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DISCUSSION PAPER SERIES

IZA DP No. 16131

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# ABSTRACT

## How Do Political Connections of Firms Matter during an Economic Crisis?*

We use a new machine learning-enabled, social network based measurement technique to assemble a novel dataset of firms' political connections in India. Leveraging this data along with a long panel of detailed financial transactions of firms, we study how political connections matter during an economic downturn. Using a synthetic difference-in-differences framework, we find that connected firms had 8-10% higher income, sales, and TFPR gains that were persistent for over a three-year period following the crisis. We unpack various mechanisms and show that connected firms were able to delay their short-term payments to suppliers and creditors, delay debt and interest payments, decrease expensive long-term borrowings from banks in favor of short-term non-collateral ones, and increase investments in productive assets such as computers and software. Our method to determine political connections is portable to other applications and contexts.

**JEL Classification:** O16, D22, D73

**Keywords:** political connections, firms, crisis

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# 1 Introduction

The role of political connections in running businesses has been widely acknowledged and politically connected firms operate in all countries across the world, including those with strong institutions and low levels of corruption.[1] This nexus between business and government however has always been an area of active policy interest and debate. The economic literature has documented the benefits of having a political connection, either through access to better finance, taxation benefits, public contracts, lower regulatory oversight, etc., and its resulting impact on firm survival, valuation, profits, and growth.[2]

There is little empirical evidence, however, on how these political connections matter during economic downturns when resources available in the economy are scarce. Understanding the role of political connections during a crisis has become especially relevant, given that the world has experienced two of the worst economic downturns since the Great Depression in a span of a decade–the Global Financial Crisis and more recently, the Covid-19 pandemic. In theory, political connections could help firms exert their influence over the bureaucratic machinery during a crisis and divert scarce resources toward them. Alternately, the political system could leverage these connections to drain resources from firms instead, as rent-seeking incentives become more acute during an economic downturn (Shleifer and Vishny, 1994). In addition to this, a second question that has received even lesser attention–primarily due to data constraints–is the mechanisms through which political connections impact firm performance. For example, do connected firms systematically alter their borrowings and liabilities portfolio during a crisis, and use it to invest in assets? Does it lead to differential changes in firm performance and growth after the crisis? Using a long panel of firms, with detailed data on their sales, income, and expenses, as well as their portfolio of assets, liabilities, and borrowings, this paper provides answers to both of these questions in the context of an unexpected macroeconomic shock in India in 2016.

A central novel contribution of this study is the construction of a new *social network based* measure of firms' political connections, using a new dataset that we assemble. This measurement relies on machine learning algorithms and can be adapted to other settings. In our context, the creation of the data is based on the following steps: First, we collect comprehensive information on not only politicians who have ever contested elections but also

[1] Faccio et al. (2006); Tihanyi et al. (2019); Amore and Bennedsen (2013); Acemoglu et al. (2016)

[2] De Soto (1989); Stiglitz and Dasgupta (1971); Fisman (2001); Sapienza (2004); Khwaja and Mian (2005); Dinç (2005); Faccio, Masulis and McConnell (2006); Goldman, Rocholl and So (2008); Akcigit, Baslandze and Lotti (2018); Choi, Penciakova and Saffie (2021); Heitz, Wang and Wang (2021)

the universe of active and retired bureaucrats in the Indian Administrative Services (IAS). Second, we obtain data on the universe of registered firms (and their Boards of Directors) from the Ministry of Corporate Affairs. Third, we use over 5 million news articles from seven leading media outlets in India and Wikipedia pages for these individuals. We then implement sophisticated machine learning algorithms and entity resolution mechanisms to search and curate their interviews, announcements, and appearances at personal and professional events. This allows us to ascertain if politicians and bureaucrats themselves, or their kin, friends, or social contacts have ever served as Directors in any of these firms.

Our measurement of political connections therefore, improves on some of the most common ones in the literature (such as co-ethnicity, relatives, from the same region, etc.) in two significant ways: first, as opposed to coarse measures of political connections (such as regional associations, social or gender identities, etc.), we observe a more direct connection to the government–politicians and bureaucrats who are Directors. In addition to this, we are also able to capture *indirect* connections between politicians/bureaucrats and Directors through their personal, professional, and social networks such as friendships, meetings, and social appearances as reported in the media.

A firm is therefore politically connected if one or more of its Directors: (i) is or ever was a politician/bureaucrat; (ii) is a kin or relative of a politician/bureaucrat; (iii) connected through friendships as well as professional and social interactions reported in the media (Section 3 provides a more detailed discussion). For our empirical analysis, we define a time-invariant binary variable that takes the value 1 if a firm in the pre-crisis period (discussed below) is politically connected and 0 otherwise.[3] By this definition, 2.75% of firms in our sample are politically connected.[4]

The empirical context is India's Demonetization episode of 2016. In a completely surprising announcement, India's Prime Minister demonetized 86% of India's currency overnight in November 2016. This led to massive cash and credit shortages across the country, as the banking system grappled with replenishing the economy with the new currency bills gradually over time (Chodorow-Reich, Gopinath, Mishra and Narayanan, 2020). The resulting disruptions and delays severely impacted both households and firms, and economic recovery was slow even a couple of years after this episode (Lahiri, 2020; Karmakar and Narayanan, 2020). It is in this context that our study examines how politically connected firms, as compared to their non-connected counterparts, systemati-

[3]It is possible that firms form political connections after the crisis, which we rule out by definition.

[4]This is similar to Faccio (2010), who examines firms' political connections in 47 countries, including India.

cally differed in their response to the crisis and the potential role of these connections in altering the portfolio of assets, liabilities, and operational decisions of a firm.

We use rich data on a panel of over 30,000 formal sector firms across all major Indian states between 2012-2019. These data are obtained from the Prowess Data of the Center for Monitoring the Indian Economy (CMIE). Even though the data covers large firms in the formal sector, a unique feature of this dataset is that it harmonizes detailed information on firm operations by using their Annual Reports, Quarterly Financial Statements, and other publicly available sources. We can therefore observe the composition of asset, liability, and borrowing portfolios of a firm, along with the more aggregate categories like income, sales, and expenses. We use this information to examine various channels through which politically connected firms leverage their connections in response to a macroeconomic crisis.

It is important to note (from Table 1) that politically connected firms in our sample are older and larger in size as compared to their non-connected counterparts. Consequently, they have higher income, sales, expenses (wage and capital bills) as well as assets and liabilities even before the crisis. While this pattern is very consistent with those across countries (Faccio, 2010), it raises the concern on whether firms' response to the crisis can be explained by the *selection* of firms who acquire political connections (such as those with higher entrepreneurial ability, better resilience to shocks, etc.), or the political connections themselves. In order to address this endogeneity concern, our identification strategy implements a Synthetic Difference-in-Differences (SDID) methodology.

Synthetic Difference-in-Differences (SDID) methodology, recently developed by Arkhangelsky, Athey, Hirshberg, Imbens and Wager (2021), combines insights from Difference-in-Differences (DID) and Synthetic Control (SC) methods (Abadie, Diamond and Hainmueller, 2010) by: (i) re-weighting and matching pre-exposure *trends* between the treated and control units on the outcome variables (similar to SC); and (ii) allowing for the additive unit- and time-specific *selection* into the treatment (similar to DID). These fixed effects, therefore, control for all observable and unobservable time-invariant differences in *levels* across connected (treated) and non-connected (control) firms (such as the entrepreneurial ability for example). Moreover, by construction, we generate a "synthetic control" group of firms that have similar *trends* to the treated (connected) firms in the years prior to the crisis (pre-period).[5] In a nutshell, therefore, firm fixed effects absorb

[5]For example, in Figure 4, we show that there are no differential trends in income, sales, and expenses in the pre-period for the treated and the synthetic control units.

all time in-variant differences that influence firms' *selection* into acquiring political connections, while creating synthetic control units alleviates concerns about time-varying unobservables that could bias our results. In addition to this, a long panel of firms allows us to also control for district×year and industry×year fixed effects in our analysis. These control for all observable and unobservable time-varying changes across districts and industries that could impact firm outcomes, or be correlated with the demonetization shock (such as district- or industry-specific changes in prices and wages, supply and credit disruptions, etc).

While the richness of our data as well as the identification strategy increases our confidence in the causal interpretation of the results, we nevertheless undertake multiple additional analyses to further mitigate this concern. First, we find no correlation between the spatial location of connected firms (as compared to non-connected ones) and the severity of the shock that they were exposed to. Moreover, the responses of connected and non-connected firms also do not differentially vary by the severity of the demonetization shock. If "better" firm characteristics were the reason for the resilience to these shocks, we would have (for example) expected larger effects for firms in areas with more severe shocks. By contrast, if political connections were driving these results, the effects would be agnostic to the severity. Second, following the literature (Faccio, Masulis and McConnell, 2006; Deng, Wu and Xu, 2020), we show that recent, newer connections matter more than older ones. If firm or Director characteristics were driving our results (as opposed to the political connections themselves), the duration of connections should not matter–firms with older and newer connections would have been equally resilient to the shock. Lastly, we rule out that politically connected firms had prior knowledge of the demonetization episode by conducting a placebo exercise. In particular, we find no difference in the outcomes of connected and non-connected firms prior to the demonetization crisis, but these differences only appear (and are persistent) after demonetization.

Turning to the results, we find that in response to the macroeconomic crisis, politically connected firms (as compared to their non-connected counterparts) reported 8-11% higher income, sales, and expenses, which were persistent over the three years following demonetization. We also find that politically connected firms had around 5% higher TFPR as compared to non-connected ones.[6] A large literature discusses the source of these productivity gains (TFPR), predominantly along three dimensions: (i) gains in the quantity efficiency as measured by TFPQ (De Loecker, 2011; Katayama et al., 2009); (ii)

[6] A long panel of firms allows us to construct measures of TFP using standard methods from the literature. In particular, we first calculate Revenue Total Factor Productivity (TFPR) measures using the method proposed by Levinsohn and Petrin (2003).

price markups; (iii) change in firm capability as measured by product quality and scope (Atkin et al., 2019). While these channels are important, the key lies in being able to measure them using standard data (like ours).[7] Moreover, Atkin et al. (2019) argue that TFPR, as opposed to TFPQ, might anyway be a better proxy for measuring the broader firm capabilities, given these measurement challenges and the fact that TFPR captures firms' ability to produce both quality and quantity.

Nevertheless, we make progress on measuring the sources of these TFPR gains to the extent possible in our setting. In our sample, around a third of the firms report the quantity and value of sales for each of their products. Following Bau and Matray (2023) and with some caveats (described in Section 6.2), we calculate the TFPQ of a firm and find, at best, no differences in TFPQ between politically connected and non-connected firms after demonetization. We find instead that politically connected firms increased their product scope and produced more products after the crisis, as compared to non-connected firms. Put together, this indicates that connected firms were able to enhance their production capabilities after the crisis.

A key question that naturally arises from the above analysis is: what did connected firms do differently to be able to realize these gains? Most data is limited in being able to answer this question, but the richness of our data allows us to unpack the mechanisms driving these results. We find four main channels that are discussed below.[8]

First, politically connected firms (compared to their non-connected counterparts) increased their liabilities (by 5.5%) after demonetization, and in particular, increased short-term liabilities (expected to be repaid within a year) as opposed to longer-term ones (Panel A, Table 3). Furthermore, this increase in short-term liabilities was driven by delaying payments to suppliers and vendors within the next year (Panel B, Column 2), and larger "other current liabilities", a proxy for interest and debt payments to creditors due within the next year (Panel B, Column 4). These delays in payments to suppliers and creditors are of special note given the broader supply-side disruptions and payment delays that were extensively reported in the popular press at this time.

Second, turning to firm borrowings, politically connected firms reported lower borrowings as compared to their non-connected counterparts (by 5%), especially reducing their long-term borrowing in favor of more short-term ones (Panel A, Table 4). As reported

[7] For example, the measurement of TFPQ requires observing prices directly across all products within a firm and then adjusting it for the quality and specification of these products. Both of these are challenging in standard administrative data (like ours) and can lead to TFPQ being a poor proxy of a firm's capabilities.

[8] We provide detailed definitions of all variables used in our analysis in Appendix Section B.

in Panels B and C, this was mainly driven by a substantial reduction in long-term bank borrowings[9] and secured borrowings (i.e., loans requiring collateral, largely reflecting borrowings from formal institutions). As we discuss in Section 7.2, this was largely due to commercial banks charging higher interest rates on these long-term loans, thus increasing firms' borrowing costs. Connected firms increased unsecured borrowings instead i.e., borrowings that do not require collateral (Panel C), though the estimated coefficient is statistically insignificant at conventional levels.

How did these differential changes in borrowings and liabilities impact the portfolio of assets? We find that as compared to their non-connected counterparts, connected firms were able to expand both the size and composition of their asset portfolio after demonetization. In particular, connected firms (relative to non-connected ones) reported a 4.1% increase in total assets, with a comparable increase in both their short-term and long-term assets (Panel A, Table 5).[10] Despite the large macroeconomic shock, these connected firms were able to increase both their short and long-term investments as well as incur higher expenditure on intangible commodities (such as computer software, patents, marketing rights, etc.), which is consistent with the productivity gains we document earlier. On the other hand, we find no relative difference in changes to short-term inventories, bank balance, expenditure on fixed assets, or on plant, property, and machinery between connected and non-connected firms (Panels B and C, Table 5).

Put together, our results show that politically connected firms were able to perform relatively better than their non-connected counterparts after an economic crisis. We are able to uncover important channels through which they were able to do so. Specifically, connected firms could delay their short-term debt and interest payments owed to creditors, and get access to scarce short-term credit (potentially even without collateral requirements), which could then be used to make productive investments that helped these firms weather the shock and grow.

Our paper complements and extends rich literature that studies the impact of political connections on firm performance. While some studies (Faccio, Masulis and McConnell, 2006; Faccio, 2010; Niessen and Ruenzi, 2010; Bertrand, Kramarz, Schoar and Thesmar, 2018) show that politically connected firms underperform compared to non-connected firms and political connections are costly, others (Goldman, Rocholl and So,

[9]Our data does not allow us to examine borrowings from public and private sector banks separately.

[10]Short-term or current assets are those assets that can be easily converted to cash within 12 months, while long-term or non-current assets cannot be converted to cash within 12 months. They include capital work, fixed assets, etc. Please see Appendix B for detailed definitions of all variables.

2009; Boubakri, Cosset and Saffar, 2012; Amore and Bennedsen, 2013; Houston, Jiang, Lin and Ma, 2014; Brown and Huang, 2020) argue that firms benefit from political connections. Most of the literature has focused on channels through which firms might benefit from acquiring political connections, such as a higher likelihood of receiving credit loans (Khwaja and Mian, 2005; Charumilind, Kali and Wiwattanakantang, 2006; Claessens, Feijen and Laeven, 2008; Li, Meng, Wang and Zhou, 2008), getting corporate bailouts (Faccio, Masulis and McConnell, 2006), winning public contracts (Goldman, Rocholl and So, 2008), getting import licenses (Mobarak and Purbasari, 2006), and facing lower regulatory enforcement (Houston, Jiang, Lin and Ma, 2014). We extend this literature in a number of ways. First, unlike previous work that focuses on how political connection matters, we determine how firms leverage political connections to increase their resilience in the presence of a macroeconomic policy-driven economic crisis. In that sense, our paper is closest to Choi, Penciakova and Saffie (2021), who examine how connected firms in the US are able to access government relief funds during hurricanes. In colossal economic downturns triggered by crises such as the Global Financial Crisis of 2008 or the Covid-19 pandemic more recently, our results indicate that politically connected firms could have a disproportionate advantage and may even grow. Second, the richness of our data allows us to uncover various channels, such as the portfolio of short and long-term borrowings, assets, and liabilities, through which these connected firms perform better when faced with a crisis. Lastly, we innovate and capture political connections in a more comprehensive way by harnessing a newly developed sophisticated machine-learning method. Both the data on the political connections of Indian firms as well as the method for measuring political connections more precisely can be used in a wide array of applications and contexts beyond the one we study here.

Our paper also augments the literature on understanding the impact of demonetization on the Indian economy. Chodorow-Reich et al. (2020) and Lahiri (2020) provide an excellent overview of the episode and its aggregate impacts on the economy, while other studies examine its different facets in greater detail, such as households (Karmakar and Narayanan, 2020), agricultural markets (Aggarwal and Narayanan, 2021), consumer confidence (Mukhopadhyay, 2019), as well its political economy (Banerjee and Kala, 2017; Bhavnani and Copelovitch, 2018; Khanna and Mukherjee, 2020). Fewer studies have examined the impact of this policy on changing firm operations and those that do (Crouzet, Gupta and Mezzanotti, 2019; Gadenne, Nandi, Das and Warwick, 2022), have focused on the adoption of digital payments. To the best of our knowledge, this is the first study that shows the role of political connections in impacting firm outcomes after demonetization.

The rest of the paper is organized as follows. Section 2 provides a background of the empirical context, while Section 3 describes how we measure political connections. Section 4 describes the firm data in detail, while Section 5 describes our empirical strategy. Sections 6 and 7 present the empirical results on how political connections played a role during demonetization, and Section 8 conducts a number of robustness checks. Finally, Section 9 offers a short conclusion.

