Academic Directors on Bank Boards: Do they really add value?[1]

Saibal Ghosh*

Nishant Vats**

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* (Corresponding Author) Saibal Ghosh is at the Qatar Central Bank and can be reached at emailsaibal@gmail.com.

** Nishant Vats is at the University of Chicago Booth School of Business and can be reached at nvats@chicagobooth.edu.

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Abstract

Using a hand-collected dataset from India, we investigate the relevance of academic directors on bank boards. More specifically, we examine (1) the factors that determine the share of academic directors on boards; (2) the association between academic directors and bank behaviour; and (3) the impact of academic directors on credit policies. Our findings indicate that unprofitable banks with bigger boards are likely to have a greater share of academic directors. Besides, we find that the specialization of academic directors matters for credit behaviour. These findings, however, differ across bank ownership and are robust in an instrumental variable setting. Finally, we show that academic directors exert real effects on banks.

Keywords: Academic director, Corporate governance, Banking, India

JEL Classification: G01; G21; G34

1. Introduction

In the wake of the financial crisis, the issue of corporate governance has come into sharp focus. In this context, the role of the Board of Directors as the fulcrum of the decision-making process has come under increased scrutiny. Among the board members, one set of directors whose role has been relatively less understood has been that of academicians.[2] A 2008 survey by the *Chronicle of Higher Education* found that presidents from 19 of the top 40 research universities were on the board of directors of at least one firm.

In tandem with the worldwide trend, banks in India have also focused on appointing academic directors.[3] Several public and domestic private banks have academic directors on their boards. For example, ICICI Bank, the leading private bank by market share, had a renowned finance expert on their board for several years. The largest state-owned Indian bank which features among the top 100 in the Banker 2016 database – State Bank of India – also had a noted academician on their board as part of the overall business strategy.

In this context, the paper has a three-fold purpose. First, using data on Indian banks during 2004-2012, we examine the factors that determine the share of academic directors on boards. Next, we investigate the association between academic directors and bank behaviour. Employing a fixed-effect regression framework, we find that both the presence and the relative share of academic directors exerts a perceptible impact on bank performance. Thirdly, we explore whether academic directors influence banks' credit extension policies and if these policies are affected by the domain expertise of the academician.

[2] We employ the terms academician and academic director interchangeably.

[3] The *New York Times* (2010) reported that Shirley Jackson, the president of Rensselaer Polytechnic Institute earned USD 1.4 million from her directorships in 2009, besides USD 1.6 million from her academic job, including bonuses and other benefits.

One possible concern is endogeneity: academic directors can positively (resp., negatively) affect bank performance and in turn, well- (resp. poorly-) performing banks are likely to be the ones to attract academic directors. To address this concern, we devise an exogenous instrument for the likelihood of an academic on the bank board. The instrument is based on the logic that the smaller the distance, the greater is the likelihood of an academician being able to collect relevant 'soft' information regarding that institution and *vice versa* (Dass and Massa, 2011).

We contribute to the extant literature in three distinct ways. First, we systematically investigate the importance of academic directors for a leading emerging economy. Most studies of this genre have analysed the performance of women directors (Adams and Ferreira, 2009), banker-directors (Booth and Deli, 1999; Dittmann, Maug, and Schneider, 2010; Sisli-Ciamarra, 2012) and lawyer-directors (Litov, Sepe, and Whitehead, 2014). Most of these studies either rely on cross-country samples or alternately, are based on developed economies. Little, if any, the systematic empirical evidence is available in respect of academic directors for emerging economies, and this is one of the major concerns of the paper.

Second, we focus on the impact of academic directors on bank performance. This contrasts with prior research which focuses on non-financial firms (White et al., 2014; Francis, Hasan, and Wu, 2015). White et al. (2014) for instance, examine the market reaction to academic director appointments in non-financial firms and find that the cumulative abnormal returns are positive only in cases of specialized appointments.[4] Levine (2004) observes a separate study of governance mechanisms in banks is critical for two reasons. First, the opacity of banks' balance sheets means that they can alter the risk composition of their asset more quickly than most non-financial firms. Second, the existence of deposit insurance generates perverse incentives which

[4] Specialized appointments include those in medicine, chemistry, physics, biology and engineering. This contrasts with administrative (e.g., presidents, chancellors, deans, provosts, vice presidents etc.) and business (e.g., business, law, etc.) appointments, which are more generic in nature.

induce shareholders to assume excessive risks. The latter is relevant in India where, as at end-March 2012, 95 percent of total numbers of accounts were fully covered by deposit insurance (DICGC, 2012).

Lastly, we contribute to the literature on the interface between performance and academic directors across bank ownership. On the one hand, cross-country studies consistently highlight the detrimental effects of higher government ownership on bank stability (La Porta, Lopez-de-Silanes, and Shleifer, 2002; Barth, Caprio and Levine, 2004). Another stream of literature finds that government-owned banks are less profitable and less stable as compared to their private peers (Das and Ghosh, 2006; Barry, Lepetit and Tarazi, 2011; Casu, Ferrari, and Zhao, 2013). Unlike these studies, our paper considers whether bank performance differs across ownership in the presence of academic directors, holding constant the institutional and macroeconomic framework.

The Indian banking system provides a compelling laboratory to examine this issue for several reasons. First, the growing competition in the sector has compelled domestic banks to expand footprints across borders to maintain margins and sustain revenues. The competition has increased the need for better and more insightful analysis of diversification strategies, necessitating the need for academic directors. Second, even within domestic markets, intensified competition driven by the entry of new and diversified players has meant that banks have been compelled to develop specific strategies to stay ahead in the race. Including academic directors on their boards, who have the skills and insights to provide reasoned analysis, has become an integral part of this process. And finally, several banks have also set up advisory councils to provide detailed policy inputs to their board of directors in the course of their governance process. Assimilating the technical information embedded in these documents and translating it

into decisive policy strategies has heightened the need for including academic directors on bank boards.

The remainder of the analysis continues as follows. We discuss the evolution of governance practices in India with emphasis on the development of board structure in the next section. Subsequently, we develop testable hypotheses by embedding our analysis within a theoretical setup. Thereafter, we describe our sample selection, data and methodology. This is followed by the univariate tests, and then the empirical strategy and results. The last section concludes.

2. Evolution of corporate governance practices in India

The evolution of corporate developments in India can be traced to the managing agency system in which the promotion, financing, and administration of companies were handled by agents in return for a small share of ownership or agency fees. As the system became more entrenched and was manifest in abuse of corporate power, the Companies Act 1956 took shape to necessarily contain the exploitation of the shareholders' interests. A few years before that, as a move towards streamlining banking operations under an apex body, the Banking Companies Act, 1949 (subsequently renamed as Banking Regulation Act) was promulgated.

Consequent upon these new legislations, a functional board with a chairman and managing director replaced the managing agent at the apex of the firm's control. This, in turn, created a new kind of ownership in the form of business groups, wherein the neo-rich managing agents coupled with some capitalist families took over the reins of the private sector in the country, marking a new era characterized by the nexus between politics and business.

As the economic reforms of the 1990s took hold, a sea change occurred in the field of corporate governance and investor protection. The establishment of the Securities and Exchange

Board of India (SEBI), the regulator of the capital market and its gradual empowerment to monitor and ensure orderly market conduct significantly transformed the corporate landscape. The earliest endeavour was the Confederation of Indian Industry (CII) Code for Desirable Corporate Governance in 1998. Later, several Committees were established at different points in time to examine various facets of governance, including the Naresh Chandra Committee on corporate audit (Government of India, 2002), the Kumar Mangalam Birla Committee that focused its attention on shareholders' rights (Securities and Exchange Board of India, 2000) and the Narayana Murthy Committee which focused on investor protection (Securities and Exchange Board of India, 2003).

While these developments in the non-financial sector were underway, the Indian central bank also reinforced its efforts towards ensuring better governance in the financial sector. As a prelude to this process, an Advisory Group on Corporate Governance was constituted in March 2001. Subsequently, another Consultative Group was formed in November 2001 to strengthen the internal supervisory role of the boards of Indian banks. Keeping these recommendations in view and the cross-country experience, the Reserve Bank initiated several measures to strengthen the corporate governance practices of Indian banks.

More recently, the Reserve Bank appointed Committee on governance of bank boards submitted its recommendations (Reserve Bank of India, 2014). The Report made several far-reaching recommendations towards improving the governance and functioning of Indian banks. As part of this process, a Bank Board Bureau has recently been established. Comprising of eminent professionals, the Bureau will, among others, seek to streamline the governance process in the banking sector.

The literature review that follows addresses the role of the board of directors in meeting the needs of good corporate governance leading to the formulation of hypotheses addressing aspects of the governance of boards of directors in the Indian context.

3. Literature and hypotheses development

The growing representation of academicians on boards of banks can be traced to both supply and demand factors. On the supply side, it appears likely that the increase in the pool of qualified academicians in the workforce with greater operational orientation has had its manifestation in their improved representation on bank boards. According to the *New York Times* (2010), the interchange of ideas between campus and corporations has allowed cross-fertilisation of ideas. According to Francis et al. (2015), a third of the S&P 500 firms had academic directors on their boards during 1998-2006. On the demand side, the growing complexity of banking operations in an increasingly uncertain world had necessitated people with significant domain knowledge who can bring to bear their skills and acumen to ensure an improvement in the organisation functioning. As a result, banks often appoint academicians on their boards who often bring in a fresh perspective (Audrescht and Lehmann, 2006).

