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White is The New Black: The Demonetization Effect

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ABSTRACT

First, this paper attempts to analyze the effectiveness of demonetization in eradicating the amount of black money or the size of the black economy in the Indian context, with the use of four main indicators. Respective data, from before and after the event, is compared to understand its true impact. Then, this paper proposes its own solutions to eradicate black money in the economy; by way of incorporating 'nudging' to increase tax compliance, and increasing transparency in the government through the mechanism of e- governance.

Introduction

The Republic of India is the world's seventh-largest economy in terms of per capita GDP, and the fastest growing one, barring China. The country is home to 18% of the world's population, a whopping 1.34 billion people.

Unfortunately, there are impediments to the country's rapid acceleration, such as a high poverty rate of 22%[1]; an increasingly glaring inequality between the sections of society - the richest 1% own 53% of the country's wealth; a large proportion, of its youth, around 30%, are uneducated, unemployed and untrained, despite having the world's youngest population; and a large shadow economy.[2]

Currently, India's black economy is estimated at 62% of its GDP – generating approximately ₹93 Lakh Crore of revenue.[3] This is larger than the income generated by the Indian agricultural sector and industry put together. Because of its existence, the country's economy has been losing 5% growth on an average (when compared to official figures) since the mid-1970s, when the black economy became more prominent. If we add 5% to the rate of growth over the past four

[1] Asian Developmental Bank, 2017
[2] World Economic Forum, 2017
[3] Kumar (2017)

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decades or so, the size of our economy would be an astronomical ₹1,050 Lakh Crore, making India the World's second largest economy, behind the US. The per capita income of the country would be ₹7.4 Lakh instead of the present ₹1 Lakh. Hence, one of the main objectives of the unprecedented event of November 8th, 2016, was to curb the accumulation ofblack money in India's economy. In onebreath, 86%[4] of the currency in circulationwas rendered invalid. The governmentdemonetized ₹500 & ₹1000 notes,effective immediately.

It must be noted that demonetization was not an isolated attempt by the Government of India (GoI) to tackle unaccounted income. They launched schemes, programmes, and policies, that had the same aim, implemented both prior to and post-demonetization. Although it has been over a year since its implementation,demonetization is still widely spoken and written about. Opinions are largely divided. It must be noted that the action had large, short term costs such as the repercussions of such a drastic cash crunchin the economy, job losses, slowed growth,increase in uncertainty amidst the public, and fall in the credibility of the policies of the government.

Therefore, this paper attempts to answer the following question:

'Was demonetization successful inreducing black money and the size of the black economy?'

2. LITERATURE REVIEW

The Indian Demonetization of 2016 hasbeen one of the most extensively studied subjects, given the extremely short period of time since its implementation. The RBI report on its macroeconomic impact, and chapter 3 of the Economic Survey, 2016- 17, Volume 1: 'Demonetization; To Deify or Demonize', are the most prolific on the subject. The studies are united by a certain amount of speculation in their claims; the recent nature of the event, and, hence, short time period of analysis, is one of its biggest limitations.

Eusebius (2017) states that demonetizationonly provided a *"backward effect,"* i.e. destroying the already accumulated black money in the economy. However, it has never defined a process to prevent the recreation of unaccounted income. Singh (2009) cited poor implementation of laws as the main reason for failure to control black money in an economy. Hence, in the wake of such an unprecedented step by thegovernment, it is essential that a complete analysis is carried out to judge the effectiveness of demonetization in eradicating black money in India. This paper attempts to do this using four main indicators: India's cash-GDP ratio, banking sector, digitization of the economy, and tax revenue.

[4] The Indian Economic Survey 2016-17, Chapter 3

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Firstly, the Economic Survey 2016-17 states a direct correlation between **cash-GDP ratio** of an economy and its corruption, and uses this to justify the success of the event in eradicating black money. However, numerous economists like Pronab Sen, former chairman of National Statistical Commission, have refuted this claim. Secondly, Anupama (2017) questioned the extent to which demonetization increased the profitability of the **banking sector** and policies of the government, and its potential improvement of financial inclusion. Thirdly, Shukla and Bose (2017) confirmed the immediate positive effects that demonetization had on the **digitization** of India: potentially increasing transparency, savings, risk management, security, leading to formalization of the economy. Lastly, the Planning Commission (Dec, 2002) states that the compliance costs, especially of income tax, are exceptionally high in India and, hence, there is a need to increase **tax compliance** in the country. The Economic Survey 2016-17 states that with the combined effect of fear of social condemnation and financial penalty, *"corruption and compliance could be permanently affected;"* however, there are many pieces of literature that displaycontrasting opinions. Wilson (2017) published an article stating that the rate of taxpayers is actually less after demonetization than before, negatively affecting tax compliance in the country.

Hence, this paper seeks to assess the developments of each indicator, pre and post-demonetization, to dig further into the facets that the above mentioned readings indicate, and understand whether the policy was successful in eradicating black money in the Indian economy.

The works of Thaler and Sunstein (2006) introduced the 'nudge' theory, which is a pivotal element of the policy suggestions proposed in this paper. Rainford and Tinkler (2011) reiterated the important rolebehavioural economics plays in public policy. Additionally, the United Nations E-Governance Development Survey 2016 established a relationship between E- governance and the level of corruption and public transparency of an economy. Following their research, this paperproposes its own solutions to increase transparency and e-governance in India.

3. METHODOLOGY

The definitions of the terms 'black money' and 'black economy' are varied and numerous. It is, therefore, necessary to stipulate the scope of these terms that this paper will be covering.

1. *Black Money*: "Assets, incomes orresources that have neither been reported to the public authorities at the time of their generation nor disclosedat any point of time during their possession." (NIPFP 2017).

2. *Black Economy*: A sum total of the activities through which black money is generated, wherein the incomes could be factor incomes, property incomes, as well as capital and

revenuereceipts which have not been reported to the direct tax authorities(Kumar, 2017).

Both terms could be expanded to include illegal activities such as trafficking, drugs, and organized crime; however, due to paucity of macroeconomic data for the same, these components are outside the scope of this paper.

The paper also opts to confine the scope of the Indian '*Demonetization*' of 2016: The psychological and monetary shock that signalled a structural change on the part of GoI's stance on black money hoarders and tax evaders. It is considered inclusive of the schemes, programmes, and policies, with the same aim, that were implemented in the relevant months preceding as wellas succeeding the move on 8th of November, 2016.

The scope of Demonetization was, thus, defined for two reasons:

Firstly, demonetization represents astructural and behavioural shift of the GoI, and the fact that such a structural reform had never been carried out before, requiresthe extent of its scope to be stated.Secondly, it is considered apt to include the other schemes and policies of the government pre and post-demonetization as they too come under the scope of the government's 'structural shift'. This paper attempts to analyze the effectiveness of demonetization in eradicating the black money in the Indian economy, through primary and secondary research:

a. **Primary Research** was collected inthe form of two online surveys – one with a sample size of 280, to understand the public's mindset towards digitization pre and post-demonetization, and the second with four different groups, each a sample size of 45, to ascertain the potential impact of nudging on willingness of the people to pay tax. The details of both surveys are mentioned in Appendix 2 and Section 6 respectively.

b. **Secondary Research** was gathered from reports, research papers, articles, journals, World Bank and government released information.

4. Indicators

This paper attempts to analyze the effect that the demonetization had on the quantum of black money in the economy. For this, the analysis of several factors thatassist in gauging the size of the black economy – 'indicators,' herein - has been carried out. Since there is no flow figure for the size of the black economy, or accurate estimate of amount of black money in the economy at any given point, it is necessary to estimate its decrease or increase. This is done through these indicators, which are, in order of analysis:

- The Cash to GDP ratio

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- The Banking sector
- Digitization
- Taxes

4.1. CASH-GDP RATIO

The Economic Survey, 2016-2017 Volume1 suggests *"Across the globe there is a link between cash and nefarious activities: the higher the amount of cash in circulation, the greater the amount of corruption, as measured by Transparency International."*

The Economic Survey, 2016-2017, states that any attempt to reduce the cash in an economy could have long-term benefits in terms of reducing levels of corruption, which implies money used for illegitimate purposes.

To calculate the amount of cash in circulation, the Survey considers the cash- to-GDP ratio, or Currency in Circulation (CIC) to GDP Ratio, which represents the value of cash in circulation as a ratio / percentage of a country's GDP. This ratio is said to have fallen drastically after demonetization: overnight, 86%[5] of the cash in circulation was rendered invalid.

The RBI annual report 2016-17[6] says *"At end-March 2017, CIC amounted to 8.8 per cent of GDP, down from 12.2 per cent in the previous year. At this level, India's currency to GDP ratio compares well with a host of advanced and emerging market economies."* The Economic Survey 2016- 17 uses this reduction in the cash to GDP ratio as a of justification of demonetization, and a marker of success in eradicating black money in the economy. Hence, it suggests that lower cash usage implies higher usage of digital payments. This, in turn, suggests that there is in fact a shift towards formalization in the economy; therefore, a reduction in corruption and nefarious activities, and by extension, the flow of black money in the economy.

This paper aims to test the claims of the Economic Survey by studying the relationship between the Cash-GDP ratio and Corruption Perception Index (CPI) of India, as measured by Transparency International. In the interest of accuracy of data, due to discrepancies in the secondary sources for the same, the authors of this paper calculated the country's annual cash-GDP ratio first-hand, for a period of 16 years (2001-2017). This was done by looking at calendar year data for GDP at constant prices and currency in circulation, and then calculating the ratio

[5] The Indian Economic Survey 2016-17, Chapter 3

[6] RBI Annual Report, 2017

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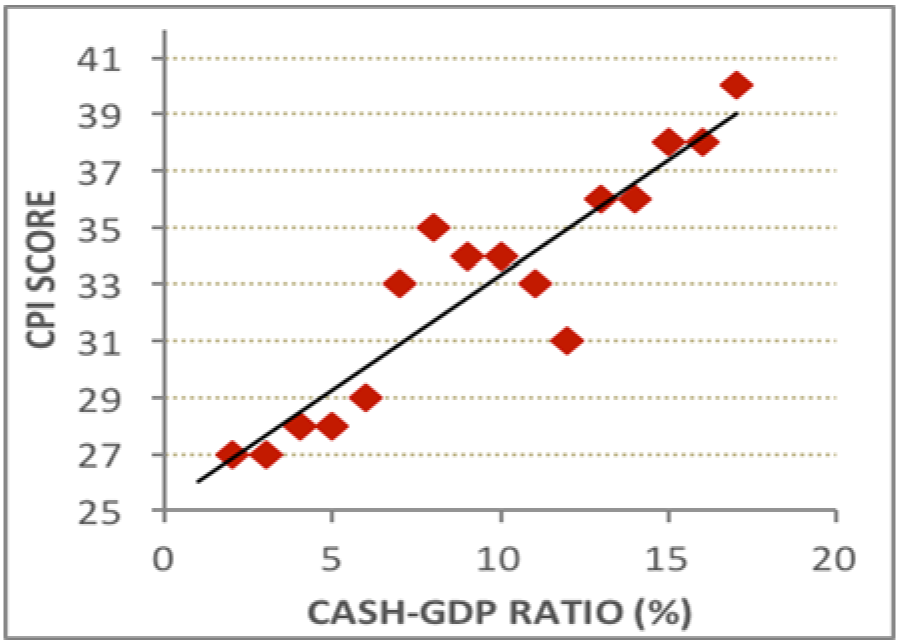
annually. A year-on-year comparison of the cash-GDP ratios does show a drop of almost the exactsame amount stated by the RBI, post demonetization (3.8% versus the stipulated3.6%).