# 2 Demonetization in India

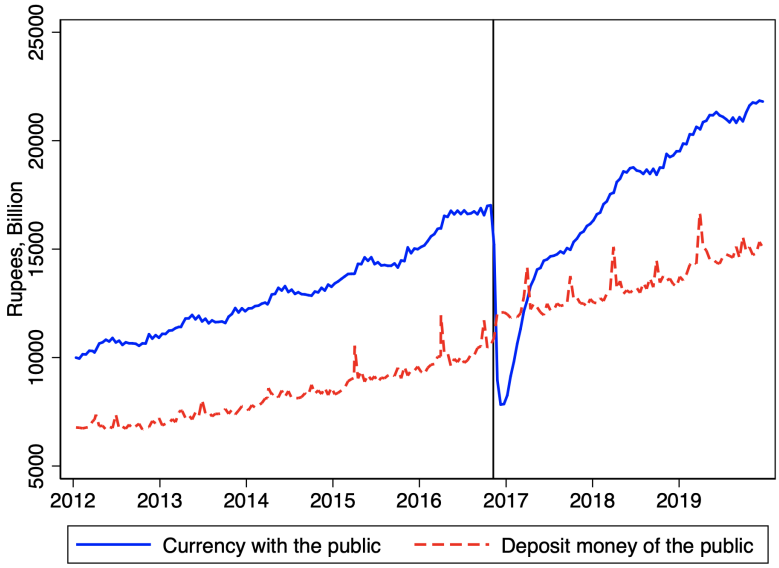
In a sudden and unexpected televised address to the nation on the evening of *November 8, 2016*, the Prime Minister of India announced that the two largest denomination notes– INR 500 ($7) and INR 1,000 ($15), would cease to be legal tender at midnight and would be replaced by new INR 500 and INR 2,000 rupee notes instead. These old notes, accounting for 86% of the pre-demonetization currency, could be deposited in banks before December 31, 2016, in exchange for new ones, but could not be used for any monetary transactions. The intended objective of this exercise, as emphasized by the Prime Minister, was to curtail corruption and eradicate black money and counterfeit currency notes from the economy. To maintain the secrecy of this policy, the Reserve Bank of India did not print and distribute a large quantity of these new notes, which unsurprisingly led to severe shortages and delays in replacing the old notes with new ones. This caused a lot of chaos and as shown in Figure 1, the total currency declined by 75% overnight and recovered very slowly after that over the course of the next year (Chodorow-Reich, Gopinath, Mishra and Narayanan, 2020; Lahiri, 2020).

The 2016 demonetization was the third such episode in recent Indian history. Similar actions were taken in 1946 and 1978 to achieve similar objectives. For example, in January 1946, INR 1000 and INR 10,000 notes were withdrawn; in January 1978, the government demonetized INR 1000, INR 5000, and INR 10,000 notes.[11] Yet, all three episodes were considered a failure as they did not help the government increase tax revenue or mitigate tax evasion. In fact, around 94% and 99% of the demonetized currency notes were returned to commercial banks in 1946 and 2016 respectively.

The demonetization episode of 2016 however had an adverse impact on a cash-dependent

[11] The government re-introduced INR 500, INR 1,000, and INR 10,000 in 1954.

Figure 1: Steep Fall in Cash




*Notes:* Data is from the Database on the Indian Economy published by the Reserve Bank of India. The units are in billions of Rupees and the frequency is fortnightly. The graph shows the time series of currency with the public (the blue solid line) and deposit money of the public (the red dashed line). Currency with the public is the currency in circulation less cash held by banks. Deposit money of the public is the sum of demand deposits with the banks and other deposits with the RBI. The black solid line is November 8, 2016.

Indian economy.[12] Estimates suggest a 3-4 pp decline in output and employment and a 2 pp decline in growth in the quarter of demonetization. Moreover, despite a large increase in bank deposits, bank lending remained constrained and while the currency in circulation recovered over the next year, economic recovery was slow even a couple of years after (Chodorow-Reich et al., 2020; Karmakar and Narayanan, 2020; Lahiri, 2020). This episode was a sharp, unexpected change in the economic conditions, resulting in a significant economic downturn and a severe cash crisis.

# 3 Innovation in Measuring Political Connections

## 3.1 Political Connections Measurements in Existing Literature

Previous literature has used a variety of ways to define political connections. In Appendix A, we list the various ways that political connections have been measured in the literature (Table A1). In highly cited studies, connections with some principal politicians

[12]Currency outside banks as a share of GDP was 12.5% in 2015 for India, as compared to 7.4% in the U.S. and 9.3% in China (Rogoff, 2016).

have been leveraged. For example, Fisman (2001) identifies connections based on the Suharto Dependency Index, developed by the Castle Group, a leading economic consultant in Indonesia. The index ranges from one (least dependent) to five (most dependent). Companies affiliated with Suharto's children or allies have a high index. Likewise, Mobarak and Purbasari (2006) use connections to President Suharto. Khwaja and Mian (2005) consider a firm politically connected if its directors contest elections. A number of papers (Agrawal and Knoeber, 2001; Boubakri, Cosset and Saffar, 2012; Amore and Bennedsen, 2013; Bertrand, Kramarz, Schoar and Thesmar, 2018) use politician CEOs and/or directors as the definition of political connection. Some papers (Claessens, Feijen and Laeven, 2008; Brown and Huang, 2020; Choi, Penciakova and Saffie, 2021) use campaign contributions for measurement.

Faccio et al. (2006) advances the measurement of political connections significantly. Politically connected firms include firms where a major shareholder (controlling at least 10 percent of voting shares) or top officer (CEO, president, vice president, chairman, or secretary) is a politician, a former head of a state, foreign politician, member of a political party or a friend of a politician. It relies on many studies (Agrawal and Knoeber, 2001; Backman, 2001; Gomez and Jomo, 1999; Johnson and Mitton, 2003; Fisman, 2001) to identify the political connections. All of these studies have a variety of different methods for classifying political connections and there is no harmonization.

## 3.2 Our Measure and Its Innovation

We now discuss how we create our measure of firms' political connections. This measure taps into various datasets and uses sophisticated machine-learning algorithms to link them together. Morover, while we consider the Indian setting for this paper, the technique we demonstrate can be used more generally for other settings as well, with details on the data organization and the algorithm discussed in Sen et al. (2018).

### Measuring Political Connections

We now elaborate on the procedure to measure firms' political connections. First, we collate a comprehensive dataset of: (i) around 20,000 politicians who have held political

office and/or contested in national and state elections from 2004 onwards[13]; (ii) universe of more than 11,000 retired and current bureaucrats in the Indian Administrative Services across all State and Central Government departments and ministries from 1961 onwards.

Second, we collect information on the universe of around 65,000 Directors on the Board of publicly listed companies on the National Stock Exchange (NSE) and Bombay Stock Exchange (BSE) from 1980 onwards. Since these Directors could be members of multiple Boards, we complement it with information on all subsidiaries of these firms, and the universe of firms registered with the Ministry of Corporate Affairs from 1980 onwards.

Third, we then train ML algorithms to identify relatives, friends, and social contacts of these individuals from over 5 million news articles (crawled daily) from seven leading media outlets in India: *The Hindu, The Times of India, Indian Express, The New Indian Express, Telegraph, Deccan Herald,* and *Hindustan Times* between 2011 and 2016. We augment this by crawling Wikipedia pages as well as curating interviews, announcements, and appearances at personal and professional events. An entity resolution algorithm (Sen et al., 2018) is then used to merge information on connections from different sources.

Lastly, we determine if any politician, bureaucrat, or their kin and *social network* served as a Director for any of the firms described above, using a network graph (for up to 3 nodes) of kinship, interactions, and friendships between various entities (bureaucrats, politicians, their kin, and social network).

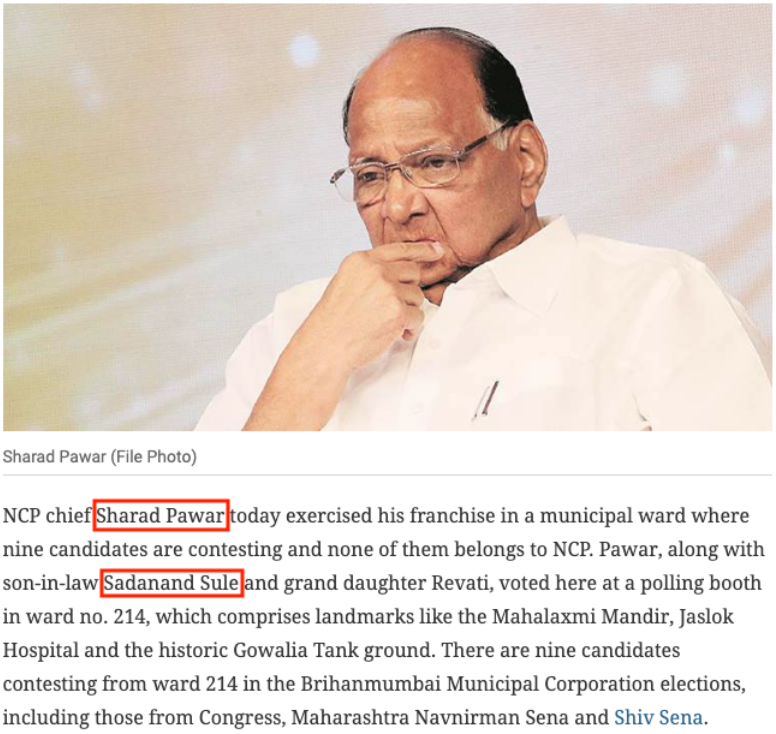
**Definition of a Politically Connected Firm**

For the purpose of this paper, we define a firm as politically connected *before 2016* if: (i) one or more of its Directors is either a politician or bureaucrat; (ii) kin or close relative of a politician or bureaucrat; (iii) connected through friendships and social interactions as reported in the media.

Our measure, therefore, improves on the precision of measuring political connections, as compared to other commonly used measures in the literature (such as proximity by social groups, regions, identity, etc.) as discussed previously (and reported in Table A1), by combining machine learning techniques to measure friendships, meetings, and social

[13]A ruling by the Supreme Court in November 2003 around citizens' Right to Information mandated all candidates contesting for public office to disclose information on assets and criminal records. We used these records and also leveraged information on www.indiavote.com www.persmin.gov.in

appearances reported in the media, which are usually difficult to measure and quantify. Moreover, this method could be applied to any country or setting more generally.



Sharad Pawar (File Photo)

NCP chief Sharad Pawar today exercised his franchise in a municipal ward where nine candidates are contesting and none of them belongs to NCP. Pawar, along with son-in-law Sadanand Sule and grand daughter Revati, voted here at a polling booth in ward no. 214, which comprises landmarks like the Mahalaxmi Mandir, Jaslok Hospital and the historic Gowalia Tank ground. There are nine candidates contesting from ward 214 in the Brihanmumbai Municipal Corporation elections, including those from Congress, Maharashtra Navnirman Sena and Shiv Sena.

Figure 2: The Indian Express: Mr. Sharad Pawar & Mr. Sadanand Sule

**Example of a Politically Connected Firm**

We provide an example to highlight the intuition behind this method. From a news article published by the *Indian Express* (a large national daily) in 2017 (Figure 2), we establish that Mr. Sadanand Sule is the son-in-law of prominent politician Mr. Sharad Pawar. We also locate Mr. Sule from the Master Data of Directors maintained by the Ministry of Corporate Affairs and hence obtain the list of companies where Mr. Sule currently serves (or has ever served) as a Director. Figure 3 displays this information. As shown, we know both a company's name and its unique Corporate Identification Number (CIN). These firms are then tagged as "politically connected" and the CIN is used to match them to the data on firms' outcomes described in Section 4 below.

# 4 Data

**View Director Master Data**

DIN 00622248
Name SADANAND BHALCHANDRA SULE

List of Companies

| CIN/FCRN | Company Name | Begin Date | End Date | ACTIVE compliance |
|---|---|---|---|---|
| U45200MH2005PTC150876 | LAGUNA DEVELOPERS PRIVATE LIMITED | 09/01/2008 | - | ACTIVE compliant |
| U51100MH1997PTC105353 | MIRACLE AGRO PRODUCTS PRIVATE LIMITED | 15/09/2014 | - | ACTIVE compliant |
| U63030MH2012PTC235832 | COLDMAN LOGISTICS PRIVATE LIMITED | 17/09/2012 | - | ACTIVE compliant |
| U63030PN2011PTC138569 | AARVEE COLD CHAIN LOGISTICS PRIVATE LIMITED | 30/09/2014 | - | ACTIVE compliant |
| U63043MH1999PTC120794 | TRAVEL MASTERS (MUMBAI) PRIVATE LIMITED | 14/07/1999 | - | ACTIVE compliant |
| U63090MH2010PTC208719 | TM HOLIDAYS PRIVATE LIMITED | 07/10/2010 | - | |
| U65944MH1991PTC064565 | NISHANT FINANCE AND TRADING P LTD | 07/09/2007 | - | ACTIVE compliant |
| U65990MH1994PTC077431 | RADIANT TRADEVEST PRIVATE LIMITED | 22/10/1996 | - | ACTIVE compliant |
| U70100MH2003PTC139307 | VRS DEVELOPERS PRIVATE LIMITED | 21/02/2003 | - | ACTIVE compliant |
| U70102MH2007PTC171204 | AARVEE REALTORS PRIVATE LIMITED | 29/05/2007 | - | ACTIVE compliant |

Figure 3: List of Firms where Mr. Sadanand Sule is a Director

## 4.1 Data on Firm Outcomes

Data on firm outcomes is obtained from the Prowess Data of the Centre for Monitoring of the Indian Economy (CMIE). Prowess is a database of over 40,000 firms that includes all firms traded on the National Stock Exchange (NSE) and the Bombay Stock Exchange (BSE), and thousands of unlisted Public and Private Limited Companies. Data on these firms is collated and harmonized from Annual Reports, Quarterly Financial Statements, Stock Exchange feeds, and other publicly available sources. While the Prowess covers large registered firms in India's formal sector, it provides granular data on a large set of economic and financial outcomes of a firm. For example, the data provides information not only on output, income, capital, and labor but also on the portfolio of assets, liabilities, and borrowings. The data is a panel of firms going back to 1989 (though the coverage has improved significantly over time). Of particular relevance for this study is that the Prowess contains information on the CIN of a firm (that is unique to a firm) and information on the Board of Directors that includes their names and Director Identification Number (DIN). Both the CIN and DIN are provided by the Ministry of Corporate Affairs and are unique to a firm and Director. Using these, we can then match the Prowess firms with the data on their political connections.

Lastly, while the Annual Survey of Industries (ASI) and the Prowess data are the most commonly used data on firms in India, we prefer using the Prowess primarily because

the ASI does not provide information on the Board of Directors of a firm, making it impossible to measure its political connections. Moreover, unlike the Prowess, the ASI has limited information on firm assets and liabilities, which are particularly useful in our context to study the mechanisms underlying how politically connected firms systematically differ in their responses as compared to non-connected ones. Lastly, like the ASI, the Prowess is limited in its coverage since it collects data only on formal sector firms.

### 4.2 Sample Characteristics

Our final sample consists of 31,492 firms that we observe from 2012-2019.[14] For each firm in our sample, we define a time-invariant dummy variable that takes the value 1 if the firm is politically connected before 2016 (based on the details in Section 3) and 0 otherwise. 867 firms in our sample (2.75%) are politically connected. This is similar in magnitude to Faccio et al. (2006) and Faccio (2010), who use a similar definition and find that on average 2.8% of firms in their sample spanning 47 countries, and 3.1% in India are politically connected. Financial services (17.5%), electricity, gas, steam, and air conditioning supply (9.11%), wholesale trade (8.4%), warehousing and transportation (4.7%), and chemicals and chemical products (4.7%) are the five industries with the largest share of politically connected firms (44.5%) (Appendix Table C2). Table 1 summarizes basic characteristics and differences between politically connected and non-connected firms between 2012-2015 i.e., before demonetization. Section B in the Appendix provides detailed definitions for all the variables used in the analysis. As is clear from the table, connected firms are larger than non-connected firms in terms of their size (employees and capital stock), assets and liabilities, income, sales, and expenses. These patterns are again very consistent with Faccio (2010), which studies the differences in politically connected and non-connected firms across 47 countries.

## 5 Empirical Strategy

We define a firm as 'politically connected' based on *politically connected social network of directors* prior to 2016, the year in which demonetization occurred. As is clear from

[14] While our results are robust to including previous years (2010 onwards) as well, the impact of the global financial crisis in 2008, large industrial policy reforms implemented in India in 2005-2006, and their aftermath could systematically differ based on political connections of a firm, affecting our interpretation of the pre-period. We, therefore, restrict our panel from 2012 onwards. We end our panel in 2019 to avoid contaminating the post-period with the impact of Covid-19 in India starting March 2020.

the previous section, political connections are not randomly allocated across firms (i.e., politically connected firms systematically differ from their non-connected counterparts). For example, even in the pre-period (before 2016), connected firms are larger and more productive than non-connected ones. One may thus be concerned about separately identifying the role of political connections from the role of unobserved firm characteristics in understanding how they respond to a macroeconomic shock. Our identification strategy mitigates these concerns.

All our empirical specifications include a firm fixed effect that controls for all observable and unobservable time-invariant *level* differences across connected and non-connected firms (such as entrepreneurial ability for example). However, time-varying differences (such as pre-period trends) are not captured. We therefore employ a new methodology developed by Arkhangelsky, Athey, Hirshberg, Imbens and Wager (2021)–the Synthetic Difference-in-Differences method (or SDID). This method relies on constructing a synthetic control unit with has similar pre-period *trends*. This counterfactual, by construction, rules out differential secular *trends* between treated and (synthetic) control units in the pre-period for various firm outcomes (like income, sales, and other firm characteristics). Given that we can eliminate pre-trends on observables, causal identification rests on the assumption that treated and synthetic control firms also have similar pre-trends on unobservable characteristics. We describe the method briefly below.

Synthetic Difference-in-Differences method (Arkhangelsky, Athey, Hirshberg, Imbens and Wager, 2021) is a new causal inference estimator that combines attractive features of both the Difference-in-Differences (DID) and the Synthetic Control (SC) methods (Abadie, Diamond and Hainmueller, 2010). To elaborate, DID relies on a "parallel trends" assumption between the treated and non-treated units, which implies that additive unit-specific and time-specific fixed effects control for selection. In contrast, SC methods (usually applied when a small number of units are treated) re-weight units to match pre-exposure trends between the treated and control units. Combining the insights from the two methods, SDID: (i) re-weights and matches pre-exposure trends on the outcome variables; and (ii) allows for additive unit and time-specific selection into the treatment, thus allowing for valid large-panel inference which is similar to DID (Arkhangelsky et al., 2021). Therefore, in our setting, it allows us to mitigate concerns that the *selection* of firms who acquire political connections (like those with higher entrepreneurial ability, better resilience, etc.) rather than the political connections themselves can explain how they respond to a macroeconomic shock.

