Brinda Khanna, Malavika Anand, Aradhya Jain
ECO-3630 Public Economics
Prof. Bhanu Gupta
30th April 2022

Did demonetisation increase the rate of digital transactions and if so, how did digital transactions enable the prevention of tax evasion?

Introduction

Tax evasion has been a prevailing roadblock in India, with only 1% of Indians paying their direct income taxes. For decades, one of the most concerning issue for the Indian economy is the emergence of black market economies fueled by these tax evasion strategies.

India, the $3 trillion economy, is losing over $10.3 billion (approximately 0.41 percent of GDP) in taxes every year due to international corporate tax abuse and private tax evasion, according to a report by the State of Tax Justice. The social impact of this lost tax is equivalent to 44.70 per cent of the health budget and 10.68 per cent of education spending.[1] Corruption, low levels of education, complicated taxation arrangements, loose/ineffective regulations or policies feed the informal economy, which poses a threat to the economy's overall growth and development. This type of conduct harms the economy in a variety of ways, including causing an imbalance in the tax burden, jeopardizing equity, contributing to a scarcity of public finances, and undermining the current taxation structure. Demonetisation introduced by Prime Minister Modi in Novermber 2016 was recognized as a rather audacious step to curb the black money problem in the country and an attempt to eradicate tax evasion in the process.

One particularly significant indirect aspect of demonetisation was; it greatly promoted digital transactions, aiming to make it easier to track tax evasion for the authorities. It forced consumers

[1] "Tax Evasion: India Losing over $10.3 Billion Every Year." *Business Today*, https://www.businesstoday.in/latest/economy-politics/story/india-losing-103-bn-every-year-due-to-tax-abuse-by-mncs-evasion-279314-2020-11-21.

and small businesses to use their debit and credit cards more often, try mobile banking and adopt e-wallets. Every transaction made with a card swipe, whether through internet, mobile, or e-wallet banking, leaves a digital trace. This trail has the ability to become a valuable source of data for the IRS to utilise in detecting tax evasion. **In this paper, we aim to explore this aspect in more detail, discussing the impact of demonetisation on digital transaction, and its consequent effect on tax evasion.**

Literature review

There's a myriad of literature exploring the impact of demonetisation and digital transactions on tax evasion. One particularly interesting paper by Amartya Lahiri called the Great Indian demonetisation (2020), provides an in-depth analysis of demonetisation in the country and its impact on the prevailing economy. It discusses the direct and indirect goals of the policy on tax evasion and how it aimed to digitze the Indian economy. Lahiri however, faces problems due to the limited evidence of three years of post-demonetization tax revenue, it was hard to argue that demonetization induced a sharp increase in the collection of tax revenues. A conclusive assessment of the impact of demonetization on tax revenues would require a few more years of data, as well as decoupling the effects of Goods and Services Tax from demonetization. Another study by James Alm called Tax Evasion, Technology and Inequality is a working paper that aims to explore the interaction between digital transactions and tax evasion and how it might promote inequality.

'An Insight into Black Money and Tax Evasion-Indian Context' delves into India's tax evasion problem and aims to provide insight into why it's prevalent and how the issue can be resolved. It further explores various dimensions of black money, tax evasion and their critical relationship with the policy and administration in India. Finally, we look at 'Cash and the Economy: From India's Demonetization' by Gita Gopinath and co-authors presenting a model of demonetization where agents hold cash both to satisfy a cash-in-advance constraint and for tax evasion purposes. They test the predictions of the model in the cross-section of Indian districts using data sets including: the geographic distribution of demonetized and new notes for causal inference; nightlight activity and employment surveys to measure economic activity including in the

informal sector, debit/credit cards and e-wallet transactions data, and banking data on deposit and credit growth.[2]

Our paper contributes to existing literature by exploring the impact of demonetisation on digital payments, as we've identified it to have significantly impact the payment trails, and through that we aim to explore the possible prevention of tax evasion in the country.