Next, a correlation was run with the calculated cash-GDP ratios from 2000- 2016, against the corresponding CPI values for each year. The results are shownin Figure 4.1.1.

The Corruption Perceptions Index (CPI) is a composite index comprising different international surveys and assessments on corruption and views of business people. The CPI is measured on a scale from 0 to 100, where 0 means highly corrupt and 100 means very clean.

Figure 4.1.1 Correlation between Cash 5 GDP Ratio and CPI Score (200052016)



Source: GDP Data - World Bank, Cash-in-Circulation – OGD, India CPI - Transparency Index

The correlation 'r' obtained was **+0.896**[7] from figure 4.1.1. This shows a high positive correlation between the two variables. Given that a higher CPI value means a less corrupt country, this goes *against* the statement made in the Economic Survey. Hence, these findings contradict the reduction in cash-GDP ratio post demonetization to be a means of justification or measure of success of the government's actions. A reduction in cash-GDP ratio could be caused by a variety of factors stemming from demonetization, aside from increase in digital transactions and reduced corruption and black money: the act of replacing ₹1000 notes with ₹2000 itself

[7] Appendix 1

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led to constriction in cash- dependent businesses, reduced currency supply, and/or general deficit of cash in pockets of the economy.

Pronab Sen, former chairman of National Statistical Commission, was quoted saying

- *"To say that a 12% cash-to-GDP ratio for India is too high, when compared with other countries, is incorrect. This comparison is not valid. Since India has a large informal sector, its cash needs are also higher. There may be legitimate need for cash. A lower cash-to-GDP ratio could mean that the informal sector has shrunk due to demonetization thereby needing lower cash, indicating rise in unemployment. It could also be on account of people shifting from cash-based transactions to informal credit-based transactions.[8]"*

Additionally, this paper acknowledges that developed countries like Japan, with a commendable CPI score of 72[9], is seen to have a higher cash-GDP ratio, at 18.61% (2015)[10], than that of India. Similarly, a country like Indonesia, which has a CPI score of 37, lower than India's score of 40, has a much lower cash-GDP ratio, of 5%. This refutes the assumption made by the GoI that a lower cash-GDP ratio tackles the issue of black money in an economy.

Thus, various studies showing the ambiguous nature of correlation between the cash-GDP ratio and CPI suggest that there may not be a direct relationship between these two variables, for it to be a suitable measure of success.

4.2. BANKING

During demonetization, the banking sector in India played a direct role by accepting deposits, converting old notes to new ones, and aiding the process of financial inclusion. Banks had to deal with major destabilizing shocks such as a tremendous increase in the number of bank accounts opened, a massive upsurge in the balances of time and demand deposit accounts, and a fall in interest rates to counter these shocks.

This section aims at analyzing the impact of demonetization on the banking sector and will delve into whether the changes in the banking sector led to a reduced number of transactions in the black economy. The study of the impact of demonetization on the banking sector will be done by analyzing gross deposits into banks and indices for financial inclusion.

[8] "Cash-to-GDP ratio: Why less cash in itself may not necessarily mean less black money" – The Indian Express, 8th Nov, 2017

[9] Transparency International, 2017

[10] World Bank Data, 2015

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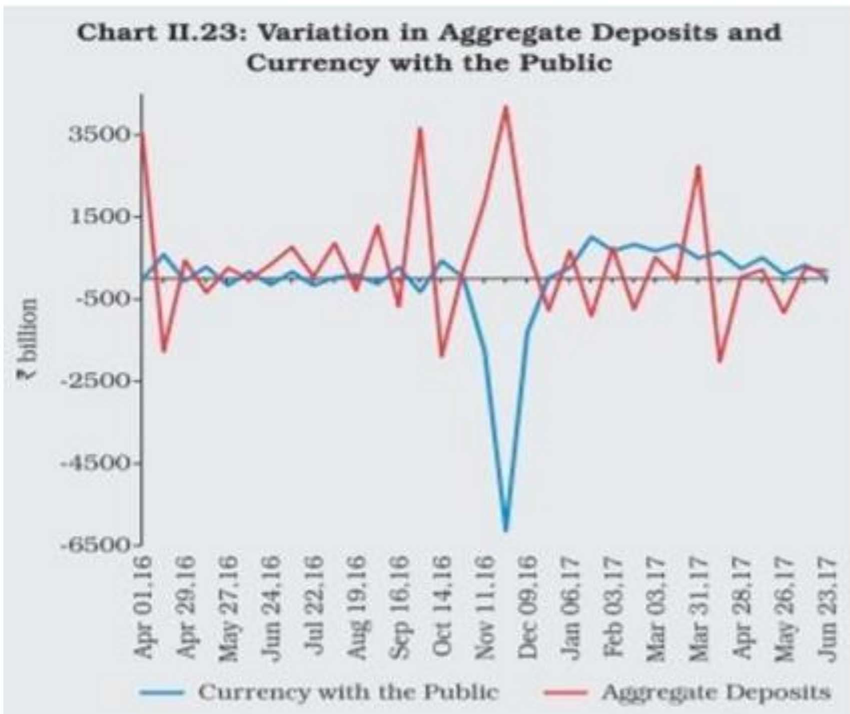
A substantial rise in gross deposits of banks was because the public wasdepositing old ₹500 and ₹1000 notes into their bank accounts. According to the RBI, a total of ₹15.28 Trillion (98.96% of the total) worth of demonetized notes were deposited compared to ₹15.44 Trillion[11] in circulation before demonetization.

Figure 4.2.1 Variation of Aggregate Depositsversus Currency with the Public



Source: RBI Report, 2017

Figure 4.2.1 shows a sharp rise in aggregate deposits in a year-on-year comparison, as shown by the red line, anda sharp decline in the amount of cash with the public, shown by the blue line.

This consequent surge in deposits led to excessive liquidity in banks, which was absorbed by several different liquidity management measures such as incremental cash reserve ratio of 100%[12], issuance of cash management bills under the Market Stabilization Scheme, and reverse repo rate under the Liquidity Adjustment Facility. This increase in investment into different

[11] RBI Annual Report, 2017

[12] Incremental CRR of 100% means that banks hadto deposit 100% of money received with the RBI i.e. they could not give out new loans using thesedeposits

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schemes and bills will be additional income for banks in the future. This was directly due to demonetization taking placeincreasing the money supply with banks.

Table 4.2.1 Bank Deposit Growth Rates

Bank	2015–16	2016-17	%Change
SBI	9.76%	18.14%	85.86%
ICICI	16.55%	28.0%	69.18%
New India Bank	9.30%	14.22%	52.90%

Source : Annual Reports of SBI, ICICI andNew India Bank 2016 – 17

The three banks, as depicted in Table 4.2.1, which are public, commercial, and co-operative respectively, had substantialgrowth in their deposits during demonetization.

Pradhan Mantri Jan Dhan Yojana:

The Pradhan Mantri Jan-Dhan Yojana (PMJDY) Scheme is a National Mission for Financial Inclusion to ensure access to financial services, namely, banking services, savings and deposit accounts, etc.in an affordable manner for the public. Under this scheme, accounts can be opened in any bank branch or business correspondent outlet. The PMJDY scheme is being used as an indicator because a large proportion of its users are from the lowest income groups.[13] These individuals would not have easy access to technology, therefore, reducing their ability to move into a cashless economy. Studying theirdeposit patterns will allow to determine the effectiveness of demonetization on reducing cash transactions and therefore, helping curb the possibility of unaccountedincome arising.

Figure 4.2.2 is important as it prevents anyassumptions being made based on the absolute value of deposits while the number of depositors was not constant. Therefore, analyzing the average balance is a better method to determine the effectiveness of demonetization on banks and the black economy.

[13] Pradhan Mantri Jan Dhan Yojana Website

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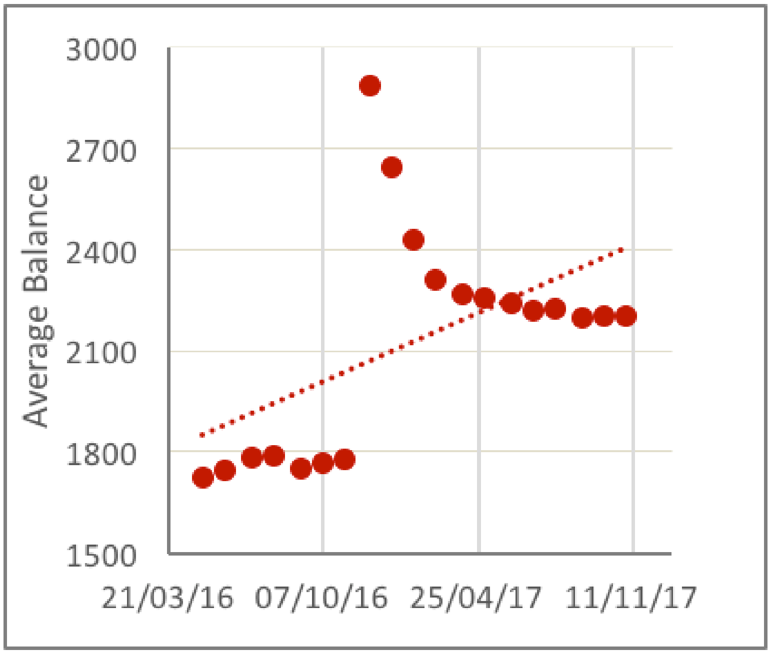
As expected, there is an increase in the average account balance, as depicted by Figure 4.2.2 during the days post-demonetization, but this reduces quickly as deposits are withdrawn to make transactions in cash.

Figure 4.2.2 Average Balance with PMJDYMay;16 to Nov;17



Source: PMJDY Website

The average balance of accounts, after February 2017, begins to stabilize at a level higher than before demonetization. As mentioned earlier, this shows a substantial shift in the savings habit of a percentage of the population to moreformal channels.

Additionally, the fall in the average deposits of accounts post-demonetizationclearly show that a large number of users holding PMJDY accounts are still dependent on cash for their transactions and have not switched to digital methods of payment yet. This could possibly be dueto the lack of expertise of lower income group individuals in using digital methods of transactions. Furthermore, the lack of infrastructure in rural India could be a key reason for the high dependence on cash.

In months post-demonetization, PMJDY accounts have grown in number from ₹25.51 Crores to ₹27.77 Crores, asubstantial rise of 8.85%.[14]

[14] PMJDY Website: Statistics

Financial Inclusion as defined by the RBI, is the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups suchas weaker sections and low incomegroups at an affordable cost.

The number of PMJDY accounts opened includes almost one-fifth of the total population of the country, bringing a substantial amount of the public into the formal financial sector. Demonetisation spurred the growth of both bank accounts, and digital payments, with the former being the recourse for them to deposit the invalid currency into, and the latter forcing Indian citizens to switch to cash-less methods of payment, due to the sheer lack of cash available to the public, ultimately helping publicize different methods ofdigital payments.

The increase in bank accounts and deposits potentially reduces the possibility of goods/services being paid for in cash, i.e. nullifying the chances of sellers to produceblack money.

On the contrary, there have been several cases of PMJDY accounts being used to launder money called ‘benami’ accounts. One such case arose in a bank in Delhi, where ₹15.39 Crores worth of funds were frozen as the depositor and beneficiary of the funds were untraceable.[15]

The rise in deposits is directly due to demonetization. A higher amount of savings in the formal channels means that the possibilities for cash-based transactionsare nullified, i.e. reducing the chances of black money being created.