We use the unit weights and time weights derived from SDID to re-weight our panel data

in the regressions.[15] For a firm $i$ (in industry $j$ and district $d$) in year $t$, we then estimate the following regression specifications:

$$Y_{it} = \alpha_i + \alpha_{dt} + \alpha_{jt} + \sum_{t=2012}^{2019} \beta_t \ Connected_i \times 1(Year = t) + \gamma X_{it} + \varepsilon_{it} \quad (1)$$

$$Y_{it} = \alpha_i + \alpha_{dt} + \alpha_{jt} + \beta \ Connected_i \times Post_t + \gamma X_{it} + \varepsilon_{it} \quad (2)$$

where $Y_{it}$ are a set of outcome variables of a firm $i$ in year $t$ (such as sales, income, expenditure, etc.). Connected$_i$ is a time-invariant definition that takes the value 1 if a firm was ever politically connected in the pre-period, and 0 otherwise. Equation (1) is a standard event-study design where $1(Year = t)$ takes the value 1 in year $t$ and 0 otherwise. We take 2015 (the year before demonetization) as the base year. In Equation (2), we pool the pre and post-policy years together and define a variable Post$_t$ that takes the value 1 for the years 2016-2019 and 0 otherwise. $\alpha_i$ are firm fixed effects that control for all observed and unobserved time-invariant characteristics of a firm, including those that allow them to become politically connected in the first place. $\alpha_{dt}$ and $\alpha_{jt}$ are district×year and industry×year fixed effects. These control for all characteristics of districts and industries over time that could influence the outcomes of a firm and be correlated with the demonetization shock, such as aggregate changes at the district level (price and wage changes) as well as industry-specific impacts of the shock over time.[16] Lastly, we cluster standard errors at the district level for statistical inference. In Table G1, we show that our inference does not change when we cluster standard errors at the firm level instead.

# 6 Results

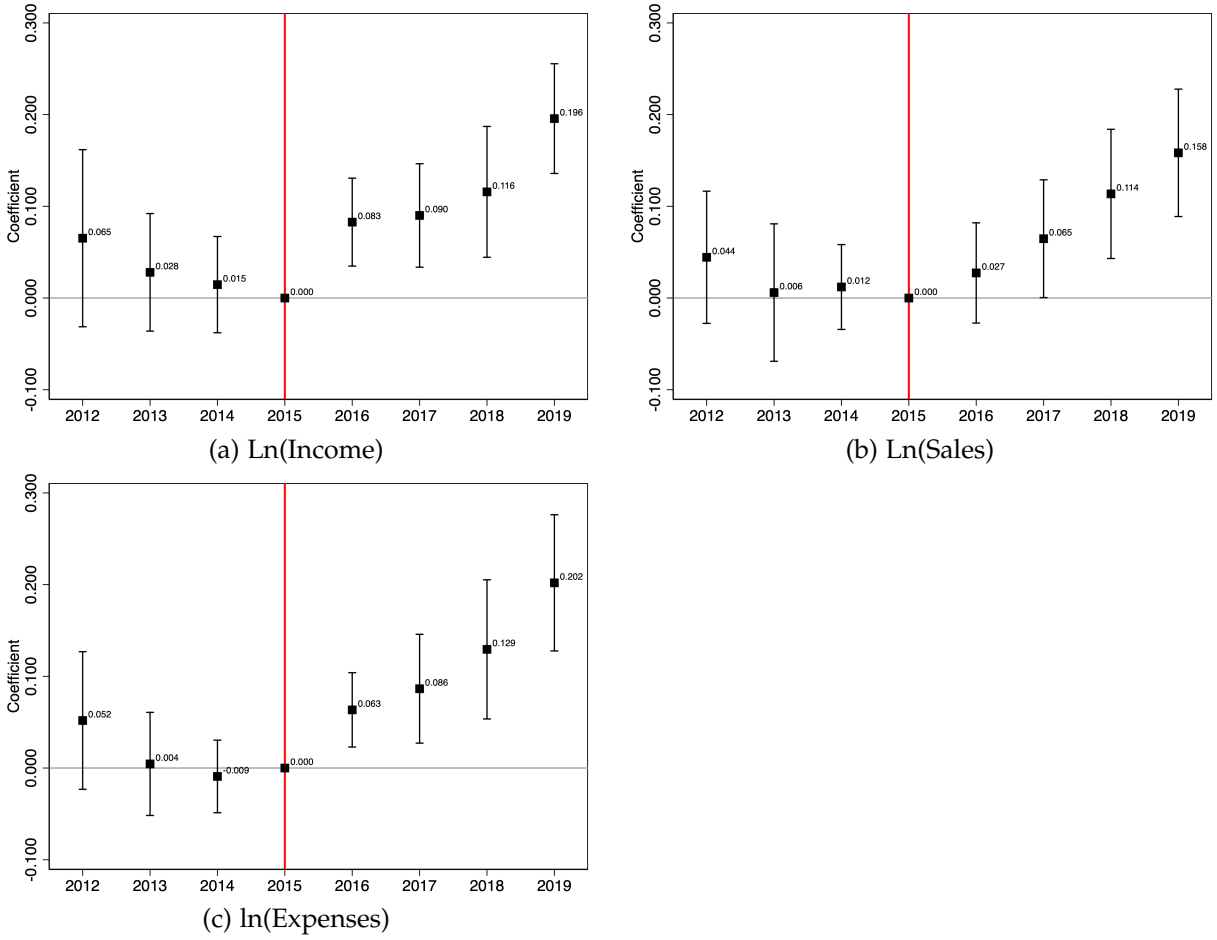
## 6.1 Impact on Firm Income, Sales, and Expenses

We begin by examining the impact of demonetization on the income, sales, and expenses of firms. Appendix Section B provides definitions of all the firm variables that are used

[15] For calculating the weights, we use an R package developed by Arkhangelsky et al. (2021), and match firms on the outcome variables while controlling for their age, whether the firm is listed on the stock market or not, log of value of total transactions on BSE or NSE, and log of value-add tax. SDID requires strongly balanced data. We therefore assign a small weight to observations that are not used in SDID, but show that the results are robust to relaxing this requirement later in the paper.

[16] India introduced the Goods and Services Tax (GST) in 2017, which varied across products and industries. Therefore, in addition to controlling for industry×year fixed effects, we also control for the amount of GST tax paid by a firm as well.

Figure 4: Event Study: Impact on Income, Sales, and Expenses of Firms




(a) Ln(Income)

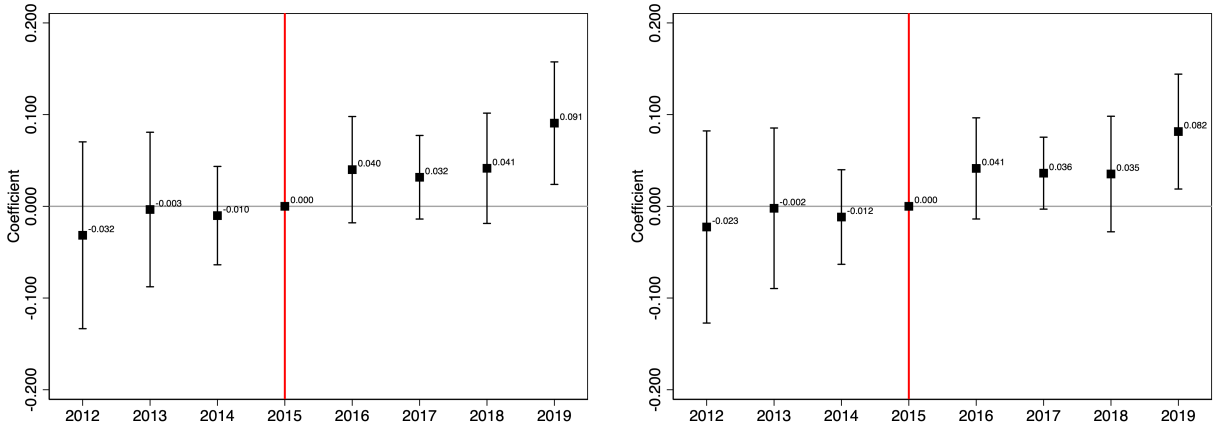
(b) Ln(Sales)

(c) ln(Expenses)

*Notes:* The above graphs plot the regression coefficients from Equation (1) and estimate the relative difference between connected and non-connected firms for a set of outcome variables. 2015, the year before demonetization, is taken to be the base year. Figures (a)-(c) use Log Income, Sales, and Expenses as outcome variables. Section B in the Appendix provides detailed descriptions of all outcome variables. All regressions include firm, district-year, and industry-year fixed effects, as well as control for the log of Goods and Service Tax payments. Each observation is weighted using weights calculated in the SDID. Standard errors are clustered at the district level. Confidence intervals are at the 95 percent level.

in our analysis. We report the estimated coefficients $\hat{\beta}_t$ from the event-study specification (Equation 1) in Figure 4. By construction, there is no difference in income, sales, and expenses between politically connected firms and their (synthetic) non-connected counterparts before demonetization. Both the estimated coefficients are small, and they are statistically insignificant at conventional levels. However, we see a substantial difference between the two groups after demonetization, which is both increasing and persistent over the three years that follow. Politically connected firms report 8-20 log-points (8.7-21.7%) higher income, 3-15 log-points (2.7-16.9%) higher sales, and 6-20 log-points (6.5-22.4%) higher expenses compared to their non-connected counterparts. Table 2 then reports these effects in a standard difference-in-differences specification (Equation 2). From Columns 1-3, politically connected firms have around 8.7-11.9 log-points

Figure 5: Event Study: Impact on TFPR of Firms




(a) Ln(TFPR1) (b) Ln(TFPR2)

*Notes:* The above graphs plot the regression coefficients from Equation (1) and estimate the relative difference between connected and non-connected firms for a set of outcome variables. 2015, the year before demonetization, is taken to be the base year. Figures (a) and (b) use TFPR estimated by the method of Levinsohn and Petrin (2003). In figure 5(a), the free variables are compensation to employees and raw material expenses, and the proxy variable is power, fuel, and water charges; in figure 5(b), the free variable is compensation to employees and the proxy variable is the consumption of raw material and power, fuel, and water. In Figure 5(b), the 2016 coefficient is statistically significant at a 10% level. Section B in the Appendix provides detailed descriptions of all outcome variables. All regressions include firm, district-year, and industry-year fixed effects, as well as control for the log of Goods and Service Tax payments. Each observation is weighted using weights calculated in the SDID. Standard errors are clustered at the district level. Confidence intervals are at the 95 percent level.

(9.1-12.6%) higher income, sales, and expenses relative to the non-connected firms.

Given the difference-in-differences specification, our estimates capture the changes reported by politically connected firms *relative* to non-connected ones. Therefore, it is unclear just from these estimates whether firm outcomes (sales, for example) recovered quickly after the crisis, or actually grew when compared to the pre-crisis period. This is particularly important when we (in subsequent sections) examine changes firms' assets and investments, and the resulting changes in productivity and TFP. In Appendix Figures F1 and F2, we report the trends in sales for connected and non-connected firms respectively. These figures show two patterns: first, connected firms were more resilient to the crisis i.e., the decline in sales was lower for connected firms as compared to non-connected ones; and second, both connected and non-connected firms experienced a growth in sales after the crisis, but growth was much faster for connected firms.

## 6.2 Impact on Firm Productivity

We now turn to examine whether the demonetization shock differentially affected firm productivity. A long panel of firms in our data allows us to construct a commonly used measure of productivity in the literature, namely: Revenue Total Factor Productivity or

TFPR. Specifically, we construct two measures of TFPR for a firm using the method proposed by Levinsohn and Petrin (2003).[17] For the first measure (denoted by TFPR1), we use the wage bill and raw material expenses as free variables with expenditure on power, fuel, and water as a proxy variable. For the second measure (denoted by TFPR2), we use the wage bill as a free variable and the consumption of raw material expenses and expenditure on power, fuel, and water as a proxy variable instead. As reported in Table 1, politically connected firms have around 11-20 log-points (11.7%-22.7%) *higher* TFPR as compared to non-connected ones in the pre-period. Similar to the event study results discussed previously, we see that after demonetization, connected firms exhibit a 3-9% higher increase in their TFPR as compared to non-connected ones (Figure 5). Consequently, as reported in Columns 4 and 5 of Table 2, this translates into connected firms having an average of 5.2%-5.4% higher TFPR relative to their non-connected counterparts after demonetization. While the magnitude of these coefficients is non-trivial, Figure 5 suggests a potential lag in firms' ability to improve their capabilities.

A large literature discusses the source of these productivity gains (TFPR), predominantly along three dimensions: (i) gains in the quantity efficiency as measured by TFPQ (De Loecker, 2011; Katayama et al., 2009); (ii) price markups; (iii) change in firm capability as measured by product quality and scope. Using tailored primary surveys of firms, Atkin, Khandelwal and Osman (2019) show that TFPR is actually a better proxy for measuring the broader capabilities of firms as opposed to TFPQ. This is because the measurement of TFPQ requires observing prices directly across all products within a firm and then adjusting it for the quality and specification of these products. Both of these are challenging in standard administrative data (like ours) and can lead to TFPQ being a poor proxy of a firm's capabilities. Moreover, if firms' capabilities come from their ability to produce both quality and quantity, TFPR may indeed be the primary object of interest.

Nevertheless, we try to make progress on measuring the sources of these TFPR gains to the extent possible in our setting. First, we do not observe prices directly for each product across all firms in our sample. However, we do observe the quantity and value of sales for each product for around a third of the firms in our sample, mostly operating in the agriculture and manufacturing sectors. While on the one hand, it allows us to examine TFPQ changes for these firms, it presents additional challenges in measurement and

[17]The Levinsohn-Petrin approach uses expenditure on intermediate inputs of firms as a proxy for the free variables. In general, we use income, fixed assets, compensation to employees, raw material expenses, and expenditure on power, fuel, and water for the estimation of the production function, along with a package developed by Rovigatti and Mollisi (2018) that allows us to incorporate systematic firm attrition as well. It should be noted, however, that the Prowess is not well suited for understanding firm entry and exit because it is not mandatory for firms to report their status to the data collecting agency.

inference (in line with the previous discussion). We discuss these in detail in Appendix D and follow Bau and Matray (2023) who use the same data, to construct TFPQ measures. We find no differential improvement in TFPQ for politically connected firms relative to their non-connected counterparts after demonetization (Table D1).

Turning to the other sources of TFPR changes, Kisat and Phan (2020) document that adjustment in markups was an important channel in explaining firm responses to the shock after demonetization, though given the data limitations, we are unable to examine differentially for connected and non-connected firms. In line with Atkin et al. (2019) however, we find that politically connected firms (as compared to non-connected ones) expand their product scope after the shock (Column 5 of Table D1).[18]

Put together, the above analysis suggests that politically connected firms, as compared to their non-connected counterparts, may have enhanced their capabilities after demonetization, as measured by a higher TFPR and wider scope of products, with no discernible difference in TFPQ.

# 7 How Do Political Connections Matter?

With detailed data on the portfolio of assets and liabilities, we now turn our attention to examining the mechanisms through which politically connected firms perform better as compared to their non-connected counterparts. We define all variables in detail in Appendix Section B. Section 7.1 discusses firm liabilities. Section 7.2 discusses firm borrowings, an important type of firm liabilities, including those from banks. Section 7.3 then discusses how the changes in liabilities and borrowings impact the asset portfolio of a firm, while Section 7.4 offers a short discussion to synthesize these results.

## 7.1 Firm Liabilities

We begin by examining how politically connected firms differentially altered their liabilities as compared to their non-connected counterparts after demonetization. From Panel

[18] Goldberg, Khandelwal, Pavcnik and Topalova (2010) show that multi-product firms for example, tend to have a higher TFP compared to single-product firms.

A in Table 3, politically connected firms (as compared to their non-connected counterparts) report a 5.5 log-points increase in their total liabilities (Column 1). We then examine whether these liabilities are driven by changes in short-term (Current) or long-term (Non-Current) liabilities. Current liabilities represent all liabilities or debts that a firm owes its suppliers, vendors, banks, etc., and must be paid within a year, while non-current liabilities are longer-term liabilities that are not expected to be settled within a year. From Columns 2-4, we find that the increase in total liabilities is driven by an 8.2 log-points increase in the current liabilities of a firm. Current liabilities as a fraction of the total liabilities also increase by 1.5 pp or 3.8% (Column 4). On the other hand, there is no differential change in non-current (or longer-term) liabilities.

In Panel B, we then examine various components of current liabilities in greater detail, namely: short-term borrowings, payables, advances, and other liabilities. Short-term borrowings are liabilities a firm is expected to pay within a year. Short-term payables are liabilities that a firm owes its suppliers, creditors, and lenders for purchases of goods and services that are expected to mature within a year. Short-term advances are deposits and advances taken from customers and employees. From Panel B of Table 3, politically connected firms report a 6.7 log-points (6.9%) increase in short-term payables (Column 2) as compared to non-connected ones. The changes in short-term borrowings (Column 1) and advances (Column 3) are smaller in magnitude (3-4%), but not statistically significant at conventional levels. Lastly, connected firms report 11.8 log-points (12.5%) higher than other current liabilities (such as maturities, debt, interest accrued, etc.) than their non-connected counterparts (Column 4). Put together, connected firms are able to increase their short-term liabilities, particularly what they owe their creditors and suppliers, as well as delay immediate debt and interest payments.

## 7.2 Firm Borrowings

We now turn to examine the change in the amount and composition of the borrowings, one of the most important components of liabilities, of politically connected firms (as compared to non-connected ones). In particular, we consider three types of borrowings: (i) short-term and long-term borrowings; (ii) secured and unsecured borrowings; (iii) borrowings from banks.

**Short-term and Long-term Borrowings:** In Panel A of Table 4, we find that the total borrowings of connected firms are 4.9 log-points (5%) lower as compared to their non-

connected counterparts (Column 1). However, there is a distinct shift in the nature of their borrowings– connected firms decrease long-term borrowings (expected to be repaid beyond a year) for a potential increase in short-term borrowing (expected to be paid within a year). In particular, long-term borrowings decrease by 14.1 log-points (15.1%, Column 3), while short-term ones increase by 6.3 log-points (6/5%, Column 2), though (like previously) this is not statistically significant at conventional levels. However, the share of short-term borrowings increases by 2.8 pp or 5% (Column 4).

In order to shed light on the relevance of these results, we explore the portfolio of borrowing, especially from banks.

**Firm Borrowings from Banks:** Bank borrowings of firms are of specific interest given the nature of the demonetization episode, which severely affected the cash holdings and lending capacity of banks. Figure E1(a) in the Appendix uses quarterly data from the Reserve Bank of India to plot the total value of loans issued by all scheduled commercial banks of India. As is clear from the figure, bank loans were not severely impacted after demonetization.[19] However, from Figure E1(b), the composition of these loans changed– banks were more likely to issue long-term loans as opposed to short-term ones i.e., there was a small decline in the value of short-term loans as a fraction of total loans.[20] From Figure E2 however, these long-term loans were also issued at higher interest rates, thus increasing the long-term cost of firm borrowing.

