

# Effects of CEO Turnover in Banks: Evidence Using Exogenous Turnovers in Indian Banks\*

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## Abstract

We examine the effects of CEO turnover in banks. Incoming bank CEOs face problems of information asymmetry because banks' operations are opaque and bank risk can change dramatically in a short time. These CEOs may therefore change bank policies to manage their personal risks. Since CEO turnover is usually endogenous, we utilize a setting in which CEO turnover is based solely on retirement age and is thus exogenous to bank performance. Consistent with our thesis, incoming CEOs increase provisioning for future delinquencies and shrink lending. Bank stock prices decline following these changes. Politically motivated lending or ever-greening cannot explain our results.

*Key Words:* Banks, CEO, CEO turnover, Earnings Management, Financial Crisis, Lending, Loans, Retirement, Superannuation, Tenure.

*JEL Classification:* G20, G21, G30, M41.

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# I Introduction

After the recent financial crisis, Chief Executive Officer (CEO) turnover in banks has occupied media headlines. For instance, commenting on the high-profile CEO turnovers in the world’s biggest banks in 2015, the *Financial Times* reported: “In the space of seven months in 2015, a trio of the world’s biggest banks—Barclays, Deutsche Bank, and Credit Suisse—all brought new leaders on board. These ‘new brooms’ face similar challenges in cleaning up their businesses: cutting costs, reshaping their investment banks, and dealing with a legacy of legal and regulatory transgressions.”<sup>1</sup> Of the top ten financial firms in the U.S. (by asset size), *six* experienced CEO turnovers in 2007-2008.<sup>2</sup> In fact, in this period, financial firms showed higher CEO turnover rates than non-financial firms.

While CEO turnovers represent significant corporate events in general (since CEOs shape key firm policies), CEO turnovers in banks are even more important than those in non-financial firms. First, because banks are special (Ashcraft (2003)) and bank financing represents a critical lifeline for credit-constrained firms (Chava and Purnanandam (2011)), changes in banks’ operations can create spillover effects for the entire economy.<sup>3</sup> Second, because banks’ operations are inherently opaque (Furfine (2001)) and their risks can change drastically in a short period (Myers and Rajan (1998)), the incoming CEO of a bank faces significant information asymmetry. Finally, as the global financial crisis highlighted, the level of risk-taking in banks can create externalities for the macro-economy (see Acharya and Richardson (2009a), Fahlenbrach and Stulz (2011)). Yet, little is known about the effects of CEO turnovers in banks. In this study, we fill this gap in the literature by examining these

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<sup>1</sup>Source: <http://www.ft.com/cms/s/0/6f4fea28-aa24-11e5-955c-1e1d6de94879.html#ixzz42sbrDM56>

<sup>2</sup>Of Citigroup, Bank of America, J. P. Morgan Chase, Morgan Stanley, AIG, Fannie Mae, Merrill Lynch, Goldman Sachs, Freddie Mac, and Wachovia, which were the top ten banks by asset size, Citigroup, AIG, Federal National Mortgage Association (Fannie Mae), Merrill Lynch, Federal Home Mortgage Corporation (Freddie Mac), and Wachovia experienced CEO turnovers in 2007-08.

<sup>3</sup>King and Levine (1993), Demirgüç-Kunt and Maksimovic (1998), Rajan and Zingales (1998), Beck, Demirgüç-Kunt and Levine (2009) provide cross-country evidence for the macro-economic effects of bank financing. Jayaratne and Strahan (1996, 1998), Cetorelli and Strahan (2006), Beck, Levine and Levkov (2010) provide evidence within the U.S.

effects.

As the examples of CEO turnover in banks above illustrate, such turnovers are endogenous. This poses a *key challenge* in studying any related effect. CEO turnover correlates not only with firm performance<sup>4</sup>, but also with that of the industry and economy (Jenter and Kanaan (2014)). Therefore, industry or economy-wide shocks cannot offer exogenous variation to study this relationship. Even CEO turnover due to either the passage of state-level anti-takeover laws (Bertrand and Mullainathan (2003)) or banking deregulation (Hubbard and Palia (1995)) would suffer from similar problems. Finally, even voluntary retirements pose identification challenges because they not only depend upon firm performance (Liebersohn (2015)) but may also represent forced retirements disguised as voluntary (Schwartz-Ziv and Weisbach (2013)).

To overcome these identification challenges, we use *exogenous variation* in CEO turnover in Indian government-owned banks (GOBs hereafter). The CEOs of GOBs demit office when they reach their retirement age. Crucially—for the purpose of identification—this retirement age is common for all government employees and is set by the Government of India.<sup>5</sup> Naturally therefore, we find no correlation between turnover and bank performance in the year the CEO exits.

Theory provides three conflicting predictions about the effects of CEO turnover in banks. The “big bath” hypothesis posits that the incoming CEO resorts to “window dressing” accounts in the transitional quarter (Pourciau (1993), Elliott and Shaw (1988), Strong and Meyer (1987), DeAngelo and DeAngelo (1989)). A lower base and the mean reverting nature of discretionary accounting adjustments can then enable CEOs to show higher profits during their tenure. The “truth-telling” hypothesis predicts that the incoming CEO implements policies that reveal the actual situation of the firm (Hertzberg, Liberti and Paravisini

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<sup>4</sup>See Coughlan and Schmidt (1985), Warner, Watts and Wruck (1988), Weisbach (1988), Parrino (1997), Denis, Denis and Sarin (1997), Kim (1996).

<sup>5</sup>In our sample, the retirement age for all government servants is 60.

(2010)). Such policies may involve terminating ever-greened loans doled out by the outgoing CEO and/or rectifying past under-provisioning. The outgoing CEO may ever-green loans to hide true loan performance or to cover up loans originated either under political influence or with corrupt motives. By revealing the truth, incoming CEOs can signal their abilities as effective monitors. The “personal risk management hypothesis” (Amihud and Lev (1981)) predicts that the incoming CEO increases provisions and reduces lending to minimize *personal* costs from negative outcomes due to the predecessor’s actions.

Under the “big bath” hypothesis, purely accounting changes should not affect stock prices. While stock prices should increase if the incoming CEO changes bank policies under the “truth-telling” hypothesis, stock prices should decline if the CEO makes such changes to reduce personal risk because bank policies that reduce the incoming CEO’s personal risks may not add to firm value (Amihud and Lev (1981)).

These conflicting theoretical predictions set the agenda for our empirical analysis. We hand-collect data on CEO retirement dates for each GOB since 2002. Each GOB experienced multiple CEO retirements during this period. Overall, there were 79 CEO turnover events during our sample period. We estimate the hypothesized effects as a generalized difference-in-difference, averaged across these 79 quasi-experiments; a GOB that experiences CEO turnover in a particular quarter forms the treatment group, while the other GOBs that did not experience a CEO turnover in the *same* quarter form the control group. Because GOBs closely resemble each other (Gandhi, 2016), those that did not experience CEO turnover serve as an excellent control group in our setting.<sup>6</sup> Given exogenous CEO turnover, the difference-in-difference tests estimate the *causal effects* of CEO turnover.

We report the following findings. First, we find that incoming CEOs increase provisions for bad loans, as measured by the ratio of loan loss provisions (LLP hereafter) to income,

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<sup>6</sup>“Public sector banks have broadly similar organizational structures and human resource policies. It has been argued that India has too many public sector banks with similar characteristics.” (Speech by Dy. Governor of Reserve Bank of India, R. Gandhi, 22nd April 2016) Source: [https://www.rbi.org.in/Scripts/BS\\_SpeechesView.aspx?Id=999](https://www.rbi.org.in/Scripts/BS_SpeechesView.aspx?Id=999)

by 8.5% in the first quarter they are in charge. We examine LLP because among the many accounting items relevant in a banks, LLP are most susceptible to manipulation.<sup>7</sup> However, we find no change in LLP in the outgoing CEO's last quarter.

Second, we examine the association between current LLP and future Non Performing Assets(NPA) to distinguish between earnings smoothing and impounding of information about future NPA. In general, we find that bank CEOs use LLP to smooth earnings. However, the increased LLP in the transitional quarter primarily impounds information about future NPA, which is inconsistent with the “big bath” hypothesis.

Third, we find that loan volume declines by 7.04% during the transition year. Using unique data on bank-borrower relationships and the characteristics of ever-greened loans documented in the extant literature, we find that the decline in lending is not driven by the incoming CEO terminating ever-greened loans.<sup>8</sup> Thus, truth-telling by terminating ever-greened loans may not explain our findings.

Fourth, we find that the cumulative 3-day abnormal return around the announcement date of results by the new CEO is -1.7%, which is statistically significant. Earlier studies show that the stock market reacts positively when the truth is revealed (Beaver, Eger, Ryan and Wolfson (1989), Elliott, Hanna and Shaw (1991), Griffin and Wallach (1991), Wahlen (1994)). Therefore, the evidence is inconsistent with truth-telling by the incoming CEO. The decrease in stock prices also support the claim that the evidence, when taken together, is consistent with the personal risk management hypothesis.

Fifth, we provide evidence consistent with the hypothesis that incoming CEOs face information asymmetry. Unlike changes under the incoming CEO, we find no evidence of any changes in the last year of the outgoing CEO. This phenomenon is consistent with the

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<sup>7</sup>For example, Collins, Shackelford and Wahlen (1995) and Kilic, Lobo, Ranasinghe and Sivaramakrishnan (2012) show that banks use LLP to smooth earnings. Ahmed, Billings, Morton and Stanford-Harris (2002) find evidence that banks use LLP to manage their capital adequacy.

<sup>8</sup>See Peek and Rosengren (2005), Bruche and Llobet (2014), Caballero, Hoshi and Kashyap (2008), Hoshi and Kashyap (2004), Rogoff (2002) for studies on the characteristics of ever-greening.

hypothesis that the outgoing CEO does not face any information asymmetry. We also find no evidence of any changes in firm policies due to CEO turnover in government-owned non-financial firms, which is consistent with information asymmetry being lower in non-financial firms than in banks. These placebo tests thus highlight that changes under the incoming CEO most likely originate from the information asymmetry the incoming CEO faces.

Our study focuses on Indian GOBs to overcome the identification challenges posed by the endogeneity of CEO turnover. However, concerns about data quality and peculiarities related to GOBs naturally arise. We note that the bank and year fixed effects control respectively for any time-invariant factors specific to a bank as well as factors common across all banks in a year. In fact, because GOBs closely resemble each other, our use of GOBs that did not experience CEO turnover as a control group also alleviates many such concerns, even if they are time-varying. Additionally, any factor that does not vary *systematically* between the transition quarter and other quarters cannot affect our results.

Nevertheless, in our final set of tests, we ensure that our results do not stem from any peculiarities of GOBs. Specifically, we conduct several tests that assure data quality in GOBs. We also conduct tests to mitigate concerns that our results are driven by politically motivated lending or ever-greening.

To our knowledge, ours is the first study to examine the effects of CEO turnover in banks. As CEOs shape key bank policies, and banks play a special role in the economy, it is important to study the impact of CEO turnover in banks. Agency problems in non-financial firms are well documented in the finance literature. However, agency problems in financial institutions are only receiving attention in the academic literature since the financial crisis. These problems in banks lead bank CEOs to assume excessive risks (Taylor (2009)) and manage their earnings (Acharya and Richardson (2009b), Huizinga and Laeven (2012)). Agency problems may also increase the risk of bank failure (see Acharya and Richardson (2009a), Fahlenbrach and Stulz (2011)). Our work contributes to this emerging literature

by examining the effects of CEO turnover in banks and documenting their economic costs through the effects on overall lending.

The paper proceeds as follows. In the next section (section II), we discuss the rationale for banks being special. In section III, we lay down the main hypotheses of the paper. Section IV details our empirical strategy and section V describes the data. Section VI describes the main findings of this paper while section VII rules out alternate explanations. Section VIII concludes.

## II Why are banks special?

### II.A Information asymmetry

Although information asymmetries plague all sectors, evidence suggests that banks face higher information asymmetry (Furfine (2001)). Loan quality in banks is not readily observable and can be hidden for long periods. This, in turn, manifests for several reasons. First, banks need not disclose information about individual loans. Second, borrower disclosures about private lending arrangements need not include the name of the banks involved. Third, the information regulators obtain by examining banks remains confidential. Fourth, banks can alter the risks underlying their assets more quickly than firms in most non-financial industries (Myers and Rajan, 1998) can. Finally, banks can readily hide problems by evergreening their loans. Consistent with such opacity, Morgan and Stiroh (2001) find that bond analysts disagree more over bonds issued by banks than those issued by non-financial firms.

## II.B LLP influences earnings & risk

Earnings management in banks is typically measured by the proclivity to make (i) discretionary LLP or (ii) discretionary realizations of security gains or losses (Cornett, McNutt and Tehranian (2006)).

### II.B.1 LLP

As in non-financial firms, banks can use accruals to manage their earnings. LLP represents one of the most important accrual items in banks.<sup>9</sup> LLP are an expense item in the income statement, reflecting management's current assessment of the likely level of future losses from defaults on outstanding loans. Recording LLP reduces net income. LLP are calculated using an incurred loss approach and reflect the expected losses from lending. Several studies find evidence that banks use LLP to manage earnings (Greenawalt and Sinkey Jr (1988), Wahlen (1994), Laeven and Majnoni (2003), Liu and Ryan (2006)). Thus, LLP are quite susceptible to manipulation in banks.