3.1 Academic Directors and Performance

Research on the association between academic directors and performance can be broadly traced to the agency theories. To avoid conflict of interests, the principal appoints an agent who represents the best interest of the principal. Recent research has explored the role and relevance of specific categories of such agents, especially outside directors. For example, employing data on Fortune 1000 firms, Carter, Simkins, and Simpson (2003) show that higher proportion of women directors improves their value. Erhardt, Warbel, and Shrader (2003) also uncover a positive relationship between the percentage of women directors and profitability of U.S. firms.

In the Indian case, using cross-section data, Jackling and Johl (2009) find that greater proportion of inside directors exert a positive impact on manufacturing firm performance. More recently, utilising data for India, Ghosh (2017) shows that the value addition from induction of women directors on bank boards is not quite compelling.

As compared to other categories of outside directors, academic directors possess several unique characteristics that could enhance board efficacy. Firstly, academicians are experts in their respective fields. This can improve the competitive advantage of banks by facilitating knowledge spillovers. As well, academic directors can add specialized skills to help navigate the bank's strategic and operational challenges. All these factors can ultimately improve performance.

The need for such academicians is more likely to be felt by bigger banks, given their business complexities (Adams and Mehran, 2012) which require fresh perspectives to circumvent the informational biases in strategy formulation. Demirguc Kunt and Huizinga (2010) demonstrate that bigger banks have a higher share of non-interest income. Employing an international sample of banks, Bertay et al. (2013) show that bank profitability increases with size. Combining these observations leads us to our first hypothesis:

Hypothesis 1: Presence of academic director is positively related to bank size.

A related issue is the impact of academic directors on performance. The human capital theory argues that prior training and availability of relevant skills raises productivity (Becker, 1964). Viewed from this perspective, academic directors not only bring a fresh set of ideas to the table, but also knowledge and rigour accumulated through years of dedicated research and teaching. On the flip side, however, it might well happen that academicians are divorced from

real-world decision making in complex organizations and lack the necessary operational experience.

Several studies have examined the impact of the specific type of independent directors on performance. The evidence is at best, mixed. Adams and Ferreira (2009) for instance, show that the presence of female directors dampen performance, whereas Fahlenbrach, Minton, and Pan (2011) find this relationship to be the opposite. Using US data for the period 1998-2006, Masulis, Wang, and Xie (2012) show that firms with foreign independent directors display significantly weaker performance. As compared to this, the evidence proffered by Litov et al. (2013) indicates that lawyer directors exert a positive impact on firm value. More recently, employing data on S&P 500 manufacturing firms during 1998-2011, Francis et al. (2015) show that academic directors positively impact both profitability and growth opportunities. Utilising cross-country data on over 3800 firms, Terjesen et al. (2015) show that firms with a higher share of independent women directors' exhibit better performance. Recent analysis using data from eight non-financial industries in South Africa finds that ethnic diversity overwhelms gender diversity in affecting market valuation of firms (Ntim, 2015).

Given the present state of the evidence, it is difficult to *a priori* provide definitive conclusions regarding the nature of the relationship between bank performance and academic directors. Based on the aforesaid arguments, we propose two competing hypotheses:

Hypothesis 2A: Presence of academic directors is positively related to bank performance

Hypothesis 2B: Presence of academic directors is negatively related to bank performance

3.2 Academic Directors and Lending Behaviour

An essential function of the bank board is to provide broad guidelines for credit extension, consistent with the long-term strategic goals of the bank. Better the risk management practices,

better the overall balance sheet and earnings profile, in turn, raising its overall stability. Resource dependency theories observe that a diverse board has access to a broader resource pool, thereby encouraging additional perspectives in lending policies. Research on the relationship between board diversity and bank lending finds that banks with a higher proportion of female loan officers extend less credit to new borrowers (Bellucci, Borisov and Zazzaro, 2010). Similarly, Del Prete and Stefani (2015) find that gender diversity in Italian banks exerts a positive impact on the quality of credit.

However, not much is known about the way academic directors influence board diversity. Macey and O'Hara (2003) observe that the fiduciary duties of bank board extend beyond shareholders to depositors and regulators because banks are mostly capitalized with funds from unsophisticated depositors and are protected by deposit insurance. In a similar vein, Levine (2004) argues that excessive risk-taking by banks can create significant negative externalities. As a result, an active bank board may encourage less risk than desired by shareholders, leading to a negative association between board effectiveness and lending practices. This, however, needs to be viewed against the domain knowledge and expertise of academic directors as embedded in the human capital theory. The technical rigour and analytical skills of academic directors can help banks to better identify the credit risk of the borrowers. This might enable the bank to extend a higher quantum of loans, presumably at competitive rates. However, the overall impact on NPLs is ambiguous. If the additional lending is channelled to risky borrowers without adequate due diligence, it could be manifest in a higher quantum of risky loans in the future, whereas if the incremental lending is directed towards more creditworthy borrowers, delinquent loans could decline. This leads to our final hypothesis:

Hypothesis 3: Banks with academic directors are expected to have higher lending.

4. Data and Variables

4.1 Data Source

We employ three major databases for our analysis. The first is the Statistical Tables Relating to Banks in India, a yearly publication by the Indian central bank. Using this database, we obtain the annual audited data on the balance sheet and profit and loss accounts of individual banks. The second data source is the Report on Trend and Progress of Banking in India, from which we extract the bank-wise prudential ratios. The third is the Prowess database, generated and maintained by the Centre for Monitoring of Indian Economy (CMIE), a leading private data aggregator and analytical firm in India.

Using the Prowess database, we extract data on publicly listed banks during 2004-2012, the period for which data on the relevant variables is available on a consistent basis. There are a total of 40 banks for which data is reported, including 24 state-owned banks, 7 de novo private (established after the inception of economic reforms in 1991) and the remaining old private (operating before the initiation of economic reforms) banks.[5] These banks are subject to a uniform set of regulations, making the data comparable across banks. On average, these banks accounted for over 85% of total commercial banking asset during the period.[6]

[5] The list of banks in the study include: Allahabad Bank (ALB), Andhra Bank (ANB), Axis Bank (AXIS), Bank of Baroda (BOB), Bank of India (BOI), Bank of Maharashtra (BOM), Canara Bank (CANB), Central Bank of India (CBI), City Union Bank (CUB), Corporation Bank (CORPB), Dena Bank (DENA), Development Credit Bank (DCB), Dhanalakshmi Bank (DLB), Federal Bank (FEDB), HDFC Bank (HDFC), ICICI Bank (ICICI), IDBI Bank (IDBI), Indian Bank (INDB), Indian Overseas Bank (IOB), IndusInd Bank (IIB), ING Vysya Bank (IVB), Jammu and Kashmir Bank (J&K), Karnataka Bank (KB), Karur Vysya Bank (KVB), Kotak Mahindra Bank (KMB), Lakshmi Vilas Bank (LVB), Oriental Bank of Commerce (OBC), Punjab and Sind Bank (PSB), Punjab National Bank (PNB), South Indian Bank (SIB), State Bank of Bikaner and Jaipur (SBBJ), State Bank of India (SBI), State Bank of Mysore (SBM), State Bank of Travancore (SBT), Syndicate Bank (SYNB), UCO Bank (UCO), Union Bank of India (UNB), United Bank of India (UBI), Vijaya Bank (VB) and Yes bank (YES).

[6] The financial year for banks runs from the first day of April of a particular year to the last day of March of the subsequent year. Accordingly, the year 2004, the first year of the sample, corresponds to the period 2003-04 (April-March) and so on, for the other years.

4.2 Variables

The primary variable of interest is the board composition, including its size. Within this category, the key dependent variable is academic directors. The *Prowess* database provides individual-specific information on board structure, from which we identify the academicians. We cross-check this information with the website of the institute/university/department with which the academician is affiliated. Based on this strategy, we identify the areas of core competence of academic directors and group them into four categories: economics and finance, management, information technology and others.[7] In the sample, 57 have specialization in economics and finance, 23 in management, 15 in information technology and the rest is in the 'others' category.

It needs to be recognised that the listing of banks occurred at different points in time. Second, the banking industry witnessed consolidation activity during this period. As a result, the number of reporting banks varies across years: with an average of 9.3 years of observations per bank, we have information on a maximum of 398 bank-years. Table 1 describes the variables, including data source and summary statistics.

[Insert Table 1 about here]

We employ four key measures of performance, which includes both market-based and accounting measures. The former includes Market-to-book value (M/B), akin to Morck, Shleifer, and Vishny (1988). To account for the possibility that the growth opportunities can influence the coefficient estimates, we supplement the market-to-book ratio with accounting measures, such as profitability, stability and asset quality (Weisbach, 1988; Hermalin and Weisbach, 1991; Mehran, 1995; Khanna and Palepu, 2000). The measure of profitability is Net Interest Margin (NIM). The stability measure is the Z-score (Laeven and Levine, 2009; Bouwens

[7] This includes environment, sociology and organization behaviour.

and Verriest, 2014). Since the Z-score is positively skewed, we use the natural logarithm of the variable (Laeven and Levine, 2009).