With this context, Table 4 examines the borrowings of politically connected firms from banks, as compared to non-connected ones. In line with the higher (long-term) cost of borrowing, we see an 8.7 log-points (9.1%) decline in total bank borrowings (Column 1), which is driven largely by a 9 log-point (9.4%) decrease in long-term bank borrowings (Column 3). Therefore, short-term bank borrowings as a share of total bank borrowings increased by 2.5 pp (4%) for connected (relative to non-connected) firms (Column 4).

**Secured and Unsecured Borrowings:** Another important dimension of firm borrowings, especially through formal channels (such as banks) is whether they are secured or unsecured borrowings. The primary difference between them is that secured borrowings

[19]This is consistent with Lahiri (2020), who documents no sharp changes in bank lending after demonetization, despite the substantial increase in bank deposits during this period.

[20]Refer to Section E for information on the source of the data and the methodology used to calculate the share of short-term loans over total loans.

are made on the security of an asset whose market value is no less than the borrowing amount (collateral for example). On the other hand, unsecured borrowings require no such collateral, but usually also attract higher interest rates. As reported in Panel C of Table 4, connected firms (as compared to their non-connected counterparts) shifted their portfolio away from secured borrowings (Column 2) and towards unsecured borrowings (Column 3). Connected firms (as compared to non-connected ones) decreased their secured borrowing by 8.5 log-points (8.8%) and increased unsecured borrowings by 4.7 log-points (4.8%). The latter, though large in magnitude, is not statistically significant at conventional levels.

Put together, the results so far indicate that connected firms were more likely (than their non-connected counterparts) to be able to reduce expensive, long-term borrowings, secure short-term (potentially non-collateral) loans, and delay payments to their creditors and suppliers as well as debt and interest payments.

### 7.3 Firm Assets

Given the changes in connected firms' liabilities and borrowings, we now turn to examine how they systematically altered their asset portfolio.

In Panel A of Table 5, we see that connected firms have 4 log-points (4.1%) more assets as compared to non-connected firms after demonetization (Column 1), with a 5 log-points (5.1%) and 6.4 log-points (6.6%) increase in their short-term (current) and long-term (non-current) assets respectively (Columns 2 and 3).[21] As noted in Column 4, the share of current (and hence non-current) assets as a fraction of total assets does not change.

In Panel B of Table 5, we then examine the different components of current assets, namely current (short-term) investments, inventories, bank balance, and other assets. Short-term investments of a firm are those that are expected to mature within a year. Current inventories are materials held to be consumed in the production process or for sale, while bank balances capture the deposits that a firm has in a bank. Other current assets include all other short-term assets held by a firm such as trade and bill receivables, assets

[21]Current assets are defined as those assets that can be easily converted into cash within 12 months (for example, cash balances, short-term investments, and inventory, etc.). Non-current assets on the other hand include more long-term fixed assets and investments that cannot be liquidated within a year (for example, intangible and fixed assets, property, plant, and PPE equipment, etc.). See Appendix B for the definitions of these variables.

held for sale and short-term transfer, etc. We find that connected firms report a 5.3 log-points (5.4%) increase in short-term (current) investments (Column 1) as well as a 7.7 log-points (8%) increase in other current assets relative to their non-connected counterparts after demonetization. There is no differential change in short-term inventories and bank balances between these groups of firms (Columns 2 and 3).

In Panel C of Table 5, we then examine the components of non-current (long-term) assets. From Columns 1 and 2, we find that connected firms report 9.3 log-points (9.7%) higher non-current investments (i.e., long-term investments) and 5 log-points (5.1%) higher expenditure on intangible goods (such as software, rights, etc.) as compared to their non-connected counterparts after demonetization. From Columns 3 and 4, we do not find any statistically significant difference in fixed assets (such as buildings, land, etc.) as well as expenditure on property, plant, and equipment.

## 7.4 Discussion

The above analysis is helpful in uncovering key channels through which politically connected firms were able to increase their income, sales, expenses, and TFP relative to non-connected firms after demonetization, despite the fact that the demonetization resulted in a transitory economic downturn. First, politically connected firms were able to delay the payment of their short-term liabilities, and in particular, payments made to creditors and suppliers as well as short-term interest and debt payments. Second, politically connected firms cut down on more costly long-term borrowings and shifted the composition of their borrowings towards more short-term, unsecured bank borrowings. Lastly, there was a clear increase in the total assets held by politically connected firms (relative to non-connected ones). This increase was reported both for short and long-term investments of these firms, as well as investments in acquiring intangible assets (such as computer software, patents, marketing rights, etc.). Hence, our analysis sheds light on multiple channels through which connected firms were able to react to a macroeconomic shock by adjusting the composition of their assets, liabilities, and borrowings. Of special note is how these firms were able to get access to credit within the banking system during a time when the economy was depleted of 86% of its cash.

# 8 Robustness of Results

We now examine the robustness of our results and report the results in Appendix G.

## 8.1 Full Sample Estimates

First, we use a consistent sample of firms across outcome variables in our regressions. However, there is some variation in the availability of outcome variables across firms i.e., some outcome variables are reported for some firms, but not others. We, therefore, redo our analysis (estimating Equation 2) using all firms for which an outcome variable is reported. As reported in Tables G2-G5, our results are qualitatively and quantitatively similar to the ones reported in Tables 2-5.

## 8.2 Did Connected Firms Anticipate Demonetization?

It is theoretically possible that politically connected firms had prior knowledge about the government's plans to demonetize the currency. However, all anecdotal evidence as well as articles in the media point to the contrary and strongly suggest demonetization plan was kept very confidential.[22] Nevertheless, in order to rule this possibility out, in Appendix Section G.3, we conduct a placebo analysis in the pre-period (2012-2015), where we move the 'treatment year' back in time. If firms had prior knowledge, we would detect effects in the years leading up to the policy change. To do this, we first define the treatment year to be 2013 so that the Post dummy takes a value of 1 for all years after 2013. Similarly in a second regression, we define the treatment year (and corresponding Post dummy) in 2014. As reported in Panel A (for 2013) and B (for 2014) of Table G6, we see no differential effects between politically connected and unconnected firms in prior years. Both the estimated magnitudes are small and they are statistically insignificant at conventional levels.

[22] As reported in a Right To Information (RTI) reply: *"The demonetization decision was taken in the RBI board meeting at 5:30 pm on November 8, 2016, ... highly placed sources within the government has revealed how apart from a select few, even senior Cabinet ministers had no clue why a meeting had been called. In fact, to stop any leak of this sensitive information before Prime Minister Narendra Modi announced it to the nation at 8 pm, all cabinet ministers and officials were asked to switch off their mobile phones before entering the meeting."* Source: Outlook India Article, Nov 2021.

## 8.3 Randomization Inference

We examine the robustness of our inference using a Randomization Inference (RI) procedure. This test, originally proposed by Fisher (1935) and developed by Heß (2017) and Young (2019), allows for statistical inference by comparing the realized treatment effect with multiple (100) placebo assignments. This procedure, therefore, has the advantage of providing inference with the correct size, regardless of the sample and cluster size. We report the results in Table G7 across all our outcome variables. In particular, Columns 1 and 2 of Table G7 report the SDID coefficient and its associated p-value from our main analysis respectively. The p-values from the RI procedure (Column 3) are similar to those in Column 2, indicating the robustness of our statistical inference. For some variables such as the log of short-term borrowings, we see a smaller p-value which bolsters our confidence that connected firms have more access to scarce short-term credits.

## 8.4 Political Connections or Characteristics of Firms?

An important concern for our causal identification is that more productive firms, more resilient firms, or firms with some unobserved characteristics such as entrepreneurial ability that make them stronger during a crisis, are able to attract politicians to their boards. Another possibility is that dynamic, entrepreneurial directors of firms are able to make social connections that attract both political ties as well as help them navigate a crisis better. In financial economics, these would be the *high-type* firms. As discussed elaborately in Section 5, our empirical strategy mitigates many of these concerns with the help of firm fixed effects as well as the synthetic difference-in-differences strategy. Nevertheless, to further bolster our confidence, we conduct two additional tests.

The first test, reported in Appendix G.5, exploits the idea that if entrepreneurial ability within a firm (and not political connections) was enabling it to mitigate the adverse effects of demonetization, we should expect to see differences in firm outcomes to be larger in areas that experienced a more severe shock. We use Figure V from Chodorow-Reich et al. (2020) (reproduced as Appendix Figure G1) to classify districts into more severely shocked and less severely shocked areas based on whether they had an above or below median demonetization shock index (Chodorow-Reich et al., 2020).[23] As reported

[23] Chodorow-Reich et al. (2020) define the demonetization shock in a district in the post-demonetization period as the value of legal tenders in the post-demonetization period divided by the total value of cash in that district before demonetization. They construct this shock indicator using currency chest records maintained by the Reserve Bank of India.

in Table G8, there is no differential effect by the severity of the demonetization shock.

For a second test, we turn to a robust finding in the prior literature, which shows that the impact of political connections on influencing firm outcomes weakens with connections that are made farther back in time, as compared to more recent ones (Faccio et al., 2006; Deng et al., 2020). In Appendix G.6, we test for this in our sample as well and find evidence consistent with this. In Panel A of Table G9, we utilize the date of the first political connection and define a binary indicator that takes the value 1 for firms having "recently" established political connections i.e., those firms having a political below the median years (4 years), and 0 otherwise. The coefficients for interaction with *recently-established* firms are large and positive whereas those for the interaction with *farther-off* are much smaller. In Panel B, we use the timing of the latest political connection. It is *Short-established* if it is less than the median, 3 years, prior to demonetization, and *Long-established* if it is greater than the median. Here again, the short-established political connections matter more (columns 1 and 3). If firms' entrepreneurial ability or any other firm characteristics instead of political connections were protecting the firms, the firms with father-off or long connections would be just as likely to protect themselves as the firms with more recently formed connections.

## 8.5 Correlation Between Spatial Location of Politically Connected Firms and Severity of the Demonetization Shock?

One may be concerned that the politically connected firms are located in districts/areas with less severe shocks. The results (discussed previously) in Table G8 make this concern unlikely because the results do not vary by the severity of the demonetization shock. In addition to this, however, we also examine whether the share of politically connected firms in a district (before demonetization) is correlated with the severity of the shock. To do this, we calculate the share of politically connected firms in 2015 (the year before demonetization) and regress it on the standardized value of shock severity of a district (Figure G1)). We cluster standard errors at the district level. As reported in Table G10, we find no correlation. Both the estimated magnitude is small, and it is statistically insignificant at conventional levels.

# 9 Conclusion

We highlight a new method for determining the political connection of firms based on the *social network* of politicians. We use this method to construct a novel dataset of political connections for Indian firms. Leveraging this data, we show that politically connected firms were more resilient after a large macroeconomic crisis in India. In light of the recent financial crisis of 2008 and the Covid-19 pandemic-induced crisis of 2020, this sheds light on how these connections can play an important role in responding to the crisis.

Another innovation of our analysis is that it sheds light on the channels through which political connections can play a central role in altering the operational decisions of firms during an economic downturn. In the context of India's demonetization episode, we find that politically connected firms were able to get access to short-term credit, especially from the banking system that was already reeling under a substantial depletion of cash and credit. Moreover, they were able to delay their payments owed to their suppliers, vendors, and creditors, along with delaying short-term interest and debt payments as well. We think of our analysis as a helpful step in not only providing additional empirical evidence on understanding the role of political connections, but the mechanisms through which they can help firms increase resilience to an economic downturn. Exactly how firms leverage their political connections in their interactions with different stakeholders, through requests, reputation, threats, future reciprocation, etc., is beyond the scope of this study, but a very promising avenue for future research.

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# Tables

Table 1: Summary Statistics (2012∼2015)

| | (1) Unconnected | | (2) Connected | | t-test Difference |
|---|---|---|---|---|---|
| | N/Firms | Mean/SD | N/Firms | Mean/SD | (1)-(2)/SE |
| Total Income (USD Million) | 81,655 | 31.348 | 2,886 | 119.050 | -87.702*** |
| | (28,171) | (0.300) | (834) | (3.667) | (1.740) |
| Sales (USD Million) | 81,655 | 28.717 | 2,886 | 102.308 | -73.591*** |
| | (28,171) | (0.281) | (834) | (3.345) | (1.622) |
| Total Expenses (USD Million) | 81,655 | 31.120 | 2,886 | 113.570 | -82.450*** |
| | (28,171) | (0.294) | (834) | (3.423) | (1.693) |
| Ln(TFPR1) | 69,399 | 0.775 | 2,012 | 0.877 | -0.111*** |
| | (25,602) | (0.004) | (630) | (0.025) | (0.023) |
| Ln(TFPR2) | 69,399 | 0.630 | 2,012 | 0.835 | -0.205*** |
| | (25,602) | (0.005) | (630) | (0.031) | (0.031) |
| Firm's age | 81,655 | 21.516 | 2,886 | 26.820 | -5.304*** |
| | (28,171) | (0.058) | (834) | (0.348) | (0.317) |
| Listed on BSE/NSE | 81,655 | 0.157 | 2,886 | 0.278 | -0.122*** |
| | (28,171) | (0.001) | (834) | (0.008) | (0.007) |
| Annual avg. value of total | 81,655 | 20.122 | 2,886 | 158.498 | -138.376*** |
| transactions in BSE (USD Million) | (28,171) | (1.439) | (834) | (21.840) | (8.688) |
| Annual avg. value of total | 81,655 | 55.935 | 2,886 | 487.435 | -431.499*** |
| transactions in NSE (USD Million) | (28,171) | (3.816) | (834) | (60.635) | (23.279) |
| Value added tax (USD Million) | 81,655 | 0.013 | 2,886 | 0.024 | -0.011* |
| | (28,171) | (0.001) | (834) | (0.005) | (0.006) |
| rK (USD Million) | 81,410 | 30.264 | 2,869 | 230.804 | -200.540*** |
| | (28,111) | (0.692) | (830) | (11.448) | (4.266) |
| wL (USD Million) | 81,166 | 2.557 | 2,878 | 11.746 | -9.188*** |
| | (28,075) | (0.041) | (833) | (0.462) | (0.235) |
| *Financial Statistics* | | | | | |
| Total assets (USD Million) | 81,638 | 57.595 | 2,886 | 375.139 | -317.544*** |
| | (28,167) | (1.029) | (834) | (16.962) | (6.334) |
| Total Liabilities (USD Million) | 81,655 | 56.955 | 2,886 | 370.355 | -313.400*** |
| | (28,171) | (0.998) | (834) | (16.469) | (6.145) |
| Total Borrowings (USD Million) | 79,583 | 22.231 | 2,880 | 154.145 | -131.913*** |
| | (27,749) | (0.559) | (834) | (8.497) | (3.352) |

*Notes:* wL = Compensations to employees. TFPR = Total factor revenue productivity. rK = Non-current assets. CL = Current liabilities. See Section B in the Appendix for detailed definitions of variables. India introduced goods and services tax in 2017, so it is not included in the summary statistics table above. In the last column, we test the differences between politically non-connected and connected firms using a t-test with equal variance. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2: Impacts on Income, Sales, Expenses and TFPR

| | (1) Ln(Income) | (2) Ln(Sales) | (3) Ln(Expense) | (4) Ln(TFPR1) | (5) Ln(TFPR2) |
|---|---|---|---|---|---|
| Connected × Post | 0.118*** | 0.087*** | 0.119*** | 0.053*** | 0.050*** |
| | (0.027) | (0.030) | (0.029) | (0.020) | (0.019) |
| Control Mean | 2.32 | 2.14 | 2.35 | 0.85 | 0.70 |
| $R^2$ | 0.95 | 0.96 | 0.96 | 0.88 | 0.94 |
| Firm FE | Yes | Yes | Yes | Yes | Yes |
| Industry-Year FE | Yes | Yes | Yes | Yes | Yes |
| District-Year FE | Yes | Yes | Yes | Yes | Yes |
| No. of firms | 31,333 | 31,333 | 31,333 | 28,622 | 28,622 |
| N | 186,937 | 186,937 | 186,937 | 161,777 | 161,777 |

*Notes:* Income in Column 1 is the sum of all kinds of income an enterprise generates during an accounting period. Sales in Column 2 are all regular income generated by companies from the clearly identifiable sales of goods and from non-financial services. Expenses in Column 3 are the sum of all revenue expenses incurred by a company during an accounting period. TFPR in Columns 4 and 5 are a firm's Total Factor Revenue Productivity calculated based on the method proposed by Levinsohn and Petrin (2003). In Column 4, the free variables are compensation to employees and raw material expenses and the proxy variable is power, fuel, and water charges; in Column 5, the free variable is compensation to employees and the proxy variable is the consumption of raw material and power, fuel, and water. Section B in the Appendix provides the definition for all variables in detail. All regressions control for the log of Goods and Service Tax payments. We include firm, district-year, and industry-year fixed effects and weight observations using Synthetic DID weights. Standard errors are clustered at the district level. + is p<0.15, * is p<0.1 , ** is p<0.05, and *** is p<0.01.

Table 3: Impacts on the Portfolio of Liabilities

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| *Panel A. Current and Non-Current Liabilities* | | | | |
| | Ln(Total Liabilities) | Ln(Non-Current Liabilities) | Ln(Current Liabilities) | Current/Total |
| Connected × Post | 0.055*** | 0.010 | 0.082*** | 0.015* |
| | (0.019) | (0.025) | (0.015) | (0.008) |
| Control Mean | 2.79 | 1.19 | 1.79 | 0.40 |
| $R^2$ | 0.98 | 0.93 | 0.94 | 0.83 |
| *Panel B. Components of Current Liabilities* | | | | |
| | Ln(Short-Term Borrowings) | Ln(Short-Term Payables) | Ln(Short-Term Advances) | Ln(Other Current Liabilities) |
| Connected × Post | 0.042 | 0.067*** | 0.029 | 0.118*** |
| | (0.036) | (0.023) | (0.021) | (0.026) |
| Control Mean | 1.00 | 1.02 | 0.31 | 0.66 |
| $R^2$ | 0.87 | 0.93 | 0.84 | 0.89 |
| Firm FE | Yes | Yes | Yes | Yes |
| Industry-Year FE | Yes | Yes | Yes | Yes |
| District-Year FE | Yes | Yes | Yes | Yes |
| No. of firms | 29,989 | 29,989 | 29,989 | 29,989 |
| N | 173,296 | 173,296 | 173,296 | 173,296 |

*Notes:* Current Liabilities of a firm are those liabilities or debts that must be paid within a year whereas Non-Current Liabilities are longer-term debts that need not be paid within a year. Short-term Borrowings are those which have to be repaid within a year. Short-Term Payables are liabilities owed to suppliers, vendors, and creditors for goods and services received that will mature within a year. Short-Term Advances are deposits and advances received from customers and employees. Other current liabilities include current maturities of long-term debt and lease, interest accrued but not due (short term), and unclaimed and unpaid dividend. Section B in the Appendix provides the definition for all variables in detail. All regressions control for the log of Goods and Service Tax payments. We include firm, district-year, and industry-year fixed effects and weight observations using Synthetic DID weights. Standard errors are clustered at the district level. + is p<0.15, * is p<0.1 , ** is p<0.05, and *** is p<0.01.

