

SBP Staff Notes

01/20

The Conundrum of Rising Demand for Currency in Pakistan

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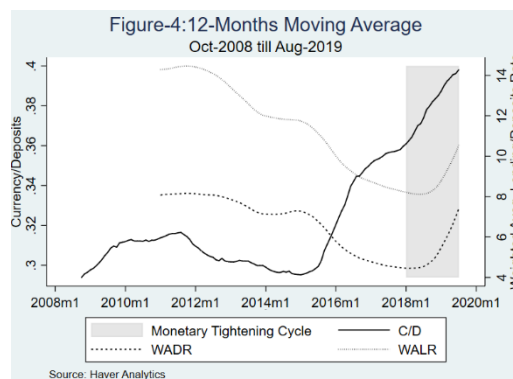
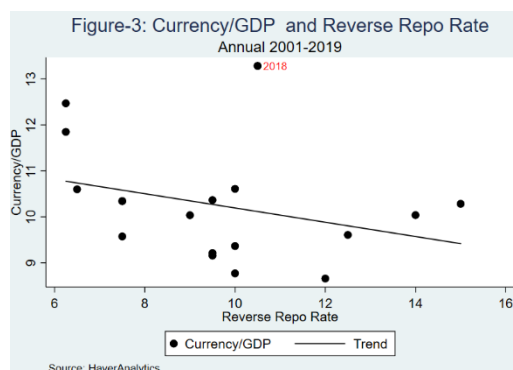
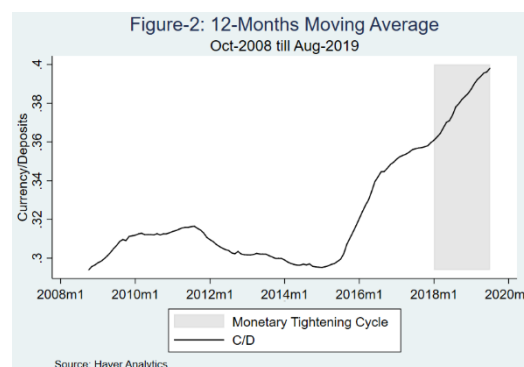
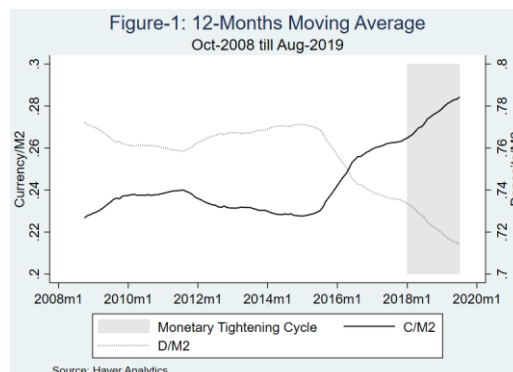
1. Introduction

It has recently been observed that currency holding are rising as a portion of broad money M2 (Figure-1) Share of currency in M2 increased from roughly 23% to over 28% after 2015. On the contrary, the share of total deposits in M2 has been falling. It fell from 77% in 2016 to slightly below 72% in 2019. As a consequence of rising currency and falling deposits, the ratio of currency to deposits has been rising steadily (Figure-2). The structural break tests performed separately for currency in circulation and deposits show that the shift in trend of C/D occurred in 2015 (Figure-A1 in Appendix-A).

The rising demand for cash poses a conundrum given the fact that Pakistan's economy is currently going through a monetary tightening phase. Intuitively, rising interest rates should depress demand for cash holding as opportunity cost of holding cash increases. This seems to hold generally true for the Pakistan's economy as evident from Figure-3. Currency to GDP ratio goes down as reverse repo goes up. Yet, the theory seems to pose a puzzle in the years after 2015. The weighted average deposit rate (WADR) and weighted average lending rate (WALR) shown in Figure-4 confirm this conundrum of rising demand for cash despite rising interest rates as part of ongoing monetary tightening. Figure-A2 given in Appendix-A provides further evidence pointing to the conundrum of rising cash despite higher policy rate.