Further, the rise in average account balance of PMJDY account holders can be directly linked to demonetization. As observed in figure 4.2.2, the average balance in the months post demonetization was almost 25% higher than before demonetization. This clearly indicates that in the few months post demonetization, PMJDY account holders were either saving more money in the formal industry, or were using digital payment systems instead of having cash in hand. Both these points are beneficial in eradicating unaccounted income as cash-based transactions form the basis for a majorityof black money.

On the other hand, taking a closer look at figure 4.2.2 indicates a falling account balance post May 2017. This is after the currency in the economy stabilized, i.e, post the initial few weeks of shock where there was a severe cash crunch in the country. This shows that demonetizationwas not able to completely convert PMJDY account holders into using digital means of transactions or using bank accounts to save money, implying that they are still heavily reliant on cash for daily transactions.

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[15] Hindustan Times Report: 15 Crore deposit made post demonetization

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4.3. DIGITISATION

India is a cash-dependent economy due to the ease and convenience of cash, a lack ofawareness of digital transactions methods, and a large informal economy[16].

To study the relationship between digitization and black money, a correlation study was undertaken which compares various indices that measure digitizationwith an index that measures the size of the black or 'shadow' economy. Refer toAppendix 2 for the results of the study. This relationship having established, thearea of study subsequently, is the impact ofdemonetization on digitization in India.

Demonetization caused a massive liquidity crunch for the general public as they did not have easy access to deposit their money in exchange for new notes and they also could not avail digital methods of payments as a mode of transaction as almost 40%[17] of the Indian public did not have a bank account. This section will analyze the impact that Demonetization had on for the growth of digital payment methods in the Indian Economy.

1. Debit and Credit Card Services

Debit card transactions are measured by total value, i.e. a consolidated figure of all ATM monthly transactions, point of sale transactions (POS) and online payments over all international and national card networks (Visa, MasterCard and RuPay). Figure 4.3.1 indicates that withdrawals of cash reduced drastically during the weeks post-demonetization, due to the fall of CIC. As the CIC restored, the withdrawals increased again, and settled at a value similar to that before demonetization. In Figure 4.3.1, a massive drop in transactions at POS terminals is observed directly after demonetization, but, in the month of December, there is almost a twelvefold increase in transactions. It is noted that in the three months post demonetization, as CIC was restored into the economy the debit card transactions stabilized at a point which was at a lower level than in December, but almost twice that of the point it was at pre-demonetization.

UPI is an instant real-time bank transfer system developed by the NPCI based on the Immediate Payment Services (IMPS). Figure 4.3.2 shows the massive surge in UPI transactions from 0.1 million in June, 2016, to over 70 million in October, 2017.

This clearly indicates the public's acceptance for UPI based paymentservices and highlights the fact that cash based transactions can be substituted in India.

[16] R. Bijapura, R Shukla and Bordoloi (2014)
[17] Times of India: 40% of India is unbanked

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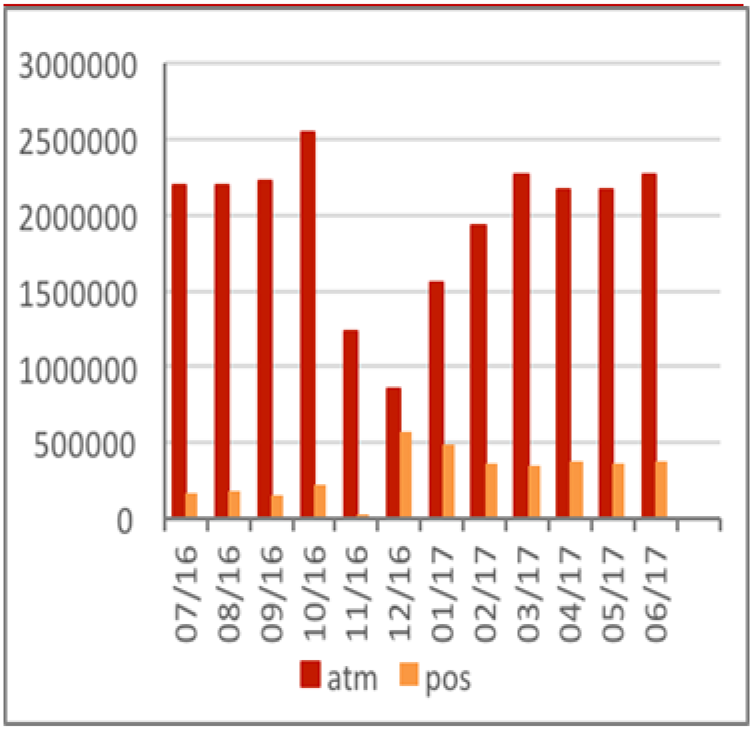
Figure 4.3.1 Debit Card Usage 4 Total Monthly Transaction Value (in ₹ Million) (Jun 416 to Jul 417)



Source: RBI, National Payments Corporation of India Solutions (NPCI)

2. Unified Payments Interface (UPI)

UPI is an instant real-time bank transfer system developed by the NPCI based on the Immediate Payment Services (IMPS). Figure 4.3.2 shows the massive surge in UPI transactions from 0.1 million in June, 2016, to over 70 million in October, 2017.

This clearly indicates the public's acceptance for UPI based payment services and highlights the fact that cash based transactions can be substituted in India.

Most banks already have UPI built into their mobile banking applications. Further, several standalone mobile applications powered by UPI have been released, such as PhonePe, Google Tez, and BHIM. All these aid in the process of making digital payments quickly and easily. Payments made through UPI have zero transaction costs, which serves as an incentive to adopt the said medium over Debit or Credit Cards, which have charges.

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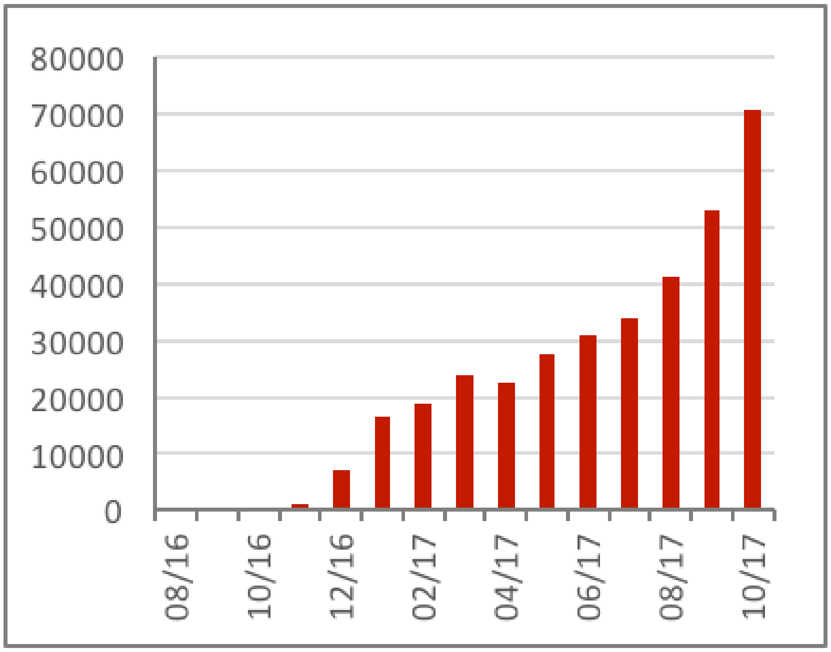
BHIM was launched in December, 2016, by the NPCI to facilitate e-payments directly through banks using (UPI). BHIM is the most downloaded UPI application on the Android Play Store, at 19.28 Million downloads.

2. Unified Payments Interface (UPI)

Figure 4.3.2 UPI Total Monthly Transaction Value (in ₹Million) (Jun?16 to Oct?17) (Jun?16 to Jul?17)



Source: NPCI statistics

3. Aadhar Enabled Payment System(AePS)

The AePS infrastructure was set-up to cater to low income individuals who did not own mobile phones. The AePS system requires biometric verification with the Aadhar card number of the individual to make a transaction through their Aadhar linked Bank account. Merchants use an AePS enabled POS system that facilitates features such as payment, balance check, eKYC, cash withdrawal, cash deposit, mini statement and Aadhar to Aadhar fund transfer. Figure 4.3.3 shows a continuous increase after March 2017, indicating that even though CIC was restored, purchases for necessities using the Aadhar Pay schemes increased. This suggests an increased acceptance towards digital payments, as opposed to cash based transactions. This also insinuates the increasing use of bank accounts, assuagingprevious worries of the AePS only being used to curb the short term cash crunch, and not a paradigm shift in habitual payment.

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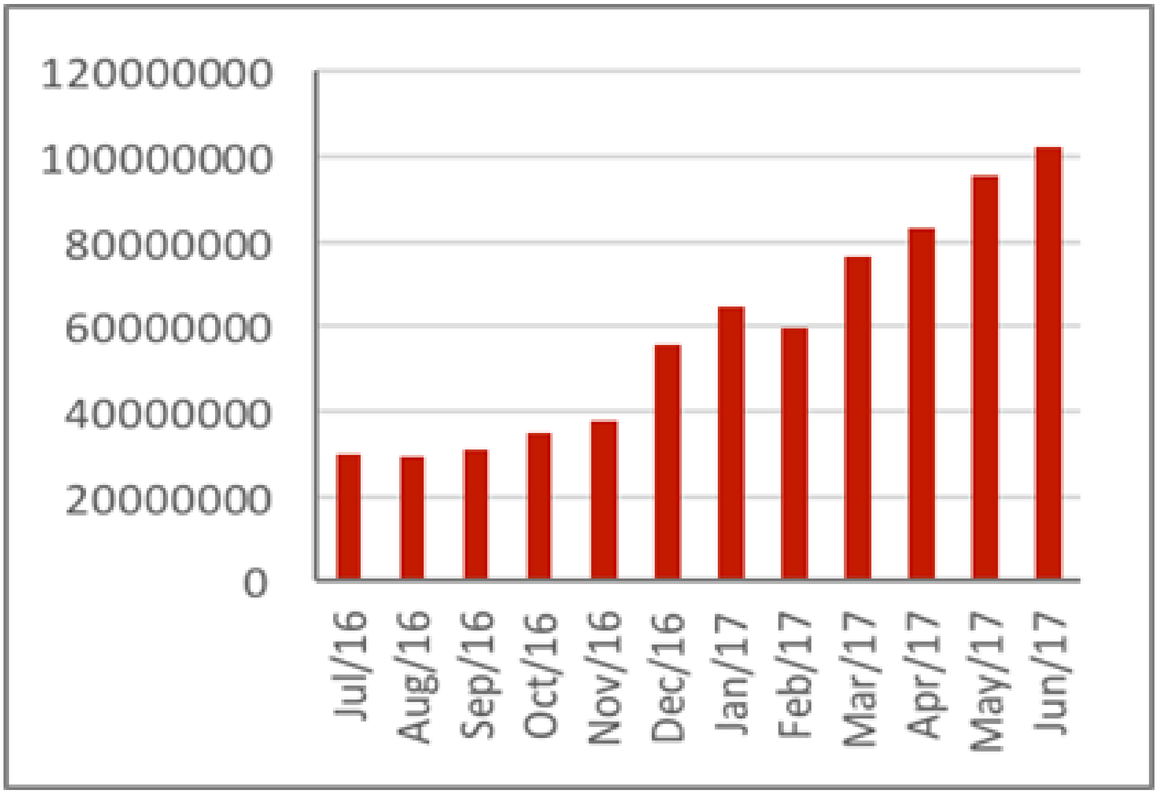
Figure 4.3.3 AePS Total 3 Monthly Transations (Jun316 to Jul317)



Source: NPCI Statistics 2017

4. Mobile Banking

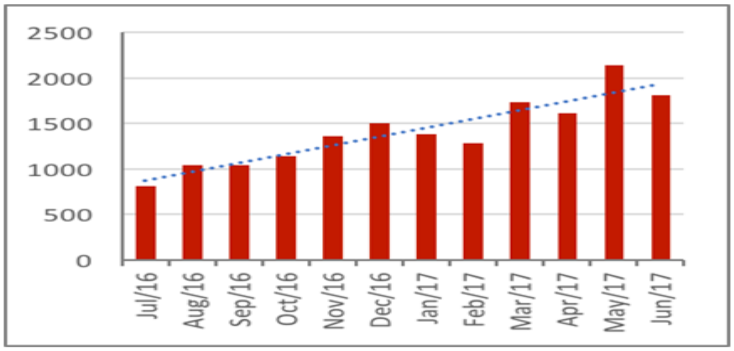
Mobile Banking usage for transfers, transactions, and various other banking functions (Figure 4.3.4) has seen a slight increase above the trend line directly dueto demonetization.