A key feature of LLP, unlike accruals in non-financial firms, is that they simultaneously influence bank profitability and bank risk (Bushman and Williams (2012), Beatty and Liao (2011)). Commercial bank regulators specify bank capital based on the bank's risk-weighted assets, which reflect the expected losses on loans. Therefore, bank capital absorbs unexpected losses, defined as negative deviations from the expected losses. Regulators view accumulated LLP as a type of capital that banks can use to absorb losses. Too high LLP lower the reported profitability, but increase the buffer against unexpected losses. Thus, high LLP reduce the chance that a bank uses its capital to cover unexpected losses (Laeven and Majnoni (2003)). On the other hand, low LLP increase reported profitability, but also increase the chance that

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<sup>9</sup>See, for e.g., Beaver et al. (1989), Moyer (1990), Scholes, Wilson and Wolfson (1990), Wahlen (1994), Beatty, Chamberlain and Magliolo (1995), Beaver and Engel (1996), Kim and Kross (1998), Liu and Ryan (2006).

a bank must use its capital to cover unexpected losses. Because equity capital is quite costly to raise (Myers and Majluf (1984)), LLP affect bank risk.

## II.B.2 Realized security gains and losses

In addition to LLP, bank CEOs exercise discretion in deciding the realization of security gains and losses (Beatty et al. (1995), Beatty, Ke and Petroni (2002)). Unlike LLP, security gains and losses are relatively unregulated. Moreover, it is unlikely that auditors, regulators, or shareholders will subsequently take issue with a manager's decision to sell an investment security that happens to increase or decrease earnings. Thus, realized security gains/losses represent a second way that management can manage earnings.

## III Hypotheses

Apart from the information asymmetry incoming CEOs face, agency problems due to the CEO's "horizon problem" matter for CEO turnovers because it affects the bank's policies. The CEO's "horizon problem" arises from the fact that the CEO's decision horizon is shorter than shareholders' investment horizons (Jensen and Smith (2000)). So, CEOs approaching retirement age become more "myopic;" they place less weight on cash flows occurring after their retirement than on cash flows occurring during their employment (Dechow and Sloan (1991), Mannix and Loewenstein (1994), Buchholtz and Ribbens (1994), Buchholtz, Ribbens and Houle (2003), Barker III and Mueller (2002), Conyon and Florou (2003)).

As we describe in the Introduction, the predicted effects vary based on the hypothesized effect of CEO turnovers on bank policies. We summarize the various predictions in the following table to enable easy interpretation of our results:

Effect in the transitional quarter:	Hypothesis:		
	Big bath	Truth telling	Personal risk management
LLP	↑	↑	↑
Correlation of LLP with future NPA	↔	↑	↑
Correlation of LLP with earnings before provisions	↑	↔	↔
Correlation of LLP with earnings after provisions	↔	↓	↓
Lending	↔	↓	↓
Stock prices following first earnings announcement	↔	↑	↓

Thus, the stock price reaction to the new CEO's first earnings announcement enables us to distinguish between the "truth telling" and "personal risk management" hypotheses.

## IV Empirical setting

### IV.A The Indian banking system

The banking industry in India includes GOBs, private sector banks, and foreign banks. GOBs account for 74.2% (75.1%) of all outstanding loans (deposits) in the Indian banking sector. The State Bank of India and its associate banks alone account for 21.8% (25.2%) of all outstanding loans (deposits).<sup>10</sup> Thus, GOBs dominate the Indian banking system.

### IV.B CEO turnover in GOBs

In this section, we discuss the retirement and appointment procedures for CEOs of GOBs in India. A CEO of a GOB retires once attaining the age of superannuation. The

<sup>10</sup>Source:<http://www.rbi.org.in/scripts/PublicationsView.aspx?id=15044>

Government of India specifies the age of superannuation for all GOB employees. Since May 1998, this age is fixed at 60. The CEO of a GOB is officially designated as Chairman and Managing Director (CMD) and is both the top executive and Chairman of the board. However, for convenience, we refer to the head of a GOB as a CEO in this paper.

The procedure for CEO appointment is rule-based with restrictions applied based on eligibility, tenure, and so on. Seniority—measured as the number of years of service—is given preference over other attributes. All appointments must be cleared by the Central Vigilance Commission (CVC), which is the federal agency in charge of investigating alleged corruption and fraud. The outgoing CEO has no role in the appointment of a new CEO. Moreover, the new appointment is always announced very close to the exit date of the incumbent CEO. Thus, in our setting, while outgoing CEOs know when their terms end (because it ends on the date of superannuation), incoming CEOs know about their appointments just a month or so before assuming office. Therefore, the predecessor and successor cannot collude to set bank policies.

#### **IV.C A clean empirical setting**

CEO exits may be endogenously determined by bank performance (Murphy and Zimmerman (1993)), industry performance, and economic performance (Jenter and Kanaan (2014)). Therefore, industry or economy-wide shocks cannot offer exogenous variation to study this question. Finally, even voluntary retirements pose identification challenges because they not only depend upon firm performance (Liebersohn (2015)), but may also represent forced retirements disguised as voluntary (Schwartz-Ziv and Weisbach (2013)).

An ideal empirical setting to examine the *causal* effects of CEO turnover is one in which (i) outgoing CEOs know the duration of their terms at the bank, that is, CEO turnover is predictable; and (ii) CEO turnover is exogenous to bank performance. Following the

discussion in section III, the CEO’s horizon problem is important in order that CEO turnover will affect bank policies. For the costs due to the manager’s horizon problem to manifest, an ideal empirical setting must meet the first condition. Thus, we need a setting where CEO turnover is determined by some variable that is uncorrelated to bank performance. Some studies use unpredictable events such as sudden deaths to examine the causes and effects of CEO turnover (see Johnson, Magee, Nagarajan and Newman (1985), Hayes and Schaefer (1999), Salas (2010)). However, in these cases, the effects due to the CEO’s horizon problem do not manifest.

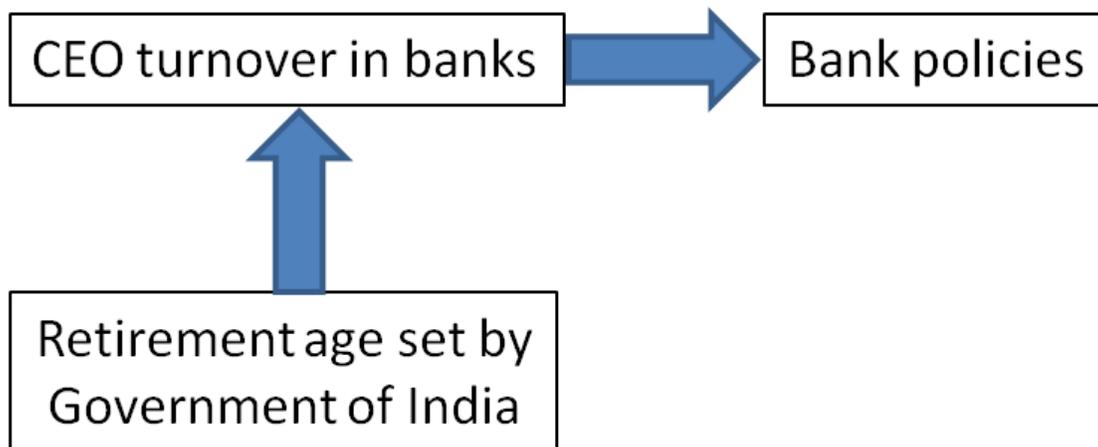


Figure 1: CLEAN IDENTIFICATION PROVIDED BY AGE-DETERMINED CEO TURNOVER

Our empirical setting satisfies both requirements because CEOs’ exits are exogenously determined by a rule that is linked to their ages. Thus, outgoing CEOs know exactly when they will retire. Consequently, all costs arising from the CEO’s horizon problem would manifest in our setting. Simultaneously, given age-based CEO exits, CEO turnover in our setting is not related to bank performance.

## V Data and proxies

To obtain data on banks’ financial performance, we use the Prowess database maintained by the Center for Monitoring the Indian Economy (CMIE). Prior studies use similar

data from Prowess (see Visaria (2009), Lilienfeld-Toal, Mookherjee and Visaria (2012), Vig (2013), Gopalan, Mukherjee and Singh (2014)). We use quarterly financial information on banks. Since complete data are available in Prowess from 2002 onwards, we begin our sample from the 2002 calendar year. Our sample ends in the April-June quarter of 2013. Given the 21 GOBs and 46 quarters, the maximum possible number of observations in our sample is 966 ( $= 21 \times 46$ ). Some GOBs were not partially privatized in 2002. Data are not available for bank-quarters where the bank is not listed in the stock markets. Hence, we do not have data for all banks starting from 2002. Specifically, data for 84 bank-quarters are not available. Therefore, we have a maximum of 882 observations at the (bank, quarter) level for LLP, income, and other income statement variables. Information from balance sheets such as lending and capital adequacy ratio, are available for a smaller sample. Data on LLP and capital adequacy ratios are available for 757 bank-quarters, data on lending are available for 760 bank-quarters, and data on lending and capital adequacy ratios are available for 732 bank-quarters. Information about non-performing assets, LLP, and capital adequacy ratios is available for a maximum of 670 bank-quarters. However, as we show later, missing data do not account for our results.

For our tests of the ever-greening of loans, we use data at firm-quarter level. For each quarter, Prowess provides the names of the banks with which a firm has a banking relationship. These tests employ 44,316 observations at the (borrower, quarter) level.

Since Prowess does not specify the exact date a new CEO joins the bank, we hand-collect data on this from various sources, including press announcements, CEOs' CVs, and company histories. Our sample consists of all 21 GOBs in India.<sup>11</sup> Table A.1 (in the Appendix) lists all CEO turnovers for each GOB during our sample period. As Table A.1 shows, each GOB experienced multiple CEO turnovers during our sample period. Therefore, we have *adequate variation in CEO turnovers within each bank* to conduct tests that control for bank fixed

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<sup>11</sup>We do not consider the State Bank of India's subsidiaries separately because, as per section 2(bb) of the State Bank of India Act of 1955, the Chairman of the State Bank of India is the Chairman of all subsidiaries.

effects. Finally, we obtain information regarding the post-retirement board memberships of bank CEOs in our sample from Prowess. In section VI, we perform several tests to address possible concerns about data quality.

## V.A Defining the transitional quarter

We define the transitional quarter in two ways. As our preferred definition, we define the transitional quarter as the first quarter in which the new CEO assumes charge. For example, if a new CEO assumes charge on the 5th of January, then the Jan-Mar quarter is the transitional quarter. We use this definition for all our tests.

As our second definition, we define the transitional quarter as the first quarter in which the incoming CEO announces the bank's results. In the example above, if the results for the October-December quarter are announced on January 30, then the October-December quarter is the transitional quarter. We use this definition as a robustness check, especially to measure the impact of CEO turnover on accounting measures. The implicit assumption here is that the CEO taking charge before the results are announced is sufficient to influence the earnings estimates.

## V.B Summary statistics

Table 1 presents the summary statistics for our data. We examine the turnover of all CEOs in 21 GOBs in India. The median and mean tenures for CEOs of GOBs is about 2.9 years (11.5 quarters) and about 3.1 years (12.6 quarters), respectively. For comparison, consider CEO tenure in U.S. firms. Average CEO tenure in the U.S. is about 4 years since the 2000s (Breton-Miller, Miller et al. (2006)). Thus, during our sample period, CEO tenure at GOBs is lower by about 25% compared to CEO tenure at U.S. firms.

During our sample period, Indian GOBs maintained a healthy median profit-to-income ratio of 12%. These banks’ net interest margin is between 3 to 4%, while the median LLP-to-income ratio is 11.9%. Indian GOBs have a healthy capital adequacy ratio of 12.79%. The median amount of loans outstanding for all the GOBs in a quarter is INR 625.77 bn, which is equivalent to USD 10.46 bn.

[Insert table 1 here]

## VI Results

### VI.A Is CEO turnover indeed exogenous?

We argue in Section IV.B that CEO turnover is driven only by the age of the incumbent. To examine if CEO turnover is indeed exogenous, we run the following regression:

$$\text{CEO\_TURNOVER}_{it} = \beta_0 + \beta_i + \beta_t + \beta_1 \cdot x_{i,t-1} + \gamma X_t + \varepsilon_{it}, \quad (1)$$

where CEO\_TURNOVER is 1 for four quarters preceding the transition quarter and 0 otherwise. Given the use of lead-lags in this empirical design, we lose some observations in these tests.  $x_{i,t-1}$  denotes one of the correlates we test for.  $\beta_i$  and  $\beta_t$  denote bank fixed effects and fixed effects for each (year, quarter), respectively. In all regressions, we estimate standard errors clustered by bank to account for possible autocorrelation.

Table (2) presents the results from equation (1). We do not find any significant change in LLP, NPA, net profit-to-income ratio, or volume of lending in the four quarters preceding the transitional quarter. Thus, it is unlikely that the CEO is replaced due to sub-par performance in the quarters preceding the transition. These tests confirm that CEO turnover

is indeed exogenous in our setting.