Previous measures to curb tax evasion

Over the decades, The Indian government and The Reserve Bank of India have taken several initiatives to combat tax evasion. Tax evasion is considered a crime in India, the government imposes prosecution and penalties under various acts. The Income Tax Department has implemented a tax evasion reward scheme, which compensates those who report tax avoidance. India and the United States recently signed an agreement to prevent Americans from evading taxes through Indian financial institutions. Individuals in possession of black money can invest in special bonds under the Special Bearer Bond Scheme (Immunities and Exemptions Act, 1981).

Another notable step was the Voluntary Compliance Scheme (Amnesty Scheme). Earlier, India has set up several committees like Taxation Enquiry Committee, Indian Tax Reforms Committee, and Direct Taxes Enquiry Committees etc. Transfer Pricing Audit was introduced by Finance Bill to audit undisclosed transactions to curb tax evasion.

Lastly, the Modi government introduced bold policies like demonetisation and GST to reduce corruption and black money in the markets. We plan to focus on demonetisation in our paper.

Demonetisation

Demonetization is the act of stripping a currency unit of its status as a legal tender. It occurs when there is a change in national currency. The current form or forms of currency is pulled from circulation and retired, to be replaced with new notes or coins. It has been used as a tool to stabilize the currency, fight inflation, facilitate trade and access to markets, and push informal

[2] Gopinath, Gita. "Cash and the Economy: Http://Www.nber.org/Papers/w25370 National Bureau ..." *NBER WORKING PAPER SERIES*, https://www.nber.org/system/files/working_papers/w25370/w25370.pdf.

economic activity into more transparency and away from black and grey markets. However, it's a drastic intervention that can cause chaos or serious downturn in an economy if it goes wrong. Demonetization has been tried as a tool to modernize a cash-dependent developing economy and to combat corruption, counterfeiting and tax evasion. In Novermber 2016, the Modi government decided to demonetize the 500- and 1000- rupee notes in India, the two biggest denominations in its currency system. These notes accounted for 86% of the country's circulating cash. With little warning, India's Prime Minister Narendra Modi announced to the citizenry on Nov. 8, 2016, that those notes were worthless, effective immediately—and they had until the end of the year to deposit or exchange them for newly introduced 2000 rupee and 500 rupee bills.[3]

Demonetisation's impact on tax evasion

Undoubtedly, Demonitization was an elaborate scheme aiming to achieve various goals however, one of the more significant and early policy goals were:

1. Seize black wealth accumulated using undeclared income, stored in the form of cash holdings.
2. Increase tax base by compelling people to exchange demonetized bills (500 and 1000 rupee) bills through the banking sector.
3. Create a more digitized economy.

In the process of exchanging demonitized bills, over 99 percent of the old cash was returned. One key prerequisite for the policy to be succesful in seizing unnaccounted cash holdings was that; the portion of demonetized currency that was returned to the Reserve Bank of India be remarkably less than 100 percent. Therefore, this direct method of capturing black wealth clearly did not work.

Black money has both a stock and a flow aspect. To evaluate the impact of demonetization, we need both the estimates. In a World Bank study from 2010, Schneider estimated the parallel economy in India to be approximately 25 percent of GDP. This would account for the flow share of the black economy (black income).

---

[3] Team, The Investopedia. "What Is Demonetization?" *Investopedia*, Investopedia, 6 Jan. 2022, https://www.investopedia.com/terms/d/demonetization.asp.

Credit Suisse in 2014 study estimated the wealth-to-GDP ratio in India to be around two. Considering creation of wealth is similar for both accounted and unaccounted income, this suggests that black wealth in India is about 50 percent of the GDP. Since the demonetized money (500 and 1000 rupee bills) was about 10 percent of GDP, even if the entire amount had been left unexchanged, it would amount to around 5 percent of the black wealth and 2.5 percent of black income. Moreover, expecting an 85-90 percent exchange rate for the demonitized bills would be a more than rational expectation, dragging these black wealth/income extermination percentages even lower.