As reflected in the table, the levels of stability are high, with an average value of 3.8. These numbers compare favourably with the advanced economies (World Bank, 2014). Also, we employ the non-performing loan ratio (NPL) as a measure of asset quality. The NPL ratio of the banking sector is 4%, on average.

5. Empirical Results

5.1 Univariate test

Table 2 reports the major characteristics of banks according to ownership. On average, state-owned banks (SOBs) board comprises of 13.6 members as compared to OPBs with 13.5 members and New Private Banks (NPBs) with 13 members. Nearly 25% percent of SOBs have at least one academic director on their board, as compared to 30% percent for NPBs and 35% for Old Private banks (OPBs). On average, academicians account for 2% of board size for SOBs, the lowest across bank ownership; these numbers are the highest for new private banks. In most instances, these differences are statistically significant.

The differences in the dependent variables are no less compelling. SOBs have significantly higher profitability, although their stability appears to be lower as compared to NPBs. Even in case of delinquent loans, the average figures for SOBs and OPBs are roughly 50% higher as compared to NPBs.

[Insert Table 2 about here]

Overall, the results tend to suggest that the presence of academic directors on bank boards is likely to be influenced by the characteristics of both the bank and its board. Therefore, it is important to take into account these characteristics in our analysis.

Figure 1 presents the year-wise number of academic directors on bank boards. The number rises sharply in the run-up to the crisis, with over two-thirds of banks having academic directors in 2007. Although the numbers have declined thereafter, nonetheless, over 50% of the banks have had academic directors in the subsequent years. When we segregate the information by bank ownership, it is observed that domestic private banks have been quite pro-active in hiring academic directors, especially after 2007 (Figure 2).

[Insert Figure 1 about here]

[Insert Figure 2 about here]

Figure 3 plots the kernel density of profitability for banks with and without academic directors. The bandwidth for the density estimation is selected using the plug-in formula of Sheather and Jones (1991). The figure depicts a significant lower profitability of banks with academic directors vis-à-vis those without it. The difference is manifest more vividly when we compare state-owned and domestic private banks (Figure 4), which shows that the gains accruing to the latter from having an academic director are much more compelling as compared with the benefits to the former.

[Insert Figure 3 about here]

[Insert Figure 4 about here]

Table 3 presents the difference in characteristics between banks that have an academic on board with the ones that do not have any academic. It is observed that banks with at least one academician are bigger in size, exhibit higher profitability, and lower non-performing loan ratio.

[Insert Table 3 about here]

We explore this aspect further by examining the median performance of banks between 2004 and 2012 and correlate it with the median share of academician on the board during the

same period. The results of a simple OLS regression are graphically depicted in Figure 5. The line is upward sloping indicating a *prima facie* positive relationship between academicians and bank performance. Also, the majority of the state-owned banks are clustered below the line, whereas non-state-owned banks are above this line, indicating that the relationship between performance and share of academics might not be homogenous across ownership. While these findings are consistent with the contention that academic directors improve bank performance, a rigorous econometric framework is necessary to establish a causal relationship between these empirical variables of interest.

[Insert Figure 5 about here]

5.2 Multivariate results

5.2.1 Academic Directors on Bank Boards

In this section, we examine the determinants of having academic directors. Towards this end, for bank b at time t the regression specification is of the following form:

$$E(Sh\_Acad_{bt}) = \varphi(\alpha + \beta[BS]_{bt-1} + \gamma[BoS]_{bt-1} + \eta_t + \vartheta_b + \varepsilon_{bt}) \quad (1)$$

In Equation (1), the dependent variable is the number of academics on bank board scaled by board size. The independent variables comprise of bank-specific (BS) and bank board specific (BoS) variables, besides controls for year (η) and bank (θ) fixed effects; ε represents the random error term; φ indicates using a normal cumulative distribution function (CDF). Since the outcome variable is a proportion and assumes values in the unit interval including end points, akin to Papke and Woolridge (1996), we employ the fractional Probit model. For robustness, we also re-estimate the model using Tobit specification, akin to Kroszner and Strahan (2001). The results are qualitatively similar in both cases.

The included bank characteristics are size, regulatory pressure, profitability, income profile and volatility of stock return. Bigger and well-capitalized banks with a diversified income structure might require academic directors who provide intellectual inputs to help them navigate the operational complexities and maintain profitability. Likewise, more profitable banks or those with diversified income structure might have an academic director in order to provide them with fresh perspectives to garner market shares and maintain revenue streams. These considerations suggest a positive sign on these variables.

In the ultimate analysis, it is the responsibility of the board to appoint director-members. Given this, we include several board-level variables. The first is board size, defined as the natural logarithm of the number of board members. The combined wisdom of bigger boards might provide the bank with expertise to improve performance, which might subsequently be manifest in better performance. In either case, the sign on this variable is likely to be positive. Taking into account the concerns raised by Fich and Shivdasani (2006) regarding the measurement of busyness, akin to Sarkar and Sarkar (2009), we compute the number of outside directorships per outside director as the busyness measure. As observed by Khwaja et al. (2008), not only the domain knowledge but also the networks that busy directors bring to the table might improve bank performance, implying a positive sign on this variable. All the bank specific variables are lagged and winsorized at 1 percent level. We also control for the gender diversity of the board by including a dummy which equals one if a bank board has a female director, else zero. Finally, we control for the duality of the CEO and director by including a dummy if both positions are held by the same individual, else zero (Brickley et al., 1997).

The regression estimates are set out in Table 4. Columns 1 and 2 report the results for all banks, while columns 3 to 6 presents the results separately by ownership. The results suggest that

less profitable banks are more likely to have academic directors. The results supports H2B and is consistent with the human capital theory that banks hire academic directors to leverage their domain knowledge.

Based on the marginal effects, we find that a decline in profitability increases the share of academic directors on bank board by roughly 64 percentage points. The findings concur with the expertise hypothesis, which suggests that banks hire academic directors in order to arrest the deterioration in profit. In contrast, bank size does not appear to exert any influence on the share of academic directors, refuting H1. In column (2), when we include board-level variables, we find that board size is positively related to the share of academicians. In terms of magnitudes, an increase in board size would improve the share of academicians by 4 percent, on average.

[Insert Table 4 about here]

The results resonate across columns (3)-(6), although the relevance of the variables differ across ownership. The impact of bank profitability on the share of academic directors in different for state-owned and private banks. While profitability positively affects the share of academic directors on boards of private banks, it is much less compelling a consideration for state-owned banks.

Additionally, the impact of regulatory pressure on academicians is pronounced only for private banks: a one standard deviation increase in regulatory pressure increases the likelihood of the share of academicians by an additional 20 percent. These findings are in accordance with the too-interconnected-to-fail theory which suggests that given their strong financial linkages, these banks hire academic directors to sustain their capital levels. For state-owned banks, given the implicit government guarantees, regulatory pressure is not an overwhelming concern (Acharya and Kulkarni, 2012).

While board size, bank profitability and regulatory pressure seems to affect the share of academic directors on bank boards, we find limited evidence of the impact of other variables such as size, stock market volatility and board busyness on the likelihood of hiring academic directors.

However, as our earlier analysis would suggest, not all banks have academic directors in any year. The bank can self-select an academician, driven by considerations of expected net gains from hiring or even the prevailing competition in the industry. The process of hiring an academician can therefore be modelled as a two-stage process. In stage 1 (selection stage), the bank decides whether to hire an academician, whereas in stage 2 (response stage), it decides how many such academicians to hires.

Empirically, this involves estimating the following two-equation Heckman model:

$$[Selection] \quad D_{Acad_{bt}} = F\left(\alpha + \beta[BS]_{bt-1} + \gamma[BoS]_{bt} + {}^{\eta_t} + \vartheta_b + \varepsilon_{bt}\right) \qquad (2A)$$

$$[Response] \quad Sh_{Acad_{bt}} = \alpha + \beta[BS]_{bt-1} + \gamma[BoS]_{bt} + {}^{\eta_t} + \vartheta_b + \varepsilon_{bt} \qquad (2B)$$

where F(.) denotes the Probit function in the first stage. Table 5 reports the results. The coefficient on size is positive and significant in the selection equation for private banks, suggesting that bigger private banks exhibit greater likelihood of hiring an academic director to help them steer through the challenges of the financial marketplace. In case of state-owned banks, the coefficient on bank size is significant only in the response stage, so that the share of academic directors on the board is likely to be higher for bigger banks. In other words, H1 appears to be valid for private and state-owned banks, although the likelihood and the intensity differs across ownership.

[Insert Table 5 about here]

The coefficient on regulatory pressure is positive in the Selection equation. In other words, banks facing high regulatory pressure are more likely to hire academicians. Intuitively, once a well-defined business strategy is in place, banks need few (often, only one) academicians to provide it with relevant analytical insights. The effect is economically large: in column 2, a one standard deviation increase in regulatory pressure raises the likelihood of recruiting academicians by an additional 75 percent.