[Insert table 2 here]

## VI.B Identification strategy

Because CEO turnover in GOBs in India is exogenous to bank performance, we can infer the *causal effect* of CEO turnover on the variables of interest by estimating a difference-in-difference. To clarify, consider the CEO change at the Bank of Baroda in May 2008. Because the April-June quarter of 2008 represents the transitional quarter, we can first estimate the difference in bank policy in the April-June 2008 quarter for Bank of Baroda vis-à-vis the average in all other quarters. Then, we can estimate the same difference for every other GOB that did not experience a CEO turnover in the April-June 2008 period. Because the Government of India owns majority stakes in all GOBs, they closely resemble each other. Thus, a GOB that did not experience CEO turnover serves as an excellent control group in our setting. The difference between these two differences provides a causal estimate of the effect of CEO change on bank policies in the Bank of Baroda in April-June 2008. This is because the second difference described above provides an estimate for the counterfactual question: what would have been the change in Bank of Baroda’s policies if the particular CEO change had not occurred in April-June 2008?

While the example above considers a single CEO turnover event at Bank of Baroda, our sample consists of 79 such exogenous CEO turnovers in 21 GOBs. We estimate the average of the difference-in-differences estimates over each of these events. Our baseline specification to estimate this difference-in-difference is

$$Y_{it} = \beta_0 + \beta_i + \beta_t + \beta_1 \times \text{NEW\_CEO}_{it} + \gamma X + \varepsilon_{it}, \quad (2)$$

where the dependent variable is an outcome measure for bank  $i$  in (year, quarter)  $t$ . The independent variable of interest is the  $\text{NEW\_CEO}_{it}$  dummy, which takes the value of 1 if the (year, quarter)  $i$  is a transitional quarter and 0 otherwise. The transitional quarter is the first quarter in which the new CEO is in charge. The bank fixed effects  $\beta_i$  enable us to control for various time in-varying factors that may be specific to the bank and that influence the bank’s profitability. The fixed effects for each (year, quarter)  $\beta_t$  allows us to control for average time trends in profitability. Many of our control variables (denoted by  $X$ ) do not show cross-sectional variation. For example, GDP growth varies by (year, quarter). Thus, we run the regressions after dropping time fixed effects when we include such variables.

The coefficient  $\beta_1$  captures the impact of CEO turnover as a difference-in-difference:

$$\beta_1 = \overline{Y}_{\text{transitional quarter}} - \overline{Y}_{\text{other quarters}} \Big|_{\text{bank experiencing CEO turnover in a (year,quarter)}} - \overline{Y}_{\text{transitional quarter}} - \overline{Y}_{\text{other quarters}} \Big|_{\text{banks NOT experiencing CEO turnover in (year,quarter)}} \quad (3)$$

## VI.C Effect on LLP

LLP are an easy target for discretionary earnings management in banks. For example, [Bikker and Metzmakers \(2004\)](#) and [Kilic et al. \(2012\)](#) find that bank managers use LLP for income smoothing. All the three hypothesis that we test—“big bath”, “truth-telling”, and “personal risk management”—predict that the incoming CEO is likely to increase provisions during the transitional quarter. Of course, we discuss in [Section III](#), the hypotheses differ in the motivation for this increase. We follow [Kilic et al. \(2012\)](#) in normalizing LLP using net income before taxes and provisions.

[Table 3](#) reports the results. In the first two columns, we use our preferred definition of transitional quarter, which corresponds to the quarter in which the new CEO assumes charge. In the next two columns, we use our second definition of transitional quarter, which

corresponds to the first quarter in which the incoming CEO announces the bank’s results. In columns 1 and 3, we report results with bank (year, quarter) and fixed effects for each (year, quarter). We find that the LLP-to-income increases by 1.1% in the transitional quarter. In columns 2 and 4, we report the result of tests including additional controls such as the bank’s capital adequacy ratio, GDP growth rate, and yield on 10-year government bonds. These variables enable us to control for specific time-varying factors that may influence provisioning by all banks. Again, we find that the LLP-to-income increases by about 1.2%-2.4%. In all four columns, the results are statistically significant at the 95% level or higher. Because the mean LLP-to-income ratio is 13.0%, our results imply an 8.5% increase in the ratio; the change is thus economically significant.

[Insert table 3 here]

We also do an event-plot of LLP-to-income ratio around the transition quarter, as shown in figure 2. We find that the ratio spikes in the transition quarter and is statistically indistinguishable from 0 in all other quarters.

[Insert figure 2 here]

The result above is consistent with all three hypotheses described in Section III. We therefore move to our second piece of evidence—the association between provisions and future NPA—for a further examination and to distinguish between the various hypotheses.

## VI.D Correlation between LLP and future NPA

A question that naturally arises in this regard is whether the future increase in NPA justifies the change in LLP. Alternatively, does the change in LLP reflect the anticipated change in NPA? [Bushman and Williams \(2012\)](#) distinguish between the provisioning associated with earnings smoothing and that associated with timely recognition of future losses. They argue that a higher sensitivity of current LLP to current earnings reflects earnings

smoothing. They find that LLP created to smooth earnings are associated with reduced discipline in risk-taking and diminished transparency. On the other hand, LLP in anticipation of higher future losses are associated with increased discipline in risk-taking and enhanced transparency.

As in [Bushman and Williams \(2012\)](#), we estimate the following regression:

$$\begin{aligned}
(LLP_{i,t}/LOAN_{i,t-1}) = & \beta_0 + \beta_i + \beta_t + \beta_1 \cdot NEW\_CEO_{it} + \\
& \beta_2 \cdot (NPA_{i,t+1}/LOAN_{i,t}) + \beta_3 \cdot (NPA_{i,t}/LOAN_{i,t-1}) + \beta_4 \cdot (PROFIT_{i,t}/LOAN_{i,t-1}) + \\
& \beta_5 \cdot (NPA_{i,t+1}/LOAN_{i,t}) \times NEW\_CEO_{it} + \\
& \beta_6 \cdot (PROFIT_{i,t}/LOAN_{i,t-1}) \times NEW\_CEO_{it} + \varepsilon_{it}
\end{aligned} \tag{4}$$

Because LLP and NPA may co-move contemporaneously, we include  $(NPA_{i,t}/LOAN_{i,t-1})$  to control for such co-movement. Current profitability measured using  $(PROFIT_{i,t}/LOAN_{i,t-1})$  captures the use of LLP for earnings smoothing. Since we are interested in the incremental correlations of LLP with current profitability and future NPAs in the transitional quarter, the key coefficients of interest are  $\beta_5$  and  $\beta_6$ :

$$\beta_5 = \frac{\partial (LLP_{i,t}/LOAN_{i,t-1})}{\partial (NPA_{i,t}/LOAN_{i,t-1})} \Bigg|_{\text{transitional quarter}} - \frac{\partial (LLP_{i,t}/LOAN_{i,t-1})}{\partial (NPA_{i,t}/LOAN_{i,t-1})} \Bigg|_{\text{other quarters}} \tag{5}$$

$$\beta_6 = \frac{\partial (LLP_{i,t}/LOAN_{i,t-1})}{\partial (PROFIT_{i,t}/LOAN_{i,t-1})} \Bigg|_{\text{transitional quarter}} - \frac{\partial (LLP_{i,t}/LOAN_{i,t-1})}{\partial (PROFIT_{i,t}/LOAN_{i,t-1})} \Bigg|_{\text{other quarters}} \tag{6}$$

We report the results in [Table 4](#). In columns 1 and 2, we examine the general relationship between LLP, income, and NPA. In column 1, we find a positive correlation between LLP and contemporaneous levels of NPA, with the correlation between LLP and future NPA being statistically indistinguishable from zero. In column 2, once we control for the correlation between LLP and contemporaneous profitability, we find that the partial correlation between LLP and contemporaneous NPA becomes negative. Thus, in general, while LLP is higher when current profitability is higher, LLP is also higher when current NPA is lower. This

seems consistent with earnings management in banks generally because the impounding of information about current delinquencies should lead to a positive correlation between LLP and NPA, and possibly no correlation between LLP and current profitability. Moreover, expected NPA captured by actual NPA in the next period, on the other hand, are not significantly associated with LLP. Thus, in general, LLP do not reflect information about expected future defaults.

Having studied these correlations in general, we now focus on differences in the transitional quarters. In column 3, we include the interaction of the dummy with future NPAs and find that the coefficient is positive and statistically significant at the 99% level. In columns 4 and 5, we estimate the full specification in equation (5). We find that the incremental association between LLP and next- period NPA shown in the coefficient estimate of  $\beta_5$  remains positive and statistically significant at the 99% level. In fact, a 1% increase in expected NPA results in a 2.3% increase in provisions. However, the general association between LLP and next-period NPA is negative and significant. In effect, the zero correlation between LLP and next period NPA shown in column 2, is a result of the overall negative association between these two variables (see columns 2-5) being offset by the positive association in the transitional quarter. Additionally, note from columns 4 and 5 that the coefficient estimate of  $\beta_6$  is statistically indistinguishable from zero. This suggests no significant association incrementally between LLP and profits in the transitional quarter. In general, however, the association between LLP and profits is positive, which indicates the general prevalence of earnings smoothing. In Table A.2 in the appendix reports the results of replicating the results in Table 4 using LLP-to-income as the dependent variable. Our results are qualitatively and quantitatively unchanged.

The results above help us rule out the “big bath” hypothesis because the results indicate that: (i) the new CEO does not indulge in earnings management in the transitional quarter; and (ii) the positive and significant association between provisions and future NPA in the

transitional quarter impounds future information about NPA.

[Insert table 4 here]

## VI.E Effect on bank profitability

We now examine if the new CEO influences revenue items other than LLP. To do this, we examine the impact of CEO turnover on profit-before-provisions and profit-after-provisions. If LLP is the only revenue item affected by CEO turnover, then we do not expect any change in profit-before-provisions in the transitional quarter and a mechanical decline in profit-after-provisions driven exclusively by increased LLP. However, if the new CEO engages in widespread earnings management—not limited only to LLP—then it is reasonable to expect a decline in profit-before-provisions as well.

Table 5 presents the results from the tests. The dependent variable is profit-before-LLP scaled by income in columns 1 and 2, whereas it is profit-after-LLP scaled by net income in columns 3 and 4. In columns 1 and 3, we use time and bank fixed effects. In columns 2 and 4, we employ bank-level and economy-wide control variables. In columns 1 and 2, we find that profit-before-LLP does not decline significantly in the transitional quarter. However, profit-after-LLP declines between 1.2% to 1.3%. This shows that the new CEO changes LLP only and does not alter any other revenue item. This result is difficult to explain using the “big bath” hypothesis.

As we discuss in Section III, bank managers can use LLP not only for earnings smoothing, but also to manage the bank’s risk. Specifically, though high LLP lowers profitability, high LLP increase the buffer against expected losses. Consequently, high LLP lowers the chance that a bank has to use its capital to cover unexpected losses (Laeven and Majnoni (2003)). In contrast, realized security gains and losses primarily affect earnings without affecting the buffer against expected losses. Furthermore, we found in section VI.D that LLP

in the transitional quarter does not smooth earnings, but impounds information about future NPAs. Combined with this evidence, the incoming CEO increasing LLP, but not other accounting items, suggests that the increase in LLP relates to bank risk.

[Insert table 5 here]

## VI.F Effect on overall lending

Under the personal risk management hypothesis, CEO turnover may affect overall lending. Because banks engage in relationship lending, which involves soft, unverifiable information (Stein (2002)), incoming CEOs would fear their lack of knowledge about the quality of the loans created by his predecessor. Note that under the “truth-telling” and “big bath” hypotheses, CEO turnover is unlikely to affect lending.

Unlike accounting estimates such as provisions, it may not be possible for a new CEO to influence lending immediately. Therefore, we compare the total advances in the four quarters immediately following CEO turnover. Thus, we redefine the dummy variable  $NEW\_CEO_{it}$  in equation (2) to equal 1 for both the transitional quarter and the subsequent three quarters, and 0 otherwise. We present the results in Table 6. In columns 1 and 2, the dependent variable is the total advances at the end of quarter  $t$ . In columns 3 and 4, we winsorize the loan amount at the 1% level. In column 1(2), we find that the total advances are lower by INR 44.0 (84.5) bn during the transitional quarters.<sup>12</sup> Using the median advance of Rs. 625.8 billion, this decline represents a 7.04% (13.15%) fall, which is economically significant.

[Insert table 6 here]

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<sup>12</sup>In additional robustness tests, we re-examine these results by including calendar month fixed effects to control for any possible seasonal effects. Our results remain unchanged.

## VI.G Stock market impact

The personal risk management hypothesis predicts that the incoming CEO would minimize personal risks, even if doing so is value-reducing for the bank. On the other hand, if the new CEO cuts lending to bad borrowers, stops the cycle of ever-greening, and undertakes a clean-up in the spirit of truth-telling, then the stock market should react positively. Unlike the existing literature, which attributes negative stock returns as a reason for CEO resignation (see [Weisbach \(1988\)](#), [Goyal and Park \(2002\)](#)), CEO turnover is exogenous in our setting. Therefore, any significant stock price reaction in the transitional quarter would provide an estimate of the causal effect of CEO turnover on the stock price.