Finally, once demonetization was introduced, we saw a 99 percent exchange rate for the demonetized bills which brings our five and two percent estimates very close to zero. Using these approximations and rough calculations one can easily discern that the policy does not seem to be well conceptualized on this particular facet atleast.

The second significant goal of demonetization was to seize black wealth indirectly by forcing people to deposit all their cash holdings in banks thereby, increasing the tax base. Essentially, there were two ways of exchanging old bills:

- Over-the-counter exchanges at banks
- Depositing old bills in your bank account and withdrawing new cash at a later date.

The Reserve Bank of India imposed extreme restrictions on over the counter exchanges by limiting the maximum amount that could be exchanged at banks. Even though public did return old bills through the second option, depositors would be traceable. Consequently, the government could potentially identify individuals/entities whose deposits were higher than the norm. The government could then examine the tax and income footprints of these depositors more intricately to identify tax evaders and confiscate their black wealth.

Digitization Impact on Tax Evasion

Technology has taken over the globe in recent years contributing tremendously to an array of fields and sectors pertaining to and outside of the economy. With increased research and development, the newest introduction post demonetisation was that of digitisation. The gradual

transition to a cashless economy was an encouraged and necessary move for the Indian economy as the opportunities that lie in a digitized economy are greatly beneficial. By incorporating technologies that use programs and data analysis tools that could wade off corruption present in the system, the government can restructure the nature of transactions made in the economy to one with increased transparency and accountability. By digitizing such services, the integrity of the system as whole is increased as it limits human manipulations and is indifferent to external persuasions. These characteristics of digitisation and the increased surveillance of transactions in an economy as a consequence of the same work well in tackling issues of tax evasion that are greatly prevalent in India.

In order to properly understand the extent to which the digitisation of financial transactions could help in curbing tax evasion, let's first look at the drawbacks of a cash economy and then compare it to the status quo market structure.

- Production of cash is time consuming and expensive

When it comes down to the production of cash in an economy, the printing of currency is significantly time consuming and expensive. Given that monetary currency in the form of notes also has a limited life-span, replacement of the same will incur further costs. By moving out of a cash driven economy, the state can cut costs in terms of printing money along with additional costs that stem from complimentary services of cash such as the installation of ATMS[4].

- Cash fuels the black economy

The biggest problem with cash based transactions is its inherent unaccountable nature. Given that there is no trace of any exchange of cash between individuals in the economy, an environment of illegal activities is enabled wherein schemes of tax evasion are predominant and reoccurring, adding to the sizable amount of unaccounted money flowing in the economy[5].

---

[4] "Cashless Economy: How Is It Important for India?: TranZact." *Let's TranZact*, 18 Feb. 2018, https://letstranzact.com/blogs/cashless-economy-how-is-it-important-for-india.

[5] "Benefits of Going Cashless in India." *Cashless Economy: Understand the Benefits of Going Cashless | Motilal Oswal*, https://www.motilaloswal.com/blog-details/Benefits-of-going-cashless-in-India/1121.

- Problems with Efficiency

The usage of cash as the primary means of financial transactions in some way hinders efficiency as the accounting of the same demands time, money and expertise. Were firms and businesses to move out of such a structure of payments and instead utilize alternate methods such as net banking, they would reduce their costs significantly.

- Financial inclusion of individuals in an economy

Financial inclusion of all individuals in an economy is both encouraged and increased in a cashless economy as all digital transactions, be it through debit/credit cards or net banking platforms require the user or individual to have a registered bank account. The setting up of a bank account can also further be helpful to individuals with regards to financial planning that could go very far in helping grow the economy.

