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Bank Privatization and Performance

Empirical Evidence from Nigeria

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Abstract: We assess the effect of privatization on performance in a panel of Nigerian banks for the period 1990-2001. We find evidence of performance improvement in nine banks that were privatized, which is remarkable given the inhospitable environment for true financial intermediation. Our results also suggest negative effects of the continuing minority government ownership on the performance of many Nigerian banks. Finally, our results complement aggregate indications of decreasing financial intermediation over the 1990s; banks that focused on investment in government bonds and non-lending activities enjoyed a relatively higher performance.

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1.   Introduction

Cross-country and bank-level evidence has shown the poor performance of government-owned banks, especially in developing countries (La Porta et al, 2001, Dinc, 2005), so that privatization could be expected to improve performance and thus boost efficiency of financial intermediation.   Evidence from individual countries that have undertaken large privatization programs, however, has been mixed (Cull, Clarke, and Shirley, 2005; Megginson, 2005). For example, in Mexico in the early and mid-1990s, privatization outcomes were bad enough to prompt re-nationalization of the banking sector in the wake of the Tequila crisis (Haber, 2005). Banking sector performance eventually improved, but only after a second round of privatization in the late 1990s in which foreign ownership participation was encouraged. Initial attempts at bank privatization in the Czech Republic, and to a lesser extent Poland, were also not fully successful, at least in part because the state maintained relatively large shareholdings in the privatized banks and discouraged ownership by foreign investors (Bonin, Hasan, and Wachtel, 2005).

Assessing the effects of privatization across countries is made difficult by country-specific circumstances that are hard to control for.[1] Researchers have therefore turned to country-level studies, which offer natural experiments if data availability allows the performance assessment of privatized banks before and after privatization, relative to other banks in the financial system and controlling for other bank and country-level but time-variant characteristics.

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[1] Otchere (2005) examines the effects of share issue bank privatizations for twenty-one banks in nine developing countries using pooled econometric tests. In the case of direct sales to strategic investors, this type of cross-country analysis is more difficult, because share prices cannot be used as performance indicators and listed banks are generally subject to lower disclosure standards.

This paper assesses the effect of privatization on bank performance in Nigeria over the period 1990-2001. Nigeria undertook a major privatization program in the early 1990s, divesting a total of 14 banks, constituting more than 50% of total banking system assets. However, this period was also characterized by other major changes in the financial system. The privatizations were part of a larger liberalization process that included interest rate and entry liberalization and the loosening of credit allocation quotas. At the same time, a multi-tiered exchange rate market offered plenty of arbitrage and rent opportunities for licensed banks. Consequently, the late 1980s saw a massive entry of new banks specializing in foreign exchange operations. While the number of banks multiplied during this period and the financial sector boomed, financial intermediation, as measured by credit to the private sector and deposits, decreased. Finally, economic recession and political instability brought the boom to a halt in 1992, with a major banking crisis crippling the financial system until the late 1990s.

The volatile macroeconomic and financial environment, in which the privatization took place, makes it difficult to compare the effects of the Nigerian privatization program to privatization in other countries. We therefore evaluate the effects of privatization on bank performance relative to the same banks before privatization and to other privately owned banks in Nigeria. Specifically, we assess the performance of privatized banks, i.e. the return on assets and equity as well as the share of non-performing loans (NPL), relative to other banks in the Nigerian financial system and relative to their performance before privatization. Given the large reliance of banks on foreign exchange revenue during the sample period, we use profit measures both including and excluding foreign exchange profits. We apply different robustness tests and estimation techniques.

Our results indicate some performance improvement due to privatization. While privatized banks performed significantly worse than privately owned commercial banks before privatization, this gap was effectively closed by privatization. This is remarkable given the macroeconomic and regulatory environment that was very inhospitable to true financial intermediation during our sample period. However, there were no further performance gains beyond the performance of other private banks in the Nigerian banking system. In addition, our results give evidence of the poor performance of banks that continued with minority government ownership during the sample period.

Our results also provide microeconomic evidence on the distorted incentives that banks faced in Nigeria during the sample period. Long established banks that focused on retail banking performed significantly more poorly than new wholesale banks that focused on lending to the government and on fee-based business. These results are the microeconomic complement to the aggregate picture of declining financial intermediation that Nigeria suffered during this period.

Our results are subject to some caveats. First, poor data quality makes it difficult to find significant relationships between bank characteristics such as ownership and bank performance. The fact that we find significant and robust relationships in spite of these shortcomings makes us more confident in our findings. Second, limited information on the privatization transactions and the individual banks limit our analysis to a primarily statistical one. We try to offset these hurdles with a thorough sensitivity analysis.

This paper makes several contributions to the literature. First, it shows the effects of privatization on performance in the context of a financial system that went through a boom and bust cycle with perverse incentives for true financial intermediation. Second, it analyzes

the performance of Nigerian banks over an important period of recent economic history and thus complements a large, mostly qualitative literature on banking sector development in this African economy, which is second only to South Africa in size.[2] Third, to our knowledge this is the first detailed quantitative analysis of bank privatization for an African nation, despite substantial recent reductions in state ownership of banks (Clarke, Cull, and Shirley, 2005). Fourth, we study share issue privatizations (SIP) in which the government fully divested its shareholdings. In other developing countries where governments attempted SIP of banks, they also tended to retain sizable shareholdings, and post-privatization performance improvements did not materialize (Clarke, Cull, and Shirley, 2005). In those cases, it is difficult to identify whether poor outcomes should be attributed to the government's failure to fully relinquish its shareholding, or to attempting an SIP where stock markets and the associated monitoring of firms by investors were not fully developed. To the extent that our empirical tests reveal that the SIP in Nigeria was unsuccessful, the SIP method itself is called into question.

The remainder of the paper is organized as follows. Section 2 offers background information on the financial system in Nigeria. Section 3 describes our data and the methodology. Section 4 presents our main results and section 5 provides robustness tests. Section 6 offers tests on the nature and quality of post-privatization financial intermediation and section 7 concludes.

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[2] Sobodu and Akiode (1998) assess the performance of Nigerian commercial banks over the period 1983-1993 using data envelopment analysis. They find an initial improvement in performance right after the beginning of financial liberalization in 1986 and a steady decline thereafter. Their sample period, however, does not allow them to test the effect of privatization.