Table 4: Impacts on the Portfolio of Borrowings

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| *Panel A. Long and Short-term Borrowings* | | | | |
| | Ln(Total Borrowings) | Ln(Short-Term Borrowings) | Ln(Long-Term Borrowings) | Short-Term/Total |
| Connected × Post | -0.049$^{+}$ | 0.063 | -0.141*** | 0.028** |
| | (0.033) | (0.052) | (0.051) | (0.012) |
| Control Mean | 2.13 | 1.48 | 1.31 | 0.56 |
| $R^2$ | 0.95 | 0.89 | 0.92 | 0.82 |
| *Panel B. Borrowings from Banks* | | | | |
| | Ln(Total Bank Borrowings) | Ln(Short-Term Bank Borr.) | Ln(Long-Term Bank Borr.) | Short-Term/Total |
| Connected × Post | -0.087*** | 0.032 | -0.090* | 0.025*** |
| | (0.028) | (0.043) | (0.047) | (0.010) |
| Control Mean | 1.73 | 1.21 | 0.92 | 0.63 |
| $R^2$ | 0.92 | 0.89 | 0.90 | 0.80 |
| *Panel C. Secured and Unsecured Borrowings* | | | | |
| | Ln(Total Borrowings) | Ln(Secured Borrowings) | Ln(Unsecured Borrowings) | Unsecured/Total |
| Connected × Post | -0.049$^{+}$ | -0.085*** | 0.047 | 0.009 |
| | (0.033) | (0.028) | (0.065) | (0.011) |
| Control Mean | 2.13 | 1.81 | 0.86 | 0.25 |
| $R^2$ | 0.95 | 0.93 | 0.83 | 0.73 |
| Firm FE | Yes | Yes | Yes | Yes |
| Industry-Year FE | Yes | Yes | Yes | Yes |
| District-Year FE | Yes | Yes | Yes | Yes |
| No. of firms | 19,536 | 19,536 | 19,536 | 19,536 |
| N | 103,838 | 103,838 | 103,838 | 103,838 |

*Notes:* Short-term Borrowings are those which have to be repaid within a year whereas Long-term Borrowings do not have to repay within a year. Secured Borrowings are those where the borrower pledges some assets with the lender as collateral and in case of default, the lender has the authority to sell the pledged assets and recover the due. Short-Term Bank Borrowings are those borrowings taken from a bank and have to be repaid within a year. Long-Term Bank Borrowings, on the other hand, do not have to be repaid within a year. Section B in the Appendix provides the definition for all variables in detail. All regressions control for the log of Goods and Service Tax payments. We include firm, district-year, and industry-year fixed effects and weight observations using Synthetic DID weights. Standard errors are clustered at the district level. + is p<0.15, * is p<0.1 , ** is p<0.05, and *** is p<0.01.

Table 5: Impacts on the Portfolio of Assets

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| *Panel A. Current and Non-Current Assets* | | | | |
| | Ln(Total Assets) | Ln(Non-Current Assets) | Ln(Current Assets) | Non-Current/Total |
| Connected × Post | 0.040** | 0.050* | 0.064*** | 0.002 |
| | (0.015) | (0.029) | (0.020) | (0.005) |
| Control Mean | 2.66 | 1.84 | 2.02 | 0.44 |
| $R^2$ | 0.98 | 0.97 | 0.96 | 0.88 |
| *Panel B. Components of Current Assets* | | | | |
| | Ln(Current Investments) | Ln(Current Inventories) | Ln(Bank Bal.) | Ln(Other Current Assets) |
| Connected × Post | 0.053* | -0.005 | -0.035 | 0.077** |
| | (0.028) | (0.023) | (0.025) | (0.031) |
| Control Mean | 0.12 | 0.96 | 0.55 | 1.22 |
| $R^2$ | 0.74 | 0.95 | 0.88 | 0.93 |
| *Panel C. Components of Non-Current Assets* | | | | |
| | Ln(Non-Current Investments) | Ln(Exptd. on Intangibles) | Ln(Exptd. on Fixed Assets) | Ln(Exptd. on PPE) |
| Connected × Post | 0.093* | 0.050*** | 0.018 | -0.018 |
| | (0.047) | (0.016) | (0.031) | (0.031) |
| Control Mean | 0.48 | 0.09 | 1.27 | 1.23 |
| $R^2$ | 0.92 | 0.84 | 0.96 | 0.96 |
| Firm FE | Yes | Yes | Yes | Yes |
| Industry-Year FE | Yes | Yes | Yes | Yes |
| District-Year FE | Yes | Yes | Yes | Yes |
| No. of firms | 30,231 | 30,231 | 30,231 | 30,231 |
| N | 175,709 | 175,709 | 175,709 | 175,709 |

*Notes:* Current Assets (and their components) are those assets held by the firm that can be easily converted to cash by the firm within 12 months. Non-Current Assets (and their components) cannot be converted to cash within 12 months. Section B in the Appendix provides the definition for all variables in detail. All regressions control for the log of Goods and Service Tax payments. We include firm, district-year, and industry-year fixed effects and weight observations using Synthetic DID weights. Standard errors are clustered at the district level. + is p<0.15, * is p<0.1 , ** is p<0.05, and *** is p<0.01.

# APPENDIX

## A Literature on Political Connections

Table A1: Related Literature on Political Connections (in chronological order)

| | How are political connections measured? |
|---|---|
| Gomez and Jomo (1999) | The authors define a firm as politically connected if it has officers or major shareholders with close relationships with key government officials—primarily Mahathir, Daim, and Anwar. |
| Agrawal and Knoeber (2001) | The authors define a firm as politically connected if its outside directors have backgrounds in law (i.e., a degree in law) and/or in politics (i.e., prior employment in government or a political party). |
| Backman (2001) | The authors define a firm as politically connected if it bribes government officers or employs relatives of government officers. |
| Fisman (2001) | The author identifies political connections based on the Suharto Dependency Index which is developed by the Castle Group, a leading economic consultant in Indonesia. The index ranges from one (least dependent) to five (most dependent). Companies affiliated with Suharto's children or allies have high indexes. |
| Johnson and Mitton (2003) | The authors follow Gomez and Jomo (1999) and define a firm as politically connected if it has officers or major shareholders with close relationships with key government officials—primarily Mahathir, Daim, and Anwar. |
| Khwaja and Mian (2005) | The authors define a firm as politically connected if its director participates in an election. |
| Charumilind et al. (2006) | The authors assume that the country's richest families that own business empires are well-connected to bankers. They define a firm as having "close connections" to banks if the firm is owned by the country's richest families. |

**Table A1 continued from previous page**

| Literature | How political connections are ascertained? |
|---|---|
| Faccio, Masulis and McConnell (2006) | A company is defined as politically connected if at least one of its top officers (defined as the company's chief executive officer, chairman of the board (COB), president, vice-president, or secretary of the board) or a large shareholder (defined as anyone controlling at least 10% of the company's voting shares) was head of state (i.e., president, king, or prime minister), a government minister (as defined below), or a member of the national parliament, as of the beginning of 1997. The author also defines indirect connections. He 1) classifies a company as indirectly connected if a relative with the same last name as a head of state or minister is a top officer or a large shareholder, as defined above, as of 1997; 2) classifies a company as indirectly connected when a top executive or a large shareholder has been described by The Economist, Forbes, or Fortune as having a "friendship" with a head of state, government minister, or member of parliament during 1997; 3) classifies a company as indirectly connected if a prior study identifies such a relationship as having been in place prior to January 1, 1997. |
| Mobarak and Purbasari (2006) | The authors define a firm as politically connected if the Suharto health news indicator has a negative coefficient on the firm's stock price which is significantly different from zero at the 95% confidence level. The size of this coefficient is used as a measure of the strength of the connection between this firm and Suharto. |
| Boubakri, Cosset and Saffar (2008) | The authors define a firm as politically-connected if at least one member of its board of directors or its supervisory board is or was a politician, that is, a member of parliament, a minister, or any other top-appointed bureaucrat. They track politicians on the board of newly privatized firms over a period of three years after the privatization date. |
| Claessens, Feijen and Laeven (2008) | The authors define a listed firm as politically connected if it appears in the official campaign contribution data. |
| Goldman, Rocholl and So (2008) | The authors define a firm as politically connected if at least one of its board members at any time prior to 1994 and 2000, respectively, held a position such as Senator, Member of the House of Representatives, Member of the Administration, or was a Director of an organization like the Central Intelligence Agency. |
| Li, Meng, Wang and Zhou (2008) | The authors define a firm as politically connected if the private entrepreneurs are a member of the Communist Party. |
| Goldman, Rocholl and So (2009) | The authors define a firm as politically connected if at least one of its board members at any time prior to 1994 and 2000, respectively, held a position such as Senator, Member of the House of Representatives, Member of the Administration, or was a Director of an organization like the Central Intelligence Agency. |

**Table A1 continued from previous page**

| Literature | How political connections are ascertained? |
|---|---|
| Faccio (2010) | The author expands his (Faccio et al., 2006) definition. She adds two new definitions for indirect connections: 4) connections with foreign politicians; and 5) other connections identified in prior studies (Gomez and Jomo, 1999; Johnson and Mitton, 2003). He also includes cases in which a member of parliament serves as a company's CEO, president, vice president, or secretary or controls at least 10% of shareholder votes. |
| Niessen and Ruenzi (2010) | The authors check whether a member of the Bundestag engaged in any paid job activities besides their governmental mandate such as being a director on the supervisory board or advisory council of a firm and how much that person received as compensation. They then identify those firms as politically connected. |
| Desai, Olofsgård et al. (2011) | The authors use perception-based questions about the political influence of firms in shaping national policies affecting their businesses in the World Bank's Enterprise Surveys to evaluate if a firm has political connections. |
| Boubakri, Cosset and Saffar (2012) | The authors define a firm as politically connected if at least one of its large shareholders (anyone controlling more than 10% of voting rights, directly or indirectly) or top officers (CEO, chairman of the board, president, vice-president, or secretary) is a member of parliament, is a minister or head of state, or is closely related to a politician or party by friendship, past top corporate or political positions, or other ties identified in prior research.<br>If any supervisory board members had a political affiliation defined as being a candidate for a local and/or state-level elected position, a member of a political party or continuously expressing public support for a given political party. |
| Amore and Bennedsen (2013) | The authors define a firm as family-related to local politicians if a politician is a CEO or a board director or both, or who is connected by family to a firm's CEO or director. The family relations considered are parent, child, sibling, and current or former spouse(s). |
| Houston, Jiang, Lin and Ma (2014) | The authors define a firm as politically connected if at least one board member and/or director either holds or held an important government or political position. The definition of positions follows Goldman et al. (2009). |
| Akcigit, Baslandze and Lotti (2018) | The authors define a firm as politically connected if at least one politician is working in the firm in the same year. |
| Bertrand, Kramarz, Schoar and Thesmar (2018) | The authors define a firm as politically connected if at least one of its CEOs has previously served as a close advisor to a top-raking government official. |

**Table A1 continued from previous page**

| Literature | How political connections are ascertained? |
|---|---|
| Schoenherr (2019) | Lee Myung Bak, former president of South Korea, graduated from Korea University (KU) Business School and served as a CEO at Hyundai Engineering & Construction (HEC), before going into politics. The author then defines a firm as politically connected if its CEO is either a Korea University Business Administration graduate (KU network), or a former Hyundai Engineering & Construction executive (HEC network). |
| Brown and Huang (2020) | The authors measure political connections by the number of White House visits by corporate executives in a year. They also define a variable, Political access, as an indicator that takes the value of one if the executives of the firm visit the White House at least once in a given year and zero otherwise. |
| Deng, Wu and Xu (2020) | If the local official has the same birthplace as one of the top managers of a listed firm located in the official's jurisdiction, then the authors define the firm as politically connected. |
| Choi, Penciakova and Saffie (2021) | The authors use campaign contributions in state legislative elections to measure a firm's political connections to state legislators |

# B Definition of Variables

Table B1: Definition of Variables

| Variable Name | Definition |
|---|---|
| Income | Total income is the sum of all kinds of income generated by a firm. |
| Sales | Sales are the sum of all regular income generated by companies from the clearly identifiable sales of goods and from non-financial services. |
| Expenses | Total expenses are the sum of all revenue expenses incurred by a firm. |
| Ln(TFPR1) | The log of estimated total factor revenue productivity using Levinsohn and Petrin (2003). Output is total income, capital is fixed assets, inputs are compensation to employees and raw material expenses, and the proxy is power, fuel, and water charges. |
| Ln(TFPR2) | The log of estimated total factor revenue productivity using Levinsohn and Petrin (2003). Output is total income, capital is fixed assets, input is compensation to employees, and the proxy is the consumption of raw materials and power, fuel, and water. |
| **Assets** | Total assets are the sum of all current and non-current assets held by a company as of the last day of an accounting period. |
| Non-Current Assets | Non-current Assets are those assets of a firm that cannot be converted to cash within 12 months. They include tangible and intangible assets. It also includes capital work in progress which refers to fixed assets that are in process of being installed or constructed. The total amount of long-term investments, long-term loans and advances, and other long-term assets of a company are also classified as Non-Current Assets. |
| Current Assets | Current assets are any assets in the balance sheet which can be easily converted into cash within 12 months. |
| Current Investments | Short-term investments include all investments made by a company that are due to maturity within 12 months from the date of the balance sheet. Companies often make investments in shares, debentures, bonds, mutual funds, immovable properties, capital of partnership firms, etc. |
| Current Inventories | Short-term inventories. Inventories are materials held to be consumed in the production process or held for sale. |
| Bank Balances | Short-term bank balance. It captures the value of a company's deposits in banks, which are short-term/current in nature. |

**Table B1 continued from previous page**

| Variable Name | Definition |
|---|---|
| Other Current Assets | Other kinds of current assets include short-term trade receivables and bills receivable, lease rent receivable, accrued income including interest receivables, assets held for sale and transfer (short term), and others. |
| Non-current investments | Non-current investments include all investments made by a company which are investments not expected to mature within 12 months from the date of the balance sheet. |
| Exptd. on Intangibles | Net intangible fixed assets which usually include the gross value of goodwill and software systems. |
| Exptd. on Fixed Assets | Net fixed assets are the net value of the fixed assets of a company after adjusting for additions/(deductions) to gross fixed assets and the cumulative depreciation on gross fixed assets. |
| Exptd. on PPE | Net property, plant, and equipment (PPE). PPE are a company's physical or tangible long-term assets that typically have a life of more than one year, such as buildings, machinery, land, office equipment, furniture, and vehicles. |
| **Liabilities** | Total liabilities. It includes all sums it owes to the shareholders in the form of share capital and reserves and surpluses, all sums it owes to its lenders in the form of secured and unsecured loans, and all current liabilities and provisions. It also includes deferred tax liability. |
| Non-Current Liabilities | Non-current liabilities are liabilities that are not expected to be settled in the company's normal operating cycle or within 12 months from the balance sheet date. |
| Current Liabilities | Current liabilities are the liabilities or debts a firm owes to its suppliers, vendors, banks, and others, which must be paid within one year. |
| Short-Term Payables | Short-term trade payables and acceptances. Trade payables are liabilities owed to suppliers, creditors, lenders, or vendors for purchases of goods or services received. Acceptances by a company, which are due to mature within the next 12 months. A trade acceptance is a time draft drawn by the seller of goods on a buyer. |
| Short-Term Advances | Short-term deposits and advances from customers and employees. It includes deposits in the form of security, a trade deposit, or a dealer's deposit, and advances received from customers for goods and services to be provided by the company. |
| Other Current Liabilities | Other kinds of current liabilities include current maturities of long-term debt and lease, interest accrued but not due (short term), and unclaimed and unpaid dividend. |
| **Borrowings** | Total borrowings. It is the sum of short-term borrowings and long-term borrowings. |

**Table B1 continued from previous page**

| Variable Name | Definition |
|---|---|
| Short-Term Borrowings | The number of short-term borrowings taken by a firm, which have to be repaid within a period of 12 months. |
| Long-Term Borrowings | The number of long-term borrowings taken by a firm, which is not expected to be repaid within the next 12 months from the balance sheet date. |
| Secured Borrowings | Secured loans are loans made on the security of assets, the market value of which is not at any time less than the amount of such loan. |
| Unsecured Borrowings | In the case of unsecured loans, the borrower does not have to pledge any assets with the lender as collateral for the loan. |
| Total Bank Borrowings | Total borrowings from banks. The sum of short-term borrowings from banks and long-term borrowings from banks. |
| Short-Term Bank Borr. | Short-term borrowings from banks. The number of short-term borrowings taken by the company from banks, whether secured or unsecured. They have to be repaid by the company within a period of 12 months. |
| Long-Term Bank Borr. | Long-term borrowings from banks. The total amount of long-term borrowings taken by companies from banks, whether secured or unsecured. Money borrowed by companies from banks for a period of more than 12 months is classified as long-term borrowings from banks. |
| **Interest Expenses** | Interest expenses include all kinds of company interest payments such as interests on long-term and short-term borrowings, trade payables, and debentures and bonds. |
| Interest incidence | Interest incidence is an indicator that is expressed as a ratio of a company's interest costs to its borrowings. It serves as an indicator of the effective cost of borrowing of a company by measuring interest paid during the year as a percentage of borrowings. |
| Interest on LTB | Interest on Long-term Borrowings. This is the number of interest paid by a company on long-term loans raised by it. |
| Interest on STB | Interest on Short-term Borrowings. This is the number of interest paid by a company on short-term loans raised by it. |
| **Firm characteristics:** | |
| Firm age (years) | Years a firm has been operating. |
| Annual avg. value of total transactions in BSE | The product of weighted average stock price and the total amount of stock transactions in Bombay Stock Exchange (BSE). |
| Annual avg. value of total transactions in NSE | The product of weighted average stock price and the total amount of stock transactions in the National Stock Exchange (NSE). |
| Listed on BSE/NSE | Take the value of 1 for firms that are either listed on BSE or NSE and 0 for firms that are not listed. |

**Table B1 continued from previous page**

| Variable Name | Definition |
|---|---|
| Goods and service tax | Total amount of goods and service tax levied on the sale/transfer of goods and/or services by a company. |
| Value-added tax | Total amount of value-added tax paid. |

*Notes:* All monetary values are reported in nominal USD million.