Given all the constraints of cash transactions post demonetisation the country naturally started making the shift into an economy of cashless transactions (payments made using a digital or electronic platform usually in the form of credit cards or net banking) and the benefits of the same were quickly realized. Digitisation has brought in levels of transparency into the economy which is beneficial for three main reasons

1. It allows a record of all transactions to be formulated through the Digital trail it leaves behind

All transactions made through a digital platform or wallet leave a paper trail which allows businesses and the government to keep a record of transactions being made across the economy.

2. Two, it enables monitoring and tracking at a very detailed level but also at a large scale.

Given the nature of digital transactions and the trail they leave, it is much easier to monitor activity in the economy at an in depth level and gain insights into different statistical data that could be used to identify trends of fraud or tax evasion

3. Finally, it automatically allows you to data mine.

With such easy accessibility and availability of data on consumption patterns of individuals in the economy, There is no doubt that the Government will mine the data on transactions in its efforts to widen the tax net

Research Methodology:

Data & Variables

The data used for this study was taken from the Reserve Bank of India's (RBI) Database on the Indian Economy. The data set includes the monthly value and number of financial transactions conducted through various payment systems from April 2004 to October 2019. This data was chosen because it spans a big time period prior to demonetisation and a significant time period following it, allowing us to examine not only the immediate but also the medium- and long-term consequences of demonetisation. The independent variable (x) is the impact of demonetisation, which is essentially the data in the dataset that is reported after November 2016. The dependent variable (y) is the digital transactions. From the dataset, we've identified the three most significant modes of digital transactions. These are credit payments, e-wallet payments (PhonePe, Paytm, Google Pay etc.) and customer transactions. The control variables we're using are EFT/NEFT, IMPS and Debit Cards. We use cash payments to indicate the impact of demonetisation before and after 2016.

Data Preparation

The dataset was downloaded as an excel file and then imported to Stata. The dataset was manually cleaned by converting all the existing string values to float values. In addition, the variable labels were modified to their actual names instead of the given letter names in the dataset for convenience.

Model

We used an OLS regression on the dataset to explore the impact of demonetisation on digital transactions. We do this by generating a variable called 'demoni', which is the independent variable (x) and takes a value of 1 for all the time periods after December 2016 and 0 for the rest of the years. We also generate another variable called 'digitrans', which is the dependent variable

(y) and is calculated by taking the sum of the credit payments, the e-wallet payments and customer transactions (as mentioned earlier, they were identified as the most significant modes of digital transactions mentioned in the dataset). We generate another variable called ‘indep2’ which is the multiplication of pre-demonetisation impact and cash payments.

We then regress the dependent variable (y) or ‘digitrans’ on the control variables (EFT/NEFT, IMPS, Debits Cards). This is done to explore the impact of demonetisation on digital transactions i.e. exploring the state of digital transactions after 2016.

We also regress the dependent variable (y) on ‘indep2’ and the other two control variables to explore the impact of demonetisation on digital transactions i.e. exploring the state of digital transactions before 2016.

Results

This is the regression exploring the impact of post-demonetisation on digital transactions.

```
. reg digitrans indep debitcards IMPS

      Source |       SS           df       MS      Number of obs   =        87
-------------+----------------------------------   F(3, 83)        =     60.66
       Model |  3.0006e+14         3  1.0002e+14   Prob > F        =    0.0000
    Residual |  1.3687e+14        83  1.6490e+12   R-squared       =    0.6868
-------------+----------------------------------   Adj R-squared   =    0.6754
       Total |  4.3693e+14        86  5.0806e+12   Root MSE        =    1.3e+06

------------------------------------------------------------------------------
   digitrans | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
       indep |   4.527495   1.280104     3.54   0.001      7.07357     1.98142
  debitcards |   27.96349    4.76715     5.87   0.000     37.44516    18.48182
        IMPS |   17.99669   7.130003     2.52   0.014     3.815396    32.17798
       _cons |   1.32e+07     882364    14.98   0.000     1.15e+07    1.50e+07
------------------------------------------------------------------------------
```

As we can see, the result indicates that there is a larger increase in digital transactions for a unit increase in cash transactions. Also, the treatment indicates that the results are highly statistically significant.