2.   Banking in Nigeria: From Boom to Bust

Nigeria's first bank, the African Banking Corporation, was established in 1892. While the earliest banks were essentially foreign owned, several wholly or partially indigenous banks were established in the 1930s, but the majority of these collapsed. No banking legislation existed until 1952, at which point Nigeria had three foreign banks (the Bank of British West Africa, Barclays Bank, and the British and French Bank) and two indigenous banks (the National Bank of Nigeria and the African Continental Bank).[3] The Central Bank of Nigeria, empowered to regulate the industry, commenced operations on July 1, 1959.

In the 1970s, the Nigerian authorities introduced an array of direct controls in the banking system, both through ownership, as well as through interest rate and credit controls. As part of an "indigenization wave" that had the goal of securing domestic majority ownership of strategically important sectors, many foreign-owned banks were nationalized, since no Nigerian purchaser could be found.[4] While these shares were formally warehoused for future sale, they effectively were used for political influence in these banks. At the same time that entry into the banking system was restricted, a floor for deposit and a ceiling for lending interest rates were established and a credit allocation quota of up to 70% of a bank's portfolio was enforced.

In the context of the Structural Adjustment Program (SAP) in 1986, Nigeria undertook a broad program of financial liberalization. Interest rates and entry into the banking system

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[3] The 1952 ordinance set standards, required reserve funds, established bank examinations, and provided for assistance to indigenous banks.

[4] In 1993, the Federal Government acquired a 40 per cent equity ownership in the three largest banks. In 1996, under the second Nigerian enterprise decree requiring 60 per cent indigenous holding, the Government acquired an additional 20 per cent holding in the three banks and 60 per cent in the other foreign–owned banks.

were liberalized, and credit allocation quotas loosened. At the same time, while ending direct rationing of foreign exchange for the real sector, the government maintained a multiple exchange rate regime, thus opening a new area of arbitrage and rent seeking for financial institutions that had privileged access to foreign exchange auctions.[5] The consequence was the quick entry of many new players into the banking system, especially merchant banks that specialized in foreign exchange operations.[6] Very low entry requirements and the high market premiums that could be earned with arbitrage activities in the foreign exchange markets allowed for returns on equity of 300% or more (Lewis and Stein, 2002). In the following years, the number of banks tripled from 40 to nearly 120 (Table 1), employment in the financial sector doubled and the contribution of the financial system to GDP almost tripled (Lewis and Stein, 2002).

The financial sector boom, however, was accompanied by financial dis-intermediation. Deposits in financial institutions and credit to the private sector, both relative to GDP, decreased over the period 1986 to 1992 (Table 1). The increasing number of banks and human capital in the financial sector was thus channeled into arbitrage and rent-seeking activity rather than financial intermediation.[7]

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[5] The arbitrage potential arose from the spread between the official exchange rate and the interbank rate. After the trade liberalization, which was part of the SAP, there was an increasing demand for trade-related financing. Lewis and Stein (2002) describe the different arbitrage possibilities in more detail.

[6] Another reason was the still existing guideline on credit growth, which made it more profitable to open a new bank than to expand an existing one.

[7] For the empirical tests that follow, data were available from 1990 to 2001, and thus we cannot describe well the boom period in speculation which occurred largely in the last half of the 1980s.

By 1990, the bubble started to burst. Non-performing loans (NPL) increased sharply. Especially, the merchant bank sector – where most of the foreign exchange speculators were concentrated – and the government-owned banks showed increasing signs of distress. In 1991, the Central Bank imposed a moratorium on new licenses. New Prudential Guidelines, introduced in 1990-91 made the extent of distress in the banking system even clearer. During 1992, several banks were scrutinized and delicensed. By mid 1993, political uncertainty following a failed transition to civilian rule triggered a bank run, which resulted in paralysis of the financial system, temporary closures and bank failures. Finally, in 1994, the new military government reintroduced exchange and interest rate controls. The following inflationary burst, rising black market premium on the Naira and economic decline resulted in windfall gains for some connected market participants, while deepening the overall distress in the financial system.

Political economy explanations of the liberalization and boom-and-bust period focus on rent-seeking activities of the governing elites (Lewis and Stein, 2002). While moving forward with structural reforms in many areas, liberalization measures were selective to maintain patronage opportunities and to insulate the governing elites and their supporters from the economic costs of these reforms. The expanding financial sector and the new arbitrage possibilities through the multi-tiered exchange rate system offered numerous patronage opportunities for political and military leaders. Bank licensing was a politically influenced process and managing boards of banks included many politicians and senior military officers. However, the shift of arbitrage and rent-seeking activities from the real to the financial sector – further fostered by macroeconomic instability – also created new groups of wealth and economic power.

It was in this volatile environment, that in 1992 the privatization agency (Technical Committee on Privatization and Commercialization, TCPC) scheduled the sale of government shares in eight commercial and six merchant banks in which the federal government had an ownership stake.[8] These 14 banks constituted 51% of total banking system assets and 60% of total banking system deposits and included the largest three commercial and largest three merchant banks. Eight of these privatizations were implemented through flotation on the stock exchange, with purchasers restricted to Nigerians and limited groups of other Africans. The government shares in Merchant Bank of Africa, on the other hand, were sold to staff. The shares of the privatized banks were widely spread, reportedly to some 150,000 new shareholders. Several banks that were originally scheduled to be privatized were not divested. This program, however, did not affect the purely state-owned banks and while it reduced, it did not eliminate government ownership in the banking system. In December 1996, there were still 20 banks with government interests.

Following privatization, there were little if any governance changes in the privatized banks. Few privatized banks changed their senior management or governing boards following privatization, and recurrent struggles between shareholders and management are reported (Lewis and Stein, 2002). In 1995, at the high point of the banking crisis, the government even considered renationalizing the banks, but was discouraged by internal and external pressure.

As the financial boom was fed by arbitrage and rent-seeking activities, so did the government use the resolution of the banking crisis for political purposes. A Failed Bank Decree was used to prosecute cases of misconduct and fraud in the banking industry, but most

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[8] The Federal Government had equity investment of at least 45 per cent in thirteen out of the fourteen banks and 4.45 per cent in Merchant Bank of Africa.

detainees were concentrated in specific ethnic groups and groups opposed to the regime. Few failing banks, on the other hand, were resolved and the authorities focused more on containing than resolving the crisis. It was only under the new government in 1998, which eventually handed over power to a civilian regime in May 1999, that a more serious cleanup started in the financial system, with 26 bank licenses revoked in 1998.