# C Data and Construction of Political Connections

## C.1 Data on Firms

**Universe of Firms:** We collect the universe of formally registered firms from the Ministry of Corporate Affairs (MCA), Government of India in December 2020. It contains over 1 billion firms and provides basic information about firms such as a company's CIN, business category, date of incorporation, and current status. Specifically, we use the CIN to map firms to the Prowess data (described below) to measure political connections. Figure C1 provides an example of a firm in the MCA dataset. Note that we do not have access to the firm outcomes from this dataset. hence, we use an alternative source for firm outcomes.

**Data on Firm Outcomes:** Data on firm outcomes is from the Prowess data, collected by the Centre for Monitoring of the Indian Economy (CMIE). Prowess is a database of over 40,000 firms that includes all firms traded on the National Stock Exchange (NSE) and the Bombay Stock Exchange (BSE), and thousands of unlisted Public and Private Limited Companies. Data on these firms is collated and harmonized from Annual Reports, Quarterly Financial Statements, Stock Exchange feeds, and other publicly available sources. It contains: (i) identity information of all firms such as entity type, ownership, industry, and age; (ii) information on the Board of Directors like name and designation; (iii) subsidiaries of each firm and mergers and acquisition deals; (iv) Bombay Stock Exchange (BSE) and National Stock Exchange of India Limited (NSE) stocks trading data; (v) standalone Annual Financial Statements. We use this data to construct firm outcomes described in the paper, as well as measure political connections.

Figure C1: An Example of Firm Information Available

**Company/LLP Master Data**

| | |
|---|---|
| CIN | L11101AS1959GOI001148 |
| Company Name | OIL INDIA LIMITED |
| ROC Code | RoC-Shillong |
| Registration Number | 001148 |
| Company Category | Company limited by Shares |
| Company SubCategory | Union Govt company |
| Class of Company | Public |
| Authorised Capital(Rs) | 20000000000 |
| Paid up Capital(Rs) | 10844051940 |
| Number of Members(Applicable in case of company without Share Capital) | 0 |
| Date of Incorporation | 18/02/1959 |
| Registered Address | DULIAJAN DIST: DIBRUGARH DULIAJAN AS 786602 IN |
| Address other than R/o where all or any books of account and papers are maintained | - |
| Email Id | ajayasahoo@oilindia.in |
| Whether Listed or not | Listed |
| ACTIVE compliance | ACTIVE compliant |
| Suspended at stock exchange | - |
| Date of last AGM | 29/09/2020 |
| Date of Balance Sheet | 31/03/2020 |
| Company Status(for efiling) | Active |

Charges

| Assets under charge | Charge Amount | Date of Creation | Date of Modification | Status |
|---|---|---|---|---|
| Book debts; Movable property (not being pledge) | 1500000000 | 16/02/2009 | - | CLOSED |
| | 7000000000 | 17/12/1999 | 22/11/2013 | OPEN |
| Book debts | 3774500000 | 16/01/2012 | - | OPEN |

Directors/Signatory Details

| DIN/PAN | Name | Begin date | End date | Surrendered DIN |
|---|---|---|---|---|
| 05130108 | AMAR NATH | 15/10/2018 | - | |
| 08245841 | ANIL KAUSHAL | 09/08/2019 | - | |
| AFVPM5451P | HARISH MADHAV | 10/04/2019 | - | |
| 08489650 | HARISH MADHAV | 02/08/2019 | - | |
| 08490095 | SUSHIL CHANDRA MISHRA | 01/10/2019 | - | |
| 08516710 | GAGANN JAIN | 09/08/2019 | - | |
| 08516744 | TANGOR TAPAK | 09/08/2019 | - | |
| 08716147 | PANKAJ KUMAR GOSWAMI | 01/06/2020 | - | |
| 09005888 | ASHEESH JOSHI | 22/12/2020 | - | |
| ALWPS5634D | AJAYA KUMAR SAHOO | 11/04/2019 | - | |

## C.2 Data on Measuring Political Connections

In Section 3.2, we briefly described how the data on political connections is constructed. We refer the reader to Sen, Agarwal, Guru, Choudhuri, Singh, Mohammed, Goyal, Mittal, Singh, Goel et al. (2018) for a detailed discussion of the data and algorithm. In the Table C1 below, we list the entities used in building the political network of firms, the description of entities, time period for which we have the data, and count of the entities in the network. Table C2 reports the distribution of politically connected (and non-connected) firms across the most common industries.

Table C1: Data on Firms, Politicians and Bureaucrats

| **Type of Entity** | **Data Source** | **Time Period** | **Count** |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| Politicians | Candidates in national elections, Members of National and State Legislative Assemblies | 2004 onwards | 19,295 |
| Bureaucrats | Indian Administrative Service Records | 1961 onwards | 11,531 |
| Firms | Listed firms on the Bombay and National Stock Exchanges, Ministry of Corporate Affairs | 1980 onwards | 64,155 |
| Family information | All Directors, Politicians and Bureaucrats from Wikipedia | All | |

*Notes:* Source: Sen et al. (2018).

Table C2: Common Industries with Connected and Non-connected Firms

| Two-Digit NIC Industry Name | # Firms | Share (%) |
|---|---|---|
| | (1) | (2) |
| *Panel A: Politically Connected Firms* | | |
| Financial service activities, except insurance and pension funding | 152 | 17.53 |
| Electricity, gas, steam, and air conditioning supply | 79 | 9.11 |
| Wholesale trade, except motor vehicles and motorcycles | 73 | 8.42 |
| Manufacture of chemicals and chemical products | 41 | 4.73 |
| Warehousing and support activities for transportation | 41 | 4.73 |
| Civil engineering | 37 | 4.27 |
| Accommodation | 29 | 3.34 |
| Total | 452 | 52.13 |
| *Panel B: Politically Non-connected Firms* | | |
| Financial service activities, except insurance and pension funding | 5,405 | 17.65 |
| Wholesale trade, except motor vehicles and motorcycles | 4,850 | 15.84 |
| Manufacture of basic metals | 1,102 | 3.6 |
| Construction of buildings | 1,093 | 3.57 |
| Rental and leasing activities | 1,010 | 3.3 |
| Manufacture of chemicals and chemical products | 1,004 | 3.28 |
| Manufacture of food products | 917 | 2.99 |
| Total | 15,381 | 50.23 |

*Notes:* The above table reports the most common two-digit NIC industries among politically connected (Panel A) and non-connected (Panel B) firms. Column 1 reports the total number of firms in that industry, while Column 2 reports the share of connected (non-connected) firms in that industry. For example, the seven industries reported in Panel A (B) account for 52.1% (50.2%) of all politically connected (non-connected) firms.

# APPENDIX FOR ONLINE PUBLICATION

## D Measuring the Impact on Firm Productivity (TFPQ)

While we report the impact of the policy on TFPR in the paper, this section focuses on the measurement of TFPQ and how it was differentially affected for politically connected and non-connected firms. To begin, similar to Bau and Matray (2023), we measure TFPQ for a firm $i$ in a year $t$ using the following equation:

$$\ln TFPQ_{it} = \ln TFPR_{it} - \ln \tilde{p}_{it} \tag{3}$$

$\tilde{p}_{it}$ is the price charged by the firm. However, a typical firm in our sample provides (or manufactures) an average of 4 to 5 products (mostly within the same two-digit NIC industry). The challenge is therefore to construct prices at the firm level. We follow Bau and Matray (2023) to construct a sales-weighted average price of a firm across all its products. However, we do not directly observe product-level prices in our data but have information on the quantity, unit, and value of sales at the product level. We use these to therefore calculate the per-unit price of a product within a firm, which is then averaged (weighted by the fraction of sales of that product in a firm) to generate a price at the firm level. Two important clarifications are in order: first, information on the quantity and value of sales is available only for around a third of the firms in our sample (9,050 firms), and around 80% of these firms are in agriculture and manufacturing. Second, even within these firms, data is available only for some years and not others. We address the latter by linearly interpolating values (weighted by the CPI index) across years, and recognize the former as a data limitation that tempers the interpretation of our results below.

With these caveats, we estimate Equation (2). The results, reported in Columns 3 and 4 of Table D1, show no relative difference in TFPQ in connected firms relative to their non-connected counterparts.

We further examine if firms' capabilities play a role. Atkin, Khandelwal and Osman (2019) show the importance of adjusting varieties and argue that TFPR is a better proxy of firms' capabilities. Producing a wider range of products usually takes longer and imposes higher demands on firms. In Column 5, we estimate Equation (2) on the log of the number of products a firm produces in a year. We find that politically connected

firms produce more kinds of products than non-connected firms after the shock. It thus suggests that politically connected firms may possess greater capabilities, as they generate a wider range of goods and services at an equivalent pace (i.e. with no discernible difference in TFPQ shown in Columns 3 and 4) when compared to their non-connected counterparts.

Table D1: Impact on TFPR, TFPQ & Number of Products

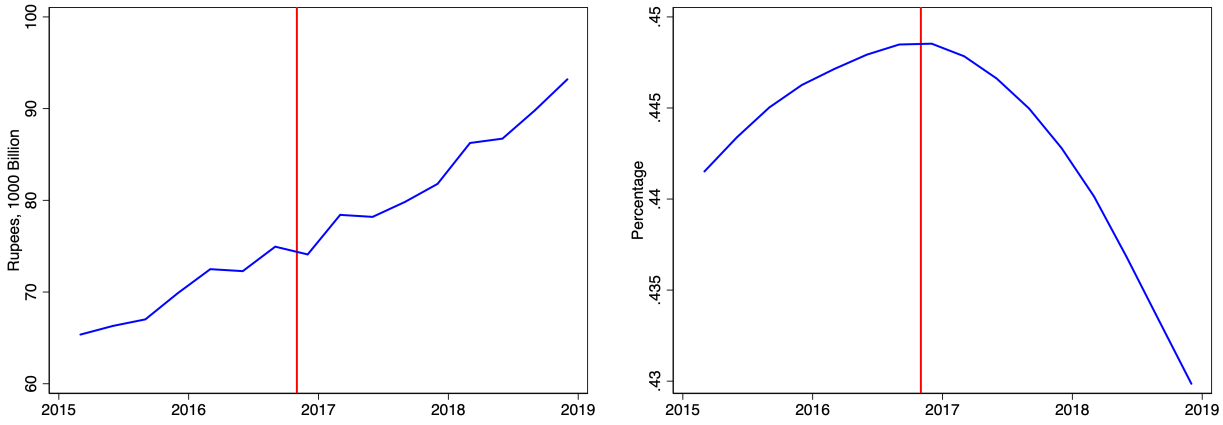
| | Ln(TFPR1) | Ln(TFPR2) | Ln(TFPQ1) | Ln(TFPQ2) | Ln(# of Products) |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Connected x Post | 0.053*** | 0.050*** | -0.001 | 0.006 | 0.048** |
| | (0.020) | (0.019) | (0.022) | (0.022) | (0.021) |
| Firm FE | Yes | Yes | Yes | Yes | Yes |
| Industry-Year FE | Yes | Yes | Yes | Yes | Yes |
| District-Year FE | Yes | Yes | Yes | Yes | Yes |
| Control Mean | 0.85 | 0.70 | 0.62 | 0.45 | 1.64 |
| $R^2$ | 0.88 | 0.94 | 0.95 | 0.98 | 0.88 |
| No. of firms | 28,622 | 28,622 | 9,039 | 9,119 | 33,174 |
| N | 161,777 | 161,777 | 53,083 | 53,083 | 208,049 |

*Notes:* "# of Products" = The number of products a firm produces or provides. TFPR in Columns 1 and 2 are the TFPR values calculated based on Levinsohn and Petrin (2003), with their corresponding TFPQ values in Columns 3 and 4 respectively. In Column 1, the free variables are compensation to employees and raw material expenses and the proxy variable is power, fuel, and water charges; in Column 2, the free variable is compensation to employees and the proxy variable is the consumption of raw material and power, fuel, and water. All regressions control for the log of Goods and Service Tax payments. We include firm, district-year, and industry-year fixed effects and weight observations using Synthetic DID weights. Standard errors are clustered at the district level. + is p<0.15, * is p<0.1 , ** is p<0.05, and *** is p<0.01.

# E Cost of Debt

Previous research finds that politically connected firms have a higher likelihood of receiving credit/loans (Khwaja and Mian, 2005; Charumilind, Kali and Wiwattanakantang, 2006; Claessens, Feijen and Laeven, 2008; Li, Meng, Wang and Zhou, 2008) with a lower cost of debt (Bliss, Goodwin, Gul and Wong, 2018; Faccio, 2010; Tee, 2018; Khelil, 2023). Yet, in Section 7.2, we find that politically connected firms decreased their borrowings and altered their borrowing portfolio by increasing short-term borrowing. To delve deeper into the borrowing behavior of firms, we first examine the lending portfolio of scheduled commercial banks and then investigate the cost of borrowing for firms.

Figure E1: Outstanding Loans Issued by Scheduled Commercial Banks




(a) Total Loans (b) Short-Term Loans/Total Loans

*Notes:* Data is from the Database on the Indian Economy published by the Reserve Bank of India. Figure E1(a) plots the loans issued by scheduled commercial banks between 2015 and 2018. To be consistent with Figure E2(a), we only keep data in March, June, September, and December. The graph is thus showing the total amount of loans made by all Indian scheduled commercial banks at the end of March, June, September, and December. Figure E1(b) plots the share of short-term loans over total loans issued by commercial banks using the LOWESS approach.

**Bank lending:** We use data from the 'Database on the Indian Economy' published by the *Reserve Bank of India* to analyze the overall credit environment. We get monthly data on the total amount of loans issued by all scheduled commercial banks from "Business in India - All Scheduled Banks and All Scheduled Commercial Banks" in the "Monthly RBI Bulletin." That is, we observe the total amount of loans issued at the end of each month. We also obtain quarterly data on the total amount of medium-term and long-term loans issued by scheduled commercial banks from "Table No 2.6 - Type of Account and Interest Rate Range-Wise Classification of Outstanding Loans and Advances of Scheduled

Commercial Banks"[1] in "Banking – Sectoral Statistics." We observe the number of long-term loans issued at the end of March, June, September, and December. We then are able to compute the total amount of short-term loans issued by scheduled commercial banks and the share of it at the end of March, June, September, and December each year. Figure E1 displays the trends of the total amount of loans and the shares of short-term and long-term borrowings. While we find a secular increasing trend for the total amount of loans issued by scheduled commercial banks, its composition changed between 2015 and 2018. The scheduled commercial banks issued fewer short-term loans after the demonetization shock. We then further explore the interest rates of long-term credits. We observe that loans with less than 10% interest rates decreased by about 28% (Figure E2(b)), loans with interest rates between 10% and 20% increased by 41% (Figure E2(c)), and loans with more than 20% interest rates increased by 57% (Figure E2(d)) between September 2016 and March 2018.

In summary, long-term bank loans from scheduled commercial banks with interests greater than 10% increased while those with lower interest fell. Short-term bank lending fell though overall lending continued its secular trend.

**Firms Interest Incidence:** We bolster the cost of long-term borrowing change by examining the interest expenses of firms. Table E1 documents the results. The interest incidence, an indicator of the effective cost of borrowing of a firm, increased by 1 pp (10%) for politically connected firms after the shock (Column 1), and it is driven by the cost of long-term borrowings (Column 2).[2] Meanwhile, the interest of short-term borrowings (Column 3) dropped by 3.8 pp (or 13.1%) though measured imprecisely.

In short, politically connected firms were able to secure scarce short-term loans after the demonetization and resort to other methods like delaying payment to suppliers to maintain and even increase their total liabilities to meet their needs in investment.

[1] Table No. 26 does not contain information on short-term loans. Scheduled commercial banks define medium-term loans as those that need to be repaid between one and three years. In our analysis, we define long-term loans that do not need to be repaid within one year. Thus, we combine medium-term loans and long-term loans in the data from the RBI for consistency.

