any denomination nor any year has shown significant result. Given the nature of this study, it will be prudent to state that H_1 is barely endorsed.

Silver

With respect to AR of Silver, summary at Table 1 shows that in the year complete years of 2008, 2011, 2014 and 2015 there were 23 event days with significant results against 1 event day insignificant in each year. In years 2009, 2013 & 2016 significant results were 22 against 2 insignificant; in 2010, 2012 & 2018, 21 significant and 3 insignificant and year 2017, 20 significant and 4 insignificant ones. Six months each of years 2007 & 2019 were somewhat replica of the remaining years with 9 & 10 significant ones respectively.

Detailed analysis of denomination and year-wise results of Silver shows that total 260 events have exhibited significant results against the total 288 events of study period of 12 years. Denomination wise Rs 25,000 and 7,500 were the best performer to produce 47 significant results out of 48 events. However, given the same draw date of both the denominations, it's practically impossible to identify the denomination which actually outperformed the other or they synergized. Followed by, 15,000 denomination with 46 significant; 1,500 & 100 with 44 significant out of 48 events of each denomination,

however, the stigma of same day draw of Rs 1,500 and 100 is to be taken as the one assumed earlier. Next in line of performance were Rs 200 with 43 significant and 5 insignificant; Rs 40,000 with 41 significant and 7 insignificant and the least performer was Rs 750 with 39 significant and 9 insignificant results. The general results seem to endorse H_2 however, the phenomenon of significant results in pre draw dates was also present in this case as existed in Gold case and also in the work conducted by Oberndorfer et al. (2013). Cumulative Abnormal Return (CAR) has shown the same results as of Abnormal Returns and be construed as such.

In AAR neither any denomination (except 1,500 & 100 of the same day draw) nor any year has shown significant result. Given the nature of this study, it will be prudent to state that H_2 is barely endorsed. *(See 1. Table)*

CONCLUSION AND RECOMMENDATIONS

The work was based on the Efficient Market Hypothesis that new information is to be responded to by the market participants, though their response pattern and pace may be different from each other. Since this was a well before time publicly known phenomenon therefore, a set pattern of response of the market participants was expected, which to some extent was corroborated through the results.

The phenomenon was tested through Event Study. AR, CAR & AAR were calculated and results in all three calculations have shown different patterns. Significant impact exhibited in post draw days in AR shows that short term availability of cash in the market did affect the Gold and Silver markets but the significant results in pre draw days lead us to assume that experienced investors knowing the draw

ABNORMAL RETURNS-YEAR & VARIABLE WISE SUMMARY

Items	Gold		Silver	
Year	Significant	Insignificant	Significant	Insignificant
2007*	12	0	9	3
2008	22	2	23	1
2009	23	1	22	2
2010	20	4	21	3
2011	22	2	23	1
2012	23	1	21	3
2013	23	1	22	2
2014	23	1	23	1
2015	20	4	23	1
2016	22	2	22	2
2017	21	3	20	4
2018	24	0	21	3
2019**	11	1	10	2
Összesen	266	22	260	28

Note: * from July to December, ** from January to June

Source: own edited

dates and their impact on returns did tend to act before time to reap the positive results. CAR were almost similar to AR, therefore, the interpretation stand true for it. However, AAR showed altogether different pattern of returns in both the markets. In Gold and Silver none of the denominations and years showed significant results. Therefore on the basis of results of Event Study, H_1 and H_2 are not endorsed.

The general inference from the results though does not specifically endorses both the hypotheses, yet the quantum of influence generated by the liquidity created in short term is sufficient to attract the Govt to document (further) the investment in all the markets under study to include the source of income and rationalize the taxation of transactions / investment. Had the amount of each denomination in circulation so far and actual data for actual encashment or issued known, the study would have been much clearer and specific with respect to impact of each denomination on three markets under study.

A lot of room for further research is still left, which may include other instruments in commodity market and bank deposits etc. Researchers may also further refine the study by ascertaining the exact amount of liquidity created by the encashment of prize bonds and their prizes after the draw. Further studies can be conducted to find some impact on or by registered prize bond of same denomination. ■

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