3. Data and Methodology

We have an unbalanced sample of 69 banks with annual data for the period 1990 through 2001, with a total of 576 observations. Since not all variables are available for all banks, fewer observations are included in some of the regressions. In our empirical analysis, we focus on the performance of nine banks that were privatized during the sample period.[9] Our sample also contains 24 commercial banks and 17 merchant banks that were privately owned, as well as eight privately owned banks that changed form (from merchant to commercial) during the sample period.[10] We have data on two banks that were completely

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[9] Not all of these nine banks were privatized in the context of the program mentioned above. Other banks privatized under the program are not included because of lack of data. The banks included in our database and classified as privatized are: First Bank, Union Bank, United Bank of Africa, Afribank, FSB International Bank, Inland Bank Nigeria, Intercity Bank, Afribank (Merchant) and First Atlantic Bank. In seven cases, state ownership went to zero; in the other two cases, it went from 54% to 11% and from 100% to 33%, respectively.

[10] The regulatory difference between commercial and merchant banks has been eliminated recently. Commercial banks were subject to higher thresholds on initial capital, and more restrictions on branching and lending. Merchant banks could not take demand deposits and focused mostly on corporate and institutional clients. Until 1996, merchant banks were required to channel 20% of their loan portfolio into medium- and long-term lending.

state-owned during the sample period and nine banks with minority-ownership stakes of the government.

In the bulk of our empirical analysis we focus on three performance measures. Return on equity (ROE) is defined as profits relative to equity, while return on assets (ROA) is profits relative to total assets. Since a large share of banks' profits came from foreign exchange operations, in some specifications we use measures of ROA and ROE that exclude foreign exchange profits. Excluding foreign exchange operations should provide a better indication of banks' profitability in financial intermediation. Finally, we also use the share of non-performing loans (NPL) as a performance indicator.

We assess the effect of ownership patterns beyond privatization of the nine banks. Specifically, in Figure 1 we distinguish between five different groups. First, *Eventually Privatized* denotes the banks that were privatized at some point during the sample period. However, the links between the state and the banking sector in Nigeria are complex, with the government retaining ownership participation in many banks under private control. In our empirical analysis we therefore distinguish between *Merchant State* and *Commercial State* banks with minority government stakes, as well as for the two banks that were completely government-owned. Finally, we distinguish between *Merchant Private* banks and *Merchant Commercial* banks.

Figure 1 shows the performance of different bank groups over the whole sample period. While commercial private banks had higher ROE than any other bank group, they were at par with the merchant banks, both privately and government-owned, in their ROA and NPL ratio. The eventually privatized and commercial state banks had lower ROA and higher

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NPL ratios than merchant banks and commercial private banks, but similar ROE as other banks, except for the commercial private banks.

Figure 2 shows an improvement in performance after privatization. We present the average for each indicator in the three years before and eight years after privatization.[11] ROA and ROE, both including and excluding foreign exchange profits show an improvement in the first year after privatization before they decrease again, while the NPL ratio increased slightly with privatization before decreasing for several years. While this indicates a positive performance effect of privatization, it does not control for (i) changes in performance in other Nigerian banks, and (ii) for other bank characteristics and policies that might have changed after privatization. Especially, the increase in ROA and ROE after t+4 might be explained by macroeconomic improvement that affected all banks.

To assess the effect of privatization on bank performance, while controlling for other bank characteristics, we use the following regression:

$$Performance_{i,t} = \alpha + \beta_1 Assets_{i,t-1} + \beta_2 Eventually\_\Pr ivatized_i + \beta_3 \Pr ivatized_{i,t} + \beta_4 Time\_\sin ce\_\Pr ivatization_{i,t} +$$
$$+ \beta_5 State\_Control_i + \beta_6 Merchant\_Bank\_State_{i,t} + \beta_7 Merchant\_Bank\_\Pr ivate_{i,t} +$$
$$+ \beta_8 Commercial\_Bank\_State_{i,t} + \beta_9 Age_{i,t} + \beta_{10} Bu\sin ess\_Orientation_{i,t} + \beta_{11}'Portfolio\_Orientation_{i,t} +$$
$$+ \beta_{12}'Efficiency_{i,t} + \beta_{13}'Year_t + \varepsilon_{i,t}$$

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Performance is one of five variables measuring the performance of bank *i* at time *t*. As noted, those variables include return on equity (ROE), return on assets (ROA), and the share of total loans that are non-performing. We use ROE and ROA both including and excluding foreign exchange revenues.

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[11] We rearranged the timeline to make data on the nine banks comparable independent of the actual privatization date.

We use three explanatory variables to de-compose the causes and effects of privatization. The first is *Eventually Privatized*, a dummy variable that equals one throughout the whole sample for banks that were privatized at some point during the sample period. We include this variable to capture any selection effects associated with bank privatization. To the extent that weak banks were privatized, we expect it to have a negative coefficient. The second is *Privatized*, a dummy variable that equals one from the moment bank i is privatized. We define privatization as the point where the government relinquished control of a bank, or in cases where control had been ceded prior to the beginning of our sample period, the point where it relinquished its entire minority shareholding in the bank. One of the nine banks was privatized in 1996, with the remaining eight privatized from 1992 to 1994. Five of the eight were privatized in 1993. While *Eventually Privatized* controls for the selection bias of the banks that were privatized, *Privatized* measures the effect of the privatization itself. The third variable is *Time since Privatization*, which measures the years since bank i was privatized. While *Privatized* is included to capture the immediate effects of privatization, including any cleaning of the loan portfolio at or just prior to the time of sale, *Time since Privatization* captures the average yearly performance trend in the wake of that sale. To statistically assess the effect of privatization after year *n*, we evaluate *Privatized + n*Time since Privatization*.

As discussed above, we control for different regulatory and ownership types of banks in our sample. Specifically, we control for state participation in banking using three different variables. The first is *State Control*, a dummy variable equal to one throughout the period for banks that were wholly owned by the government, and thus did not experience any changes in ownership structure. *Merchant Bank State* and *Commercial Bank State* are dummy variables

equal to one if the state had any minority ownership participation in the bank in question.[12]

We use two separate variables because, as described above, the activities of merchant and commercial banks differ, which could have implications for performance, and for the impact of state ownership on performance. Finally, *Merchant Bank Private* is a dummy variable for wholly privately owned merchant banks, while privately owned commercial banks are captured by the constant.