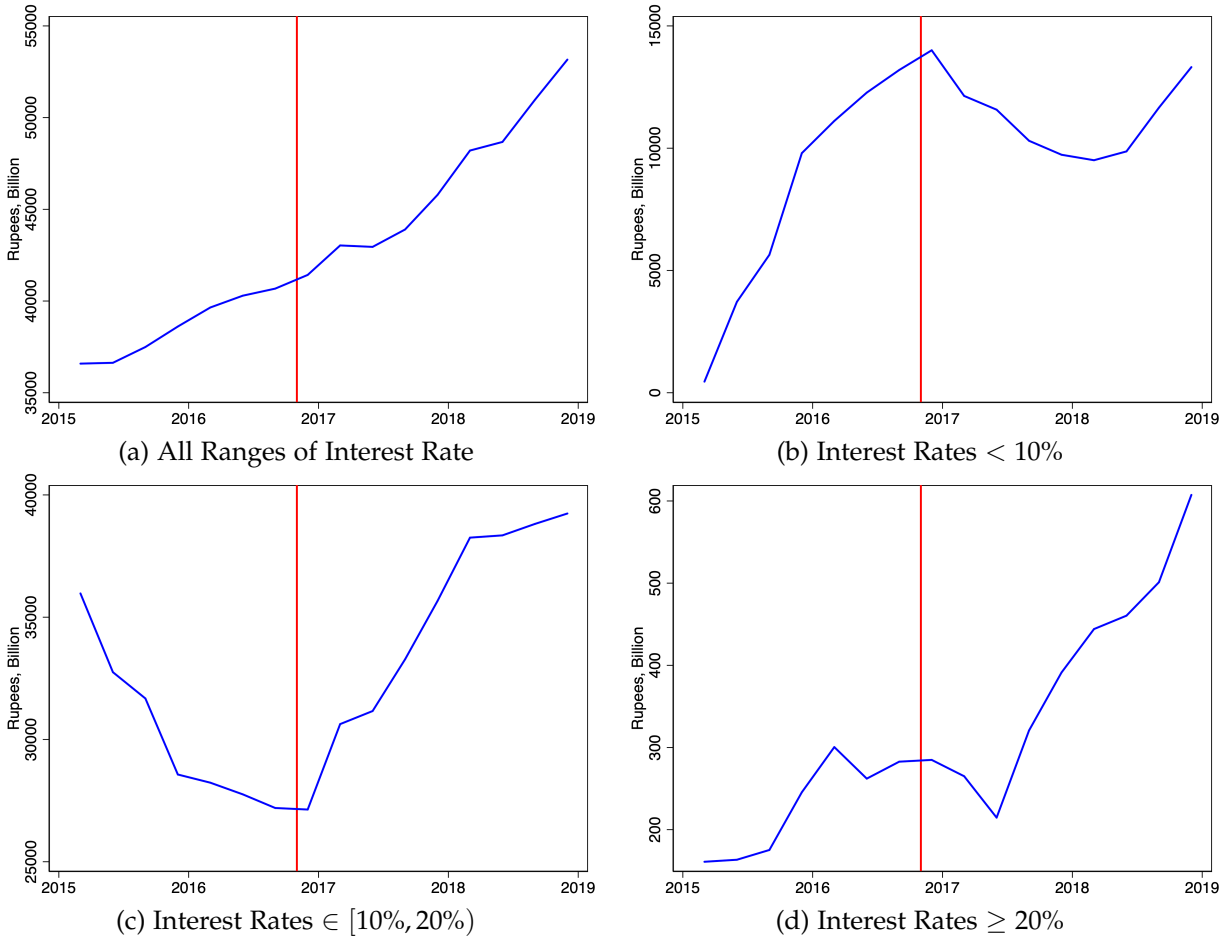
[2] We follow the definition of interest incidence to construct the cost of long-term borrowings and the cost of short-term borrowings.

Table E1: Impacts on Interest Expenses

| | (1) | (2) | (3) |
|---|---|---|---|
| | Interest Incidence | Interests on LTB/LTB | Interests on STB/STB |
| Connected x Post | 0.010*** | 0.013** | -0.038 |
| | (0.002) | (0.006) | (0.048) |
| Firm FE | Yes | Yes | Yes |
| Industry-Year FE | Yes | Yes | Yes |
| District-Year FE | Yes | Yes | Yes |
| Control Mean | 0.10 | 0.07 | 0.29 |
| $R^2$ | 0.60 | 0.51 | 0.48 |
| No. of firms | 16,899 | 16,899 | 16,899 |
| N | 80,978 | 80,978 | 80,978 |

*Notes:* Interest incidence is an indicator that is expressed as a ratio of a company's interest costs to its borrowings. It serves as an indicator of the effective cost of borrowing of a company by measuring interest paid during the year as a percentage of borrowings. "LTB" = Long-term Borrowings. "STB" = Short-term Borrowings. Short-term Borrowings are those which have to be repaid within a year whereas Long-term Borrowings do not have to repay within a year. "Interests on LTB" = Interests on Long-term Borrowings. This is the number of interest paid by a company on long-term loans raised by it. "Interests on STB" = Interests on Short-term Borrowings. This is the number of interest paid by a company on short-term loans raised by it. Section B in the Appendix provides the definition for all variables in detail. All regressions control for the log of Goods and Service Tax payments. We include firm, district-year, and industry-year fixed effects and weight observations using Synthetic DID weights. Standard errors are clustered at the district level. + is p<0.15, * is p<0.1 , ** is p<0.05, and *** is p<0.01.

Figure E2: Outstanding Long-Term Loans Issued by Scheduled Commercial Banks




(a) All Ranges of Interest Rate

(b) Interest Rates $< 10\%$

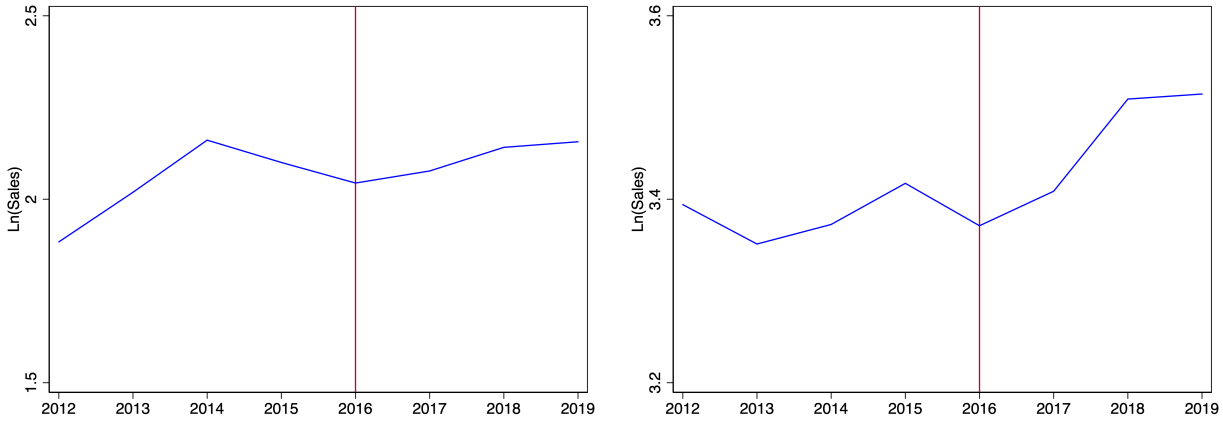
(c) Interest Rates $\in [10\%, 20\%)$

(d) Interest Rates $\geq 20\%$

*Notes:* Data is from the Database on the Indian Economy published by the Reserve Bank of India. The units are in billions of Rupees and the frequency is quarterly (March, June, September, and December). The graphs plot the descriptive trends of long-term loans, no need to be repaid within a year, issued by scheduled commercial banks between 2015 and 2018 with different ranges of interest rates. The trends of the number of accounts of long-term borrowings are similar to the ones shown in Figure E2.

# F Quicker Recovery and/or Growth?

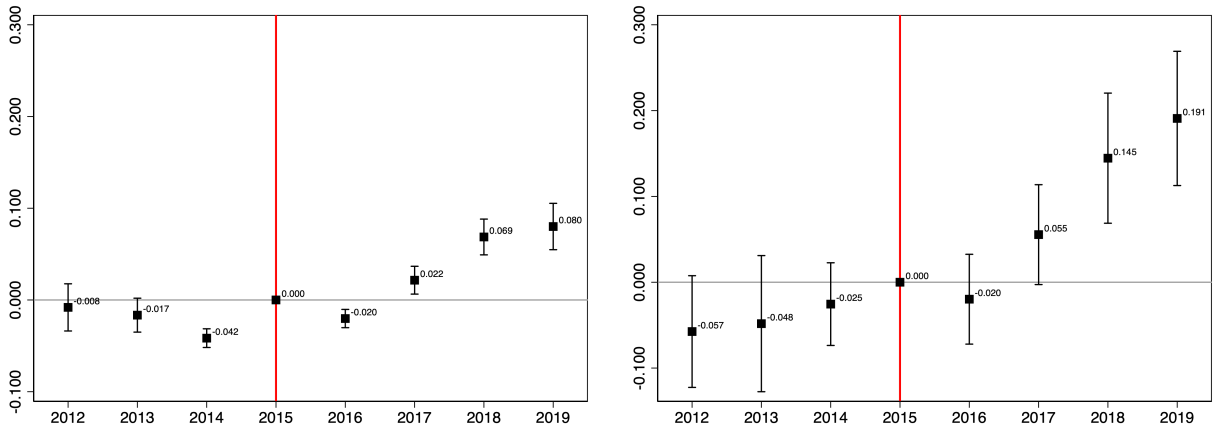
Figure F1: Descriptive Trends of Log of Sales




(a) Non-connected Firms (b) Politically Connected Firms

*Notes:* In Figure F1(a), we plot the trend of the average value of the log of sales for non-connected firms; in Figure F1(b), we plot the trend for politically connected firms. The red lines are the year 2016.

Figure F2: Time-Trends in Sales By Political Connections




(a) Non-connected Firms (b) Politically Connected Firms

*Notes:* We perform regression analysis of the logarithm of sales on the year indicators with 2015 as the base year, separately for both the samples of non-connected firms and connected firms. The regressions include firm, district-year, and industry-year fixed effects, as well as control for the log of Goods and Service Tax payments. We do not use the weights calculated in the SDID here. Standard errors are clustered at the district level. Confidence intervals are at the 95 percent level.

# G Robustness of Results

## G.1 Standard Errors at the Firm Level

Given that there could be a correlation in the intensity of the demonetization shock across firms within a certain area (districts), our preferred specification clusters the standard errors at the district level. However, in Table G1, we present the results by clustering standard errors at the firm level instead.

Table G1: Impact on Income, Sales, Expenses and TFPR (Standard Errors Clustered at the Firm Level)

| | (1) Ln(Income) | (2) Ln(Sales) | (3) Ln(Expense) | (4) Ln(TFPR1) | (5) Ln(TFPR2) |
|---|---|---|---|---|---|
| Connected x Post | 0.118*** | 0.087*** | 0.119*** | 0.053* | 0.050* |
| | (0.035) | (0.032) | (0.032) | (0.029) | (0.029) |
| Firm FE | Yes | Yes | Yes | Yes | Yes |
| Industry-Year FE | Yes | Yes | Yes | Yes | Yes |
| District-Year FE | Yes | Yes | Yes | Yes | Yes |
| Control Mean | 2.32 | 2.14 | 2.35 | 0.85 | 0.70 |
| $R^2$ | 0.95 | 0.96 | 0.96 | 0.88 | 0.94 |
| No. of firms | 31,333 | 31,333 | 31,333 | 28,622 | 28,622 |
| N | 186,937 | 186,937 | 186,937 | 161,777 | 161,777 |

*Notes:* We restrict our sample to firms that did not have political/bureaucratic connections before 2016. Income in Column 1 is the sum of all kinds of income an enterprise generates during an accounting period. Sales in Column 2 are all regular income generated by companies from the clearly identifiable sales of goods and from non-financial services. Expenses in Column 3 are the sum of all revenue expenses incurred by a company during an accounting period. TFPR in Columns 4 and 5 are a firm's Total Factor Revenue Productivity calculated based on the method proposed by Levinsohn and Petrin (2003). In Column 4, the free variables are compensation to employees and raw material expenses and the proxy variable is power, fuel, and water charges; in Column 5, the free variable is compensation to employees and the proxy variable is the consumption of raw material and power, fuel, and water. Section B in the Appendix provides the definition for all variables in detail. All regressions control for the log of Goods and Service Tax payments. We include firm, district-year, and industry-year fixed effects. Standard errors are clustered at the firm level. + is p<0.15, + is p<0.15, * is p<0.1 , ** is p<0.05, and *** is p<0.01.

## G.2 Analysis Using All Observations

In our preferred specification in the paper, we use a consistent sample of firms across all outcome variables in our regressions. However, there is some variation in the availability of outcome variables across firms i.e., some outcome variables are reported for some firms, but not others. In this section, we, therefore, redo our analysis (estimating Equation 2) using all firms for which an outcome variable is reported, to see whether our results are sensitive to this constraint.

Table G2: Main Outcome Variables (All Observations)

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | Ln(Income) | Ln(Sales) | Ln(Expense) | Ln(TFPR1) | Ln(TFPR2) |
| Connected × Post | 0.154*** | 0.143*** | 0.164*** | 0.091*** | 0.083*** |
| | (0.030) | (0.038) | (0.034) | (0.029) | (0.028) |
| Firm FE | Yes | Yes | Yes | Yes | Yes |
| Industry-Year FE | Yes | Yes | Yes | Yes | Yes |
| District-Year FE | Yes | Yes | Yes | Yes | Yes |
| Control Mean | 2.32 | 2.05 | 2.18 | 0.83 | 0.68 |
| $R^2$ | 0.95 | 0.96 | 0.96 | 0.89 | 0.95 |
| No. of firms | 31,593 | 31,901 | 33,951 | 28,622 | 28,722 |
| N | 193,351 | 191,208 | 211,794 | 161,777 | 162,777 |

*Notes:* Income in Column 1 is the sum of all kinds of income an enterprise generates during an accounting period. Sales in Column 2 are all regular income generated by companies from the clearly identifiable sales of goods and from non-financial services. Expenses in Column 3 are the sum of all revenue expenses incurred by a company during an accounting period. TFPR in Columns 4 and 5 are the Total Factor Revenue Productivity of a firm calculated based on the method proposed by Levinsohn and Petrin (2003). In Column 4, the free variables are compensation to employees and raw material expenses and the proxy variable is power, fuel, and water charges; in Column 5, the free variable is compensation to employees and the proxy variable is the consumption of raw material and power, fuel, and water. Section B in the Appendix provides the definition for all variables in detail. All regressions control for the log of Goods and Service Tax payments. We include firm, district-year, and industry-year fixed effects and weight observations using Synthetic DID weights. Standard errors are clustered at the district level. + is $p<0.15$, * is $p<0.1$ , ** is $p<0.05$, and *** is $p<0.01$.

Table G3: Portfolio of Liabilities (All Observations)

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| *Panel A. Current and Non-Current Liabilities* | | | | |
| | Ln(Total Liabilities) | Ln(Non-Current Liabilities) | Ln(Current Liabilities) | Current/Total |
| Connected × Post | 0.077*** | -0.069** | 0.113*** | 0.001 |
| | (0.026) | (0.030) | (0.028) | (0.008) |
| Control Mean | 2.52 | 1.07 | 1.61 | 0.39 |
| $R^2$ | 0.98 | 0.91 | 0.95 | 0.86 |
| No. of firms | 35,909 | 36,131 | 35,937 | 35,766 |
| N | 227,923 | 229,716 | 226,189 | 224,707 |
| *Panel B. Components of Current Liabilities* | | | | |
| | Ln(Short-Term Borrowings) | Ln(Short-Term Payables) | Ln(Short-Term Advances) | Ln(Other Current Liabilities) |
| Connected × Post | 0.036 | 0.111*** | 0.095*** | 0.125*** |
| | (0.057) | (0.030) | (0.026) | (0.028) |
| Control Mean | 0.92 | 0.89 | 0.28 | 0.64 |
| $R^2$ | 0.86 | 0.93 | 0.86 | 0.90 |
| No. of firms | 34,831 | 35,823 | 35,833 | 34,671 |
| N | 216,745 | 224,458 | 224,244 | 212,840 |
| Firm FE | Yes | Yes | Yes | Yes |
| Industry-Year FE | Yes | Yes | Yes | Yes |
| District-Year FE | Yes | Yes | Yes | Yes |

*Notes:* Current Liabilities of a firm are those liabilities or debts that must be paid within a year whereas Non-Current Liabilities are longer-term debts that need not be paid within a year. Short-term Borrowings are those which have to be repaid within a year. Short-Term Payables are liabilities owed to suppliers, vendors, and creditors for goods and services received that will mature within a year. Short-Term Advances are deposits and advances received from customers and employees. Other current liabilities include current maturities of long-term debt and lease, interest accrued but not due (short term), and unclaimed and unpaid dividend. Section B in the Appendix provides the definition for all variables in detail. All regressions control for the log of Goods and Service Tax payments. We include firm, district-year, and industry-year fixed effects and weight observations using Synthetic DID weights. Standard errors are clustered at the district level. + is p<0.15, * is p<0.1 , ** is p<0.05, and *** is p<0.01.

Table G4: Portfolio of Borrowings (All Observations)

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| *Panel A. Long and Short-term Borrowings* | | | | |
| | Ln(Total Borrowings) | Ln(Short-Term Borrowings) | Ln(Long-Term Borrowings) | Short-Term/Total |
| Connected × Post | 0.014 | 0.036 | -0.077* | 0.024** |
| | (0.041) | (0.057) | (0.047) | (0.012) |
| Control Mean | 1.47 | 0.92 | 0.91 | 0.51 |
| $R^2$ | 0.93 | 0.86 | 0.90 | 0.83 |
| No. of firms | 34,903 | 34,831 | 34,800 | 29,303 |
| N | 218,114 | 216,745 | 216,690 | 170,622 |
| *Panel B. Secured and Unsecured Borrowings* | | | | |
| | Ln(Total Borrowings) | Ln(Secured Borrowings) | Ln(Unsecured Borrowings) | Unsecured/Total |
| Connected × Post | 0.014 | -0.028 | -0.011 | 0.001 |
| | (0.041) | (0.044) | (0.054) | (0.013) |
| Control Mean | 1.47 | 1.06 | 0.73 | 0.45 |
| $R^2$ | 0.93 | 0.90 | 0.84 | 0.83 |
| No. of firms | 34,903 | 34,903 | 34,918 | 29,395 |
| N | 218,114 | 217,846 | 218,034 | 171,703 |
| *Panel C. Borrowings from Banks* | | | | |
| | Ln(Total Bank Borrowings) | Ln(Short-Term Bank Borr.) | Ln(Long-Term Bank Borr.) | Short-Term/Total |
| Connected × Post | 0.026 | 0.020 | -0.000 | 0.006 |
| | (0.060) | (0.048) | (0.041) | (0.013) |
| Control Mean | 0.97 | 0.65 | 0.51 | 0.62 |
| $R^2$ | 0.88 | 0.84 | 0.84 | 0.81 |
| No. of firms | 34,775 | 34,805 | 34,784 | 21,053 |
| N | 214,606 | 214,634 | 214,553 | 117,800 |
| Firm FE | Yes | Yes | Yes | Yes |
| Industry-Year FE | Yes | Yes | Yes | Yes |
| District-Year FE | Yes | Yes | Yes | Yes |

*Notes:* Short-term Borrowings are those which have to be repaid within a year whereas Long-term Borrowings do not have to repay within a year. Secured Borrowings are those where the borrower pledges some assets with the lender as collateral and in case of default, the lender has the authority to sell the pledged assets and recover the due. Short-Term Bank Borrowings are those borrowings taken from a bank and have to be repaid within a year. Long-Term Bank Borrowings, on the other hand, do not have to be repaid within a year. Section B in the Appendix provides the definition for all variables in detail. All regressions control for the log of Goods and Service Tax payments. We include firm, district-year, and industry-year fixed effects and weight observations using Synthetic DID weights. Standard errors are clustered at the district level. + is p<0.15, * is p<0.1 , ** is p<0.05, and *** is p<0.01.