We calculate the market-adjusted return by taking the residuals from regressing the individual bank’s stock return on the CNX NIFTY index, the National Stock Exchange of India’s benchmark index for the Indian equity market.<sup>13</sup> Prowess does not provide comprehensive data for quarterly results announcement dates. We thus hand-collect this data from newspapers and company websites, and cross-check the information with Bloomberg. We use returns over the  $[-165, -16]$  window to calculate the parameters of the market model and use  $[-1, 1]$  as the event window. To avoid incorrect estimates for relatively illiquid stocks, we require a stock to be traded for at least 120 days during the 150-day estimation window. Additionally, as we note in [Section V](#), some banks were later in our sample period; their coverage only starts from the quarter of listing. For these tests, we therefore have a maximum of 651 observations for 20 banks. In addition, some stocks remained illiquid for some quarters after listing. We left such observations out due to our liquidity screen. Of the 21 GOBs, one bank—United Bank of India—was excluded because it consistently trades for less than 120 days during the estimation windows. However, none of our results were impacted significantly by either including or omitting this bank.

We use the cumulative abnormal returns over  $[-1, 1]$  as the dependent variable in equa-

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<sup>13</sup>By trading volume, The National Stock Exchange is the largest stock exchange in India.

tion (2). We present the results from the above tests in Table 7. In columns 1 and 2, the dependent variable is the cumulative return and the cumulative abnormal return, respectively, on bank stock  $i$  during the event window. We include bank- and quarter-level fixed effects in all four specifications.

The results clearly show that the market reacts negatively to results announced by new CEO. The cumulative abnormal return (cumulative return) is lower, by 1.7% (1.5%), during transitional quarters compared to other quarters. This clearly shows that new CEOs' risk aversion has real negative effects on shareholder wealth. Further, these results help us to alleviate concerns that our results are driven by the new CEO terminating ever-greening, connected lending, and/or politically motivated lending. If these alternative explanations were correct, the stock prices should have reacted positively.

[Insert table 7 here]

## VI.H Asymmetric information

We argue that CEO turnover affects bank policies due to the significant information asymmetry that new bank CEOs face. To provide evidence of this mechanism, we conduct two sets of placebo tests. First, as in Table 2, none of the key financial variables change significantly before the transitional quarter. This suggests that changes in bank policies occur under the new CEO and not the outgoing CEO, which is consistent with the hypothesis that incoming CEOs face information asymmetry, while the outgoing ones do not.

Second, we investigate whether any changes in firm policies occur that coincide with CEO turnover in similar government-owned *non-financial* firms. As we mention in Section III, problems due to information asymmetry are lower in non-financial firms than in banks. If our results are indeed driven by information asymmetry, then we do not expect them to manifest in this sample of government-owned *non-financial* firms. If, on the other hand, our

results are driven government ownership, then we are likely to find abnormal behavior in the key variable around CEO turnover, even in this sample. Table 8 reports the results, which show that profit does not decline significantly for non-bank government-owned companies. Similarly, we see no change in standardized unexpected earnings. Because these are non-financial firms, we cannot examine their lending. This evidence indicating no changes in government-owned non-financial firms suggests that our main results stem from the issue of information asymmetry that characterizes banks. Moreover, this evidence demonstrates that *our main results do not stem from any peculiarities associated with government ownership of banks.*

[Insert table 8 here]

## VI.I Motivation for incoming CEOs' actions

To provide further evidence of personal risk management, we now examine if post-retirement career concerns motivate such risk management. Brickley, Linck and Coles (1999) argue that (inside and outside) board memberships after retirement provide powerful incentives for CEOs. Gupta (2005) shows that CEOs of Indian government-owned firms that exhibit better performance receive more board offers after retirement. Accordingly, we test if greater performance management by a bank CEO in our sample correlates with board appointments in other firms after retirement. Because we are interested in the “managed” component of performance, we measure the growth rate in profits from the first quarter a CEO is in charge to the last quarter he/she is in charge. We compare this measure vis-à-vis the benchmark provided by actual performance measured by the growth rate in profits from the last quarter the previous CEO was in charge to the last quarter the current CEO was in charge. Because our sample ends in the April-June quarter of 2013, in the case of CEOs exiting at the end of the sample, we can only observe the board appointments secured within two years of retirement. To avoid this right-censoring bias, we uniformly restrict board mem-

berships to those received within two years of retirement. Since the sample for these tests consists of the 64 CEOs who retired during our sample period, the sample is not adequate for multivariate tests. Therefore, we restrict the analysis to a simple t-test for the difference in the means between the sample of CEOs given a board membership and those that did not. We report the results in Table 9. For the group that received a board membership within two years after retirement, we find that the “managed” component of performance is approximately 8% higher than for the group that does not receive any board membership during the same period. This result shows that incoming CEOs’ performance management in the transitional quarter is associated with more directorships post-retirement. Note that CEOs who receive a board membership may be more ambitious or more qualified. Since our tests only test for the association between performance management by the incoming CEO and subsequent board memberships, we cannot rule out such self-selection. Therefore, this evidence only suggests that post-retirement career concerns influence personal risk management by the incoming CEO.

[Insert table 9 here]

## VII Alternative explanations and data concerns

Our study focuses on Indian GOBs to overcome the identification challenges of the endogeneity of CEO turnover. However, concerns about data quality and peculiarities related to GOBs naturally arise. As we argue in the Introduction, including bank and year fixed effects and using other GOBs that do not experience CEO turnover as a control group significantly alleviates such concerns.

For instance, consider politically connected lending. Bank fixed effects should control for time-invariant, bank-specific differences in politically connected lending. Similarly, we control for the common factors that affect politically connected lending across all banks

in a (quarter, year) by the fixed effects for each (quarter, year) pair. Finally, GOBs in India are very similar to each other. For instance, the Deputy Governor of the RBI argues that India “has too many GOBs with very similar characteristics.” (Gandhi, 2016) Since politically connected lending affects all GOBs similarly, using GOBs that do not experience CEO turnover in a particular (quarter, year) as a control group enables us to account for various time-varying factors as well. In fact, any factor that does not vary *systematically* between the transitional quarter and other quarters cannot affect our results. Nonetheless, we examine such concerns directly.

## VII.A Politically motivated lending?

First, we investigate if our results stem from outgoing CEOs’ lending to politically connected firms. In this case, it is possible that the incoming CEO’s higher provisioning and reduction in lending may be intended to correct this malaise. A number of studies show that GOBs are indeed subject to political interference (Dinç (2005), Khwaja and Mian (2005), Sapienza (2004), Cole (2008)).

Politically appointed CEOs would owe their allegiance to the government of the day. Thus, we use the unexpected change in the federal government—from the incumbent National Democratic Alliance (NDA) to the United Progressive Alliance (UPA) in 2004—to examine if politically connected lending impacts our results. For this purpose, we focus on outgoing-incoming CEO pairs where both CEOs were appointed by the same government. In such pairs, both CEOs are likely to owe their allegiance to the same set of political masters. If the outgoing CEO in this group lends to politically connected firms, the incoming CEO in this group is unlikely to upset the *status quo*. Note that there is no reason to believe that the incoming CEO will be *systematically* less prone to political influence than the outgoing CEO because every new CEO becomes an old CEO when handing charge of a bank to the successor. Thus, for these pairs of CEOs, it is unlikely that the political influence on CEOs

will differ significantly between transitional and other quarters. In other words, in this group of CEOs, the incoming CEO is unlikely to reduce lending. If our results stem from outgoing CEOs' lending to politically connected firms, then the difference between the transitional quarter and other quarters should not manifest for these CEO pairs.

To test this thesis, we repeat the specifications in Tables 3 and 6 for the sub-sample of cases where the same government appointed both the outgoing and incoming CEOs. We report the results in Table 10. In line with our earlier results, LLP increases significantly and lending declines significantly in the transitional quarter. Thus, we can infer that our results are unlikely to stem from lending to politically connected firms.

[Insert table 10 here]

## VII.B Ever-greening of loans?

Next, we examine if our results stem from possible ever-greening by the outgoing CEO. To identify ever-greening, we use the findings from the literature on ever-greening and zombie lending (Peek and Rosengren (2005), Bruche and Llobet (2014), Caballero et al. (2008), Hoshi and Kashyap (2004), Rogoff (2002)). We then examine if the incoming CEO reduces lending to such categories of borrowers.

### VII.B.1 Pre-existing relationships

Peek and Rosengren (2005) show that one of the pre-requisites for zombie lending is a pre-existing relationship. It is unlikely that the outgoing CEO ever-greens the loans of borrowers with whom he does not have an existing relationship. Note that any revelation or admission of guilt by the borrower that a loan was ever-greened could land the CEO in trouble because federal anti-corruption agencies can investigate bank CEOs, even after retirement (Banerjee, Cole and Duflo (2008)). Therefore, for ever-greening to manifest, it

is necessary that the borrower and the outgoing CEO trust each other. Such trust is more likely in cases where a prior banking relationship exists between the borrower and the bank under the outgoing CEO’s leadership.

We use data at the firm-quarter level on bank-borrower relationships provided by CMIE Prowess. Using the above data, we estimate the following regression:

$$\text{NOT\_RENEWED}_{ijt} = \alpha + \nu_i + \delta_j + \theta_t + \beta_1 \times \text{NEW\_CEO}_{jt} \times \text{RELATIONSHIP\_BORROWER}_i + \beta_2 \times \text{NEW\_CEO}_{it} + \epsilon_{ijt} \quad (7)$$

$\text{NOT\_RENEWED}_{ijt}$  is a dummy variable that takes the value of 1 if firm  $i$ ’s relationship with bank  $j$  is not renewed in year  $t$ . Relationship Borrower $_i$  is a borrower that had at least a 3-year continuous relationship with the bank.  $\text{NEW\_CEO}_{jt}$  is defined as before. We include bank, firm, and year fixed effects. We focus on the interaction between the  $\text{NEW\_CEO}_{jt}$  dummy and the  $\text{RELATIONSHIP\_BORROWER}_i$  dummy. This term captures whether a relationship borrower has a higher chance of being dropped in the transitional quarter compared to a non-relationship borrower.

We present the results in column 1 of Table 11, which shows that the coefficient estimate for  $\beta_1$  is statistically insignificant. Therefore, it is clear that the new CEO does not show any greater tendency to not renew loans to relationship borrowers.

[Insert table 11 here]

### VII.B.2 Loss-making firms

Loans made to loss-making firms are more likely to be ever-greened compared to loans made to healthy firms (Peek and Rosengren (2005)). Based on this argument, we examine if the incoming CEO is more likely to not renew loans to loss-making firms. We identify firms

whose net profit in the immediately preceding year was negative. We estimate regression equation (8) by replacing the RELATIONSHIP\_BORROWER<sub>*i*</sub> dummy with a dummy for loss-making firms. We report the result in column 2 of Table 11. As in column 1, the coefficient estimate for  $\beta_1$  is statistically insignificant. Therefore, it is unlikely that new CEOs show a higher tendency to not renew loans to loss-making firms.

### VII.B.3 Large firms

Ever-greening occurs to window-dress loan accounts, that is, to show fewer defaults than the actual levels (Peek and Rosengren (2005)). There is a cost associated with the possibility of being caught and punished. So, maintaining secrecy is critical for successful ever-greening. The outgoing CEO may find it safer to ever-green some large loans rather than ever-green a large number of small loans. As well, large firms may offer post-retirement career opportunities to the outgoing CEO as a *quid pro quo* (Brickley et al. (1999)). Therefore, if a new CEO stops ever-greening, large firms are less likely to be renewed.

To test this thesis, we estimate regression equation (8) by replacing the RELATIONSHIP\_BORROWER dummy with a dummy for large firms defined as those with assets greater than the median. We classify assets for every year. We report the results in column 3 of Table 11. Here again, we find a statistically significant coefficient estimate of  $\beta_1$  only at the 10% level. The results suggest very little difference in renewals of loans by new CEOs to large firms.

### VII.B.4 Priority sector lending

All banks in India, including private sector banks, are mandated by law to direct at least 40% of their total credit to “priority sector loans.” Priority sectors *inter alia* include agriculture, small and medium enterprises, small ticket housing loans, and education loans.

Given this lending mandate, it is quite possible that CEOs engage in ever-greening to reach priority sector targets (Tzioumis and Gee (2013)).

Among the borrowers covered by the data provided in CMIE Prowess, we identify firms eligible for priority sector loans. Firms whose investment in plant and machinery does not cross INR 10 million are considered small and medium enterprises (Banerjee and Duflo (2014)). This definition was revised to INR 50 million in October 2006. Using these definitions, we estimate regression equation (8) by replacing the RELATIONSHIP\_BORROWER<sub>*i*</sub> dummy with a dummy for firms eligible for priority sector loans. If the outgoing CEO ever-greens loans to reach priority sector lending targets and the new CEO does not renew such ever-greened loans, then loans to firms eligible for priority sector lending are less likely to be renewed in the transitional quarter.

We present the results of these tests in column 4 of Table 11. The interaction between new CEO and the SME dummy is statistically indistinguishable from zero. Therefore, based on this result, it is reasonable to conclude that our results are not driven by ever-greening with the purpose of fulfilling priority sector requirements.