We also include a number of variables to control for the size and age of the bank and its business orientation. *Assets* is the log of real assets measured at time t-1. Larger banks might have enjoyed scale or scope economies that had positive effects on their performance.[13] We also control for the age of the bank (*Age*) since longer established banks might have enjoyed performance advantages over relative newcomers. On the other hand, in a developing country like Nigeria older banks might have been relatively entrenched in their business methods, and thus relatively incapable of pursuing new profit opportunities. Since many new banks were established with the purpose of gaining rents on the foreign exchange rate market, this would result in a negative relation of Age with Performance.

In robustness tests, we include further measures of the business and loan portfolio orientation and productivity of the bank. We include two variables to capture the business orientation of the bank. *Branches*, is the log of the number of branches. Banks with more

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[12] We also experimented with replacing the minority state participation dummy variable with the government's actual ownership share. However, the results did not indicate the performance was worse (or better) as the size of the minority ownership stake increased. This could be because the minority state ownership stakes for many banks fluctuated during this period.

[13] This was true, for example, for measures of cost and profit efficiency in Argentina in the 1990s (Berger et al., 2005).

branches were likely to have a retail orientation, which also might have had an impact on performance, although it is difficult to predict whether any such effect would have been positive or negative. *Fee income* is the share of non-interest (and non foreign-exchange) revenue in total revenue.

We include two variables to control for loan portfolio orientation, the ratio of *government bonds* to total assets and the share of *loans to banks* to total assets. We include two indicators of the productivity of the bank; *fixed assets* relative to total assets and the ratio of *overhead costs* to total assets. Finally, we include year dummies to control for macroeconomic and business cycle factors that affected all banks.

Table 2 presents descriptive statistics and correlations. There is wide variation in performance across banks. ROA varies from 21% to less than -200%. Similarly, ROE varies from over 1,300% to less than -20,000%.[14] Even after excluding foreign exchange rate revenues, there is still significant variation. Truncating the sample at the 1st and 99th percentile, however, eliminates most of the outliers. The NPL ratio ranges from zero to 92%. There is wide variation in both size and age across banks, as well as business and portfolio orientation and productivity.

All five performance indicators are significantly correlated with each other. Interestingly, few of our ownership dummy variables are significantly correlated with performance. Neither the age nor the size of the bank is correlated with performance, while banks with a larger share of government bonds, less fixed assets and lower overhead costs

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[14] The extremely low ROE numbers are by construction: in case of negative equity, we set equity at 1% of assets to calculate ROE and to thus avoid a positive ROE for banks with negative equity and losses.

have higher ROA and ROE. The banks that were eventually privatized are larger, and older, have more branches, have higher overhead costs and have a lower share of fee-based income.

One of the estimation problems we faced was poor data quality, which stems from the poor quality of accounting standards common among developing countries.[15] In the case of Nigeria, these problems are exacerbated by the high and volatile inflation the country suffered during our sample period.[16] Further, poor and politically influenced supervision standards decreased the opportunity costs of deficient financial reporting. All these factors bias our estimations against finding any significant relationship between the privatization process and bank performance. Following Cull, Matesova and Shirley (2002), we deal with this problem in two different ways. First, we restrict the sample to values of the dependent variable between the 1st and the 99th percentiles to thus exclude outliers such as discussed above. In the case of NPL, we restrict only on the upper end – the 99th percentile – given the restriction that NPL cannot fall below zero. Second, we use a robust estimation technique that uses all observations available, but assigns different weights to avoid the impact of outliers. Specifically, observations are weighted based on the absolute value of their residuals, with observations with large residuals being assigned smaller weights. Unlike in the case of the truncated sample, where we assign a zero weight a-priori to observations with extreme values and one to all others, the robust regressions assign these weights in an iterative process.

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[15] Nigeria scores 59 out of 90 on a cross-country indicator of accounting standards, complied by the Center for International Financial Analysis and Research (CIFAR) for 1990. This compares to sample median of 64 and sample mean of 61 for 41 countries, for which data are available. South Africa, the only other African country in this sample, scores 70.

[16] Inflation varied between 5% and over 50% over the period 1990 and 2001.

4. Main Results

The results in Table 3 provide evidence of a significant and robust performance improvement after privatization. We present models where we restrict the sample to values of the dependent variable between the 1st and 99th percentile of its distribution in columns one through five, and models where we use all observations in robust regressions to control for the impact of outliers, in columns six through ten.

There is strong evidence that relatively weak banks were chosen for privatization. *Eventually Privatized* enters significantly and with the expected sign in all ten regressions. The banks that were eventually privatized had a lower return on assets and on equity, both including and excluding foreign exchange profits, and had higher NPL. This suggests that the government relinquished control of relatively weak banks. Significance difference tests between *Eventually Privatized*, on the one hand, and *Merchant-State* and *Commercial-State*, on the other hand, also indicate that the eventually privatized banks were weaker than the banks where the government kept their minority stake; the only differences that are not significant are between *Merchant State* and *Eventually Privatized* in the ROA regressions.

Privatization resulted in a significant increase in ROE and a significant decrease in NPL. *Privatized* enters significantly and positively in all ROE regressions and significantly and negatively in both NPL regressions; it just misses significance in the robust ROA regression and is significant at the ten percent level in the robust ROA regression that excludes foreign exchange operations.[17] The coefficients on *Privatized* and *Eventually*

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[17] Since the difference in the computation of these ratios is assets versus equity, one might be concerned that share issues affected the equity value of privatized banks and thus measures of ROA and ROE. Therefore, improvements in ROE might have been larger than those for ROA because equity was not measured well (i.e., was smaller than it should have been). However, both assets and equity grew at about the same pace around the

Privatized are of similar size, but of opposite sign in all regressions where both enter significantly, which indicates that the performance gap between commercial privately owned banks and privatized banks was closed through privatization. However, this also indicates that performance improvements are bounded by the quality of other banks in the system.[18] Further, there was no performance improvement in the years after privatization, as indicated by the insignificant coefficients on *Time since Privatization*. Of course, that insignificance also implies that the privatized banks did not return to their laggard pre-privatization performance, but rather remained on par with other private banks.