Note also that, this conundrum is specific to Pakistan mostly, since the cross-country look at CIC/GDP ratio of economies in south Asia (See Figure-A3 in Appendix-A) shows that this unprecedented rise in cash is specific to Pakistan only.

In this note, we present a detailed analysis on the observance of the rising demand for cash in the economy. We take note of major macroeconomic events, policy developments coinciding with the rising trend in cash using monthly and annual data over the past one decade.



2. Determinants of Cash Demand

We hypothesize that, in theory, currency demand could rise for three major reasons. 1) consumers demand for cash increases with rising price level, 2) It could also rise due to rise in peoples' income levels or consumption, 3) The lower opportunity cost of holding currency may also increase the demand for cash holding. Moreover, in the empirical literature other macroeconomic factors such as, remittances, public sector borrowing and size of informality in the economy have also been found to affect the demand for currency. We hypothesize that a combination of some or all of these factors may be associated with the rise in demand for currency.

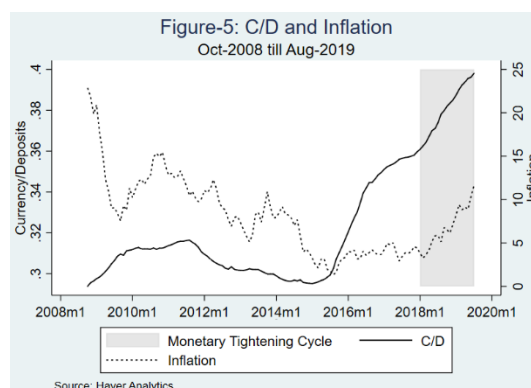
3. Methodology

Using monthly data over the period 2008M7 till 2019M7¹, we first provide a graphical analysis followed by event analysis to litmus test the hypotheses mentioned in the foregoing section. In the plots shown, the variable of interest is Currency to Deposit Ratio (C/D) plotted against Year-on-Year (YoY) changes in other macroeconomic and policy variables. All the variables are smoothed out by using 12-Month moving average unless otherwise stated.

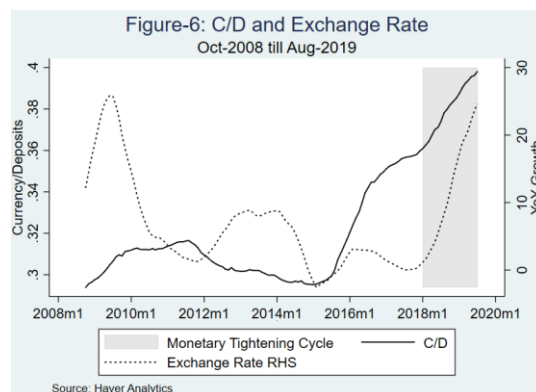
4. Graphical Analysis

4.1. Money Demand and Price Level

Figure-5 provides the plot of currency-over-deposits with YoY growth in Consumer Price Index (CPI) for the period 2008M10 till 2019M8. Ex ante, the two variables are expected to be positively correlated. The relationship appears to hold indicating that rising demand for money could be due to rising prices. This relationship is more pronounced starting 2015.



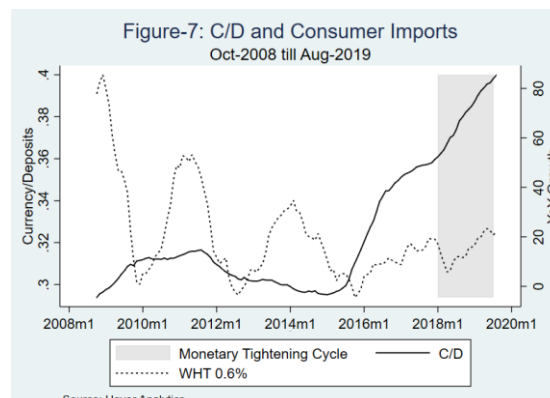
The price level could also be affected by imported inflation through exchange rate. Exchange rate channels works in two ways. First, the depreciation of exchange rate raises the cost of inputs which translates into general price level thus leading to demand for currency. Secondly, exchange rate may also serve as an anchor for inflation expectations. If the economic agents' expectation about future inflation is high, this will lead to rise in agents' demand for holding cash. This is evident from the result in Figure-6 which plots C/D with YoY change in Nominal Exchange Rate of PKR/USD. Note that the depreciation coincides closely with rise in demand for currency. This effect is more clear especially after 2015.