Overall, we therefore conclude that our results are unlikely to stem from ever-greening by the outgoing CEO and the incoming CEO rectifying this phenomenon.

## VII.C Quality of GOBs' data

Given our empirical setting, readers may have concerns about the quality of data provided by GOBs. In this section, we describe the extensive list of institutional reasons and supporting empirical evidence to mitigate this concern. We describe the institutional reasons before describing our formal empirical tests.

### VII.C.1 Institutional factors

Several institutional reasons mitigate concerns about the quality of GOBs' data.

First, all Indian GOBs are partially privatized. Non-government ownership ranges between 25% to 45%. All GOBs are corporations under by law and subject to The Banking Regulation Act and The Reserve Bank of India (RBI) Act. GOBs are subject to the same corporate governance and audit requirements as are private sector banks. *De jure*, the GOBs that we study are *not* run as departmental undertakings but as commercial enterprises subject to the same rules and regulations as private sector banks.

Second, although GOBs are subject to political intervention (Ding (2005), Cole (2009)), oversight by the independent Central Bank (RBI) provides a strong counter-balancing force. India's central bank has a reputation as an independent and competent central bank (Bardhan et al. (1999), Bhagwati et al. (1993)).

Third, every board and its audit committee in a GOB includes a representative from the RBI as its member. The RBI appoints very senior officials, including deputy governors and executive directors as RBI representatives on bank boards and their audit committees.

Fourth, the RBI requires banks to produce various granular reports frequently; the numbers reported in these reports are cross-validated with those reported in financial statements. Some of these reports cover connected lending, asset liability management, large credits, capital adequacy, and so on.

### VII.C.2 Tests for the quality of GOBs' data

As we argue above, institutional factors alleviate concerns about the quality of GOBs' data. Nevertheless, by conducting additional tests, we dispel residual concerns about the quality of data reported by GOBs. For brevity, describe these results here and present a

detailed description in the Online Appendix.

First, dispersion in analysts' forecasts is a good proxy for a company's level of accounting transparency (Barron and Stuerke (1998), Avramov, Chordia, Jostova and Philipov (2009), Zhang (2006), Morgan (2002)). Accordingly, we test and find that the dispersion in analyst's earnings forecasts is similar for private sector banks and GOBs. Because private sector banks are similar to the banks in the U.S., the U.K., and other countries, they serve as a useful benchmark for comparison. Furthermore, within GOBs, we find no significant difference in such dispersion between the transitional quarter and other quarters.

Second, the accounting literature documents that if a company's earnings are credible, then markets should react in the direction of the earnings announced (Healy and Wahlen (1999), Dechow, Ge and Schrand (2010), Ecker, Francis, Kim, Olsson and Schipper (2006), Teoh and Wong (1993), Barron, Kile and O'Keefe (1999), Imhoff Jr and Lobo (1992)). Thus, we compare the association between earnings surprises in GOBs and the stock market reaction. Here again, we find results consistent with credible earnings estimates from GOBs.

Third, to examine the sanctity of the data on lending, we use monetary policy shocks and examine the response of GOBs and private sector banks. Any discrepancy in the quality of lending data for GOBs should manifest as differences in the response magnitudes for GOBs and private sector banks. However, we find no difference in the response to the monetary policy shock between GOBs and private sector banks. Recall that the private sector banks are similar to banks in the U.S., the U.K., and other countries, and therefore serve as a useful benchmark for comparison. Moreover, we find no difference in the response of lending to monetary policy shocks between the transitional quarter and other quarters. These tests assure us about the quality of GOBs' lending data.

Finally, we examine our results for a sub-sample of GOBs with high foreign institutional ownership. The governance and reporting standards in such GOBs is likely to be higher than those in other GOBs (Aggarwal, Erel, Ferreira and Matos (2011)). If our results were due to

poor data quality, we should find differences based on governance and reporting standards in GOBs. However, our results using this sub-sample remain similar to those for the full sample, which also alleviates concerns about data quality.

In sum, we conclude that our results do not stem from poor quality data for GOBs.

## VII.D Missing Data

As we note in section V, the primary reason for missing data is that data are available for a GOB only after it is listed in the stock market. To show that missing data do not account for our results, we create a sub-sample of banks with no missing data. We start from the end of the sample and stop when we encounter the first missing observation for any variable used in the regression.

We present the results using this sample in Table 12. In columns 1 and 2, we find that our earlier results—decline in LLP and loans in transitional quarters—continue to hold with similar economic magnitudes. In columns 3 and 4, we use data on stock price reactions for the last 10 quarters for 20 banks for which no data are missing. Although we have information about all 200 observations, we dropped 6 observations due to our liquidity screen. Hence, we have 194 observations in these tests. In these columns, we find that the cumulative return and the cumulative abnormal return on bank stock  $i$  during the event window declines by 3.1% and 2.5%, respectively. Based on these findings, it is reasonable to infer that missing data do not impact our results systematically.

[Insert table 12 here]

## VIII Conclusion

We examine the effects of CEO turnover on banks' policies. To overcome the identification challenges posed by endogenous CEO turnover, we exploit *exogenous* variation generated by age-based CEO retirement policies in Indian GOBs. We find that incoming CEOs change bank policies to manage their personal risks by (i) increased provisioning for future delinquencies and (ii) shrinking lending. Politically motivated lending, ever-greening, or the quality of data in GOBs cannot explain these findings. Bank stock prices decline following these changes.

Because bank lending can lead to significant downstream effects on economic growth, the effects on lending that we highlight may have significant economic effects in environments in which bank CEO turnover is frequent. In contrast, these economic effects may be low in environments where bank CEO turnover is infrequent. Moreover, the asymmetric information problems that lead to the effects documented in this study may be minimized in the case of internally promoted bank CEOs. Our data do not allow us to study these questions. Therefore, we suggest these as important questions for further research.

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Table 1: SUMMARY STATISTICS

Table 1 reports the descriptive statistics for the key variables of interest. The data is collected from the Prowess database maintained by the Center for Monitoring Indian Economy (CMIE). The period for our study is Q1-2002 to Q2-2013. The sample comprises all GOBs in India.

VARIABLES	MEAN	MEDIAN	STANDARD DEVIATION
NUMBER OF CEOs PER BANK	4.45	4	1.31
TENURE OF CEOs (QUARTERS)	12.57	11.5	5.05
LLP-TO-INCOME RATIO	0.13	0.12	0.07
LLP-TO-LOAN RATIO	0.18	0.05	2.71
PROFIT-BEFORE-PROVISIONS-TO-INCOME RATIO	0.32	0.12	5.38
PROFIT-AFTER-PROVISIONS-TO-INCOME RATIO	0.12	0.12	0.059
ADVANCES (IN BILLIONS OF RUPEES)	1014.96	625.77	13222.98
NET-NPA (IN BILLIONS OF RUPEES)	15	7.21	27.54

Table 2: EXOGENOUSLY DETERMINED EXITS OF CEOs IN PUBLIC SECTOR BANKS

Table 2 presents the estimates from an OLS regression where the dependent variable equals 1 for four quarters immediately preceding the transition quarter and 0 otherwise. Transition quarter is defined as the first quarter the new CEO assumes charge. We use OLS instead of logit or probit to avoid the incidental parameters problem that affects non-linear models with fixed effects. The standard errors are clustered at bank level and adjusted t-statistics are reported in parentheses below the regression estimates. \*\*\*, \*\*, \* represents statistical significance at the 1%, 5% and 10% levels.

DEPENDENT VARIABLE	(1)	(2)	(3)	(4)
	CEO TURNOVER			
LLP-TO-INCOME RATIO	-0.337 [-1.022]			
NPA-RATIO		-0.002 [-0.482]		
ADVANCES (IN BILLION OF RUPEES)			-0.000 [-0.539]	
NET PROFIT RATIO				-0.634 [-1.310]
Bank Fixed Effect	Yes	Yes	Yes	Yes
(Year, Quarter) Fixed Effect	Yes	Yes	Yes	Yes
Observations	798	619	684	811
Number of Banks	21	21	21	21
Adjusted R-squared	0.109	0.093	0.098	0.114

Table 3: IMPACT OF CEO TURNOVER ON LLP-TO-INCOME

Table 3 presents OLS regression estimates for the effect of appointment of a new bank CEO on the bank's loan loss provisions (LLP). The dependent variable, LLP-To-Income ratio, is calculated by normalizing loan loss provisions by interest income. The key explanatory variable equals the dummy New CEO, which equals 1 for the transition quarter and 0 otherwise. In columns 1 and 2, we use our preferred definition of transition quarter. Here, transition quarter is defined as the first quarter the new CEO assumes charge. In columns 3 and 4, the first quarter for which the new CEO announces results is considered as the transition quarter. The standard errors are clustered at bank level and adjusted t-statistics are reported in parentheses below the coefficient estimates. \*\*\*, \*\*, \* represents statistical significance at the 1%, 5% and 10% levels.

	(1)	(2)	(3)	(4)
DEPENDENT VARIABLE	LLP-TO-INCOME RATIO			
NEW_CEO	0.011** [2.184]	0.012** [1.961]	0.018*** [3.602]	0.024*** [3.459]
CAPITAL ADEQUACY RATIO		0.003 [1.286]		0.003 [1.274]
GDP GROWTH RATE		-0.000 [-0.312]		-0.000 [-0.280]
GOI SECURITIES YIELD		-0.018*** [-5.668]		-0.019*** [-5.710]
Bank Fixed Effect	Yes	Yes	Yes	Yes
(Year, Quarter) Fixed Effect	Yes	No	Yes	No
Observations	882	757	882	757
Number of Banks	21	21	21	21
Adjusted R-squared	0.436	0.175	0.439	0.184

Table 4: EFFECT OF CEO TURNOVER ON THE RELATIONSHIP BETWEEN LLP AND FUTURE NPA

Table 4 presents OLS regression estimates for the effect of appointment of a new bank CEO on the relationship between LLP, income and future NPA. The purpose is to test the impact of CEO turnover on earnings smoothing and genuine recognition of future expected loss, in the spirit of [Bushman and Williams \(2012\)](#). The dependent variable is the ratio of LLP to lagged total advances. New CEO is a dummy variable that takes the value of one for the transition quarter and zero otherwise. The standard errors are clustered at bank level and adjusted t-statistics are reported in parentheses below the coefficient estimates. \*\*\*, \*\*, \* represents statistical significance at the 1%, 5% and 10% levels.

	(1)	(2)	(3)	(4)	(5)
DEPENDENT VARIABLE	LLP(i,t)/LOAN(i, t-1)				
NPA(i,t+1)/LOAN(i,t) × NEW_CEO(i,t)			0.025*** [3.322]	0.023*** [2.699]	0.027*** [2.837]
PROFIT-BEFORE-PROVISION(i,t)/ LOAN(i,t-1) × NEW_CEO(i,t)				-0.156 [-0.851]	-0.149 [-0.765]
NEW_CEO			-0.035 [-0.786]	0.007 [0.156]	0.019 [0.458]
PROFIT-BEFORE-PROVISION(i,t)/ LOAN(i,t-1)		0.525*** [33.104]	0.525*** [33.566]	0.526*** [35.021]	0.526*** [34.449]
NPA(i,t)/LOAN(i,t-1)	0.483*** [3.812]	-0.124*** [-2.877]	-0.124*** [-2.870]	-0.126*** [-2.940]	-0.126*** [-2.875]
NPA(i,t+1)/LOAN(i,t)	0.006 [0.607]	-0.002 [-0.779]	-0.022*** [-3.810]	-0.022*** [-3.556]	-0.025*** [-3.194]
CAPITAL ADEQUACY RATIO					0.018 [1.042]
GDP GROWTH RATE					-0.000 [-0.032]
GOI SECURITIES YIELD					-0.002 [-0.185]
Bank Fixed Effect	Yes	Yes	Yes	Yes	Yes
(Year, Quarter) Fixed Effect	Yes	Yes	Yes	Yes	No
Observations	670	670	670	670	670
Number of banks	21	21	21	21	21
Adjusted R-squared	0.352	0.984	0.984	0.984	0.983

Table 5: IMPACT OF CEO TURNOVER ON PROFIT BEFORE AND AFTER PROVISIONS

Table 5 presents OLS regression estimates for the effect of appointment of a new bank CEO on the bank's profits before and after LLP. The purpose is to test if there are other changes correlated with CEO turnover either in the opposite or in the same direction as LLP. The dependent variable in the first two columns is the ratio of profit before provisions to net interest income, and in the subsequent two columns is the ratio of profit after provisions to net interest income. The explanatory variable of interest—New CEO—is dummy variable that takes the value of 1 if the quarter under consideration is a transition quarter and zero otherwise. The standard errors are clustered at bank level and adjusted t-statistics are reported in parentheses below the coefficient estimates. \*\*\*, \*\*, \* represents statistical significance at the 1%, 5% and 10% levels.