Profitability enters with a negative sign in the selection model and with a positive sign in the response model, suggesting that although profitable firms are less likely to hire academic directors, their share in overall board is high. These findings reiterate the expertise hypothesis that banks hire academic directors to leverage on their domain knowledge to sustain profitability levels.

Looking at board-level variables, the coefficient on board size is positive and significant in the selection equation whereas it is negative and significant in the response equation: the likelihood of hiring academicians is higher for banks having larger boards, although their share is low. These results reverberate across both state-owned and private banks. Economically, large banks are operationally more complex and tend to have bigger boards to provide them with technical inputs across multiple areas. As a result, they require experts with domain knowledge spawning multiple fields and having an academic director to provide analytical expertise is just one aspect of the process. In columns (1) and (2), although the likelihood of hiring an academician is higher for bigger boards, its share in overall board is low. To illustrate, a 10 percent increase in board size reduces the share of academicians by 0.5 percentage points. This magnitude is nearly double for private banks as compared with state-owned ones.

5.2.2 Academic Directors and Performance

As discussed earlier, we estimate the impact of academic presence on bank performance and lending practices while controlling for board and bank characteristics, as earlier. We employ the following specification:

$$Perf_{bt} = \alpha + \beta D\_Acad_{bt} + \gamma Controls_{bt-1} + \varepsilon_{bt} \quad \textbf{(3)}$$

where *Controls* is the set of bank- and board-specific controls, both included with a lag to avoid endogeneity concerns and ε is the error term. The coefficient of interest is D_Acad, which captures the impact of academic directors on performance. The model is estimated using fixed effects regressions with standard errors clustered at the bank level.

The results are presented in Table 6. The point estimates of D_Acad in column (1) and (5) are positive and statistically significant at 10% and 5% level respectively. Presence of an academic director results in nearly 9% growth in net interest margin. Also, the growth in net other income is 17% greater when an academic director is present on the bank board. The results support H2B and suggest that academic directors on bank board improve banks' margin. Similar results are observed when we use share of academic director instead of dummy variable for the presence of an academic director. We find a negative relationship between market to book value and presence of academic directors.

[Insert Table 6 about here]

Next, we look at the fact if having multiple academic directors on bank board impacts bank behaviour. We identify all bank-years with more than one academic director, and examine the impact of the presence of multiple academic directors on bank boards. The results are presented in Panel B of Table 6. The results show that having multiple academic directors on bank board exerts no statistically discernible impact on either bank performance or value.

However, the D_Acad variable is significant and the point estimates are qualitatively similar to those observed in panel A of Table 6.

Summing up, the evidence suggests presence of gains from having an academic director on bank performance.

5.2.2.1 Addressing Endogeneity – Endogenous Treatment Effect

One major concern with the results presented in Table 6 is the fact that the variable D_Acad is likely to be endogenous. On one hand, academic directors are likely to impact bank performance, and poorly performing banks are more likely to hire an academician on board to foster better performance. To better identify the causal relationship running from the presence of academic directors to bank performance, we construct an exogenous measure of the likelihood of a bank hiring an academic director.

Following related research, we focus on 'proximity' as the measure of informational advantage. Proximity captures the geographical distance between the academics and the bank and is considered as a way of eliciting 'soft' information for both parties (See, for example, Berger et al., 2005).

Our measure is based on the inverse square law, that banks will attract academics with a force inversely related to the square of the distance between them. Banks are likely to have academic board members who are closely linked with academic institutions in the vicinity. An increase in the distance between a bank headquarters and academic institutions is likely to impede this relationship. This is consistent with the Indian scenario wherein banks operate on a pan-India basis and their headquarters are located in major cities which also have reputed research institutes and universities.

To implement this empirically, for each bank, we collect the geographical coordinates of its headquarters. Similarly, we extract information on the geographical coordinates for the top 40 academic institutions in the country. We compute the distance of a bank for each of these institutions and construct an average of the same for each bank. Next, we square this distance and use the inverse of this measure as an instrument for the likelihood of an academic being present on bank board. The relationship between the likelihood of a bank having an academic director and the inverse of the squared distance is positive and presented in Figure 6.

We run a linear regression with endogenous treatment effects to identify the causal impact of academic directors on bank performance and lending practices. In the first stage, we run a Probit model and subsequently use these estimates to compute of average treatment effect. The results are set out in Table 7. We observe a positive effect of the presence of academic director on bank advances. Specifically, banks with an academic director on board exhibit 15% higher growth in advances, 28% in investment, and 3% in lending rate. We do not observe any effect of presence of academic directors on the banks' cost of funds. Similar, to table 6 we find a positive impact of the presence of academic director on bank margins. Furthermore, we do not find any positive affect of the presence of academic directors on NPLs. This indicates that even though banks with academic directors improve advances and lending rates, these advances do not materially alter the risk-taking nature of the banks. This supports H3, wherein academics leverage their knowledge to better identify the riskiness of borrowers, and suitably modulate lending rates to match the creditworthiness of borrowers. Moreover, academic directors tend to positively affect the market performance of banks. Note that after controlling for the endogeneity the relationship between presence of academic director and market to book value is positive and statistically significant at the 0.01 level.

5.2.3 Academic Director Specialization and Lending Practices

Next, we examine the influence of the background of academic directors on lending practices. As discussed earlier, we classify academicians into four categories based on their area of specialization and include them as independent variables in the regressions.

Table 8 reports the results. We find that banks with academic directors having specialization in information technology (IT) extend more credit: presence of an academic director with IT background improves bank lending by close to 5%. These results find echo in Petersen and Rajan (1992) who observe an increase in aggregate lending driven by technology adoption. Intuitively, having an IT-expert academician on board improves technology adoption by banks, in turn improving their risk-assessment skills and consequently, lending. When we examine the differential effect across bank ownership, we observe that academics with IT background increase advances on average by 8.3%, but there is a decline in advances for academicians on boards of state-owned banks.

[Insert Table 8 about here]

The findings with regard to lending rates are presented in columns 3 and 4 of the table. First, we find that banks having academic directors with specialization in economics charge lower lending rates. The effect is quantitatively modest and significant at 1%, this observation is valid for both directors with economics and IT background. We also examine the differential impact of academic specialization across ownership. Academic directors with economics background increase lending rates for SOBs. This is consistent with the fact that SOBs are lenient lenders and academics with economics specialization ensure discipline in lending practices and better identification of creditworthiness which foster higher lending rates. The

finding reiterate the expertise theory that academic directors are appointed on boards of banks to enhance credit extension policies and thereby improve performance.

5.2.4 Real Effects

Finally, we look at the real effects of academic directors. For this, akin to Nakane and Weintraub (2005), we compute a measure of productivity for banks. Accordingly, we estimate a Cobb-Douglas production function with a measure of bank output and two productive inputs as explanatory variables: labor and capital (fixed capital). Furthermore, akin to Levinsohn and Petrin (2003, 2012), we disaggregate labor into two components: skilled labor (proxied by number of officers) and unskilled labor (proxied by total of clerical and sub-ordinate staff). Other studies that employ this methodology to estimate productivity include Sanyal and Shankar (2011) and Martin-Oliver et al. (2013).

We measure value added as total earnings net of expenses (including interest and operational expenses), making our model consistent with the intermediation approach.

To obtain unbiased measures of productivity, we need to specify an intermediate input that performs two functions. First, it has to be informative regarding productivity and, second, it needs to affect output through their impact on factor accumulation. Clearly, equity capital fulfils the key requirements of such an analogue intermediate input. First, equity capital serves as an indicator of a bank's riskiness to financial markets and regulators (Berger, 1995). This, in turn, determines their costs of funding. Second, equity capital directly affects banks' factor demand because of its dual role as a direct source of lending and signalling role regarding the funding cost of banks. At the same time, the determination of optimal levels of (costly) equity capital under regulatory constraints is a key task of bankers. As a consequence, levels of equity capital is likely to be correlated with bank productivity.

We estimate the production function using Levinsohn Petrin (L-P) algorithm and obtain total factor productivity (TFP). The TFP is the amount of output not explained by the labour and capital. Having obtained these estimates, we compute an index of TFP and thereafter, examine the impact of academic directors on bank TFP. Using data on US manufacturing firms, Bulan et al. (2010) show that CEO performance pay incentives exerts a non-linear effect on productivity. Akin to their specification, we model the growth in TFP as a function of share of academic directors, while controlling for other bank- and board-specific factors, as earlier. The results are reported in table 9.

[Insert Table 9 about here]

We find that the presence of academic directors exert a positive effect on productivity: banks with at least one academic director have greater TFP. Illustratively, the most conservative estimate in column (6) which includes all bank- and board-specific variables shows that an academic director on bank board raises TFP growth by 0.8%. These results are robust to an instrumental variable setting, although the magnitudes are higher in several instances. When we consider the share of academic directors as opposed to their presence as the key variable of interest (column 7 & 8), we find qualitatively similar results. An increase in the share of academic director results in an improvement in TFP growth by 1.63%. All in all, the results appear to suggest that academic directors exert positive real effects on banks.