Yet the value of transactions is still on an increasing trend, as portrayed by the line of best fit. The observed cyclicality can be attributed to: one, an increase due to demonetization, two, a reduction in mobile banking as cash in circulation was restored, and three, constantly changing conditions of the mobile network industry.

5. Unstructured Supplementary Structured Device (USSD)

Demonetization's effect on mobile banking is the starkest when seen through the Unstructured Supplementary Structured Device technology (USSD).

Figure 4.3.4 Mobile Banking 3 Total Monthly Transaction Value (in ₹ Billion) (Jun316 to Jun317)

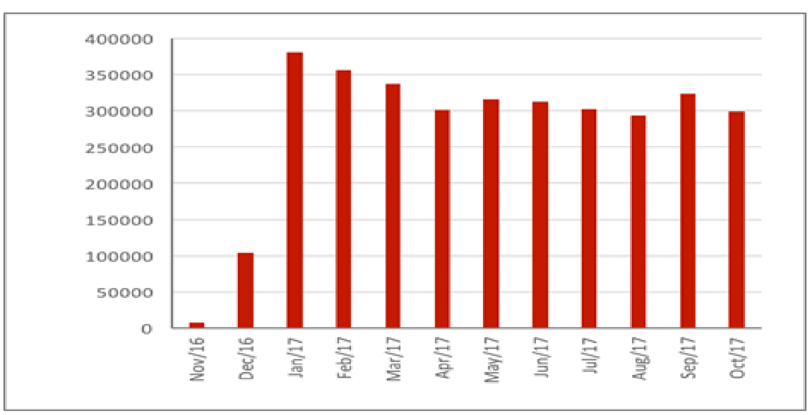


Source: RBI

The USSD works similar to the Short Message Service and enables a user to send a text between any mobile phone and an application registered under the network. This technology has enabled people without smartphones or data connections to carry out a range of banking services using regular cell phones. The increase in USSD transactions as seen in figure 4.3.5 may suggest an increase in the use of bank accounts by low income groups.

This data illuminates a few things necessary in forecasting digitization's effect on black money. Primarily, there was an increase in the value of monthly transactions post-demonetization for all banking services through digital means. This highlights a shift of consumer preference towards digital methods of payment amongst most income groups of the country.

Figure 4.3.5 USSD / Total Monthly Transactions (in ₹ Thousands) (Nov/16 to Oct/17)



Source: National Payments Corporation of India

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This is seen from the increase in mobile- wallet usage, debit cards transactions (higher income strata), Aadhar Enabled Merchant Pay scheme, RuPay cards and USSD transactions (lower income strata).

The increase in deposits came from the flushing out of accumulated cash in households, which is untaxed, and, therefore, black money. Digitization, therefore, finds its purpose as an indicator in the reduction of black money in the economy by substituting cash based transactions that could possibly lead to unaccounted income arising. The second observation is that the value of monthly transactions ultimately settled at a higher level than before demonetization. This implies that after CIC was restored in the economy, consumers continued making payments and banking transactions through digital means. This is further supported by the average increase in bank account deposits (as shown in the previous section).

The RBI carried out a study which ‘‘empirically evaluates the impact of demonetization on inter-bank payment and settlement systems against the backdrop of progressive use of electronic modes and capping service charges.’’ This study found that (i) there has been a reduction in the usage of cheques prior to demonetization; and (ii) since demonetization, cash transactions have moved in a sustained manner to non-cash mode of payment systems via retail electronic payment systems, point of sale terminals and cheques.

Another supporting study was a surveywas carried out, with a sample size of 280, which asked respondents about their usage of digital tools for transactions and banking before and after demonetization, which further illuminates the changes in usage of digital tools after demonetization. The results of this survey and methodology are substantiated inAppendix 2.

In the long-run, the effect of demonetization will definitely be felt, centred on digitization. Subsequently, along with the country’s growth, it is believed that digitization and formalization will reduce the size of the informal economy.

4.4. Tax

The Central Board of Direct Taxes released a report in 2016, stating that only 3.81% of Indians paid income tax.

large amount of people’s income is unaccounted for therefore, becoming “black money,” as per the definition followed in this paper (refer section 3).

The lack of an official estimate, or a method of measuring black money in India, makes studying the impact of demonetization on it an exceedingly trying task. Hence, studying tax data before and after demonetization can serve as an indicator to measure its success. The government has,

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on numerous occasions, claimed a substantial increase in tax revenue since demonetization. By studying the impact of demonetization and other complementary schemes on the functioning and success of the income tax department, we can gauge the extent to which black money has reduced in the market, if at all. As a corollary, we can analyze the degree change of formalization of the Indian economy after demonetization, which would imply a proportionately lower percentage of black money in the country. A marker of success for demonetization, as articulated by the Economic Survey, 2016-2017, Volume 1, is the increase in tax collections i.e, the increase in the 'accounted' income. Both Direct and Indirect Taxes have seen an increase in FY 2016-2017.

Total Tax Revenue

The total tax revenue of the Centre and the States was studied, and it was found that the growth is in line with previous trends, as seen in Table 4.4.1, thus, showing no jump in increase expected after demonetization.

Table 4.4.1 Total Tax Revenue (2009510 to 2016517)

Year	**Total Revenue (₹ Billion)**
2009-10	9846.11
2010-11	12500.67
2011-12	14427.52
2012-13	16879.59
2013-14	18465.45
2014-15	20207.28
2015-16	23552.87
2016-17	26494.70

Source: Budget Documents, Centre andState Governments

A. Direct Taxes:

Direct tax is a tax imposed directly upon a person, property or a business, such as income tax or corporate tax.

The post-demonetization period shows a marked increase in the growth of total direct taxes after a period of steady decline due to sluggish growth attributed to:

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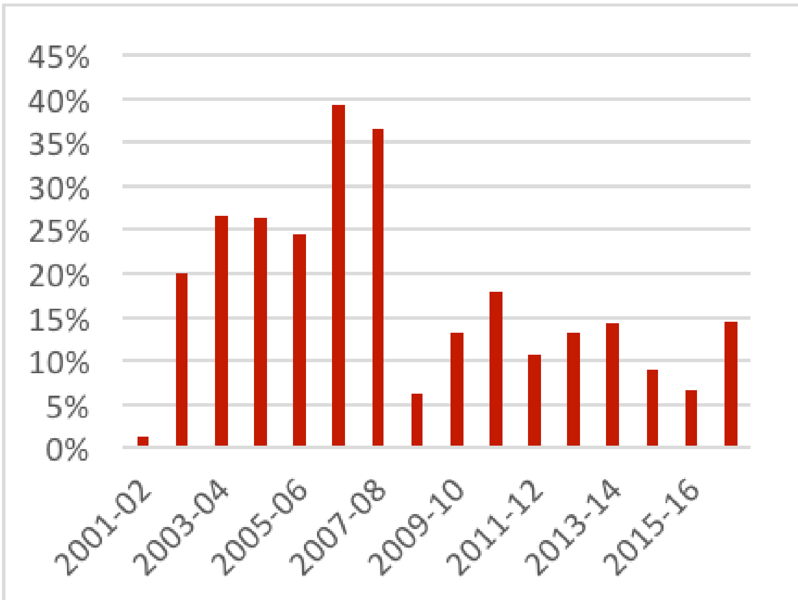
- The near financial crisis of 2013.
- A decrease in the TDS collections and a slowing service sector.

Figure 4.4.1 Total Growth Rate of Direct Tax



Source : Source: Income Tax Department, Time Series Data, 2017

As evidenced by Figure 4.4.1, the growth rate in 2016-2017, is at 15% the highest in 6 years However, an analysis of the components of tax was carried out to further scrutinize the increase. The year- on- year growth rate of the collections of the following was studied from 2000- 2017:

1. Corporate Tax

A steady increase in terms of corporate tax can be witnessed with the increase in the total value of collections, however, the increase post demonetization is in line with previous growth trends. It must be noted that if the growth rate for the same time period is examined (Figure 4.4.2), a downward trend was witnessed before 2015-2016. This suggests that demonetization could have sparked increase growth in this area.

The corporate tax rate in India is higher than most countries at 30%, plus surcharge and cess, resulting to an approximate 34.6%[18].

[18] Trading Economics, 2016

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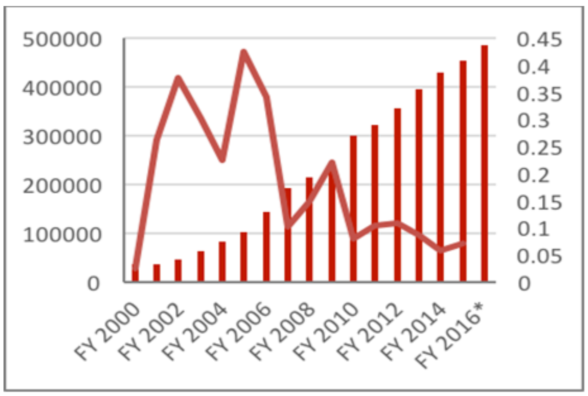
It has, in the past, served as a deterrent and is touted to be one of the reasons for India's low tax revenue collections. This explains the downward trend witnessed. In 2015, this rate was proposed to be brought down to 25% over the period of 5 years. However, the general demand is to bring the rate down to 18%, as argued by industrial lobbyists, but there has not been any significant change in the rate, nor does there exist external factors that could encourage compliance, substantiating the suggestion that the increased growth rate is dueto demonetization.

Figure 4.4.2 Corporate Tax 2 Revenue & Growth Rate

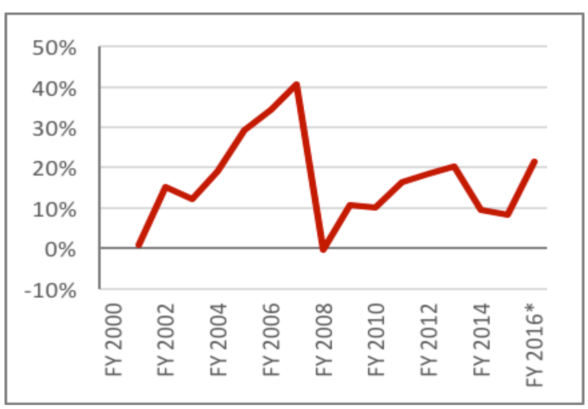


Source: Income Tax Department, Time Series Data, 2017

2. Personal Income Tax

A sharp increase was witnessed post 2015- 2016 as seen in Figure 4.4.3. In fact, the growth rate, 21%, in 2016-2017, is the highest India has witnessed post the Global Financial Crisis. However, it is still comparatively lower than the pre-crisis growth levels, which were as high as 42%.