	(1)	(2)	(3)	(4)
DEPENDENT VARIABLE	PROFIT-BEFORE-PROVISIONS -TO-INCOME RATIO		PROFIT-AFTER-PROVISIONS -TO-INCOME RATIO	
NEW_CEO	-0.002 [-0.432]	0.000 [0.000]	-0.013*** [-2.723]	-0.012* [-1.866]
CAPITAL ADEQUACY RATIO		0.006*** [2.691]		0.003*** [3.039]
GDP GROWTH RATE		0.003*** [2.644]		0.004*** [6.304]
GOI SECURITIES YIELD		-0.036*** [-7.141]		-0.017*** [-5.004]
Bank Fixed Effect	Yes	Yes	Yes	Yes
(Year, Quarter) Fixed Effect	Yes	No	Yes	No
Observations	882	757	882	757
Number of Banks	21	21	21	21
Adjusted R-squared	0.593	0.488	0.401	0.359

Table 6: EFFECT OF APPOINTMENT OF A NEW CEO ON LENDING

Table 6 reports OLS estimates for the effect of appointment of a new CEO on lending. In columns (1) and (2) the dependent variable is the total advances (in billions of Rupees) lent. In column 3 and 4, we winsorize the dependent variable—loan amount— at 1%. The independent variable—New CEO—takes the value of one for CEO transition quarter and 3 successive quarters following the transition quarter and zero otherwise. The standard errors are clustered at bank level and adjusted t-statistics are reported in parentheses below the coefficient estimates. \*\*\*, \*\*, \* represents statistical significance at the 1%, 5% and 10% levels.

	(1)	(2)	(3)	(4)
DEPENDENT VARIABLE	ADVANCES (IN BILLION RUPEES)			
NEW_CEO	-44.07** [-2.016]	-84.56** [-2.255]	-39.93* [-1.796]	-75.17** [-2.347]
CAPITAL ADEQUACY RATIO		-16.14 [-0.598]		-11.03 [-0.470]
GROWTH IN GDP		-135.85*** [-4.298]		-125.56*** [-5.518]
GOVERNMENT BOND YIELD		382.10*** [3.478]		371.39*** [3.716]
Bank Fixed Effects	Yes	Yes	Yes	Yes
(Year, Quarter) Fixed Effect	Yes	No	Yes	No
Observations	760	732	760	732
Number of Banks	21	21	21	21
Adjusted R-squared	0.801	0.724	0.834	0.752

Table 7: MARKET REACTION TO RESULTS ANNOUNCED BY A NEW CEO

Table 7 reports OLS estimates of estimates for bank stock price reaction to results announced by the new CEO. The dependent variable in column 1 is the cumulative stock returns during the 3-day interval around bank result announcement. In column 2, we use cumulative abnormal returns calculated using the CAPM model. We use the entire data provided by Prowess. We include bank and quarter fixed effects. The standard errors are clustered at bank level and adjusted t-statistics are reported in parentheses below the coefficient estimates. \*\*\*, \*\*, \* represents statistical significance at the 1%, 5% and 10% levels.

	(1)	(2)
DEPENDENT VARIABLE	CUM-RET	ABNORMAL CAR
NEW_CEO	-0.015* [-1.681]	-0.017** [-2.421]
Bank Fixed Effect	Yes	Yes
(Year, Quarter) Fixed Effect	Yes	Yes
Observations	651	651
Number of Banks	20	20
Adjusted R-squared	0.209	0.182

Table 8: IMPACT OF NEW CEO'S APPOINTMENT ON FIRM PERFORMANCE FOR NON-BANK PSUs

Table 8 presents OLS regression estimates for the effect of appointment of a new CEO on various profit-to-income ratio and standardised unexpected income (SUE) for non bank PSUs. In columns (1), the dependent variable is profit-to-income ratio and in columns (2) the dependent variable is the Standardized Unexpected Earnings. The key explanatory variable equals the dummy New CEO, which equals 1 for the transition quarter and 0 otherwise. The standard errors are clustered at Bank level and adjusted t-statistics are reported in parentheses below the coefficient estimates. \*\*\*, \*\*, \* represents statistical significance at the 1%, 5% and 10% levels.

	(1)	(2)
DEPENDENT VARIABLE	PROFIT-TO-SALES RATIO	SUE
NEW_CEO	-0.027 (-1.421)	-0.207 (-1.399)
GDP GROWTH	0.001 (0.333)	0.025 (1.191)
GOI SECURITIES YIELD	0.003 (0.200)	-0.013 (-0.255)
Company Fixed Effect	Yes	Yes
(Year, Quarter) Fixed Effect	Yes	Yes
<i>Adjusted R</i> <sup>2</sup>	0.013	0.002
Observations	1,093	1,093

Table 9: POSSIBLE MOTIVATION FOR INCOMING CEO'S ACTIONS- BOARD POSITIONS POST RETIREMENT

Table 9 reports the result from a simple ttest to analyze the difference in the degree of manipulation between two groups: Group0: Chairman getting at least one directorship in other companies within two years post retirement and Group1: Chairman getting no directorship in other companies within two years post retirement. \*\*\*, \*\*, \* represents statistical significance at the 1%, 5% and 10% levels.

DEGREE OF MANIPULATION	OBSERVATION	MEAN	STANDARD ERROR
NO DIRECTORSHIP (GROUP 0)	43	0.0016	0.019
AT LEAST 1 DIRECTORSHIP (GROUP 1)	16	0.085	0.051
DIFFERENCE (GROUP 0 - GROUP 1)		-0.0841*	0.020

Table 10: IMPACT OF CEO TURNOVER ON LLP-TO-INCOME AND LENDING- CEO PAIR APPOINTED BY THE SAME POLITICAL PARTY

Table 10 presents OLS regression estimates for the effect of appointment of a new bank CEO on the bank's loan loss provisions (LLP) and Lending. Panel A presents the results for the impact on LLP-To-Income ratio. Panel B presents the results for the impact on lending. The sample is restricted to outgoing-incoming CEO pairs that are appointed by the same government at the federal level. The dependent variable in Panel A, LLP-To-Income ratio, is calculated by normalizing loan loss provisions by interest income. The key explanatory variable equals the dummy New CEO, which equals 1 for the transition quarter and 0 otherwise. In columns 1 and 2 in Panel A, we use our preferred definition of transition quarter. Here, transition quarter is defined as the first quarter the new CEO assumes charge. In columns 3 and 4 in Panel A, the first quarter for which the new CEO announces results is considered as the transition quarter. In columns 1 and 2 of Panel B, the dependent variable is the total advances (in billions of Rupees) lent. The data pertaining to bank-borrower pair spans from 2001 to 2014. The independent variable—New CEO—takes the value of one for the transition quarter and 3 successive quarters following the turnover quarter and zero otherwise. The standard errors are clustered at bank level and adjusted t-statistics are reported in parentheses below the coefficient estimates. \*\*\*, \*\*, \* represents statistical significance at the 1%, 5% and 10% levels.

<b>Panel A</b>				
DEPENDENT VARIABLE	LLP-INCOME-RATIO			
NEW_CEO	0.016*** [3.481]	0.011** [1.988]	0.019*** [3.031]	0.010* [1.736]
CAPITAL ADEQUACY RATIO		0.005 [1.156]		0.006 [1.154]
GDP GROWTH RATE		-0.000 [-0.282]		-0.000 [-0.247]
GOI SECURITIES YIELD		-0.014*** [-5.117]		-0.016*** [-5.723]
Number of Banks	21	21	21	21
Firm fixed effects	Yes	Yes	Yes	Yes
(Year, Quarter) Fixed Effect	Yes	Yes	Yes	Yes
Observations	682	682	554	554
Adjusted R-squared	0.627	0.627	0.285	0.285

<b>Panel B</b>		
DEPENDENT VARIABLE	(1)	(2)
	ADVANCES (IN RUPEES BILLIONS)	
NEW_CEO	-102.45** [-2.363]	-107.79*** [-2.730]
CAPITAL ADEQUACY RATIO	0.571 [0.026]	-1.58 [-0.075]
GDP GROWTH RATE	-108.67*** [-7.151]	-108.14*** [-7.203]
GOI SECURITIES YIELD	178.39*** [7.024]	178.93*** [7.153]
Observations	532	532
Firm fixed effects	Yes	Yes
(Year, Quarter) Fixed Effect	Yes	No
Number of banks	21	21
Adjusted R-squared	0.777	0.777

Table 11: TERMINATION OF EVER-GREENING FOLLOWING CEO TURNOVER

Table 11 reports OLS estimates of estimates for the effect of appointment of a new CEO on possible evergreening. The data is organized at borrower-bank-year level. The dependent variable -loans not renewed- takes the value of 1 if the loan to borrower  $i$  is not renewed by bank  $j$  in year  $t$  and 0 otherwise. Loss is a dummy variable that takes the value of 1 for firms that reported negative profits for the immediately preceding year and zero otherwise. Relationship borrower is a dummy variable that takes the value of 1 for firms that have a three-year continuous relationship with the bank and zero otherwise. Large is a dummy variable that takes the value of 1 for firms whose value of total assets is above the average for any year and zero otherwise. Priority is a dummy variable that takes the value of 1 for a firm that is eligible for priority sector loans and zero otherwise. The standard errors are clustered at bank level and adjusted t-statistics are reported in parentheses below the coefficient estimates. \*\*\*, \*\*, \* represents statistical significance at the 1%, 5% and 10% levels.

DEPENDENT VARIABLE	(1)	(2)	(3)	(4)
	LOANS NOT RENEWED			
NEW_CEO $\times$ RELATIONSHIP_BORROWER	-0.006 [-0.685]			
NEW_CEO $\times$ Loss		0.007 [1.350]		
NEW_CEO $\times$ LARGE			-0.012* [-1.823]	
NEW_CEO $\times$ PRIORITY				0.002 [0.312]
LOSS MAKING	0.018** [2.521]			
RELATIONSHIP_BORROWER		0.009 [1.110]		
LARGE FIRMS			-0.077*** [-5.180]	
PRIORITY				-0.011*** [-2.764]
NEW_CEO	-0.009** [-1.981]	-0.001 [-0.167]	-0.002 [-0.958]	-0.004 [-1.439]
Bank Fixed Effects	Yes	Yes	Yes	Yes
Borrower Fixed Effects	Yes	Yes	Yes	Yes
(Year, Quarter) Fixed Effect	Yes	Yes	Yes	Yes
Observations	44,316	44,316	44,316	44,316
Adjusted R-squared	0.857	0.857	0.864	0.014

Table 12: EFFECT OF APPOINTMENT OF A NEW CEO -TESTS USING SAMPLE WITH NO MISSING DATA

Table 12 reports OLS estimates of estimates for the effect of appointment of a new CEO on Provisions, lending and stock value selecting a sub sample that does not have any missing data. The sample is selected by working backwards from the last quarter. In Columns (1) and (2) the dependent variables are the ratio between LLP and Sales and the total advances (in millions of Rupees) lent. The dependent variable in column 3 is the cumulative stock returns during the 3-day interval around bank result announcement. In columns 2, we use cumulative abnormal returns calculated using the CAPM model as the dependent variable. The definition of new CEO is the same as in Table 2. The independent variable—New CEO—takes the value of one for CEO transition quarter and 3 successive quarters following the turnover quarter and zero otherwise. We include bank and quarter fixed effects. The standard errors are clustered at bank level and adjusted t-statistics are reported in parentheses below the coefficient estimates. \*\*\*, \*\*, \* represents statistical significance at the 1%, 5% and 10% levels.

SAMPLE PERIOD	Q4-2008 to Q4-2012	Q3-2006 to Q4-2012	Q3-2010 to Q4-2012	Q3-2010 to Q4-2012
	(1)	(2)	(3)	(4)
VARIABLES	LLP-TO-INCOME	ADVANCES (IN BILLIONS OF RUPEES)	CUM-RET	ABNORMAL CAR
NEW_CEO	0.016*** [2.640]	-69.69* [-1.707]	-0.031** [-2.181]	-0.025** [-2.221]
Observations	340	390	194	194
Bank fixed effect	Yes	Yes	Yes	Yes
(Year, Quarter) Fixed effect	Yes	Yes	Yes	Yes
Number of banks	20	15	20	20
Adjusted R-squared	0.400	0.900	0.329	0.275

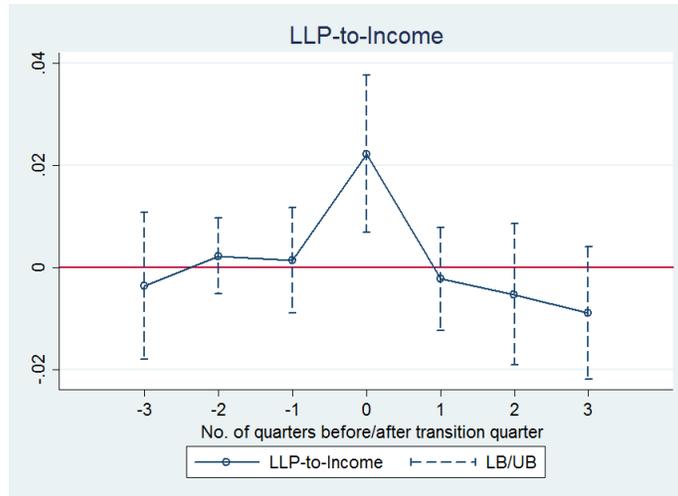


Figure 2: EFFECT OF NEW CEO ON LLP-TO-INCOME RATIO IN TRANSITION QUARTER VS. OTHER QUARTERS

In figure 2, we test how LLP-to-Income ratio varies before and after the transition quarter. We find that in the transition quarter, LLP-to-income ratio is significantly higher while in the other quarters the impact is statistically insignificant.