This is the regression exploiting the impact of pre-demonetisation on digital transactions.

```
. reg digitrans indep2 debitcards IMPS

      Source |       SS           df       MS      Number of obs   =        87
-------------+----------------------------------   F(3, 83)        =     63.13
       Model |  3.0379e+14         3  1.0126e+14   Prob > F        =    0.0000
    Residual |  1.3314e+14        83  1.6041e+12   R-squared       =    0.6953
-------------+----------------------------------   Adj R-squared   =    0.6843
       Total |  4.3693e+14        86  5.0806e+12   Root MSE        =    1.3e+06

------------------------------------------------------------------------------
   digitrans | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
      indep2 |   3.543169   1.024292     3.90   0.000     2.371047    7.315291
  debitcards |    22.11176    4.87179     4.54   0.000    31.80155     12.42196
        IMPS |   6.073797   5.465842     1.11   0.270    -4.797544    16.94514
       _cons |   1.08e+07    1033950    10.43   0.000      8727279    1.28e+07
------------------------------------------------------------------------------
```

As we can see, pre-demonetisation, the results indicate the opposite of what was found in the first result. This means that for every 3.54 increase in digital transactions, there is a unit increase in cash transactions. The number of digital transactions was less prominent pre-demonetisation, as they weren't as prevalent at the time. In addition, corruption and black money were widespread in the country, making digital transactions a hindrance. Also, the treatment indicates that the results are highly statistically significant.

What does this mean for tax evasion?

From the results shown above, digital transactions became more prominent after the occurrence of demonetisation. Now, digital transactions leave a trail making it harder to evade taxes. Pre-demonetisation, with the tremendous amount of black money in most of the households, evading taxes became increasingly easier, as the proportion of black money in hand was not accounted for when the taxes were levied. The devaluing of the currency resulted in a loss of cash in hand, making it harder for households to keep black money with them. Therefore, as shown in the results, most of the population converted to digital transactions. This in turn, led to an increase in the number of taxpayers and helped in preventing tax evasion.

Limitations

Calculating tax evasion on its own is not an easy task. The results shown above calculate the impact of demonetisation on digital transactions, and indicate that digital transactions did indeed increase. We correlate digital transactions and tax evasion and draw inferences from that. Additionally, this model does imply that increased digitisation of transactions helped evade taxes, but it doesn't deduce that digital transactions are the absolute measure to prevent tax evasion. Furthermore, third-party companies and softwares may intervene and scout for ways to prevent themselves from leaving a digital trail. Lastly, the dataset used by us in this paper, is information that the Reserve Bank of India (RBI) uses to keep a record of payment systems and financial transactions in the country. Recently, the Government of India has released other payment systems which are not present in the dataset used by us.

Recent Government solutions to promote Digital Transactions

The country's central bank has finally implemented the Unified Payments Interface (UPI) for low-cost feature phones. The RBI's goal with this move is to draw at least 400 million individuals into the digital ecosystem. People who do not own a smartphone can now send money utilising the UPI capability. The new feature is the third version of the Unstructured Supplementary Service Data service, which was first introduced in 2016.

The new functionality is likely to attract more users and help UPI surpass the Rs 10-trillion monthly threshold. The value of UPI transactions has soared, but so has the volume.

Suggestions for Effective implementation of Digital Transactions[6]

In rural areas, there is still a lack of awareness regarding digital solutions such as smartphone-based transactions and the usage of credit/debit cards at point-of-sale (PoS) systems. The government, in collaboration with the Reserve Bank of India (RBI), has implemented and begun several programmes, such as the Pradhan Mantri Jan Dhan Yojana, to promote financial inclusion, particularly in rural India. Despite these efforts, some people still do not have access to

[6] "Best practices in Promoting Digital Payments — Vikaspedia." *Vikaspedia*, https://vikaspedia.in/e-governance/digital-payment/best-practices-in-promoting-digital-payments.

banks. To overcome these obstacles, more awareness campaigns and training camps should be held in rural regions to educate people about the benefits of having a bank account and making digital payments and customers to promote digital payments.