¹ For some graphs (Figures A4, A3 in Appendix-A and Figure-15) we have used annual data due to lack of availability of data on lower frequency.

4.2. Money Demand and Consumption

As mentioned earlier, another reason for rising M2 and CIC in particular, could be rising consumption levels. To see this, we have plotted C/D along with YoY Growth in consumer imports (see Figure-7.) The two appear to move together especially after 2015. Prior to 2015, the relationship still appears to hold but with a lag. It is worth mentioning here that the consumer imports were used in dollar terms. Accordingly, the effect of exchange rate could be the dominating factor here. This indeed is the case as evident from the relationship shown between C/D and Exchange rate in Figure-6 earlier.



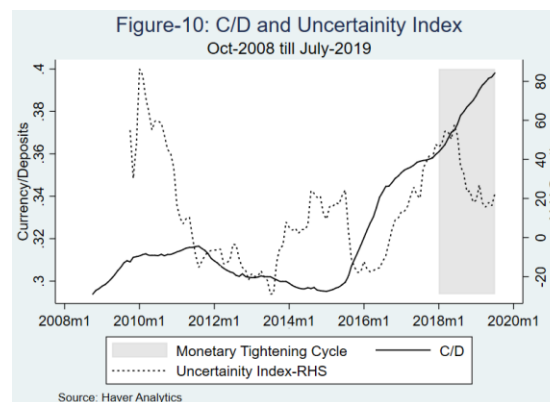
To further substantiate the consumption theory, we plotted C/D and growth in final consumption using annual data for the period 2001-2019 (see Figure-A4 to Appendix-A.) It shows annual consumption was rising steadily along with C/D after 2015. Note, however, that consumption started falling rapidly after 2018 which could be attributed to the ongoing monetary tightening.

We also plotted YoY Change in LSM to proxy for rising economic activity (Figure-A5 in Appendix-A.) The graph shows that the growth in LSM picked up pace following rise in demand for cash in 2015. However, more recently, the growth in LSM has been reined in by the ongoing monetary tightening.

It is worth mentioning here that LSM and consumer imports moved positively with demand for money in the months after 2015. However, the growths in these aggregates have slowed down in the latest period of monetary tightening. Thus, overall, the empirical evidence of rising money demand due to rising consumption appears to be ambiguous at this stage.

4.3. Lower Opportunity Cost of Holding Money

This hypothesis suggests that households prefer to hold cash if the returns on savings are unattractive. On the contrary, the demand for holding money should be less attractive amid high interest rates. This seems to hold generally for Pakistan as shown in Figure-3 earlier. The pass through of policy rates to general interest rates also appears to be working (Figure-A2 to Appendix-A) and WADR and WALR shown in Figure-4 are also rising.



Theoretically, households are expected to resort to saving if they expect uncertainty in future. This seems to hold for the period starting 2018 (Figure-10), however, the same argument cannot be made for the period between 2015-2018, when demand for cash was high despite rising uncertainty².

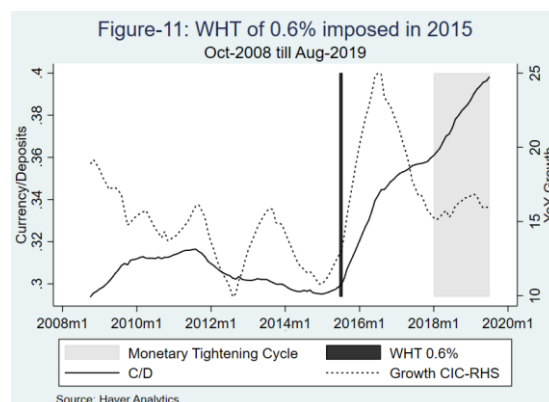
² Refers to Economic Policy Uncertainty used internally by SBP for assessing economic conditions.