Figure 4.4.3 Growth Rate of Personal Income Tax



Source: Income Tax Department, Time Series Data, 2017

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This, is in turn, with the increase of the total direct tax revenue, indicating improved compliance of the general public.

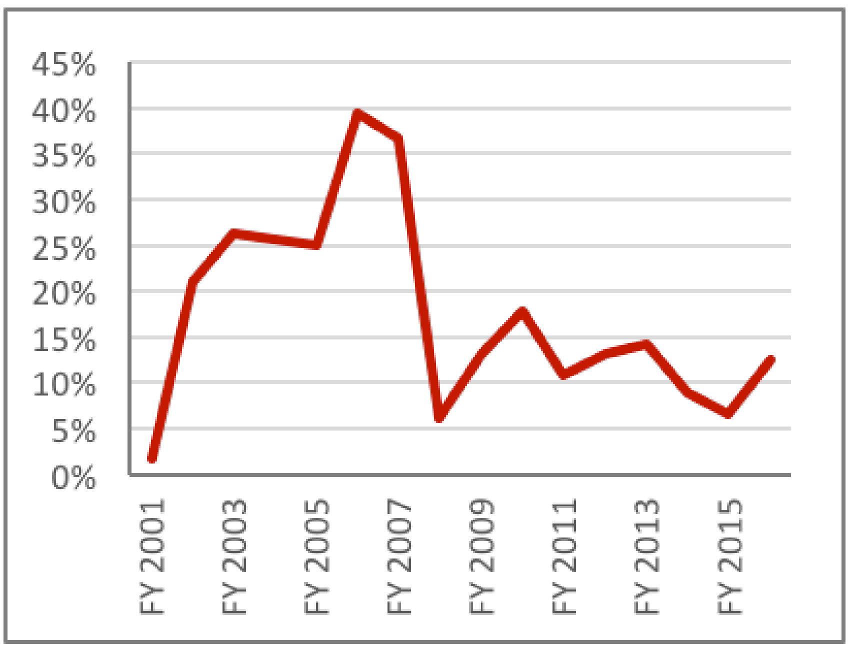
3. Other Direct Tax

The growth in other direct tax, as seen in Figure 4.4.4 is by far the most significant, reaching an all-time high of 1348% in 2016-2017, as opposed to the negative rate of growth of - 1% in the previous year.

This is attributed largely to two schemes launched by the government:

A. Income Declaration Scheme, July 2016[19] (pre-demonetization) - It provided the required limited "tax compliance window" for local taxpayers to reveal their hidden income, as was suggested by the 2016- 17 Union Budget.

Figure 4.4.4 Growth Rate of Other Direct Tax



Source: Income Tax Department, Time Series Data, 2017

The scheme provided an opportunity to those who did not proclaim their income or pay taxes thereon, in the past, to get a chance to reveal said money, pay income tax (30%), surcharge (25%) and penalty (25%) on the declared amount, with no questionsasked.

[19] Press Information Bureau, 2016

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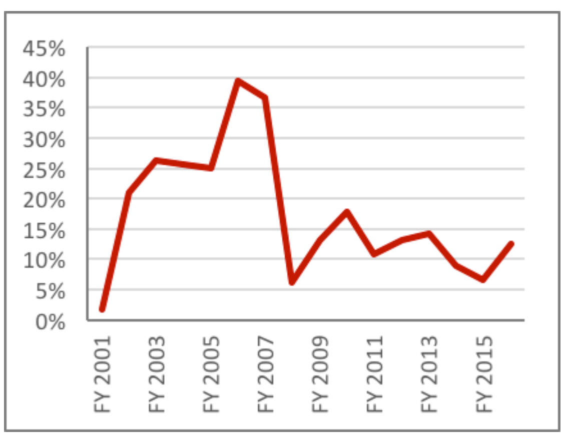
B. Pradhan Mantri Garib Kalyan Yojana (PMGKY)[20], December, 2016 (post-demonetization) - It gave an opening to all the black money stashers to come clean by stating their hidden income and paying hefty taxes and penalty. The scheme required all declarants to pay income tax (30%), surcharge (33%), and penalty (10%) on the undisclosed income. This amounts to approximately 50 % tax of the undisclosed income. Other than paying tax and penalty, the declarants are required to deposit 25% of the amount disclosed in the Pradhan Mantri Garib Kalyan Yojana, which shall be interest free deposits kept for a period of 4 years.

The optimism at the growth rate of the total direct tax revenue, when viewed in this context, is diminished. The rise can be contributed largely to the substantial jump in the 'Other Direct Tax' which was obtained by one-off schemes that are unlikely to be repeated. Therefore, a more accurate gauge of the impact of demonetization on direct tax would be the rate of growth of the total tax as calculated without the 'Other Direct Tax'. Here, we see that growth rate of total tax revenue reduces from 15% to 13% when other direct taxes are excluded. It must also be noted that, although the percentage of growth for Other Direct Tax was 1348%, the amount in real terms was comparatively small, only resulting in a 2% addition to the total growth. Thus, it can be concluded that the rate of growth of the direct tax collections post- demonetization has seen an increase that points to improved compliance and higher revenues for the GOI.

A part of this increase can be attributed to the voluntary complementary schemes carried out by the government. The growth rate can be contributed to demonetization and its complementary schemes due to the lack of external factors in this interim.

Figure 4.4.5 Total Direct Tax 3 Growth Rate without ODT



Source: Income Tax Department, Time Series Data, 2017

[20] PMJKY official website

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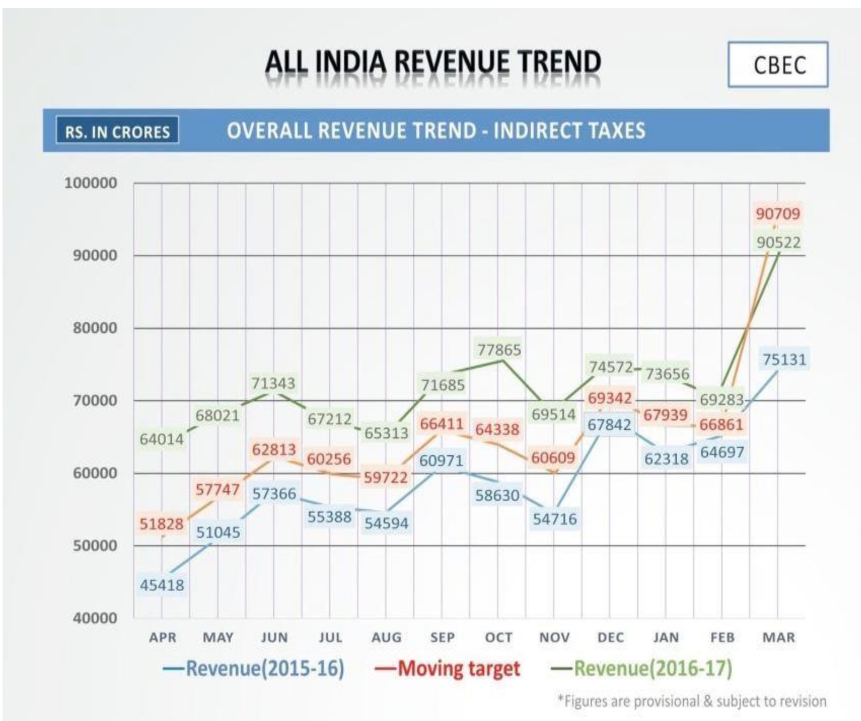
B. Indirect Tax

Indirect tax is a tax levied on goods and services rather than on income or profits. In the Indian context, it includes Central Excise Duty, Customs Duty, etc.

A pointed decrease in the indirect tax revenue is evident during the time period of demonetization, due to the momentary reduction in consumption caused by the cash crunch. However, a significant rise is noted in the months after this rise, cannot be isolated to demonetization due to the presence of other factors during the same time period such as the 380% increase in the excise duty on diesel (from 2014- 2016), and the corresponding 120% increase in the case of petrol (2014-2016 Central Government Revenue), through levy of excise duty on petrol/diesel, has more than tripled in the three year period between 2013-14 and 2016-17, owing to this increase in tax rate[21].

Therefore, it cannot be concluded that demonetization had a significant impact on indirect taxes.

Figure 4.4.6 Indirect Tax Revenue



Source: Central Board of Excise & Customs Report, 2017

[21] Petroleum Planning and Analysis Cell, officialwebsite

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c. Number of Taxpayers

A taxpayer is defined as any person who has either filed a return of income, or in whose case tax has been paid or deducted or collected at source during the financial year under reference[22].

The calculation of this increase has been carried out by the Government with different methodologies and at various points in time post-8th November 2016. The various claims and calculations have been taken into account.

According the Economic Survey, 2016-17, Volume 2, the growth of the number of taxpayers is as follows:

The survey stipulates that there has been an increase of ₹5.4 Lakh taxpayers between 9th November 2016 and 31st March 2017. This calculation was undertaken to attempt to isolate the impact of demonetization on the increase in tax payers, notwithstanding regular growth trends. When compared with the growth percentage for the same period in 2015- 2016, a substantial increase is witnessed – a jump from 25.1 to 45.3%. However, the taxable income of the new taxpayers was found to be below the minimum tax bracket, resulting in a muted effect on the increase in the average taxable income, that is, from ₹2.5 Lakh in the same period of the FY 2015-2016, to ₹2.7 Lakh post demonetization. Therefore, this increase in taxpayers, while significant, does not contribute to the tax revenue collections that significantly.

D. Number of Income Tax Returns Filed

As per an official press release from the Government of India[23], there was a substantial increase in the number of e- returns filed post-demonetization. ₹56 Lakh addition e-ITRs were received in 2017, as compared to 2016.

In 2016, there were only ₹22 Lakh additional e-returns were received by the due date of filing as compared to 2015.

This is not only indicative of increased compliance, but also stands in support of the impetus it provided to digitization, as established in Section 4.3. The same press release also stated that from 1st April to 5th August, 2017, ₹2.79 Crore tax returns were filed by Individual taxpayers as against ₹2.23 Crore returns filed during corresponding period of last year. The number is expected to further rise significantly as many more taxpayers are still to file their returns.

[22] Office Memorandum, CBDT, 2016.
[23] Press Information Bureau, August 2017.

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Further, it stipulates that a total of ₹1.96 Crore Income-tax Returns were filed during the period of 9th November, 2016 to 31st March, 2017, as compared to ₹1.63 Crore returns filed during the corresponding period of FY 2015-16.

Individually assessed, these numbers point to increased compliance that can be directly contributed to demonetization.

Table 4.4.3 Increase in the number of e6 returns filed

Time Period	**Number of e-returns filed (in ₹Crores)**
1st April 2015 - 5th August 2015	2.00
1st April 2016 - 5th August 2016	2.23
1st April 2017 - 5th August 2017	2.79

Source: Economic Survey Vol 2, 2016-2017

But there is a requirement to study the annual increase in the number of taxpayers, so as to understand the cumulative effect of the individual calculations. Thus, the paper chronicles the increase in 'Number of Effective Assesses,' as per the data given by the income tax department.

E. Number of effective assesses

This data from figure 4.4.7 is based on the number of income-tax returns entered in the system plus number of cases where tax has been deducted at source from the income of the taxpayer but the taxpayers has not filed the return of income.

The growth in the number of effective assesses was examined, where it was seen that the increase in 2016-17 was in line with previous growth trends, as indicated by the trend line in Figure 4.4.7.

Thus, the inference can be made that, while the increase in the number of taxpayers has been significant, it has not, yet led to a corresponding increase in the total tax revenue for the FY 2016-2017.