## **Online Appendix: Tests to ascertain quality of data of GOB**

In this Online Appendix, we provide a detailed description of the tests to ascertain the quality of GOBs' data.

### **A.1 Tests to investigate the quality of variables from the income statement**

First, we examine the quality of income statement variables such as LLP and declared income.

#### **A.1.1 Earnings Surprise**

The stock market reaction to an earnings surprise is a good proxy for the quality of reported earnings (Healy and Wahlen (1999), Dechow et al. (2010), Ecker et al. (2006), Teoh and Wong (1993), Barron et al. (1999)). Imhoff Jr and Lobo (1992)) show that market reactions to an earnings surprise is higher for firms whose earnings are less noisy. Here, the underlying thesis is that whenever there is a wedge between analyst forecasts and actual earnings, the stock market's reactions depend on market participants' perception of the quality of firm's reported data. If market participants perceive that the reported data indeed reflect the true economic situation, then the market is likely to move in the direction of the surprise. In our setting, for instance, the Bank of India's reported earnings for the quarter ending March 2014 was INR 5.52 against the consensus estimate of INR 4.13. In response, on the day the results were announced, the stock price increased by 9.63% against the overall market, which remained flat. If, on the other hand, market participants perceive the reported

earnings to be noisy, then the reaction to earnings surprise is likely to be muted.

We collect data related to analysts' earnings estimates, actual earnings, and market reaction to the announcement from Bloomberg. The data are available only for 2006-16 for 14 banks. We estimate the following regression:

$$\text{MARKET\_REACTION}_{it} = \beta_0 + \beta_i + \beta_t + \beta_1 \times \text{SURPRISE}_{it} + \varepsilon_{it} \quad (\text{A-1})$$

The data are organized at the (bank, quarter) level. The  $\text{MARKET\_REACTION}_{it}$  is the return on the stock of bank  $i$  on the day of the announcement  $t$ .  $\text{SURPRISE}_{it}$  is the ratio between actual earnings per share and estimated earnings per share. If the reporting quality is good, then in line with [Imhoff Jr and Lobo \(1992\)](#), we expect a significant positive association between the earnings surprise and market reaction. If not, the association is likely to be weak.

Table [A.3](#) reports the results. A 1% increase in earnings surprise is associated with a 2.8% to 3.7% increase in stock prices. This result indicates that the market does consider the reported earnings of GOBs as credible and reacts in the direction of reported earnings when there is a wedge between expected and reported earnings.

[Insert table [A.3](#) here]

### **A.1.2 Dispersion of Analyst Recommendations**

The literature assessing the quality of reported earnings uses dispersion in analyst estimates as a key metric for the quality of reported earnings ([Barron and Stuerke \(1998\)](#), [Avramov et al. \(2009\)](#), [Zhang \(2006\)](#)). The lower the dispersion, the lower is the proportion of noise in earnings ([Imhoff Jr and Lobo \(1992\)](#)). In banks and financial institutions in particular, such dispersion proxies the degree of opacity ([Morgan \(2002\)](#)). Thus, we examine

the dispersion of analyst forecasts for GOBs in India. If the reported numbers of GOBs are transparent and of high quality, then we expect a low dispersion.

To classify a particular level of earnings dispersion as either high or low, we need a benchmark; we use the level of dispersion for private sector banks in India. Because private sector banks in India are similar to banks in the U.S. and the U.K., the level of dispersion in private sector banks serves as a good benchmark. The data cover the period from December 2008 to September 2016. Figure A.1 provides a comparison between GOBs and private sector banks; the bold line represents the dispersion for GOBs while the dotted line represents the same for private sector banks. As the figure shows, the dispersion levels are quite similar for both categories of banks.

[Insert figure A.1 here]

### A.1.3 Transitional Quarter versus Other Quarters

While the general quality of reported data is indeed important, systematic differences in reporting standards between the transitional quarter and other quarters are even more important to investigate in our context. We thus compare the dispersion in analyst estimates for GOBs during the transitional quarter and other quarters. We plot this comparison in Figure A.2; the number of quarters before or after the transitional quarter is plotted in the horizontal axis. Quarter 0 corresponds to the transitional quarter and quarter  $i$  ( $-i$ ) corresponds to  $i$  quarters after (before) the transitional quarter. It is clear from the figure that the standard deviation of analyst estimates remains flat before, during, and after the transitional quarter. Although the figure shows a downward trend, this difference is not significant, either statistically or economically.

[Insert figure A.2 here]

## A.2 Tests to investigate the quality of lending data

To check the sanctity of lending data, we check the response of bank lending to monetary policy shocks. The literature on monetary policy transmission shows that, either due to a change in the cost of capital or due to credit market frictions (Friedman and Schwartz (1963), Bernanke and Blinder (1992), Bernanke, Gertler and Gilchrist (1999)), monetary policy rates and bank lending move in opposite directions. If the data from public sector banks are of good quality, then we expect that the relationship between bank lending and a monetary policy shock to be similar for both GOBs and private sector banks. As we mention above, private sector banks serve as a good benchmark for comparison.

We test the above proposition by regressing the loan amount lent at the (bank, quarter) level on the level of repo rate. Note that the repo rate is the rate at which the RBI lends short term funds to banks; an increase in the repo rate corresponds to monetary policy tightening and vice-versa. To incorporate lagged effects of monetary policy shocks on bank lending, we also include two lags of the repo rate.

Table A.5 reports the results. The data cover the period from September 2003 to June 2010. We end our sample for these tests in June 2010 because the RBI shifted from a prime lending rate regime to a Base rate system. Because this change represents a clear regime shift, pooling the periods after this change with the periods before the change would introduce needless heterogeneity. Nevertheless, we check and find that the results remain unchanged if we include the full sample period up to 2014. In column 1, we include only GOBs. We find that a 1% increase (decrease) in the repo rate is associated with a 9.4% decrease (increase) in the loan amount. In column 2, we consider only private sector banks. Here, we find that a 1% increase (decrease) in the repo rate leads to a 9.8% decrease (increase) in the loan amount. Thus, the responses to monetary policy shocks remain similar for GOBs and private sector banks. Note that the CEO of a GOB does not gain anything by adjusting

bank lending to match a private sector bank’s response to a monetary policy shock. This result suggests that the lending numbers reported by GOBs are similar to those reported by their private sector counter-parts.

[Insert table A.5 here]

### **A.2.1 Difference between the transitional quarter and other quarters in response to monetary policy shocks**

As we state previously, factors that change between the transitional quarter and other quarters have a higher chance of vitiating our results. Therefore, as a further robustness check, we examine the difference between the transitional quarter and other quarters in GOBs’ responsiveness to monetary policy shocks. Specifically, we regress the loan amount at the (bank, quarter) level on the interaction between the new CEO quarter and the repo rate. We report the results in column 3 of Table A.5. Note that the coefficient on the policy rate variable is a negative and significant 9.2%. This is very close to what we find in columns 1 and 2. More importantly, the interaction between the New CEO dummy and policy rate variable is statistically indistinguishable from zero. This suggests that responsiveness to monetary policy does not differ between the transitional quarter and other quarters. This also suggests that the quality of lending data is unlikely to significantly vary between the transitional quarter and other quarters.

## **A.3 Effect of higher foreign institutional ownership on the quality of GOBs’ data**

As we note before, all GOBs are partially privatized. In fact, private ownership in these banks ranges from 5% to 45%. Private shareholders include individuals, domestic

institutions, and foreign institutions. For example, in the largest GOB—the State Bank of India—the government ownership is limited to 61.22%.<sup>14</sup> Foreign investors own nearly 10% of the shares. Domestic institutions such as banks, insurance companies, and mutual funds own nearly 20%.

Extant research shows that higher participation of foreign institutional investors leads to better corporate governance (Aggarwal et al. (2011)), which should lead to higher quality financial reporting as well (Bédard, Chtourou and Courteau (2004), Marrakchi Chtourou, Bedard and Courteau (2001), Xie, Davidson and DaDalt (2003)). Based on this premise, we divide our sample of banks into those with higher and lower levels of foreign institutional ownership. We use the median ownership as the cut off. If our results stem from low quality data, then the effects should be more muted for banks with high foreign institutional ownership. If, on the other hand, GOBs' reported data are of good quality, then our findings are likely to hold equally well in the sub-sample of banks with high foreign institutional ownership as well.

We test this hypothesis by replicating Tables 3 and 6 pertaining to LLP and loan amounts, respectively, on a sub-sample of banks with high foreign institutional ownership. Note that LLP represents an income statement component while the loan amount is a measure of real activity. We report the results in Panels A and B of Tables A.4, which show that LLP increases significantly during the transitional quarter and the amount of loans falls significantly during the transitional year. Note that the relevant coefficients are either equal to or higher than the coefficients obtained using the entire sample. Thus, our results remain unchanged, even when we limit the sample to banks that are likely to have higher levels of governance. We can therefore conclude that our results are unlikely to stem from poor quality GOB data.

[Insert table A.4 here]

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<sup>14</sup>Source <http://www.moneycontrol.com/company-facts/statebankindia/shareholding-pattern/SBI>

Table A.1: List Of PSU Bank's CEO And Their Time Of Joining

BANK	CEO	MONTH, YEAR OF JOINING
Allahabad Bank	Omkar Nath Singh	Dec-03
	A.C. Mahajan	Aug-06
	K.R. Kamath	Aug-08
	J.P.Dua	Dec-09
	S.A. Panse	Jan-12
Andhra Bank	B Vasanthan	May-00
	TS Narayan Sami	Apr-04
	Rama Krishnan	Oct-05
	RS Reddi	Aug-08
	Rama Chandran	Sep-10
Bank Of Baroda	BA Prabhakar	Jan-12
	P S Shenoy	May-00
	A K Khandelwal (Dr.)	Mar-05
	M D Mallya	May-08
	SS Mundra	Jan-13
Bank Of India	M Venugopalan	Aug-03
	M Balachandran	Jun-05
	T S Narayanasami	Jun-07
	Alok Kumar Misra	Aug-09
	Smt V.R.Iyer	Nov-12
Bank Of Maharashtra	M D Mallya	Mar-06
	Allen C A Pereira	Jun-08
	A S Bhattacharya	Oct-10
	Narendra Singh	Feb-12
Canara Bank	V P Shetty	Nov-04
	M B N Rao	Jun-05
	A C Manajan	Aug-08
	RK Dubey	Jan-13
Central Bank Of India	S Sridhar	Mar-09
	M V Tanksale	Jun-11
Corporation Bank	K Cherian Varghese	Nov-00
	V K Chopra	Dec-05
	B Sambamurthy	Apr-06
	J M Garg	Nov-08
	Ramnath Pradeep	Sep-10
	Ajai Kumar	Oct-11
Dena Bank	M V Nair	Mar-05
	P L Gairola	May-06
	D L Rawal	Jan-09
	Nupur Mitra (Smt.)	Nov-11
	Shri Ashwani Kumar	Jan-13
I D B I Bank Ltd.	P P Vora	Sep-01
	M Damodaran	Jun-04
	V P Shetty	Mar-05
	Yogesh Agarwal	Jul-07
	R M Malla	Jul-10
	MS Raghavan	Jul-13

<b>Bank</b>	<b>CEO</b>	<b>Month, Year of Joining</b>
Indian Bank	M S Sundara Rajan T M Bhasin	Jun-07 Apr-10
Indian Overseas Bank	S C Gupta T S Narayanasami S A Bhat M Narendra	Jul-01 Jun-05 Jun-07 Nov-10
Oriental Bank Of Commerce	B D Narang K N Prithviraj Alok K Misra T Y Prabhu Nagendra Peda S L Bansal	Jul-00 May-05 Jun-07 Aug-09 Sep-10 Mar-12
Punjab & Sind Bank	N S Gujral G S Vedi D P Singh	Feb-01 Aug-09 Nov-11
Punjab National Bank	SS Kohli SC Gupta Kamalesh Chandra Chakrabarty (Dr.) KR Kammath	Apr-00 Apr-05 Jun-07 Oct-09
State Bank Of India	Janki Ballabh A K Purwar O P Bhatt Pratip Chowdhary	Nov-00 Nov-02 Jun-06 Apr-11
Syndicate Bank	Michael Bastian N Kantha Kumar C P Swarnkar George Joseph Basant Seth M G Sanghvi Sudheer Kumar Jain	Aug-02 Jan-05 Apr-06 Aug-08 Aug-09 Mar-12 Jul-13
Uco Bank	V Sridhar S K Goel Arun Kaul	Dec-04 Jul-07 Sep-10
Union Bank Of India	K Cherian Varghese M V Nair D Sarkar S C Gupta Bhaskar Sen Archana Bhargav	Dec-04 Apr-06 Apr-12 Nov-08 Mar-10 Apr-13
Vijaya Bank	M S Kapur Prakash Mallya Albert Tauro H S Upendra Kamath	Aug-02 Apr-06 Aug-08 Apr-11

Table A.2: EFFECT OF CEO TURNOVER ON THE RELATIONSHIP BETWEEN LLP AND FUTURE NPA

Table A.2 presents OLS regression estimates for the effect of appointment of a new bank CEO on the relationship between LLP, income and future NPA. The purpose is to test the impact of CEO turnover on earnings smoothing and genuine recognition of future expected loss, in the spirit of [Bushman and Williams \(2012\)](#). The dependent variable is the ratio of LLP to Income. New CEO is a dummy variable that takes the value of one for the transition quarter and zero otherwise. The standard errors are clustered at bank level and adjusted t-statistics are reported in parentheses below the coefficient estimates. \*\*\*, \*\*, \* represents statistical significance at the 1%, 5% and 10% levels.