So if the pass through is sufficiently strong and there is an opportunity cost to holding cash, then what explains the fall in deposits that began in 2015³? One factor could be imposition of withholding tax in 2015⁴. In the next section we explore WHT and other factors associated with rising demand for cash.

4.4. Other Factors affecting demand for Currency

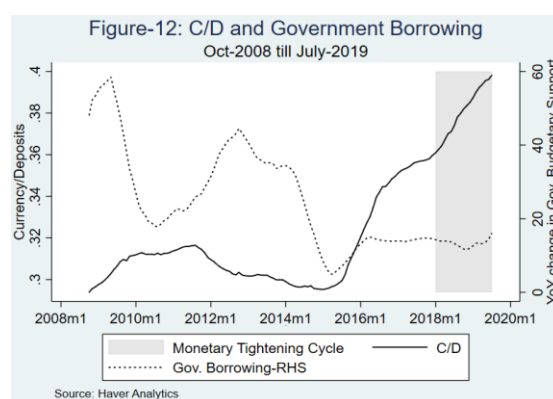
a) WHT of 0.6% imposed in 2015

In 2015, the government imposed a WHT of 0.6% on all banking transactions⁵. Figure-11 shows that growth in CIC rose sharply after 2015. As a consequence, the C/D rose drastically until about 2017 following which the growth in currency eased. Note that subsequently, in the Finance Act of 2018-19, the government through a secondary amendment permanently reduced the WHT to 0.3%⁶. It is also worth mentioning here that WHT of 0.1% was imposed in 2005 on cash withdrawals also⁷. Accordingly, it is interesting to see if the WHT of 2005 had any impact on cash. Figure-A6 to Appendix-A shows the growth in currency holding rose substantially before imposition of WHT in 2005 and it fell as rapidly after.



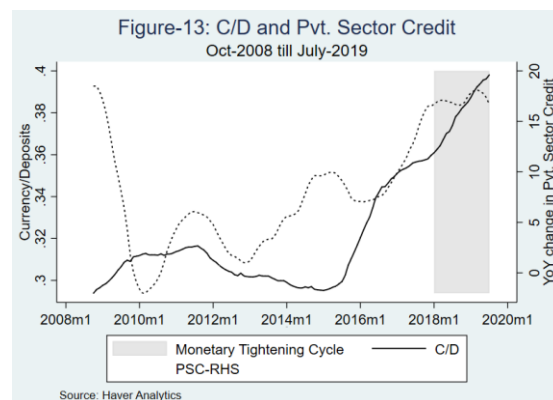
b) Government Borrowing

Apart from above, some macroeconomic variables have been found to be generally associated with rising currency in the empirical literature. We have seen the relationship of these macro variables around 2015 when C/D rose sharply. First, we have plotted Public Sector Borrowing. The evidence in Figure-12 shows that rise in C/D followed the rise in government borrowing for budgetary support in the aftermath of 2015. However, this spike was short lived and government borrowing eventually flattened out post 2016.



c) Private Sector Credit

Figure-13 shows a strong association between demand for currency and YoY growth in private sector credit. The two variables have generally move together showing strong positive correlation. This relationship is particularly pronounced after 2015 albeit with a lag.



³ Researchers from IMF found that impact of interest rate on currency demand does not necessarily hold. However, the group of countries used was limited to New Zealand, Brazil, Sudan and Kazakhstan.

<https://www.imf.org/en/Publications/WP/Issues/2018/02/16/Monetary-Policy-and-Models-of-Currency-Demand-45633>

⁴ See Para C on Page 35 of the budget speech at http://www.finance.gov.pk/budget/budget_speech_english_2015_16.pdf

⁵ *Ibid* at 1.