6 Concluding Remarks

Using a novel dataset of Indian banks during 2004-2012, the study examines the relevance of academic directors on boards. The results suggest that academic directors are associated with bigger and less profitable banks. A disaggregated analysis based on bank ownership suggests that for state-owned banks, the findings are consistent with the expertise theory; in the case of

private banks, the results support the too-interconnected to fail theory. Our analysis therefore, contributes to the literature that focuses on the interlinkage among bank performance, governance, and ownership. With regard to performance, the findings suggest that academic directors positively influence bank performance and banks having academic directors with certain categories of specialization extend more credit and charge competitive rates.

The question therefore remains: why do banks hire academic directors? To explore this further, we look at the real effects of academic directors on bank behaviour, such as its productivity. We find that academic directors exert a salutary real impact, after controlling for other confounding factors. The analysis therefore lends credence to the fact that academic directors influence bank performance and policies.

To syncopate, the paper furthers our understanding as to the effects of enriching board diversity and its manifestation on bank behaviour. A couple of caveats are in order. First, owing to the paucity of data, our analysis does not allow us to examine the differential impact of academic directors on bank performance vis-à-vis other categories of specialized directors. Second, the study does not analyse what kind of board-level information the academicians utilize, over and above their domain knowledge, to make their decisions. Addressing these issues using disaggregated data comprise elements for future research.