The regression results in Table 3 also indicate that commercial banks that had a minority government ownership throughout the period and were not privatized performed significantly worse than commercial privately owned banks; *Commercial Bank State* enters significant at at least the 10% level in all robust regressions, and significant at the 5% level or better in the ROA and NPL truncated regressions. This suggests that minority ownership hampered the performance of these banks significantly.

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time of privatization. For the banks that underwent privatization from 1992 to 1994, nominal assets grew by 81% in the year of privatization, while equity grew by 73%. In the two years prior to privatization, the ratio of equity to assets averaged 8.7%, while in the two years after privatization it was 9.5%. What seems more likely is that the assets and equity of private and state banks *not* involved in privatization were not measured well in 1991 and 1992. For those banks, the correlation between ROA and ROE was only 0.51 in 1991-1992, and 0.98 in 1993-1994. For the privatized banks, the 1991-92 correlation was 0.78, while the 1993-94 correlation was 0.85. When the 1991-1992 data are excluded, the "privatized" coefficient becomes significant in the ROA regressions. In the robust specifications, for example, the coefficient becomes +0.46, which is significant at the five percent level.

[18] Similar results were found for the case of privatized state banks in Argentina (Berger et al., 2005).

There is no robust evidence on the performance of merchant banks relative to privately owned commercial banks. While privately owned merchant banks have significantly lower NPL than commercial banks, the evidence on ROA and ROE is not robust across different estimation techniques and to the exclusion of foreign exchange profits. Similarly, merchant banks with minority government ownership enjoyed lower NPL than privately owned commercial banks, but the evidence on ROA and ROE is not consistent and robust. There is no significant difference between merchant banks that are completely privately owned and those with minority government ownership. Finally, the results indicate that older banks and smaller banks perform worse. This seems to indicate that larger banks did enjoy economies of scale and scope and that new entrants into the market were better able to pursue new profit opportunities. Given that age enters significantly even in the performance regressions where we exclude foreign exchange profits, this effect cannot be attributed completely to foreign exchange speculation.

The regressions in Table 4 confirm our previous finding of a positive link between privatization and performance, and give some additional insights into bank characteristics that explain variation in bank profitability. Here we include additional indicators of business and portfolio orientation and productivity. Columns one through five present results of the sample limited to the 1st through 99th percentile, while columns six through ten report the results of robust regressions.

While weak banks were chosen for privatization, privatization did close the performance gap relative to privately owned commercial banks. *Eventually Privatized* enters significantly in all ten regressions, while *Privatized* enters significantly in all but two regressions. As before, we cannot reject the hypothesis that the sum of both coefficients is not

significantly different from zero, and the insignificant coefficient for *Time since Privatization* indicates that the performance improvement at the time of privatization was maintained. Also as before, larger and younger banks perform better. However, in Table 4 we cannot find any robust link between the other ownership dummies and performance.

The results in Table 4 also indicate that retail-oriented banks with a larger branch network have a lower ROA, while there is evidence that banks focusing on fee-based business have a higher ROE and ROA, but also a higher NPL ratio. Banks with a larger share of government bonds in their portfolio performed better, enjoying higher ROA and ROE, while there is no significant and robust relationship between the importance of interbank loans and performance. Finally, banks with higher overhead costs relative to assets perform worse, while there is no robust relationship between the share of fixed assets and performance. By comparing Tables 3 and 4, one can see that the inclusion of the overhead costs variable does not greatly alter the privatization coefficients. This suggests that the post-privatization improvements in profitability and portfolio quality were not attributable to cost savings. In fact, the privatization variable is more highly significant in most specifications in Table 4, which are our preferred models because they better control for banks inputs and outputs.

5.   Robustness Checks

In a sample with potential measurement error and multiple observations from the same bank, error terms might not truly be independent of one another. In particular, the errors for individual banks might be correlated. Moreover, to the extent that measurement error is likely to be systematically higher for particular banks, their observations could be driving our results. We offer two solutions. The first relaxes the assumption of independent errors,

allowing for correlation between observations from the same bank, using so-called clustered standard errors.[19] The second uses bank-specific fixed effects, which directly control for heterogeneity between different banks.

Controlling for clustered standard error terms does not change the conclusions of our paper (Table 5, columns 1-5). *Eventually Privatized* still enters significantly, negatively in the ROE and positively in the NPL regressions (10% level in the ROA regressions), while *Privatized* enters positively and significantly at the 5% level in the ROE and negatively and significantly at the 10% level in the NPL regressions. Controlling for clustered standard errors, we still find that banks with higher fee-based income have higher ROA and ROE, but also higher NPL, and banks with a higher share of government bonds and lower overhead costs have higher ROE and ROA and lower NPL.

Controlling for bank-specific fixed effects does not affect our findings (Table 5, columns 6-10). Introducing fixed effects changes the interpretation of our coefficients as implying changes from the bank-specific mean, so that all variables that are constant over the entire period for individual banks are dropped from the regressions. Specifically, we do not have to control anymore for selection bias by introducing the variable *Eventually Privatized*. *Privatized* enters significantly and positively in the regressions of ROE, ROE No Forex, and ROA No Forex, and significantly and negatively in the NPL regression, indicating a clear performance improvement after privatization. Banks that relied more on fee-based income and had a higher share of government bonds had higher ROA and ROE, but also a higher

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[19] See Deaton (1997, pp. 73-78) for a detailed discussion of clustering. Also, see Huber (1967) and Rogers (1993).

NPL ratio. Banks with lower overhead costs had higher ROE and ROA and a lower NPL ratio.

In unreported regressions, available on request, we derived cost and profit efficiency measures to predict how well each bank would perform if it produced the same set of outputs, following the method of Berger *et al.* (2005), and used them as dependent variables. None of the regressions, however, showed any significant effect of privatization, which we explain with the low data quality and the limited information we have on the outputs and inputs of the banks in our sample.

6.   Nature and Quality of Post-Privatization Financial Intermediation

When we control for the portfolio and operating characteristics of the banks using the variables in Table 4, post-privatization improvement is, if anything, larger than it was without those variables. This suggests that those improvements are attributable to changes in operating and portfolio variables that we cannot measure. However, it is still possible that privatized banks made significant changes on the different dimensions that we can measure. In this section, therefore, we offer direct tests of whether post-privatization improvements in profitability and portfolio quality coincided with changes in variables describing business practices and portfolio orientation.