⁶ Page 36 Budget speech http://www.finance.gov.pk/budget/budget_speech_english_2018_19.pdf

⁷ See section 231A of Finance Act, 2005.

d) Remittances

Another important factor that appears crucial is worker remittances. We plotted the C/D with year-on-year growth in workers' remittances shown in Figure-14. Result shows that workers remittances were falling sharply in the period in which C/D started rising rapidly. However, the relationship turned positive towards the end of 2017 and in the period leading up to the tightening cycle. Since then the relationship has been growing strongly indicating that the growth in workers' remittances have been responding to higher exchange rate and rising interest rate.

e) NAB Complaints

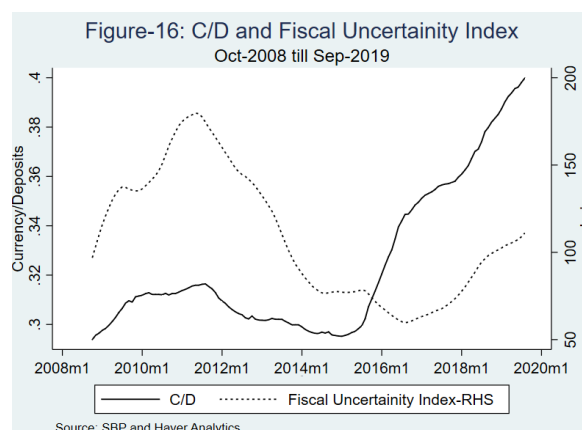
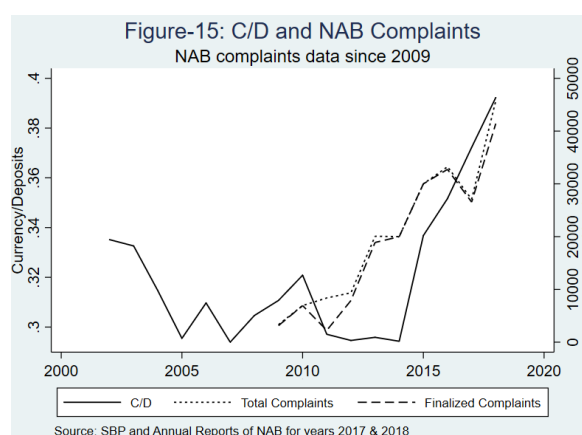
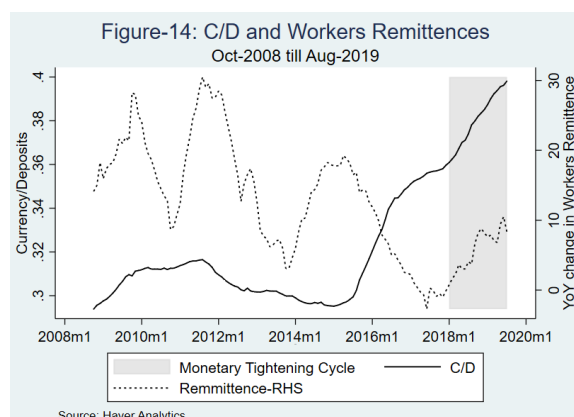
It has been observed, the trend of filing complaints with NAB shot up significantly during the period 2009-2017. Incidentally, this rise in filing of complaints also coincides with rise in C/D especially after 2015 thus indicating that there may be an association between the crack down by corruption watch dog with rising demand for cash as public resort to deposits withdrawals to put the cash under mattress⁸.

f) Fiscal Uncertainty

Uncertainty in fiscal policy⁹ can also affect currency through money demand function. Randomness in government policies may lead households to resort to holding cash in an economy with a large informal sector. Figure-16 shows that post 2016 the index of fiscal uncertainty rose while demand for cash had been rising already in anticipation.

g) Tax Compliance/Documentation Drive

In recent past, the government of Pakistan has taken a number of policy measures to broaden the tax net. Two most important measures include advance taxation regime on banking transactions including cash withdrawals and different rates for filers and non-filers of income tax returns. These reform based policy interventions may have had unintended consequences which is evident from the fact that two events occurred around 2014-2015 (See Table-1) The timing of rise in C/D coincides with introduction of most of these reformist measures. For example,



⁸ It is worth noting that YoY change in recoveries made between 2015 and 2016 was 241% which is the third highest change in the period 2000-2018.