	(1)	(2)	(3)	(4)	(5)
DEPENDENT VARIABLE	LLP(i,t)/INCOME(i,t)				
NPA(i,t+1)/INCOME(i,t+1) X NEW_CEO(i,t)			0.005** [2.420]	0.005** [2.398]	0.005** [2.397]
PROFIT-BEFORE-PROVISIONS(i,t)/ INCOME(i,t) × NEW_CEO(i,t)				0.017 [0.163]	0.013 [0.129]
NEW_CEO(i,t)			0.010** [2.054]	0.006 [0.261]	0.007 [0.303]
PROFIT-BEFORE-PROVISIONS(i,t) INCOME (i,t)		0.616*** [10.892]	0.622*** [11.099]	0.621*** [11.415]	0.622*** [11.363]
NPA(i,t)/LOAN(i,t-1)	-0.000 [-1.067]	-0.000 [-1.168]	-0.000 [-0.781]	-0.000 [-0.777]	-0.000 [-0.686]
NPA(i,t+1)/LOAN(t)	-0.001 [-1.427]	-0.001 [-0.959]	-0.005** [-2.504]	-0.005** [-2.498]	-0.005** [-2.490]
CAPITAL ADEQUACY RATIO					-0.001 [-0.601]
GDP GROWTH RATE					-0.030 [-1.138]
GOI SECURITIES YIELD					-0.051 [-0.900]
Bank Fixed Effect	Yes	Yes	Yes	Yes	Yes
(Year, Quarter) Fixed Effect	Yes	Yes	Yes	Yes	No
Observations	670	670	670	670	670
Number of Banks	21	21	21	21	21
Adjusted R-squared	0.395	0.604	0.614	0.614	0.614

Table A.3: RELATIONSHIP BETWEEN EARNINGS SURPRISE AND MARKET REACTION

Table A.3 presents the results for association between stock market reaction and earnings surprise. The data is organized at bank-quarter level. Here the dependent variable Stock Ret represents the result announcement day return on the bank stock under consideration as reported by Bloomberg. In cases where the result was announced after market hours, the next trading day return is considered. The main explanatory variable-surprise-represents the ratio between actual earnings per share and estimated earnings per share. We include bank level fixed effects in columns 2 and 3 and year fixed effects in column 3. Standard errors are clustered at bank level and adjusted for heteroscedasticity. \*\*\*, \*\*, \*, represent statistical significance at 1%, 5% and 10% levels.

	(1)	(2)	(3)
DEPENDENT VARIABLE	STOCK RETURN %		
SURPRISE %	0.028*** [3.407]	0.028*** [3.202]	0.037*** [3.289]
Observations	128	128	128
Bank fixed effects	No	Yes	Yes
(Year, Quarter) Fixed Effect	No	No	Yes
Adjusted R-squared	0.0843	0.132	0.466

Table A.4: IMPACT OF CEO TURNOVER ON LLP-TO-INCOME- BANKS WITH HIGH FOREIGN INSTITUTIONAL OWNERSHIP

Table A.4 presents OLS regression estimates for the effect of appointment of a new bank CEO on the bank's loan loss provisions (LLP) (Panel A) and on lending (Panel B). The sample is restricted to banks with above median foreign institutional ownership. In Panel A, the dependent variable, LLP-To-Income ratio, is calculated by normalizing loan loss provisions by interest income. The key explanatory variable equals the dummy New CEO, which equals 1 for the transition quarter and 0 otherwise. In columns 1 and 2, we use our preferred definition of transition quarter. Here a quarter is considered as the transition quarter only if the new CEO takes charge before the last day of the quarter. In columns 3 and 4, the first quarter for which the new CEO announces results is considered as the transition quarter. In Panel B, the dependent variable is the total advances (in billions of Rupees) lent. The data pertaining to bank-borrower pair spans from 2001 to 2014. The independent variable—New CEO—takes the value of one for CEO transition quarter and 3 successive quarters following the turnover quarter and zero otherwise. The standard errors are clustered at bank level and adjusted t-statistics are reported in parentheses below the coefficient estimates. \*\*\*, \*\*, \* represents statistical significance at the 1%, 5% and 10% levels.

	(1)	(2)	(2)	(2)
DEPENDENT VARIABLE	LLP(i,t)/Income(i,t)			
NEW_CEO	0.014** [2.130]	0.017* [1.812]	0.015** [2.112]	0.018* [1.875]
CAPITAL ADEQUACY RATIO		-0.005* [-1.850]		-0.005* [-1.737]
GDP GROWTH RATE		0.002 [1.230]		0.002 [1.242]
GOI SECURITIES YIELD		-0.020*** [-5.372]		-0.020*** [-5.359]
Bank fixed effects	Yes	Yes	Yes	Yes
(Year, Quarter) Fixed Effect	Yes	Yes	Yes	Yes
Observations	501	386	501	386
Number of Banks	10	10	10	10
Adjusted R-squared	0.510	0.131	0.510	0.131

<b>Panel B</b>		
VARIABLES	(1)	(2)
	ADVANCES (IN BILLION RUPEES)	
NEW_CEO	-58.63* [-1.652]	-135.80* [-1.700]
CAPITAL ADEQUACY RATIO		-97.56 [-1.285]
GDP GROWTH RATE		-174.83*** [-3.046]
GOI SECURITIES YIELD		489.38*** [2.734]
Bank fixed effects	Yes	Yes
(Year, Quarter) Fixed Effect	Yes	Yes
Observations	391	377
Number of Banks	10	10
Adjusted R-squared	0.729	0.729

Table A.5: RESPONSE OF BANK LENDING TO MONETARY POLICY SHOCKS

Table A.5 reports OLS estimates for reaction of bank lending to monetary policy shocks. The data is organized at bank quarter level and covers a period between September 2003 and June 2010. The dependent variable is the natural logarithm of advances. The explanatory variable of interest in columns 1 and 2 is the short term government security repurchase (repo) rate set by the Central Bank. We also include two lags of the Repo rate. In column 1, we present the results for government owned banks whereas in column 2, we present the results for private banks. In column 3, we compare between transition and other quarter between government owned banks. New CEO is a dummy variable that takes the value of 1 for transition quarter and zero otherwise. The main explanatory variable of interest in column 3 is the interaction between New CEO dummy and the repo rate. We include bank fixed effects in all three columns. The standard errors are clustered at bank level and adjusted t-statistics are reported in parentheses below the coefficient estimates. \*\*\*, \*\*, \* represents statistical significance at the 1%, 5% and 10% levels.

DEPENDENT VARIABLE	Advances		
	PUBLIC BANKS	PRIVATE BANKS	PUBLIC BANKS
POLICY RATE	-0.094** (0.040)	-0.098*** (0.035)	-0.092*** (0.014)
NEW_CEO			-0.243 (0.385)
NEW_CEO $\times$ POLICY RATE			0.040 (0.054)
LAG OF POLICY RATE	0.018 (0.062)	0.026 (0.055)	0.008 (0.011)
LAG 2 OF POLICY RATE	0.044 (0.041)	-0.012 (0.038)	0.043*** (0.013)
Observations	640	287	519
Bank fixed effects	Yes	Yes	Yes
(Year, Quarter) Fixed Effect	Yes	Yes	Yes
Adj R-squared	0.605	0.881	0.612

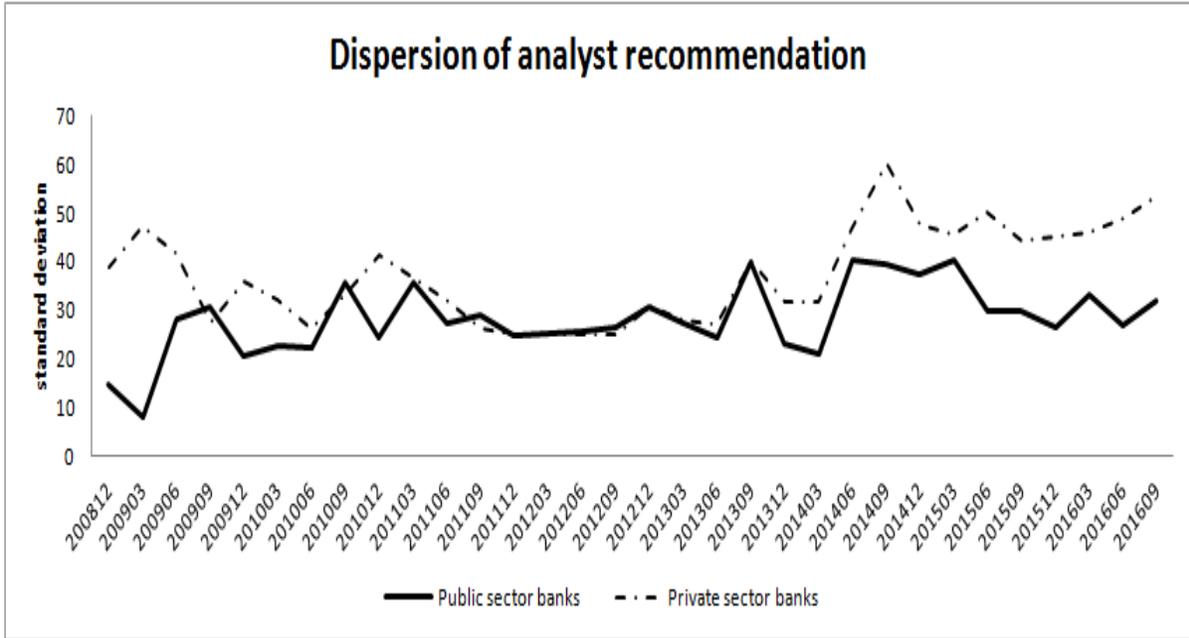


Figure A.1: DISPERSION OF ANALYST ESTIMATES

In figure A.1, we compare the dispersion in analyst estimates for government owned banks with the same for private sector banks. The data spans a period between December 2008 and September 2016. The bold line represents the dispersion for government owned banks and the dotted line represents the same for private banks. The horizontal axis represents time and the vertical axis represents the dispersion in analyst estimates.

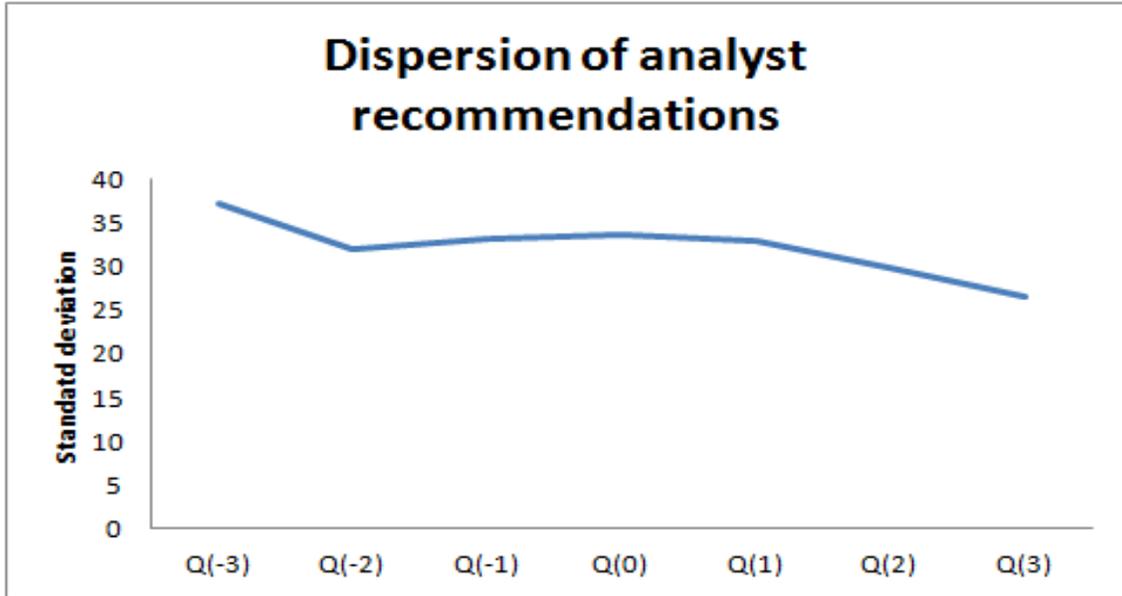


Figure A.2: DISPERSION OF ANALYST ESTIMATES-TRANSITION QUARTER V/S OTHER QUARTERS

In figure A.2, we compare the dispersion in analyst estimates for government owned banks with the same for private sector banks. In this figure, we compare the dispersion in analyst estimates within government owned banks between transition and other quarters. The data spans a period between December 2008 and September 2016. The horizontal axis represents distance from transition quarter and the vertical axis represents the dispersion in analyst estimates.