In Table 6, overhead costs, government bonds, fixed assets and interbank loans, all relative to total assets are the dependent variables, while we use the same explanatory variables as in the base regressions of Table 3.[20] The regressions suggest that the banks that were eventually privatized had lower overhead costs, held less government bonds and fixed

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[20] While we present simple OLS regressions, Tobit and robust regressions yield the same results.

assets but lent more to other banks. However, *Eventually Privatized* enters negatively and significantly only in the government bonds/assets regressions, while positively and significantly at the 10% level in the loans to banks/assets regression. *Privatized* always takes the opposite sign to *Eventually Privatized*, but enters significantly only in the overhead costs regression, where the coefficient for the years since privatization is negative and significant. This suggests that privatized banks were incurring costs while re-orienting their business, but that those costs dissipated over time. The estimated coefficients imply that a typical privatized bank would achieve a ratio of overhead costs on par with that of other private banks in eight years. Although the overhead costs regression suggests some changes in business orientation, they are not reflected in the portfolio orientation variables. These results are further confirmation that the performance improvements in our base results are not easily traced to the variables that we can measure. On a more positive note, these results also suggest that privatized banks did not boost profits simply by buying government bonds or by lending to other financial institutions, and the cost results indicate that some changes in business practices were occurring. However, without more detailed data, we are unable to document exactly what those changes were.

In Table 7, finally, we assess the effect of privatization on foreign exchange revenue relative to total income, total assets and equity.[21] While none of these variables measures return on foreign exchange activity, they provide us with an indication of business orientation before and after privatization. While *Eventually Privatized* enters positively and significantly in all regressions, *Privatized* or *Time since Privatization* enters negatively and significantly,

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[21] In these regressions, none of our year dummies enters significantly, consistent with our earlier observation that our sample period misses most of the high-speculation period.

suggesting that these banks relied more on foreign exchange business pre-privatization than private commercial banks, while reducing their reliance post-privatization. The coefficients for *Privatized* and *Time since Privatization*, which are negative and jointly significant, indicate that within a short period privatized banks shifted to foreign exchange shares of income similar to those for other private commercial banks.[22]

7.   Conclusions

Using a unique database on Nigerian banks, this paper has shown some positive performance effects of privatization, even in an economy with weak institutions and a macroeconomic and regulatory environment that was inhospitable to financial intermediation. While government owned banks performed significantly worse in terms of profitability and loan portfolio quality than privately owned banks, privatization helped close this gap, while other government-owned banks, even with only a minority ownership stake of the government, continued with the significantly poorer performance. Our findings, however, also show the boundaries of privatization. We do not find any performance improvement beyond other private banks in the Nigerian banking system. The underlying perverse incentive structure that was given by adverse macroeconomic conditions and regulatory

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[22] Foreign exchange speculation, however, does not necessarily have to show up only in foreign exchange revenue, since the corresponding profits can be obtained in the money market, as examples from other developing countries have shown. While we cannot say for sure that privatized banks were reducing their foreign exchange operations, we can say that, for them *not* to have done so would have required a switch from pure foreign exchange speculation to speculation through the money market. We know of no anecdotal evidence supporting that view.

arbitrariness resulted in high returns on investment in government bonds and non-lending activities, while apparently punishing banks focusing on retail lending.

In the end, the Nigeria case is difficult to classify as a success or failure. On the one hand, it offers evidence of limited performance improvement after a share issue privatization in a relatively weak institutional environment. At least a part of that performance improvement is likely attributable to the government fully relinquishing its shareholding in these banks. In SIP in other developing countries, the government has tended to retain substantial shares in the 'privatized' bank, and performance did not improve. On the other hand, the performance improvements relate only to profitability and portfolio quality. Since other tests indicate that privatization did not bring about cost reductions, at least not in the first years thereafter, profitability improvement is only attributable to increased revenue generation. Moreover, since the mix of profit generating activities for Nigerian banks was tilted away from private lending, it is doubtful that increased profitability coincided with substantial welfare improvement.

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Table 1: Financial Development Indicators for Nigeria, 1985-2001.

	Liquid Liabilities	Private Credit	Financial Deposits	Number of banks
1985	34.23%	17.52%	24.31%	40
1986	35.74%	20.96%	25.75%	41
1987	26.95%	17.28%	20.37%	50
1988	29.33%	17.59%	22.55%	66
1989	22.29%	13.05%	15.65%	81
1990	20.76%	11.87%	13.72%	107
1991	22.39%	11.45%	15.10%	119
1992	21.06%	11.64%	14.29%	119
1993	18.15%	12.71%	17.37%	119
1994	9.19%	12.39%	16.43%	116
1995	5.42%	9.18%	9.81%	115
1996	4.58%	8.42%	8.12%	115
1997	5.00%	9.69%	9.07%	115
1998	6.17%	11.83%	11.12%	89
1999	7.49%	12.24%	12.93%	
2000	7.43%	11.14%	13.52%	
2001	8.07%	12.70%	15.41%	

Source: Financial Structure Database, World Bank, and Lewis and Stein (2002). Liquid Liabilities is liquid liabilities of the financial system divided by GDP. Private Credit is claims of financial institutions on the non-financial private sector divided by GDP. Financial deposits is total deposits in financial institutions divided by GDP