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Figure 1

Year-wise number of academic directors

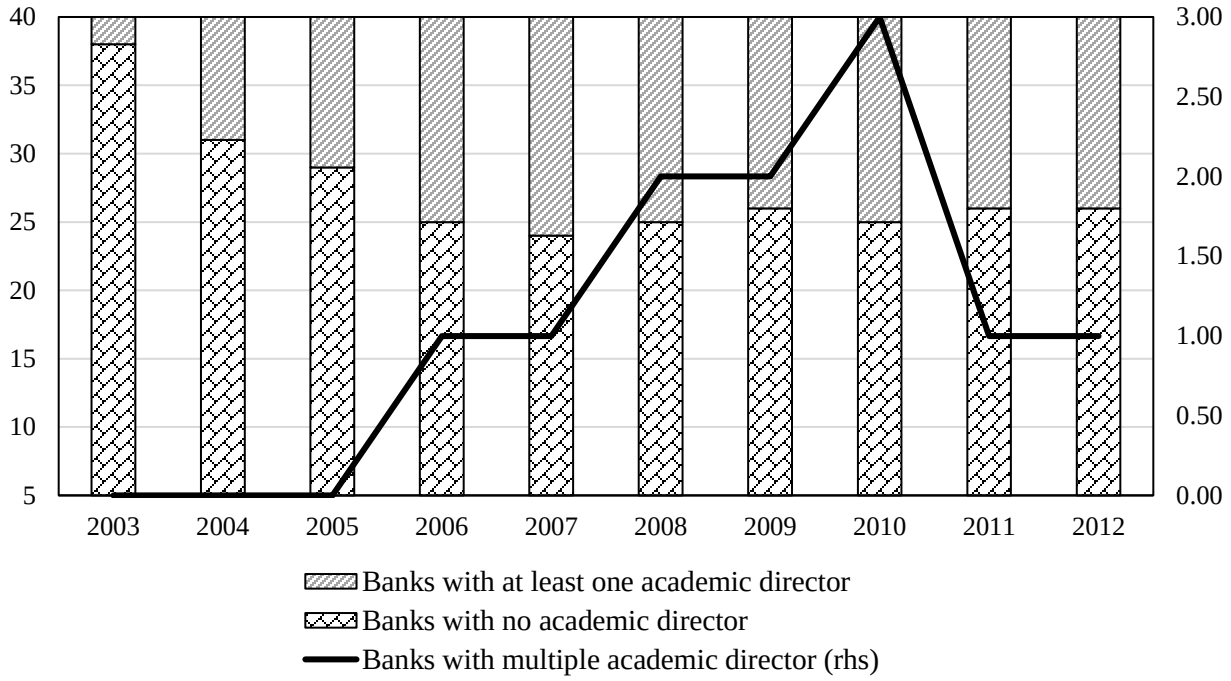

Figure 2

Bank ownership-wise number of academic directors

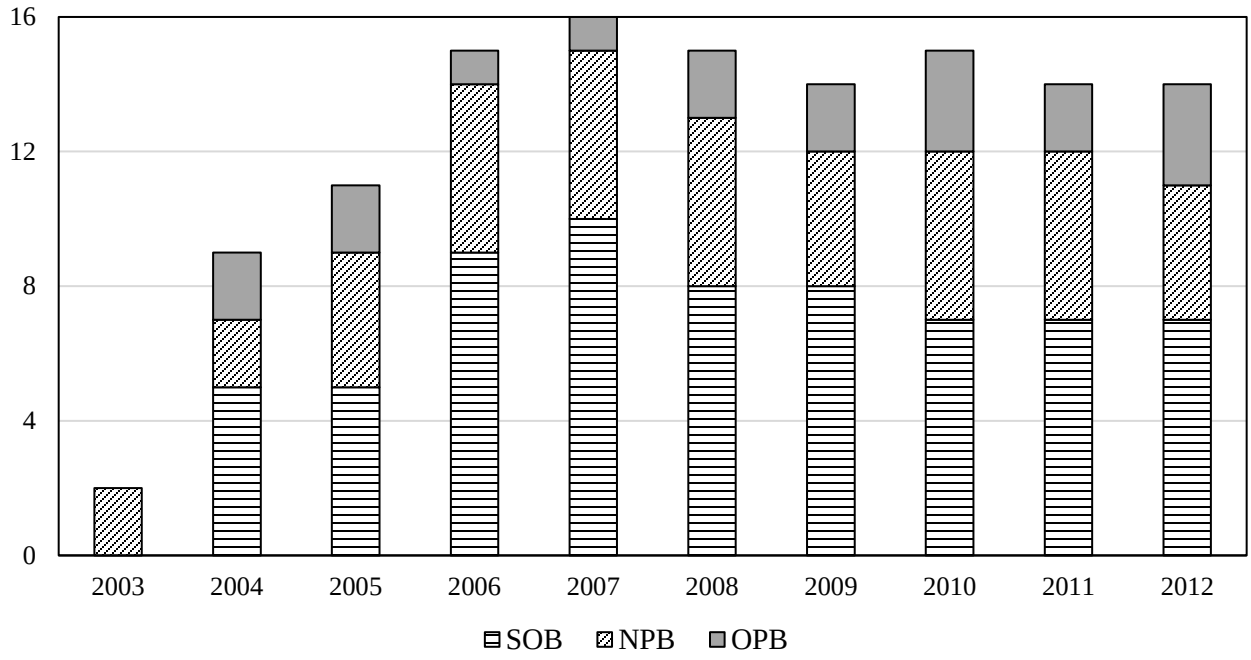

Figure 3

RoA for banks with and without academician on their board

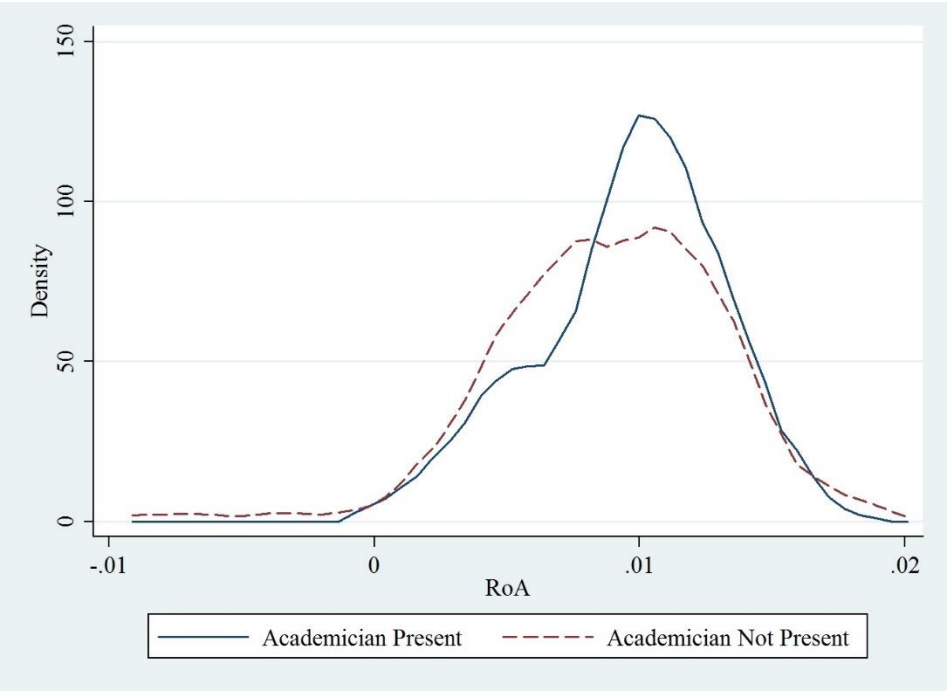

Figure 4

RoA across bank ownership with and without academician on their board

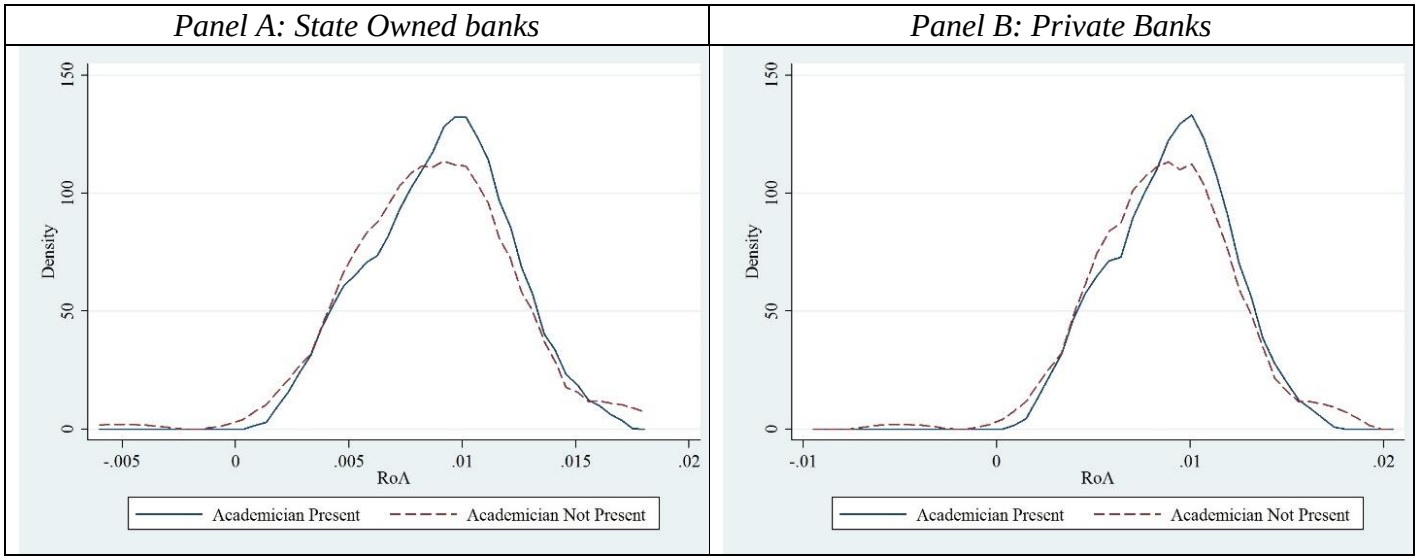

Figure 5

RoA by ownership and percentage of academicians on the Board (based on median values)

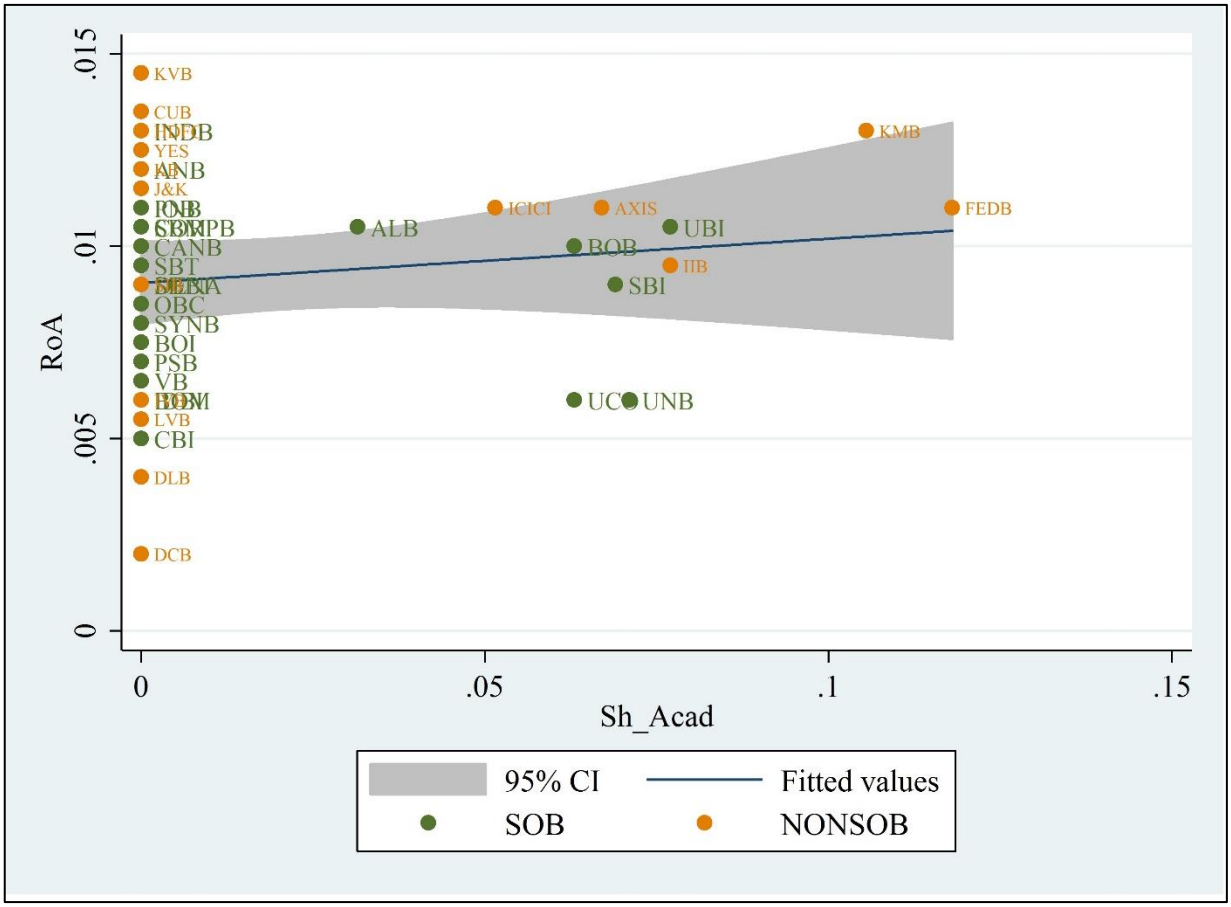

Figure 6

Presence of academic directors and inverse of the squared average distance of banks from top academic institutions