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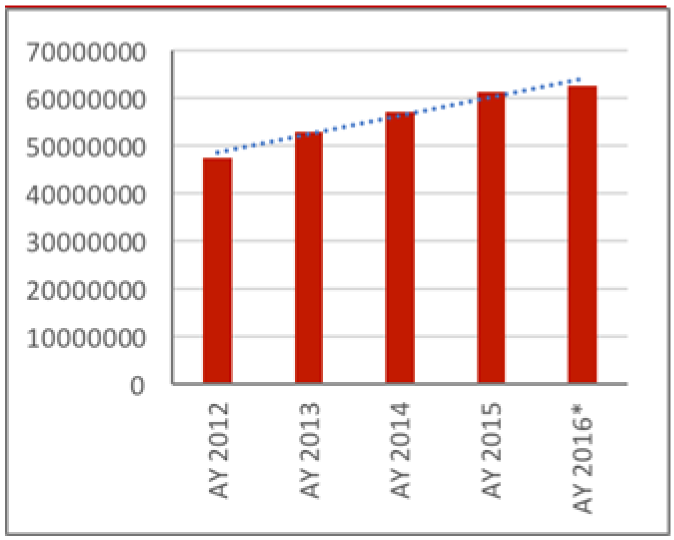
Figure 4.4.7 Total Number of Assesses (2012:13 to 2016:17)



Source: Central Board of Excise & Customs Report, 2017

5. Limitations

Due to the lack of a universally accepted definition of a black economy, black money, and demonetization, the scope of the study was very vast. Even though attempts were made to keep the scope of the research focused, the following limitations were encountered:

- Details regarding an accurate estimate of the amount of black money in the economy, at any given point in time, were difficult to come by. This hampered the quantitative analysis of the amount of black money removed from or deposited into the economy. The data that was available was as per fiscal or calendar year, and hence the unavailability of values for pre and post-demonetization made its isolated impact difficult to ascertain.

- The narrow time period of analysis, post the policy, permits only short- term study of demonetization, and long run estimates. As the Economic Survey 2016-17 states, "forecasting its impact is hazardous. The discussion that follows, especially the attempts at quantification, must consequently be seen as tentative and far from definitive."

- Cash-GDP: India's CPI score for the year 2017, will only be available in January 2018, preventing us from observing the impact of the event on restricting the extent of our calculated correlation.

- Banking: The average account balance of PMJDY accounts has been higher than before

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demonetization, but they are reducing slowly. The short time frame since demonetization negatively affects how well the paper can analyze the impact of demonetization on the true level of financial inclusion.

- Digitization: A large portion of accumulated black money was successfully converted into white by laundering through several means, all of which evaded tax payments. Digitization as an indicator, cannot realize the full extent of this.

- Primary research was limited to online surveys, the sample sizes of which are a main constraint to our research. A bigger sample size would give us a better idea of the general public sentiment and behaviour.

- Secondary research was collected using websites and government portals. Contradictory and inconsistent data, specifically with tax estimates, led us to exclude certain parameters.

- Due to the limitation of the definitions taken, and the paucity of data, the paper had no way of assessing the impact of demonetization on:

a. The unaccounted income accrued either illegally, or stored in the forms of assets such as gold and real estate when, in fact, some estimates say that 40% of the total black money in India is in Real Estate[24].

b. Undisclosed assets

c. Black money hoarded by political parties (MC Joshi committee states that political parties largely understate their incomes as opposed to their expenditures), specifically in the context of elections.

d. Money in tax havens in international countries.

6. Policy Suggestions

The results seen after in-depth analysis of each indicator suggest that, although demonetization and allied policies implemented by the government may have reduced the quantum of black money to a certain extent, there is a shortcoming expressed in existing policy. This paper, therefore, presents policy suggestions for the short and long-run, which aim to provide consistent, holistic solutions.

[24] Takshashila Institution (2016)

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These suggestions are provided under three main umbrellas of thought:

1) The Nudge theory
2) Transparency
3) E- governance

1. The Nudge Theory

The 'Nudge' theory, Thaler and Sunstein (2008), a concept in Behavioral Economics, proposes the mechanisms of positive reinforcement and indirect suggestions to achieve compliance to influence the motives of individuals without force. A 'Nudge' is defined as the technique used to alter people's behaviour in a predictable way, not through prohibition or a significant change in incentives, but by simply altering the number of choices available, or the manner in which they are presented. Nudge, as a theory, has found acceptance not only academically, but also in implementation. Various countries have set up 'Nudge Units.'

'Nudging' towards India

Indian government has made headway into setting up a 'Nudge Unit' under the NITI Aayog. They have been reported to tie up with both, the Bill & Melinda Gates Foundation, as well as Britain's Nudge Unit. The purpose stated is to *sensitize people at the grassroots towards the government's flagship programmes such as Swachh Bharat, Jan Dhan Yojana, Digital India through social messaging and new ad campaigns.*

The Indian Government has already adopted various policies and schemes that incorporate this concept :

1. *Swachh Bharat Movement*, 2014, to induce voluntary reduction of littering
2. *Income Disclosure Scheme,* 2016, to incentivize individuals to give up their black money at a lower fee than the penalty rate.

This paper proposes an acceleration of this process to achieve a fully functioning nudge unit. Further, in the context of reducing the usage of black money and the size of the black economy, this paper proposes the usage of nudges to increase tax compliance. This can be carried out through incentives, the power of suggestion, and Richard Thaler's philosophy.

Increased Tax Compliance:

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UK's Behavioural Insight Team studied the use of "nudging" as a relatively non- intrusive way of enforcing tax compliance. The details of their experiment can be found in Appendix 3. Ruda and Kettle (2014), of The Behavioural Insights Team in UK, conducted a trial in Guatemala, where tax compliance is particularly low. They sent out five different types of reminder letters to the five groups of citizens about their tax payments for several weeks.

They found that the behaviorally-informed letters, the ones that employed nudging, outperformed all other conditions, with the most successful variant increasing payment by 43%. Further analysis showed that if the modified letter had been sent to all the citizens in the trial, tax collections would have been US$400,000 more than if they had been sent the standard letter, the one that did not employ nudging. This experiment was replicated by the authors of this paper, to test the conclusion, that customized messages motivate taxpayers to be more compliant, in the Indian context.

Following are the details of said survey:

- Number of groups : 4
- Sample size of each group : 45
- Form : Online
- Respondents of each group were between the age group 30-55 years.
- Respondents of each group were earning and tax-paying Indian citizens.
- Each group of respondents was asked different questions. The questions will be hereafter referred to as 1A, 1B, 2A, 2B respectively.
- Set B (1B, 2B) differs from Set A (1A, 2A) when it comes to the amount of income taxed, and hence helps us understand the importance of price sensitivity to citizens of the country.
- The aim of this survey was to ascertain the potential role that the concept of "nudging" could play on the willingness of the citizens of India to pay tax.

The translated survey, with results, is given below:

Q 1A) "Even though your income is lower than the required tax bracket, thegovernment requests you to pay a sum equal to 20% of your annual income, as a voluntary contribution to public revenue. Would you be willing to make the payment?"

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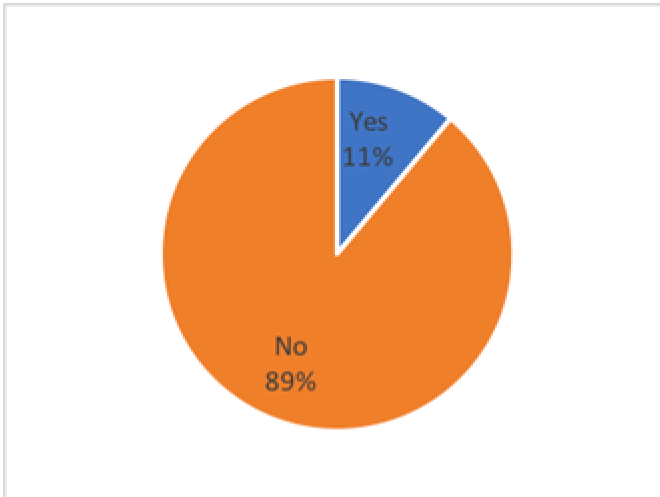
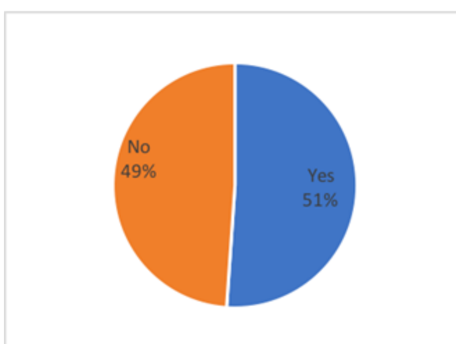
- *Yes : 11.1%*
- *No : 88.9%*



Q 2A) "85% of the people whose annual income is also low enough to exempt them from paying taxes, have voluntarily signed up to pay a sum equal to 20% of yourannual income to contribute to the welfare of the country. It has already made a huge difference. Can we count on you to also be a part of that?"

- *Yes : 51%*
- *No : 49%*



Q 1B) "Even though your income is lower than the required tax bracket, thegovernment requests you to pay a sum equal to 10% of your annual income, as a voluntary contribution to public revenue. Would you be willing to make the payment?''

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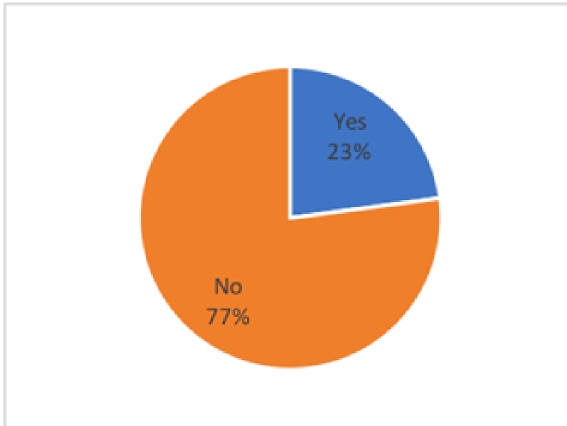
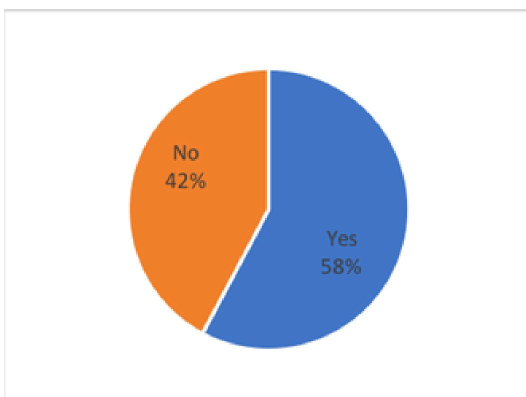
- *Yes : 23%*
- *No : 77%*



Q 2B) "85% of the people whose annual income is low enough to exempt them frompaying taxes, have voluntarily signed up topay a sum equal to 10% of your annual income to contribute to the welfare of the country. It has already made a huge difference. Can we count on you to also be a part of that?"

- *Yes : 58%*
- *No : 42%*



Result : In both the sets A and B, when the framing of the words was changed to be slightly more persuasive and inclusive, a drastic increase in the number of people who agreed to pay tax was noticed, above a 35% increase, proving that nudging can potentially have a significant impact if carried out successfully.