⁹ Developed by authors for the purpose of this note.

Table-1 shows that the distinction between filer and non-filer for the purpose of advance taxation on cash withdrawals was first made in the Finance Act of 2014-15. Similarly, this distinction for advance taxation on banking transactions was introduced in 2015-16 and subsequently for winnings on Prize Bonds in 2016. Coincidentally, this is also the time when C/D started rising rapidly indicating that cash transactions were a preferred mode of settlement. Table-1 also shows that, during the period 2015-2019, the tax rates on non-filers were enhanced every year to enhance filing of tax returns which may have led to demand for cash as means of settlement. Thus the rise in cash since 2015 could be an unintended consequence of the recent documentation and taxation reforms undertaken by the Government of Pakistan.

h) *National Action Plan (NAP) Effect*

It is not out of place to hypothesize that the peace that ensued may have helped enhance economic activity in the formal and informal sector thus increasing the demand for cash. The event analysis shown in Figure-17 confirms that there is an association of currency deposits ratio with improving law and order situation particularly after the NAP went into implementation phase.

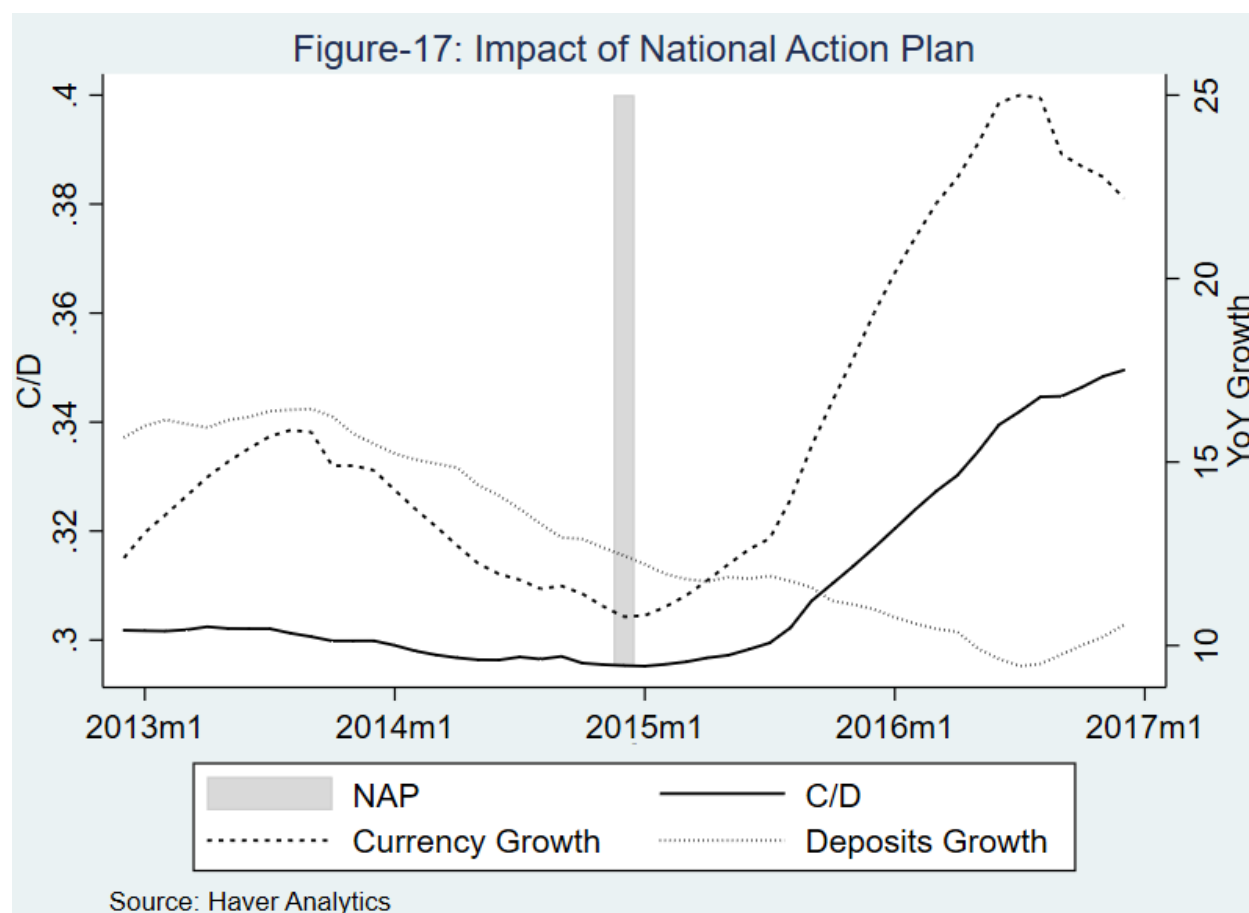


Table-1

Head	Category	Section of ITO 2001	Type	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
Income Tax (Sec 149 of ITO)	Salaried	149			>400k 12 slabs 2%-30% 2k-1.4M	>400k 12 slabs 2%-30% 2k-1.4M	>400k 12 slabs 2%-30% 2k-1.4M	>400k 7 slabs 5%-25% 1k-1.09M	>600K 12 slabs 5%-35% 30k-21.4M