Table 2 – Summary Statistics

Panel A: Descriptive Statistics

Variable	Obs.	Mean	Median	St.Dev.	Maximum	Minimum	First percentile	99th percentile
ROA	576	3.6%	3.9%	11.6%	21.1%	-224.1%	-16.0%	14.7%
ROA- No Forex	521	2.4%	2.9%	12.0%	15.5%	-225.3%	-16.9%	14.0%
ROE	576	-25.0%	34.3%	1074.0%	1346.6%	-22412.7%	-353.7%	349.3%
ROE-No Forex	521	-43.7%	26.4%	1133.1%	1346.6%	-22525.8%	-414.2%	242.6%
NPL	563	20.2%	15.4%	17.0%	91.8%	0.0%	0.3%	77.4%
Eventually Privatized	576	0.14	0.00	0.35	1.00	0.00	0.00	1.00
State Control	576	0.02	0.00	0.15	1.00	0.00	0.00	1.00
Merchant Bank State	576	0.04	0.00	0.19	1.00	0.00	0.00	1.00
Merchant Bank Private	576	0.33	0.00	0.47	1.00	0.00	0.00	1.00
Commercial Bank Private	576	0.37	0.00	0.48	1.00	0.00	0.00	1.00
Commercial Bank State	576	0.10	0.00	0.29	1.00	0.00	0.00	1.00
Age	576	15.1	9.0	18.0	106.0	1.0	2.0	100.0
Government Bonds/Assets	559	13.0%	10.1%	10.6%	54.7%	0.0%	0.1%	51.6%
Fixed Assets/Assets	576	4.7%	4.3%	2.8%	25.6%	0.0%	0.5%	13.9%
Loans to Banks/Assets	576	27.1%	25.7%	15.8%	76.1%	0.1%	1.9%	68.6%
Branches	576	27.1	7.0	58.3	299.0	0.0	0.0	287.0
Fee Income/Assets	519	28.3%	27.1%	13.0%	76.0%	4.3%	6.2%	65.7%
Overhead Costs/Assets	576	7.2%	6.6%	3.6%	34.5%	0.9%	2.4%	19.6%
Assets	576	92972.5	40208.8	172896.4	1218394.0	1206.9	1712.9	1011171.0

Panel B: Correlations

	ROA	ROA - No Forex	ROE	ROE -No Forex	NPL	Assets	Eventually Privatized	Privatized	Time since Privatization	State Control	Merchant State	Merchant Private	Commercial State	Commercial Private	Age	Branches	Fee income	Govt. Bonds	Loans to Banks	Fixed Assets
ROA - No Forex	0.9913***	1																		
ROE	0.9547***	0.9627***	1																	
ROE – No Forres	0.9624***	0.9641***	0.9999***	1																
NPL	-0.2985***	-0.3159***	-0.1907***	-0.2099***	1															
Assets	0.0505	0.0658	0.0545	0.0596	0.0034	1														
Eventually Privatized	-0.0446	-0.0343	0.0186	0.0212	0.1463***	0.3417***	1													
Privatized	-0.0321	-0.0189	0.0177	0.0211	0.0701*	0.2786***	0.8842***	1												
Time since Privatization	-0.0246	-0.0104	0.0161	0.0194	0.0196	0.2810***	0.7728***	0.8740***	1											
State Control	-0.0216	-0.0111	0.0093	0.0087	-0.0302	0.0867*	-0.0648	-0.0573	-0.05	1										
Merchant State	0.0297	0.0255	0.0114	0.0133	-0.1041**	0.0897**	-0.0798*	-0.0706*	-0.0617	-0.0307	1									
Merchant Private	0.0266	-0.0019	-0.0396	-0.044	-0.0793*	-0.4146***	-0.2890***	-0.2555***	-0.2234***	-0.1112***	-0.1370***	1								
Commercial State	-0.0211	-0.0094	0.0194	0.0205	0.1524***	-0.0092	-0.1333***	-0.1179***	-0.1030**	-0.0513	-0.0632	-0.2288***	1							
Commercial Private	0.0147	0.0266	0.0059	0.0055	-0.0724*	0.0990**	-0.3131***	-0.2769***	-0.2420***	-0.1205***	-0.1485***	-0.5375***	-0.2480***	1						
Age	-0.033	-0.0272	0.0319	0.0332	0.2053***	0.6161***	0.4779***	0.3990***	0.3679***	0.1989***	0.0740*	-0.2124***	0.0681	-0.2744***	1					
Branches	-0.0108	0.011	0.065	0.0688	0.1670***	0.7259***	0.4044***	0.3476***	0.3335***	0.1952***	-0.0861**	-0.6330***	0.2281***	0.1622***	0.6880***	1				
Fee Income	-0.0471	-0.0574	-0.0626	-0.074	0.1972***	-0.0678	-0.1266***	-0.0982*	-0.0937**	0.1259***	-0.0829*	-0.2069***	0.0108	0.2772***	-0.0676	0.1224***	1			
Govt. Bonds	0.1316***	0.1476***	0.0732*	0.0747*	0.0014	0.0947**	-0.0369	0.0013	-0.0009	-0.0257	0.0409	-0.1078**	-0.0786*	0.1721***	-0.0498	0.0531	0.1192***	1		
Loans to Banks	0.0229	0.0128	0.0038	0.0047	-0.1036**	-0.1031**	0.0012	-0.0206	-0.0121	-0.1112***	0.1561***	0.3466***	-0.2225***	-0.2288***	-0.0261	-0.3607***	-0.1596***	-0.2940***	1	
Fixed Assets	-0.2291***	-0.2457***	-0.1852***	-0.1984***	0.2605***	-0.0824**	0.0097	0.0178	0.0098	0.0392	-0.1172***	-0.1027**	0.1162***	0.0554	0.0951**	0.1429***	0.1795***	-0.0914**	-0.2182***	1
Overhead costs	-0.5107***	-0.5359***	-0.4468***	-0.4663***	0.4608***	-0.1576***	0.0895**	0.1077***	0.0523	0.0015	-0.1201***	-0.1772***	0.1000**	0.0931**	-0.0056	0.1009**	0.2230***	-0.0856**	-0.2276***	0.4210***