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Additionally, one must also take into account the contrast between the two sets in terms of India’s price sensitivity. Regardless of how the question was framed, more people said yes to paying tax of a lower amount, i.e. 10% of income, than to 20% of income, exhibiting that the respondents were extremely sensitive to price change, i.e. a reduction in the tax bracket increases tax compliance and hence, tax reforms may also be necessary. In this way, nudging may be limited in its approach.

The survey shows a glimpse of the potential impact nudging could have on tax compliance, if carried out appropriately.

This paper concludes that, taking from the success of the Guatemalan experiment, there is scope for lots of success for the same, in India.

Benefits of the Policy:

1. Improves public policy outcomes at lower costs to the government, as ‘nudges’ bring out compliance through voluntary behavioural changes, reducing enforcement and policing costs.

2. Potential to bring about a behavioural, and therefore more permanent change in the mindset of the people.

Limitations of the Policy

1. The impact of the benefits accrued by Nudging Units is suggested to be more notable in the long-term, leading to potentially modest short-term results.

2. The results could differ from state to state.

2. Increased Transparency and Dissemination

Section 29C of The Representation of the People Act, 1951 states that all political parties must report all contributions in excess of Rs. 20,000 from any person, or companies other than government companies, in that financial year. Failing to submit said report would disallow that party from receiving tax relief.

This has paved the way for parties to manipulate their donation sources. Donations can be collected from multiple avenues in increments less than the ₹20,000 limit, in cash, to prevent taxation. Mishra and Kumari (2015) stated that “between 2007 and 2009 the Bahujan Samaj Party got Rs 200 Crore; not one rupee came in by cheque. In the same period, the BJP received ₹55 Crore, of which ₹21 Crore was by cheque, and the Congress got ₹72 Crore, of which only

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₹35 Crore by cheque." Gowda and Sridharan (2012) discussed several consequences arising out of the present system of electoral laws and said that the lack of any effective system of internal democracy, transparency, and accountability within parties that reinforces corrupt fund-raising and accumulation of black money.

Hence, this paper proposes the following:

- An amendment to section 29C of The Representation of the People Act wherein it becomes mandatory forparties to declare the amounts and sources of all their donations.

- Additionally, necessary amendmentsshould also be made under the Right to Information Act 2005 so as to bring all political parties under the definition of 'public authorities'.

Sridharan (2014) stated *"strengthening and increased focus on the RTI can make economic decisions such as public sector contracting more transparent."* Additionally, Madhavi (2016) argued that RTI is the tool to tackle corruption, saying the *"main thrust of RTI law to change the culture of secrecy, red tapism and aloofness that has plagued India's monolithic and opaque bureaucracy,"* advocating the immense power RTI has to make the government accountable and trustable.

3. E-Governance

E-governance is the integration of Information and Communication Technology (ICT) with government services to enhance the government's ability to serve the general public, by reducing corruption through increased transparency and better accountability. A UN survey established an inverse relationship between E-Governance and the size of a country's informal economy, through an E-Government Development Index (EGDI). India has a score of 0.46 out of 1.

Table 5.3.1 UN E-Governance Development Survey, 2016

	EGDI	HCI	OSI	TII
KAZAKHSTAN	0.72	0.84	0.76	0.57
INDIA	0.46	0.50	0.74	0.14

Source: United Nations E-Governance Development Survey 2016

India's score have been compared to those of Kazakhstan, to develop a more accurate picture. India's components are similar to Kazakhstan's, however, the score for 'average years of schooling' is far lower at 4.4 compared to Kazakhstan's 12. OSI: India's government services portal offers online services for a wide range of categories, and as such, has a similar score to

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Kazakhstan. India's data shows that while 74% of individuals have a mobile subscription, only 18% of the population actively uses the internet, and only 3% of the population has a wireless broadband connection at home.

Thus, this paper recommends that the government of India needs to shift its focus from solely improving ICT in government services towards internet penetration, accessibility of those services via telecom infrastructure, and improving technology infrastructure in the education system so as to improve the quality of education, thus affecting the HCI & TII positively. When awareness and accessibility increase, the E-governance Index will increase. Along with an increase in this Index, the Corruption Perception Index may see a fall as stated in the report, thereby reducing black money within the public sector in India.

Specific actions to stimulate TII & HCI through the telecommunications industry:

1. Increased regulation and enforcing of the objectives proposed under the National Telecom Policy, 2012.

2. Providing business incentives to mobile phone manufacturing companies setting up in India that focus on rural, underdeveloped markets, so as to increase the number of people who have mobile phones therefore brings them one step closer to being connected to online government services.

3. To provide tax breaks for telecommunication companies providing internet services in rural areas to stimulate growth in underdeveloped regions.

4. Increased focus on telecommunications infrastructure under the National E- governance plan, and increased importance to fixed broadband services under the various Mission Mode Projects of the Ministry of Electronics and Information. This is a secondary opportunity to increase TII as most people in India have cell phones but not personal computers.

7. Conclusion

The paper attempted to answer the research question **''Was demonetization successful in reducing black money, andthe size of the black economy?''** The content analysis provided by this paper is studied through four different indicators.

The first indicator, Cash-GDP Ratio, confirmed the reduction in cash in circulation (CIC) post demonetization. However, with no direct relationship to the amount of black money in the

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economy, it is not suitable to be a measure of success. But, the constriction of CIC corresponds to an increase in the formalization of the economy, which we further analyzed through the other three indicators.

Data showed a substantial increase in digital payments right after demonetization, 70 times growth for UPI transactions, which was sustained even after CIC was restored in the economy. This indicates a shift of consumer preference towards digital methods of payment, amongst most income groups in the country.

The third Indicator, Banking, showed that the average account balance increased in the short-run significantly due to the surge of deposits. It still remained at a level approximately 25% higher as compared to before demonetization. Under the PMJDY scheme for lower income groups, there was a fall in the average deposits of accounts 6 months post-demonetization, clearly indicating that a large number of users are still dependent on cash for transactions.

Hence, the intended 'digital revolution' seems to have succeeded with higher income group individuals, who already had access to digital methods of payment, but not to the poorer sections of the country.

The Government's claims of increased tax payers held true, with an impressive increase, but this was without a corresponding increase in the average taxable income or the total tax revenue. The significant increases in tax collection were primarily witnessed in the increase of the Indirect Tax and Other Direct Tax, where the former could not be isolated to demonetization, and the latter a one-off increase, not substantial enough in terms of real value to aid collections. The increase in personal income tax and corporate tax points to increased compliance, but the increase is not sufficient to prove that compliance will increase in the long run. This all points to say that demonetization was simply effective as a 'shock' and may not actually have decreased black money or the size of the black economy in the long-run. Additionally, demonetization may not have prevented the further creation of black money. Also, a large portion of unaccounted income in India was in the form of undisclosed assets, like gold and real estate (an estimated 40%), held by political parties, or stored as tax havens international countries. Since none of these areas were targeted during demonetization, this suggests that the event not may have been as successful as intended, at targeting the task at hand.

Hence, this paper concludes that demonetization was not as effective in tackling the problem of unaccounted income, in the short-run, but definitely succeeded increasing the use of digital payments tenfold. However, there is no assurance of its sustained success in the long-run, and research indicates that the event may not be as successful as intended, in achieving its targets.

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Appendix-1

Correlation ‘r’ = +0.896

The calculation of the Cash-GDP ratio used is as follows :

Table 8.1 : Calculation of Cash-GDP Ratio

Year	GDP in Constant Prices (2010 Base Year - in INR)	Cash in Circulation (in INR)	Cash as a Percentage of GDP
	GDP (2010 Base Year - in INR) x USD-INR Exchange Rate in 2010	https://data.gov.in/catalog/statistics-notes-circulation	[CIC (in INR) / GDP in constant prices (in INR)] x 100
2001	36575604963000	2128510000000	5.82
2002	38339971085400	2446080000000	6.38
2003	39798429911400	2754020000000	6.92
2004	42926758027400	3197320000000	7.45
2005	46327596054000	3612130000000	7.80
2006	50629161120000	4219220000000	8.33
2007	55319375164000	4959380000000	8.96
2008	60741780190000	5815770000000	9.57
2009	63105112252000	6810990000000	10.79

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2010	68455983996000	7882790000000	11.52
2011	75479914412000	9369350000000	12.41
2012	80490433534000	10537860000000	13.09
2013	84882212548000	11756350000000	13.85
2014	90302795070000	12837350000000	14.22
2015	97080231820000	14288820000000	14.72
2016	104856400762000	16415580000000	15.66
2017	112308619618000	13234008171923.0	11.78

Appendix-2

There are two indices of digitization that define the scope and extent of digitization in an economy: The Networked Readiness Index, published by the World Economic Forum, andthe DiGix digitization index. These indices cover a range of variables from Digital infrastructure, user and governments' adoption, costs availability etc. They are holistic and covers digitization from a legal, environmental and social construct too, as opposed to purely economic.

<u>Digitization & the Black Economy :</u>

The variables that constitute digitization in the context of a black economy, are:

Financial Inclusion : the process of ensuring access to appropriate financial products and services needed by vulnerable groups such as weaker sections and low income groups at an affordable cost in a fair and transparent manner by mainstream Institutional players'[4]

Mobile Banking : the act of doing financial transactions on a mobile device (cell phone, tablet, etc.). This activity can be as simple as a bank sending usage activity to a client's cell phone or as complex as a client paying bills or sending money abroad. Advantages to mobile banking include the ability to bank anywhere and at any time.[5]

Mobile Transactions : Money rendered for a product or service through a portable electronic device such as a cell phone, smartphone or PDA. Mobile payment technology can also be used to send money to friends or family members.

The following are indices that encompass the above variables :

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Mobile Banking and Payments Internet Penetration Index - Nielsen Global Survey [6]

World Bank FINDEX- ‘Number of people who have made a digital transaction ages 15+)’[7] FINDEX- ‘Number of people who have received wages or government transfers into an account ages 15+’

INDEX FOR ESTIMATION OF BLACK MONEY :

The most thorough research available on the estimation of the black economy is the MIMIC index - a special type of structural equation modelling (SEM) that is widely applied in psychometrics and social science research and is based on the statistical theory of unobserved variables developed in the 1970s by Zellner and Joreskog et al. The MIMIC model is a theory-based approach to confirm the influence of a set of exogenous causal variables on the latent variable (shadow economy), and also the effect of the shadow economy on macroeconomic indicator variables.[8]

THE STUDY AND FINDINGS :

The indicators in place, a sample of 8 countries were taken, and their scores on the respective indices noted.

A Pearsons’ Correlation Coefficient study between the digitization indices and the MIMIC index to show the link between a country’s estimated digitization level and their estimated size of the black economy

The purpose of this study arises due to a lack of compiled data on India’s digitization level and black economy size post demonetization. It is not possible to compare an old index with a new index post demonetization as there has been no study conducted for these indices post demonetization.

Table 8.2 (2015)

COUNTRY	Networked Readiness Index- WEF (rank)	Mobile Banking and Payments Index- Nielsen (%)	Made or received Digital Payments: Age 15+ (%)	Received Wages or Government Transfers into an account: Age 15+ (%)	Black economy MIMIC Index score

INDIA	89	37	22.4	7.46	20.3
SINGAPORE	1	81	90.15	56.58	11.9
AUSTRIA	20	83	93.62	59.63	9.9
JAPAN	10	91	89.34	48.65	10.8
THAILAND	67	60	36.77`	15.96	50.6
ITALY	55	62	73.23	36.05	29.6
UNITED STATES OF AMERICA	7	87	92.01	56.56	9.4
PAKISTAN	112	18	9.45	3.11	33.1
PHILIPPINES	77	53	21.35	9.53	42.7
INDONESIA	73	34	23.31	8.99	19.1

CORRELATIONS :

*X variables are digitization index scores, Y variable is the black economy MIMIC indexFindex Wages Received vs Black economy index

Correlation ‘r’ = -0.6939.