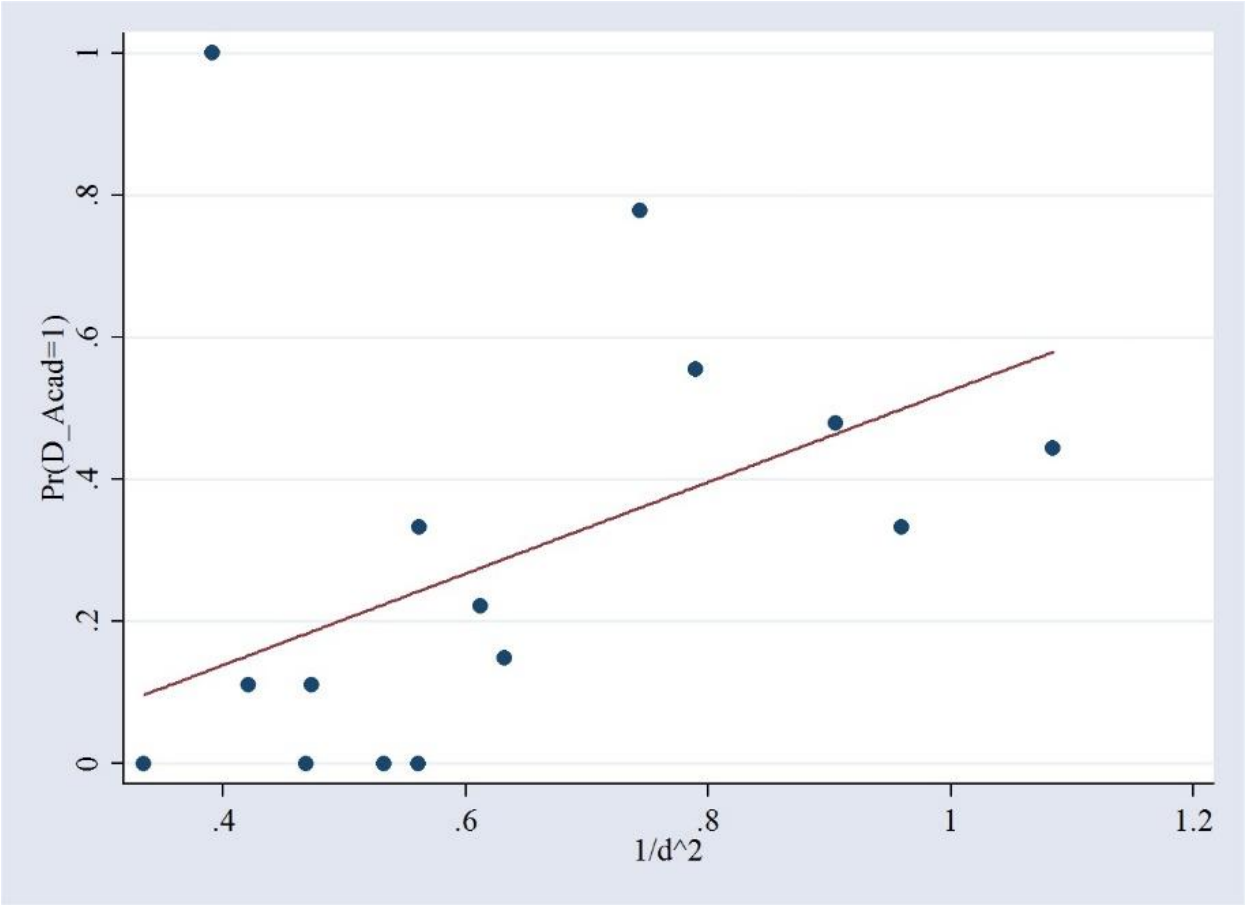

Table 1
Variable Definition and Summary Statistics

Variables	Definition	Source	N. Obs	Mean (SD)
Bank level				
RoA	Net profit/Total asset	STRBI	397	0.010 (0.011)
LN(1+NIM)	NIM = Investment Returns – Interest Expenses	STRBI	397	11.893 (1.112)
Ln (1+z)	z=(K/A+RoA)/SD(RoA), where K=capital, A=Total asset and SD is the 3-year rolling standard deviation	STRBI	393	3.816 (1.001)
NPL	Non-performing loans/ Total loans	RTPB	395	0.040 (0.033)
Tobin's Q	Market value of equity (MVE)+Total borrowings/ Total asset, where MVE=Closing share price X Number of outstanding shares	Prowess	377	1.055 (0.182)
Advances	Log (1+Advances)	STRBI	398	4.313 (0.504)
Lending Rate	Interest earned on advances/ Total advances	STRBI	398	0.156 (0.044)
Cost of Funds	[Interest paid on deposits + Interest paid on borrowings]/[Deposits + Borrowings]	STRBI	397	0.059 (0.009)
Ln Asset	Ln (Total asset/wholesale price index)	STRBI	397	4.694 (0.712)
REGPRES	CRAR/0.09, where CRAR is the capital adequacy ratio, and 9 percent is the regulatory prescribed capital adequacy ratio	RTPB	356	0.721 (0.096)
DIVERS	Index of income diversification, defined following Stiroh(2004) as $1-(SH_{NET}^2+SH_{NON}^2)$, with $SH_{NET}=\frac{NET}{NET+NON}$ $SH_{NON}=\frac{NON}{NET+NON}$ NET=net interest income; NON=non-interest income	STRBI	397	0.421 (0.061)
VOLATILITY	Standard deviation of daily stock price returns	Prowess	344	0.031 (0.032)
Board level				
BOARD	Ln(Number of board members)	Prowess	379	2.575 (0.234)
D_Acad	Dummy=1 if a bank has an academic director in its Board of Directors (BoD) in a year, else zero	Prowess	400	0.285 (0.452)
Sh_Acad	Share of academic directors on the BoD in a year	Prowess	379	0.025 (0.042)
N_Acad>1	Dummy=1 if a bank has more than one academic director in its Board of Directors (BoD) in a year, else zero	Prowess	360	0.031 (0.172)
Duality	Dummy = 1 if CEO and Board Chairman are same	Prowess	360	0.014 (0.117)
D_Female	Dummy = 1 if at least one female director on board	Prowess	360	0.547 (0.515)
Busyness	Total number of outside directorship by independent directors (ID)/ ID	Prowess	380	1.683 (1.989)
Ownership				
SOB	Dummy=1 if the bank is state-owned, else zero	RTPB	400	0.600 (0.491)
NPB	Dummy=1 if a bank is new private, else zero	RTPB	400	0.175 (0.380)
OPB	Dummy=1 if a bank is old private, else zero	RTPB	400	0.225 (0.418)
Others				
Distance	The average distance of a bank from top 34 engineering and management colleges in India	Computed by the authors	36	1216.826 (191.862)

RTPB = Report on Trend & Progress of Banking in India
STRBI = Statistical Tables Relating to Banks in India

Table 2
Characteristics of Banks by Ownership

The sample comprises of an unbalanced panel of 40 banks for the period 2004-2012. The table reports the mean values of the banks by ownership. SOB, NPB and OPB denote state-owned, new private and old private bank, respectively. The lower half of the panel displays the results of t-test of difference in the mean values of the variables by bank ownership.

Bank ownership	Board size	D_Acad	Sh_Acad	RoA	Ln (1+z)	Tobin's Q	NPL
SOB	13.570	0.254	0.021	0.009	3.864	1.045	0.042
NPB	13.000	0.300	0.030	0.013	3.478	1.066	0.029
OPB	13.530	0.350	0.029	0.011	3.897	1.073	0.043
t-test of difference							
SOB *vs.* NPB	1.659*	-0.719	-1.684*	2.306**	2.614***	-0.857	3.606***
SOB *vs.* OPB	1.791*	-1.792*	-1.636*	1.671*	-0.278	-1.307	-0.261
NPB *vs.* OPB	-1.663*	-0.647	0.152	1.973*	-2.561***	-0.205	-3.134***

*** p<0.01, ** p<0.05, * p<0.10

Table 3
Comparison of Banks with at least one Academician on Board of Directors (BoD)

The sample comprises of an unbalanced panel of 40 banks for the period 2004-2012. The Table reports the comparison of mean and standard deviation for banks with at least one academician on their board of directors and banks with no academician on the board of directors.

Variables	D_Acad=1		D_Acad=0		Difference	t-stat
	Mean	SD	Mean	SD		
Panel A: Board Level						
Board Members	14.179	3.131	13.209	2.772	0.969	2.793***
Busyness	2.138	2.397	1.508	1.741	0.630	2.487***
Duality = 1	0.027	0.162	0.008	0.090	0.019	1.145**
D_Women = 1	0.625	0.539	0.512	0.501	0.113	1.880**
Panel B: Bank Level						
LN(1+NIM)	12.322	1.077	11.662	1.154	0.659	4.932***
LN(1+Inv)	14.815	1.037	14.122	1.143	0.693	5.326***
LN(1+Oth Income)	11.572	1.152	10.814	1.130	0.758	5.456***
LN(1+z)	3.936	1.017	3.823	1.031	0.114	0.970*
M/B	0.122	0.179	0.119	0.187	0.003	0.140
LN(1+ADV)	4.491	0.502	4.283	0.488	0.208	3.660***
Interest Rate	0.152	0.037	0.152	0.046	0.000	0.002
Cost of Funds	0.059	0.009	0.059	0.009	-0.001	-0.507
LN(1+NPL)	1.270	0.526	1.157	0.502	0.113	1.899**

Table 4
Baseline Results

The table reports the Fractional Probit results for all banks in column 1 and 2, State-owned banks in column 3 and 4, and Private banks in column 5 and 6. The Tobit results are reported from column 7 to 9. The dependent variable in the model is the ratio of number of academic directors to total directors in the board. This ratio takes a value between 0 and 1. The sample comprises of all scheduled commercial banks between 2004 and 2012.

VARIABLES	Fractional Probit						Tobit		
	All		State Owned Banks		Private Banks		All Banks	SOB	Private Bks
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Bank level variables, lagged									
Ln Asset	0.256	0.360	1.000	0.270	-0.011	0.104	0.063	-0.010	0.027
	(0.498)	(0.596)	(2.898)	(2.801)	(0.501)	(0.524)	(0.082)	(0.338)	(0.087)
REGPRES	0.233	0.375	0.003	-0.244	1.344*	1.935**	0.053	-0.033	0.247*
	(0.511)	(0.538)	(1.549)	(1.542)	(0.708)	(0.986)	(0.084)	(0.187)	(0.147)
RoA	-9.520	-12.336*	-25.271*	-35.308	21.013*	25.959***	-1.715**	-3.530	2.913**
	(7.796)	(7.460)	(14.907)	(28.901)	(12.545)	(8.645)	(0.853)	(4.407)	(1.212)
DIVERS/A	-0.120	-0.143	1.351	1.223	-0.668	-0.795	-0.008	0.137	-0.077
	(0.455)	(0.488)	(0.890)	(1.281)	(0.431)	(0.522)	(0.053)	(0.166)	(0.063)
VLTLTY	2.845	5.211	-5.768	-2.027	3.777	6.065	0.749*	-0.542	0.781
	(4.449)	(3.676)	(12.874)	(13.652)	(3.885)	(3.899)	(0.445)	(1.714)	(0.473)
Board level variables									
BOARD		0.704***		0.736**		0.801**	0.098***	0.086**	0.112**
		(0.232)		(0.328)		(0.366)	(0.032)	(0.039)	(0.054)
Busyness		-0.006		0.010		-0.025	-0.000	0.000	-0.003
		(0.032)		(0.035)		(0.029)	(0.004)	(0.004)	(0.005)
Duality		-0.175		0.078		-0.634	-0.025	0.005	-0.082
		(0.173)		(0.316)		(0.453)	(0.022)	(0.000)	(0.061)
D_Female		-0.151		-0.160		0.162	-0.020	-0.019	0.018
		(0.160)		(0.203)		(0.422)	(0.021)	(0.024)	(0.053)
Bank FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Left Censored Obs	-	-	-	-	-	-	201	115	86
Observations	299	299	168	168	131	131	299	168	131
Pseudo R2	0.198	0.201	0.198	0.201	0.209	0.215	6.222	8.789	5.679

Standard errors (clustered at bank level) presented in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5
Addressing Selection Bias: Heckman Selection Model

The table reports the results of Heckman Selection model. Here, the selection variable is D_Acad which takes a value of 1 if there is an academic director on the board, 0 otherwise. The outcome variable is Sh_Acad which is the percentage of academicians in the board. The sample comprises of all scheduled commercial banks between 2004 and 2012.