Table G5: Portfolio of Assets (All Observations)

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| *Panel A. Current and Non-Current Assets* | | | | |
| | Ln(Total Assets) | Ln(Non-Current Assets) | Ln(Current Assets) | Non-Current/Total |
| Connected × Post | 0.087*** | 0.088*** | 0.135*** | 0.006 |
| | (0.032) | (0.032) | (0.024) | (0.007) |
| Control Mean | 2.55 | 1.76 | 1.84 | 0.45 |
| $R^2$ | 0.98 | 0.98 | 0.96 | 0.91 |
| No. of firms | 35,237 | 35,431 | 35,456 | 35,663 |
| N | 221,161 | 221,296 | 221,311 | 223,491 |
| *Panel B. Components of Current Assets* | | | | |
| | Ln(Current Investments) | Ln(Current Inventories) | Ln(Bank Bal.) | Ln(Other Current Assets) |
| Connected × Post | 0.061** | 0.044 | -0.045 | 0.089*** |
| | (0.028) | (0.032) | (0.040) | (0.028) |
| Control Mean | 0.11 | 0.85 | 0.53 | 1.10 |
| $R^2$ | 0.72 | 0.96 | 0.88 | 0.93 |
| No. of firms | 35,523 | 35,467 | 35,495 | 35,388 |
| N | 221,231 | 221,314 | 221,269 | 219,067 |
| *Panel C. Components of Non-Current Assets* | | | | |
| | Ln(Non-Current Investments) | Ln(Exptd. on Intangibles) | Ln(Exptd. on Fixed Assets) | Ln(Exptd. on PPE) |
| Connected × Post | 0.171*** | 0.027* | 0.060** | 0.036 |
| | (0.059) | (0.016) | (0.030) | (0.026) |
| Control Mean | 0.46 | 0.09 | 1.16 | 1.11 |
| $R^2$ | 0.93 | 0.87 | 0.95 | 0.95 |
| No. of firms | 35,456 | 35,546 | 35,554 | 35,553 |
| N | 221,282 | 222,059 | 222,923 | 222,913 |
| Firm FE | Yes | Yes | Yes | Yes |
| Industry-Year FE | Yes | Yes | Yes | Yes |
| District-Year FE | Yes | Yes | Yes | Yes |

*Notes:* Current Assets (and their components) are those assets held by the firm that can be easily converted to cash by the firm within 12 months. Non-Current Assets (and their components) cannot be converted to cash within 12 months. Section B in the Appendix provides the definition for all variables in detail. All regressions control for the log of Goods and Service Tax payments. We include firm, district-year, and industry-year fixed effects and weight observations using Synthetic DID weights. Standard errors are clustered at the district level. + is p<0.15, * is p<0.1 , ** is p<0.05, and *** is p<0.01.

## G.3 Placebo Test Using Prior Years as Post

We conduct a placebo test by restricting our data to the years before the demonetization shock (before 2016), and estimating Equation (2) assuming (in a counterfactual case) that the demonetization shock happened in either 2013 (Panel A) or 2014 (Panel B). This implies we estimate Equation (2) by defining the binary variable Post to take the value 1 for years between 2013-2015 (Panel A) and 2014-2015 (Panel B).

Table G6: Placebo Test (2012∼2015): Main Outcome Variables

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | Ln(Income) | Ln(Sales) | Ln(Expenses) | Ln(TFPR1) | Ln(TFPR2) |
| *Panel A. Treatment year is 2013* | | | | | |
| Connected × Post 2013 | -0.016 | 0.026 | 0.033 | 0.042 | 0.033 |
| | (0.036) | (0.035) | (0.026) | (0.031) | (0.033) |
| Control Mean | 2.29 | 2.08 | 2.30 | 0.88 | 0.73 |
| $R^2$ | 0.99 | 0.99 | 0.98 | 0.87 | 0.93 |
| *Panel B. Treatment year is 2014* | | | | | |
| Connected × Post 2014 | -0.001 | 0.043 | 0.010 | 0.019 | 0.012 |
| | (0.025) | (0.032) | (0.015) | (0.034) | (0.036) |
| Control Mean | 2.28 | 2.08 | 2.31 | 0.87 | 0.72 |
| $R^2$ | 0.99 | 0.99 | 0.98 | 0.87 | 0.93 |
| Firm FE | Yes | Yes | Yes | Yes | Yes |
| Industry-Year FE | Yes | Yes | Yes | Yes | Yes |
| District-Year FE | Yes | Yes | Yes | Yes | Yes |
| No. of firms | 25,092 | 25,092 | 25,092 | 21,679 | 21,803 |
| N | 80,626 | 80,626 | 80,626 | 73,571 | 73,571 |

*Notes:* Income in Column 1 is the sum of all kinds of income an enterprise generates during an accounting period. Sales in Column 2 are all regular income generated by companies from the clearly identifiable sales of goods and from non-financial services. Expenses in Column 3 are the sum of all revenue expenses incurred by a company during an accounting period. TFPR in Columns 4 and 5 are the Total Factor Revenue Productivity of a firm calculated based on the method proposed by Levinsohn and Petrin (2003). In Column 4, the free variables are compensation to employees and raw material expenses and the proxy variable is power, fuel, and water charges; in Column 5, the free variable is compensation to employees and the proxy variable is the consumption of raw material and power, fuel, and water. Section B in the Appendix provides the definition for all variables in detail. We do not control for the log of Goods and Service Tax payments (GST) because GST is started in 2017. We restrict the sample to pre-periods (2012∼2015) and conduct a placebo treatment test assuming that the demonetization happened in 2013 or 2014. Since the Synthetic DID requires at least two pre periods, we use the same weights in Panel B as in Panel A. We include firm, district-year, and industry-year fixed effects and weight observations using Synthetic DID weights. Standard errors are clustered at the district level. + is $p<0.15$, * is $p<0.1$ , ** is $p<0.05$, and *** is $p<0.01$.

## G.4 Randomization Inference

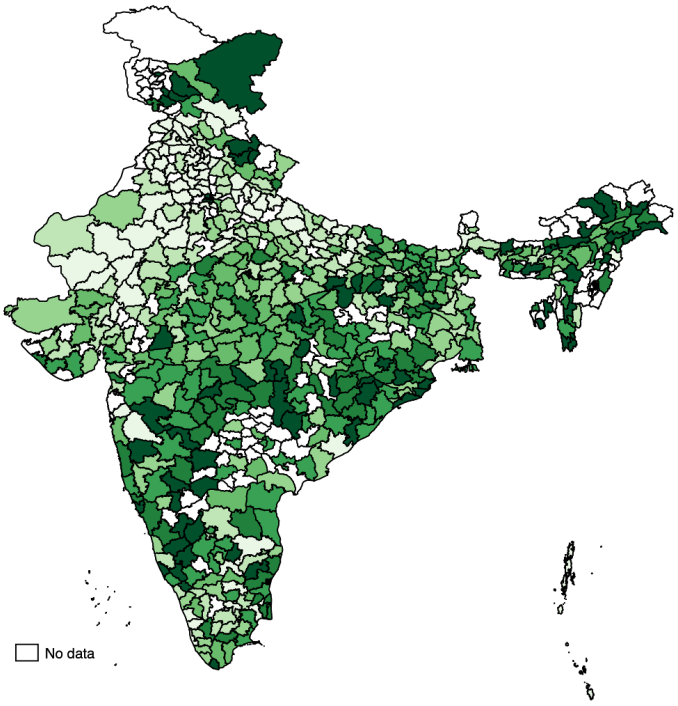
Table G7: Randomization Inference: Main Outcome Variables

| Variables | Connected x Post | p-value (SDID) | p-value (RI) |
|---|---|---|---|
| | (1) | (2) | (3) |
| ***Main Outcomes:*** | | | |
| Ln(Income) | 0.118 | 0.00 | 0.00 |
| Ln(Sales) | 0.087 | 0.00 | 0.01 |
| Ln(Expense) | 0.119 | 0.00 | 0.00 |
| Ln(TFPR1) | 0.053 | 0.00 | 0.05 |
| Ln(TFPR2) | 0.050 | 0.01 | 0.09 |
| ***Liabilities:*** | | | |
| Ln(Total Liabilities) | 0.055 | 0.00 | 0.04 |
| Ln(Non-Current Liabilities) | 0.010 | 0.69 | 0.70 |
| Ln(Current Liabilities) | 0.082 | 0.00 | 0.00 |
| Current/Total | 0.015 | 0.07 | 0.26 |
| Ln(Short-Term Borrowings) | 0.042 | 0.24 | 0.18 |
| Ln(Short-Term Payables) | 0.067 | 0.00 | 0.00 |
| Ln(Short-Term Advances) | 0.029 | 0.17 | 0.14 |
| Ln(Other Current Liabilities) | 0.118 | 0.00 | 0.00 |
| ***Borrowings:*** | | | |
| Ln(Total Borrowings) | -0.049 | 0.14 | 0.09 |
| Ln(Short-Term Borrowings) | 0.063 | 0.23 | 0.04 |
| Ln(Long-Term Borrowings) | -0.141 | 0.01 | 0.00 |
| Short-Term Borr./Total Borr. | 0.028 | 0.03 | 0.00 |
| Ln(Secured Borrowings) | -0.085 | 0.00 | 0.02 |
| Ln(Unsecured Borrowings) | 0.047 | 0.46 | 0.18 |
| Unsecured Borr./Total Borr. | 0.009 | 0.42 | 0.39 |
| Ln(Total Bank Borrowings) | -0.087 | 0.00 | 0.00 |
| Ln(Short-Term Bank Borr.) | 0.032 | 0.46 | 0.34 |
| Ln(Long-Term Bank Borr.) | -0.090 | 0.05 | 0.02 |
| Short-Term Bank Borr./Total Bank Borr. | 0.025 | 0.01 | 0.05 |
| ***Assets:*** | | | |
| Ln(Total Assets) | 0.040 | 0.01 | 0.05 |
| Ln(Non-Current Assets) | 0.050 | 0.08 | 0.05 |
| Ln(Current Assets) | 0.064 | 0.00 | 0.01 |
| Non-Current/Total | 0.002 | 0.67 | 0.66 |
| Ln(Current Investments) | 0.053 | 0.06 | 0.00 |
| Ln(Current Inventories) | -0.005 | 0.83 | 0.82 |
| Ln(Bank Balance) | -0.035 | 0.16 | 0.15 |
| Ln(Other Current Assets) | 0.077 | 0.01 | 0.00 |
| Ln(Non-Current Investments) | 0.093 | 0.05 | 0.00 |
| Ln(Exptd. on Intangibles) | 0.050 | 0.00 | 0.00 |
| Ln(Exptd. On Fixed Assets) | 0.018 | 0.57 | 0.74 |
| Ln(Exptd. On PPE) | -0.018 | 0.56 | 0.60 |

*Notes:* Section B in the Appendix provides the definition for all variables in detail. For Randomization Inference, we randomize the assignment of treatment 100 times. Connected $\times$ Post in Column 1 and the p-value (SDID) in Column 2 is the estimated coefficient (and the corresponding p-value) from our preferred specification in the paper. p-value (RI) in Column 3 is the p-value associated with the Randomization Inference. Standard errors are clustered at the district level.

## G.5 Severity of Demonetization Shock and Firms' Responses

Figure G1: Demonetization Shock By District




*Notes:* The figure displays a district-level map of India's 2016 demonetization shock severity constructed from data extracted from Figure V in Chodorow-Reich et al. (2020). It depicts the value of legal tenders in the district in the post-demonetization period divided by the total value of cash in that district before demonetization using currency chest records maintained by the Reserve Bank of India. The deeper the color, the larger the shock a district has experienced.

Table G8: More vs. Less Severely Shocked Districts

| | (1) Ln(Income) | (2) Ln(Sales) | (3) Ln(Expense) | (4) Ln(TFPR1) | (5) Ln(TFPR2) |
|---|---|---|---|---|---|
| Connected x Post | 0.137*** | 0.111*** | 0.104*** | 0.043 | 0.033 |
| | (0.032) | (0.034) | (0.036) | (0.027) | (0.026) |
| Connected × Post × Severe Shocks | -0.026 | -0.034 | 0.026 | 0.019 | 0.029 |
| | (0.054) | (0.058) | (0.057) | (0.037) | (0.037) |
| Firm FE | Yes | Yes | Yes | Yes | Yes |
| Industry-Year FE | Yes | Yes | Yes | Yes | Yes |
| District-Year FE | Yes | Yes | Yes | Yes | Yes |
| Control Mean | 2.39 | 2.24 | 2.43 | 0.87 | 0.72 |
| $R^2$ | 0.95 | 0.96 | 0.96 | 0.88 | 0.94 |
| No. of firms | 31,333 | 31,333 | 31,333 | 28,138 | 28,242 |
| N | 182,949 | 182,949 | 182,949 | 158,218 | 158,218 |

*Notes:* Income in Column 1 is the sum of all kinds of income an enterprise generates during an accounting period. Sales in Column 2 are all regular income generated by companies from the clearly identifiable sales of goods and from non-financial services. Expenses in Column 3 are the sum of all revenue expenses incurred by a company during an accounting period. TFPR in Columns 4 and 5 are the Total Factor Revenue Productivity of a firm calculated based on the method proposed by Levinsohn and Petrin (2003). In Column 4, the free variables are compensation to employees and raw material expenses and the proxy variable is power, fuel, and water charges; in Column 5, the free variable is compensation to employees and the proxy variable is the consumption of raw material and power, fuel, and water. Section B in the Appendix provides the definition for all variables in detail. All regressions control for the log of Goods and Service Tax payments. We include firm, district-year, and industry-year fixed effects and weight observations using Synthetic DID weights. Standard errors are clustered at the district level. + is p<0.15, * is p<0.1 , ** is p<0.05, and *** is p<0.01.

## G.6 Recency of Political Connections

Table G9: Impact of Connection Duration on Income, Sales, Expenses, and TFPR

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | Ln(Income) | Ln(Sales) | Ln(Expenses) | Ln(TFPR1) | Ln(TFPR2) |
| *Panel A. The First Connected Year* | | | | | |
| Post × Recently-established Political Connection ($\hat{\beta}_1$) | 0.106* | 0.053 | 0.121** | 0.046 | 0.043 |
| | (0.061) | (0.066) | (0.051) | (0.044) | (0.043) |
| Post × Farther off-established Political Connection ($\hat{\beta}_2$) | 0.048 | 0.044 | 0.028 | 0.076$^{+}$ | 0.075 |
| | (0.042) | (0.051) | (0.041) | (0.046) | (0.051) |
| p-vale ($\hat{\beta}_1 - \hat{\beta}_2 = 0$) | 0.522 | 0.925 | 0.196 | 0.635 | 0.678 |
| Control Mean | 2.32 | 2.14 | 2.35 | 0.85 | 0.70 |
| $R^2$ | 0.95 | 0.96 | 0.96 | 0.88 | 0.94 |
| *Panel B. The Nearest Connected Year* | | | | | |
| Post × Short-established Political Connection ($\hat{\beta}_2$) | 0.156** | 0.073 | 0.151** | 0.067 | 0.058 |
| | (0.078) | (0.077) | (0.068) | (0.053) | (0.052) |
| Post × Long-established Political Connection ($\hat{\beta}_2$) | 0.010 | -0.043 | -0.004 | 0.019 | 0.031 |
| | (0.050) | (0.053) | (0.045) | (0.032) | (0.037) |
| p-vale ($\hat{\beta}_1 - \hat{\beta}_2 = 0$) | 0.166 | 0.288 | 0.104 | 0.423 | 0.677 |
| Control Mean | 2.32 | 2.14 | 2.35 | 0.85 | 0.70 |
| $R^2$ | 0.95 | 0.96 | 0.96 | 0.88 | 0.94 |
| Firm FE | Yes | Yes | Yes | Yes | Yes |
| Industry-Year FE | Yes | Yes | Yes | Yes | Yes |
| District-Year FE | Yes | Yes | Yes | Yes | Yes |
| No. of firms | 31,333 | 31,333 | 31,333 | 28,622 | 28,622 |
| N | 186,937 | 186,937 | 186,937 | 161,777 | 161,777 |

*Notes:* In panel A, we use the joining year of the *first* politician/bureaucrat director to calculate how many years a firm has been politically connected. If the connection years are above the median, then we call it a Farther off-established political connection; if the connection years are below the median, then we call it a Recently-established connection. In panel B, we use the joining year of the *latest* politician/bureaucrat director before 2016 to calculate how many years a firm has been politically connected. Income in Column 1 is the sum of all kinds of income an enterprise generates during an accounting period. Sales in Column 2 are all regular income generated by companies from the clearly identifiable sales of goods and from non-financial services. Expenses in Column 3 are the sum of all revenue expenses incurred by a company during an accounting period. TFPR in Columns 4 and 5 is a firm's Total Factor Revenue Productivity calculated based on the method proposed by Levinsohn and Petrin (2003). In Column 4, the free variables are compensation to employees and raw material expenses and the proxy variable is power, fuel, and water charges; in Column 5, the free variable is compensation to employees and the proxy variable is the consumption of raw material and power, fuel, and water. Section B in the Appendix provides the definition for all variables in detail. All regressions control for the log of Goods and Service Tax payments. We include firm, district-year, and industry-year fixed effects and weight observations using Synthetic DID weights. Standard errors are clustered at the district level. + is p<0.15, * is p<0.1 , ** is p<0.05, and *** is p<0.01.

## G.7 Spatial Distribution of Politically Connected Firms

Table G10: Connected Firms & Shock Severity

| | Share of Connected Firms | |
|---|---|---|
| | (1) | (2) |
| Severity | -0.006 | -0.006 |
| | (0.010) | (0.009) |
| N | 370 | 370 |

*Notes:* "Share of connected firms" is the percentage of firms that are politically connected in a district in 2015. "Severity" is the standardized value of demonetization shock. Larger values imply larger shock. "N" is the number of districts. We aggregate the unit weights of firms used in the income/sales regression at the district level. In column (1), we apply the aggregated district weights from the income regression; in column (2), we employ the weights from the sales regression. Standard errors are clustered at the district level. + is $p<0.15$, * is $p<0.1$ , ** is $p<0.05$, and *** is $p<0.01$.