	Non-Salaried				tax reduced to 10% from 7% for income group 400k-500k				
Profit on Debt (Section 151 of ITO)	Filer	151		10%	10%	10%	10%	10%	10%
	Non-Filer			15% 10% Profit <500K	17.5% 10% Profit <500K	17.5% 10% Profit <500K	17.5% 10% Profit <500K	17.5% 10% Profit <500K	17.5% 10% Profit <500K
WHT	Cash withdrawal*	231A	Filer	0.3%	0.3%	0.3%	0.3%	0.3%	0.0%
			Non-Filer	0.5%	0.6%	0.6%	0.6%	0.6%	0.6%
	Banking Transactions	231AA	Filer	0.3%	0.3%	0.3%	0.3%	0.3%	0.0%
			Non-Filer		0.6%	0.6%	0.6%	0.6%	0.6%
	Bank Transactions Other than cash	236P [#]	Filer						
			Non-Filer		0.6% ^{\$}	0.6%	0.6%	0.4%	0.6%
	Prize Bonds Winnings/ Sec 156	156	Filer	15%	15%	15%	15%	15%	15%
			Non-Filer			25%	20%	25%	25%
	Property	236 C Sale	Filer	0.5%	0.5%	1%	1%	1%	1%
			Non-Filer	1%	1%	2%	2%	2%	2%
		236 K Purchase	Filer	1% & >3M	1% & >3M	2% & >4M [^]	2% & >4M [^]	2% & >4M [^]	2% & >4M [^]
			Non-Filer	2% & >3M	2% & >3M	4% & >4M [^]	4% & >4M [^]	4% & >4M [^]	4% & >4M [^]

Source: Based on consolidated Finance Acts available on FBR's website.

Distinction first made. * For 50K per Aggregate/Day. The words "twenty-five" substituted by the Finance Act, 2012.

[^] 0% tax if value of property <4M. # Section "236P" inserted by the Finance Act, 2015.

^{\$} Provided that the rate specified in this Division shall be 0.3 per cent for the period commencing from the July-Sep or till the date as Government may, on recommendation of the Economic Coordination Committee of the Cabinet, extend.

Appendix-A