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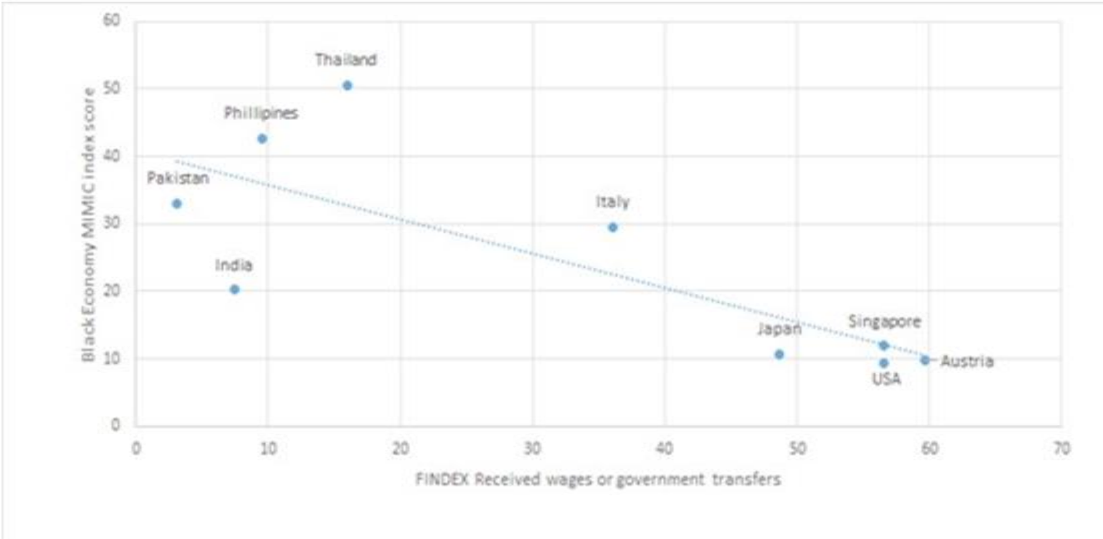
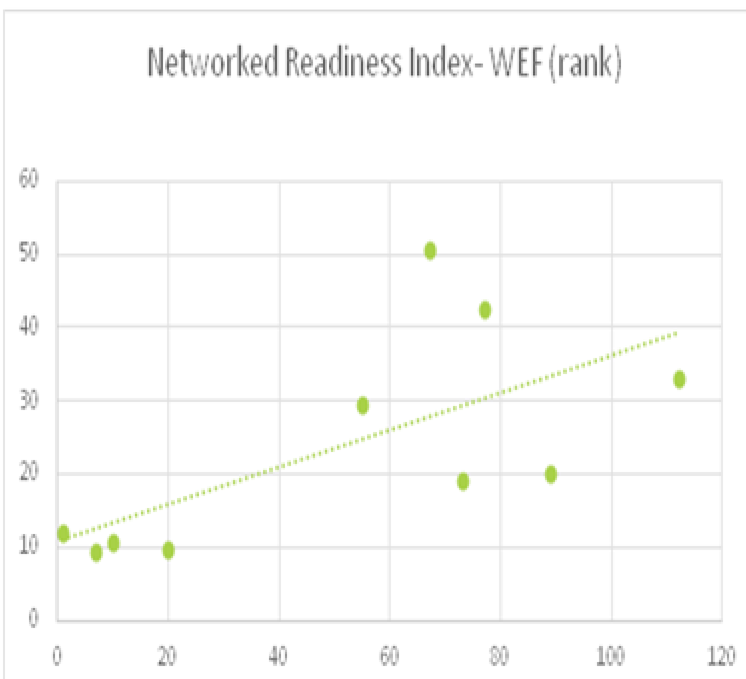
Figure. 8.2.1 :



b. Networked Readiness Index vs Black economy MIMIC indexCorrelation 'r'= +0.68

Figure. 8.2.2



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2.3. (A) OBSERVATIONS :

There exists a negative correlation between the digitization of a country and the size of its shadow economy.

There exists a positive correlation between the size of the black economy, and rank on the Networked Readiness Index

The values for Thailand and India stray quite a bit from the trend line. This could suggest discrepancies in the MIMIC index calculations and a masking of the true size of the black economies of India and Thailand.

2.3. (B) LIMITATIONS :

The MIMIC index being the most well-structured Index for a measure of the black economy still does not account for it being completely accurate, as the agents of a black economy do attempt to stay unnoticed.

The correlation simply shows us the relationship between levels of digitization and the size of a black economy. It doesn't infer causation, that digitization is the reason for the black economy being as such.

The relationship between India's MIMIC index score and its digitization indicators has a deviation of some magnitude with the line of best fit. This suggests the undervalued estimate of India's size of its black economy. This idea has been substantiated through another relationship made by the Economic Survey 2016-17, Union Budget, between India's Cash to GDP ratio and its corruption index.[9]

2.4. DIGITISATION SURVEY :

A survey was conducted as well, with the aim of ascertaining the level of digitisation amongst consumers in the country before and after demonetization through the use of primary data.

Basic Details :

- Sample size : 278
- Form : Online
- Respondents were between the age group 15-60 years.

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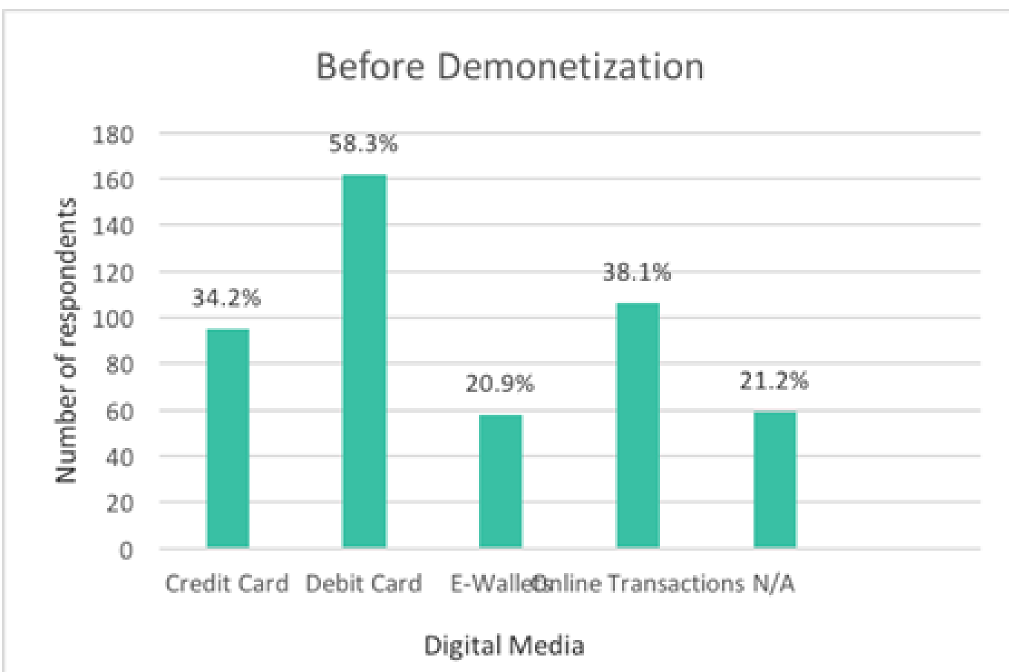
Respondents were from over 10 different cities of India. The translated survey, with results, is given below :

Q 1) which income bracket do you feel like you relate to the most?

- Upper Class : 5%
- Upper Middle Class : 62.6%
- Lower Middle Class : 21.9%
- Lower Class : 10.4%

Q 2) before demonetization, did you make digital payment or transactions? If yes, then please specify which media.

- Yes, frequently : 39.9%
- Yes, rarely : 36%
- Not at all : 24.1%



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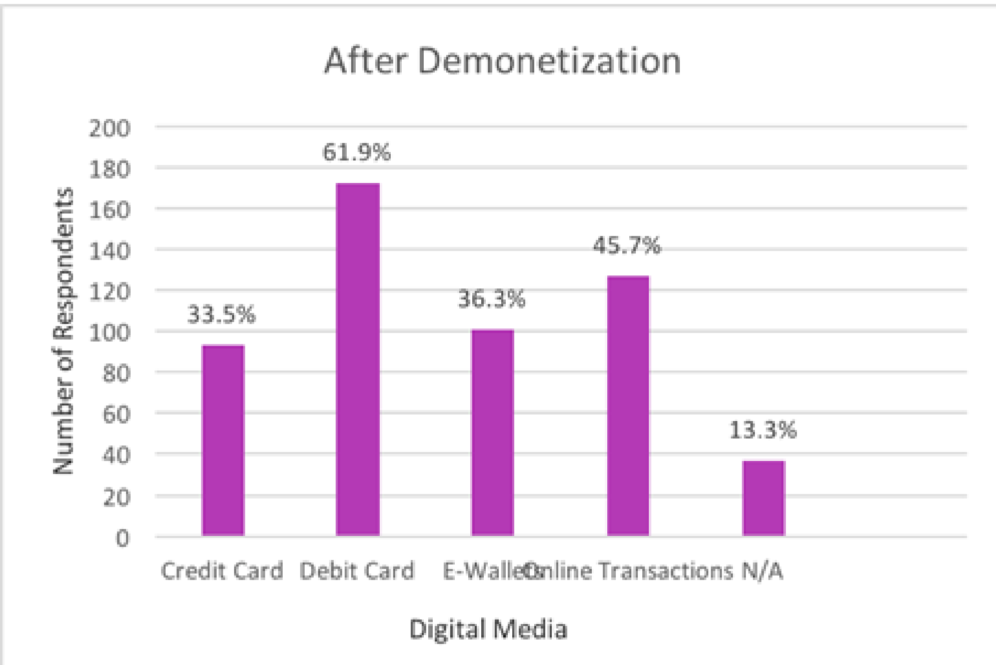
Q 3) After demonetization, did you make digital payment or transactions? If yes, then please specify which media.

- Yes, frequently : 59.4%
- Yes, rarely : 27.7%
- Not at all : 12.9%



RESULTS :

There was a ~20% increase in the number of respondents who said they made digital payments or transactions frequently.

There was an ~11% decrease in the number of respondents who said they had never made digital payments.

The largest increase of all the digital media was in the use of E-wallets, with 16% more respondents claiming they had used e wallets after demonetization.

The percentage of respondents who answered 'Not applicable' fell from 21.4% to 13.3% suggesting their entry into the ambit of digital payments and transactions.

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APPENDIX-3

THE NUDGE THEORY

UK Behavioural Insight Team: the use of "nudging" as a relatively non-intrusive way of enforcing tax compliance.

They compared the impact of different types of tax reminders on people who had declared their income but not yet paid tax on it.

They classified their experiment into five "norms" :

NORMS TO INCENTIVISE TAX PAYMENTS	IMPACT / RESULT
"Nine out of ten people pay their tax on time" (basic norm)	Largest impact on payment of tax - pushing likelihood of tax payment by nearly 51%. (an increase of £2.36 million in taxes collected in 23 days)
"Nine out of ten people in the UK pay their tax on time" (country norm)	
"Nine out of ten people in the UK pay their tax on time. You are currently in the very small minority of people who have not paid us yet" (minority norm)	
"Paying tax means we all gain from vital public services like the NHS (National Health Service), roads, and schools" (gain)	
"Not paying tax means we all lose out on vital public services like the NHS, roads, and schools" (loss)	