Make it the responsibility of all banks to organise a training team at the branch level, comprised of bank personnel and skilled volunteers, to train local merchants and educate citizens about digital payments and the benefits of seeding bank accounts with a mobile number and Aadhaar.

To raise awareness and promote digital payments, all government departments and authorities should be involved at the district, block, and tehsil levels. More incentive programmes for both retailers and customers should be implemented to promote digital payments. Monthly service charges on PoS machines and bank transaction fees on digital payments should be reduced or absorbed by district/state/central government organizations.

In remote locations, network concerns, low mobile coverage, and internet connectivity are important challenges, preventing access to digital forms of commerce.

People are concerned about digital payment security issues such as illicit use of payment networks and data theft. As a result, in order to acquire citizens' trust, cyber security protocols for securing digital payments must be tightened.

The Aadhaar enabled Payment System (AePS) is primarily used in rural regions, and biometric readers are an essential component of the Aadhaar-based payment system. It is preferable to assure the availability of high-quality biometric readers on the market. Tapping of industries where unorganized labor is employed and payments are made in cash.

Conclusion

The impact of demonetisation was greatly felt by the Indian economy for a while after its introduction. With nearly 86% of the currency in circulation in 2016 wiped out, individuals in the economy were in a state of frenzy over the lack of transactional options as the country was

predominantly a cash fuelled economy. And while most direct goals of demonetisation were not fully achieved, it laid the path for the outset of a digital India.

The digitisation of transactions has and will continue to grow the economy in numerous ways. With increased convenience, velocity of transactions increases. Increased transparency and accountability result in a reduction of illegal activities particularly that of tax evasion. Through the digital trail available to the Reserve Bank of India and the Government, surveillance of all financial transactions of individuals made online has increased the number of taxpayers in the country, thereby constantly reducing the scope of tax evasion.

From the data, it is evident that demonetisation had an impact on digital transactions, which have shown trends in reduction of tax evaders. With appropriate policy measures and successful implementation of the suggestions mentioned above, India might be able to eradicate tax evasion in the coming future, and successfully convert to a digital economy.

Biblipgraphy

1. https://dbie.rbi.org.in/DBIE/dbie.rbi?site=statistics
2. https://www.rbi.org.in/scripts/AnnualPublications.aspx?head=Handbook%20of%20Statistics%20on%20Indian%20Economy
3. "Best practices in Promoting Digital Payments — Vikaspedia." *Vikaspedia*, https://vikaspedia.in/e-governance/digital-payment/best-practices-in-promoting-digital-payments.
4. "Tax Evasion: India Losing over $10.3 Billion Every Year." *Business Today*, https://www.businesstoday.in/latest/economy-politics/story/india-losing-103-bn-every-year-due-to-tax-abuse-by-mncs-evasion-279314-2020-11-21.
5. Gopinath, Gita. "Cash and the Economy: Http://Www.nber.org/Papers/w25370 National Bureau ..." *NBER WORKING PAPER SERIES*, https://www.nber.org/system/files/working_papers/w25370/w25370.pdf.
6. Team, The Investopedia. "What Is Demonetization?" *Investopedia*, Investopedia, 6 Jan. 2022, https://www.investopedia.com/terms/d/demonetization.asp.

7. “Benefits of Going Cashless in India.” *Cashless Economy: Understand the Benefits of Going Cashless | Motilal Oswal*, https://www.motilaloswal.com/blog-details/Benefits-of-going-cashless-in-India/1121.
8. “Cashless Economy: How Is It Important for India?: TranZact.” *Let's TranZact*, 18 Feb. 2018, https://letstranzact.com/blogs/cashless-economy-how-is-it-important-for-india.