VARIABLES	All		State Owned Banks		Private Banks	
	Response	Selection	Response	Selection	Response	Selection
Bank level variables, lagged						
Ln Asset	-0.014	6.455*	0.207**	-9.609	0.029	1.141**
	(0.035)	(3.409)	(0.103)	(11.549)	(0.054)	(0.450)
REGPRES	-0.059**	7.729**	-0.024	0.868	-0.092	1.241
	(0.030)	(3.380)	(0.066)	(6.510)	(0.112)	(1.575)
RoA	2.136**	-82.297***	0.709	-169.960	2.859	31.518
	(1.037)	(30.976)	(1.678)	(118.102)	(2.998)	(36.429)
DIVERS/A	-0.056	1.806	-0.029	11.084*	-0.017	-0.519*
	(0.035)	(1.988)	(0.063)	(6.535)	(0.048)	(0.310)
VLTLTY	0.048	34.139	0.301	-112.723	0.809	29.925**
	(0.315)	(23.518)	(0.729)	(106.389)	(1.814)	(14.532)
Board level variables						
BOARD	-0.058***	5.056***	-0.065***	7.008**	-0.090**	0.138
	(0.022)	(1.461)	(0.023)	(2.973)	(0.038)	(0.716)
Busyness	-0.002	0.132	-0.002	0.259	0.000	0.123*
	(0.002)	(0.234)	(0.003)	(0.492)	(0.008)	(0.065)
Duality	-0.011	-1.136		1.126	-0.008	-0.108
	(0.017)	(1.574)		(0.000)	(0.042)	(0.828)
D_Female	0.010	-0.687	0.015	-1.552*	0.001	-0.101
	(0.008)	(0.507)	(0.009)	(0.814)	(0.023)	(0.340)
Inverse-Mills Ratio	-0.001		0.005		0.045	0.045
	(0.010)		(0.009)		(0.095)	(0.095)
Year FE	Y	Y	Y	Y	Y	Y
Bank FE	Y	Y	Y	Y	N	N
Observations	299	299	168	168	131	131
Chi-Squared	256.3	256.3	82.01	82.01	27.44	27.44

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6
Fixed Effects Regression: Effect of Academicians on Performance

The sample comprises of an unbalanced panel of 40 banks for the period 2004-2012. This table reports the regression results of the impact of the presence of academic director on bank performance. Panel A reports the baseline results, and Panel B reports the results for the effect of presence of more than one academic director on the board. Column 1 and 2 reports results on Ln(1+NIM), column 3 and 4 report results on Ln (1+Inv), column 5 and 6 report results on Ln(1+Oth Income), column 7 and 8 report results on Ln(1+Z), and column (9) and (10) report results on M/B.. All variables are defined in Table 1.

Panel A: Effect of academic director on firm performance										
VARIABLES	Ln(1+NIM)		Ln(1+Inv)		Ln(1+Oth Income)		Ln(1+Z)		M/B	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
D_Acad	0.087*		0.086		0.174**		0.294		-0.030*	
	(0.045)		(0.055)		(0.075)		(0.239)		(0.016)	
Sh_Acad		1.199**		1.144*		1.914**		4.173		-0.325*
		(0.507)		(0.597)		(0.876)		(2.765)		(0.178)
Bank/Board Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bank/Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	307	307	307	307	307	307	340	340	330	330
Adjusted R^2	0.982	0.982	0.986	0.986	0.962	0.961	0.448	0.450	0.875	0.874
Panel B: Effect of having more than one academic director										
VARIABLES	Ln(1+NIM)		Ln(1+Inv)		Ln(1+Oth Income)		Ln(1+Z)		M/B	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Sh_Acad*N_Acad>1		-0.087		0.039		-2.976		-12.045		0.762
		(1.508)		(0.916)		(2.330)		(12.174)		(0.540)
Sh_Acad		1.158*		1.103		2.146**		3.650		-0.439**
		(0.617)		(0.731)		(0.994)		(3.122)		(0.212)
N_Acad>1	0.102	0.033	0.097***	0.013	0.071	0.374	0.600	2.223	0.008	-0.080
	(0.064)	(0.230)	(0.034)	(0.110)	(0.093)	(0.416)	(0.362)	(1.927)	(0.017)	(0.077)
D_Acad	0.088*		0.086		0.175**		0.293		-0.030*	
	(0.045)		(0.055)		(0.075)		(0.239)		(0.016)	
Bank/Board Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bank/Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	307	307	307	307	307	307	340	340	330	330
Adjusted R^2	0.982	0.982	0.986	0.986	0.962	0.962	0.454	0.455	0.875	0.875

Standard errors (clustered by bank) are reported in parentheses (*** p<0.01, ** p<0.05, * p<0.1)

Table 7
Linear regression with endogenous treatment effects: Impact of the presence of academic director on bank performance

The table reports the results for linear regression with endogenous treatment effects. The endogenous treatment is the presence of an academic on bank board. We use the square of the inverse of the average distance from top colleges as an instrument for the presence of an academic on bank board. The first stage is a Probit model of the treatment equation. The sample comprises of all scheduled commercial banks between 2004 and 2012. All variables are defined in Table 1.

Panel A								
VARIABLES	Advances		Ln(1+Inv)		Lending Rate		Cost of Funds	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
D_Acad	0.149***		0.275***		0.034***		0.001	
	(0.036)		(0.102)		(0.008)		(0.004)	
Instrument = $1/d^2$		1.591*		2.075**		2.149**		2.093**
		(0.868)		(0.975)		(0.986)		(1.031)
Bank/Board Controls	Y	N	Y	N	Y	N	Y	N
Bank FE	Y	N	Y	N	Y	N	Y	N
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Observations	311	311	281	281	311	311	281	281
Panel B								
VARIABLES	Ln(1+NIM)		Ln(1+Z)		Ln(1+NPL)		M/B	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
D_Acad	0.141**		-0.698		-0.108		0.089***	
	(0.070)		(0.585)		(0.068)		(0.015)	
Instrument = $1/d^2$		2.099**		1.867**		1.852*		1.576*
		(1.032)		(0.933)		(0.967)		(0.936)
Bank/Board Controls	Y	N	Y	N	Y	N	Y	N
Bank FE	Y	N	Y	N	Y	N	Y	N
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Observations	281	281	309	309	310	310	300	300

Standard errors (clustered by bank) reported in parentheses (*** p<0.01, ** p<0.05, * p<0.1)

Table 8
Academic Directors and Bank Credit Policy

The sample comprises of an unbalanced panel of 40 banks for the period 2004-2012. The table reports the results of the impact of academic directors on bank credit policies. Column 1 and 2 report the impact on bank advances and 3 and 4 report the results on lending rates. All variables are defined in Table 1.

VARIABLES	Advances		Lending Rate	
	(1)	(2)	(3)	(4)
D_Econ	0.019	0.020	-0.005	-0.022***
	(0.047)	(0.084)	(0.010)	(0.007)
D_Econ*SOB		-0.007		0.037***
		(0.084)		(0.012)
D_Mgnt	0.004	0.047	-0.008*	-0.007
	(0.017)	(0.045)	(0.004)	(0.005)
D_Mgnt*SOB		-0.059		0.002
		(0.049)		(0.006)
D_IT	0.046**	0.083***	-0.019	-0.029**
	(0.018)	(0.025)	(0.015)	(0.011)
D_IT*SOB		-0.054**		0.013
		(0.024)		(0.022)
Bank Controls	Y	Y	Y	Y
Board Controls	Y	Y	Y	Y
Bank FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Observations	299	299	293	293
Adjusted R^2	0.985	0.984	0.747	0.752

Standard errors (clustered by bank) reported in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9
Total Factor Productivity and Academic Directors

The table reports the impact of the presence of an academic director on bank's total factor productivity. *The endogenous treatment is the presence of an academic on bank board. We use the square of the inverse of the average distance from top colleges as an instrument for the presence of an academic on bank board. The first stage is a Probit model of the treatment equation. The sample comprises of all scheduled commercial banks between 2004 and 2012. All variables are defined in Table 1. Column 7 and 8 employ 2SLS and GMM to capture the effect of share of academic directors on total factor productivity of banks.*

VARIABLES	Linear Regression with Endogenous Treatment Effects						2SLS	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
D_Acad	1.942***		1.073***		0.826***			
	(0.580)		(0.335)		(0.319)			
Instrument = $1/d^2$		3.036***		2.437***		2.282**		
		(0.764)		(0.890)		(0.980)		
Sh_Acad							23.567**	23.567***
							(9.202)	(8.852)
Constant	3.766***	-2.796***	2.378**	-2.425***	1.497	-2.323***	-0.325	-0.325
	(0.255)	(0.651)	(1.131)	(0.738)	(1.138)	(0.803)	(1.030)	(1.286)
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Bank Controls	N	N	Y	Y	Y	Y	Y	Y
Board Controls	N	N	N	N	Y	Y	Y	Y
Observations	287	287	287	287	280	280	280	280

Standard errors (clustered at bank level) in parentheses
*** p<0.01, ** p<0.05, * p<0.1