*, **, *** significant at 10, 5 and 1 percent level, respectively

Table 3: Privatization and Bank Performance

	White					Robust Reg				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	ROE	ROA	NPL	ROE- No Forex	ROA – No Forex	ROE	ROA	NPL	ROE- No Forex	ROA – No Forex
Assets	0.1	0.007	-0.043	0.086	0.008	0.096	0.005	-0.033	0.103	0.008
	(5.34)***	(3.77)***	(4.86)***	(4.09)***	(4.19)***	(8.79)***	(3.84)***	(5.06)***	(8.95)***	(5.45)***
Eventually Privatized	-0.426	-0.025	0.15	-0.479	-0.024	-0.306	-0.021	0.223	-0.299	-0.024
	(3.29)***	(2.55)**	(3.01)***	(3.14)***	(2.42)**	(4.88)***	(2.64)***	(5.83)***	(4.67)***	(2.98)***
Privatized	0.316	0.008	-0.132	0.425	0.019	0.235	0.017	-0.205	0.227	0.019
	(2.04)**	(0.52)	(2.02)**	(2.46)**	(1.60)	(2.84)***	(1.64)	(4.12)***	(2.70)***	(1.81)*
Time since Privatization	-0.001	0.001	-0.006	-0.003	-0.001	-0.0002	-0.001	-0.002	0.005	-0.0003
	(0.08)	(0.33)	(0.70)	(0.19)	(0.49)	(0.02)	(0.81)	(0.23)	(0.38)	(0.20)
State Control	-0.019	-0.017	-0.085	-0.121	-0.009	-0.057	-0.015	-0.05	-0.009	-0.008
	(0.20)	(3.59)***	(2.24)**	(0.86)	(1.80)*	(0.93)	(1.97)**	(1.39)	(0.15)	(1.01)
Merchant Bank State	-0.094	0.01	-0.103	-0.049	0.007	-0.121	0.012	-0.07	-0.103	0.007
	(1.41)	(2.10)**	(4.74)***	(0.76)	(1.34)	(2.44)**	(2.00)**	(2.40)**	(2.04)**	(1.13)
Merchant Bank Private	-0.074	0.01	-0.067	-0.082	0.005	-0.035	0.01	-0.06	-0.025	0.009
	(2.13)**	(2.74)***	(3.59)***	(1.99)**	(1.08)	(1.48)	(3.45)***	(4.30)***	(0.98)	(2.85)***
Commercial Bank State	-0.022	-0.012	0.055	-0.042	-0.009	-0.104	-0.011	0.09	-0.092	-0.008
	(0.32)	(4.23)***	(2.57)**	(0.78)	(2.63)***	(3.11)***	(2.61)***	(4.55)***	(2.49)**	(1.71)*
Age	-0.004	-.0005	0.003	-0.005	-0.001	-0.004	-0.0004	0.003	-0.005	-0.001
	(3.87)***	(5.10)***	(6.85)***	(4.12)***	(5.93)***	(5.06)***	(4.67)***	(6.29)***	(5.95)***	(5.61)***
Constant	-0.6	-0.019	0.643	-0.546	-0.052	-0.492	-0.002	0.473	-0.572	-0.035
	(2.74)***	(0.71)	(5.55)***	(2.26)**	(2.36)**	(2.50)**	(0.09)	(4.07)***	(2.82)***	(1.38)
Observations	564	563	557	509	509	576	576	563	521	521
R-squared	0.15	0.17	0.22	0.15	0.14	0.26	0.18	0.27	0.26	0.18

Assets and Age are entered in logs. T-Statistics are reported in parentheses. *, **, *** significant at 10, 5 and 1 percent level, respectively. All models include year dummies.

Table 4: Privatization and Bank Performance: Controlling for Further Bank Characteristics

	White					Robust Reg				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	ROE	ROA	NPL	ROE- No Forex	ROA – No Forex	ROE	ROA	NPL	ROE- No Forex	ROA – No Forex
Assets	0.06	0.006	-0.03	0.058	0.007	0.062	0.006	-0.026	0.085	0.008
	(2.83)***	(2.58)**	(3.19)***	(2.49)**	(3.15)***	(4.51)***	(3.47)***	(3.42)***	(5.82)***	(4.69)***
Eventually Privatized	-0.47	-0.024	0.166	-0.573	-0.023	-0.378	-0.021	0.245	-1.041	-0.026
	(3.59)***	(2.78)***	(3.17)***	(3.59)***	(2.52)**	(5.35)***	(2.42)**	(6.00)***	(14.43)***	(2.87)***
Privatized	0.415	0.015	-0.146	0.578	0.023	0.249	0.024	-0.21	0.951	0.018
	(2.52)**	(1.26)	(2.42)**	(3.13)***	(2.00)**	(2.76)***	(2.14)**	(4.09)***	(10.36)***	(1.58)
Time since Privatization	-0.002	-0.0003	-0.001	-0.008	-0.001	0.01	-0.002	0.001	0.009	0.001
	(0.11)	(0.19)	(0.15)	(0.38)	(0.77)	(0.72)	(1.27)	(0.09)	(0.69)	(0.31)
State Control	0.029	-0.015	-0.082	-0.119	-0.006	-0.038	-0.013	-0.051	0.037	-0.007
	(0.25)	(2.87)***	(2.05)**	(0.72)	(1.12)	(0.57)	(1.53)	(1.41)	(0.55)	(0.81)
Merchant Bank State	-0.078	0.004	-0.022	-0.099	-0.005	-0.142	0.003	-0.003	-0.141	-0.007
	(1.04)	(0.71)	(0.86)	(1.46)	(0.91)	(2.60)***	(0.51)	(0.10)	(2.51)**	(1.00)
Merchant Bank Private	-0.049	0.004	0.007	-0.091	-0.003	-0.064	0.002	0.008	-0.054	-0.002
	(0.90)	(0.95)	(0.30)	(1.74)*	(0.60)	(1.99)**	(0.38)	(0.44)	(1.59)	(0.41)
Commercial Bank State	0.064	-0.004	0.039	0.039	-0.001	-0.069	-0.004	0.074	-0.058	-0.001
	(0.75)	(1.16)	(1.89)*	(0.55)	(0.15)	(1.88)*	(0.95)	(3.64)***	(1.38)	(0.17)
Age	-0.003	-0.0001	0.002	-0.003	-0.0002	-0.002	-0.0001	0.002	-0.003	-0.0001
	(2.23)**	(1.64)	(4.54)***	(2.07)**	(2.26)**	(2.49)**	(0.84)	(4.03)***	(3.00)***	(1.17)
Branches	0.025	-0.004	0.008	0.0003	-0.006	0.009	-0.007	0.006	-0.006	-0.008
	(0.91)	(1.76)*	(0.78)	(0.01)	(2.30)**	(0.58)	(3.56)***	(0.66)	(0.33)	(3.69)***
Fee Income	0.701	0.064	0.22	0.714	0.047	0.193	0.048	0.199	0.218	0.055
	(3.78)***	(4.44)***	(3.79)***	(3.87)***	(3.19)***	(2.26)**	(4.57)***	(4.22)***	(2.31)**	(4.66)***
Government Bonds	0.621	0.036	0.072	0.704	0.042	0.503	0.022	0.047	0.606	0.031
	(3.33)***	(2.25)**	(1.07)	(3.62)***	(2.59)**	(5.00)***	(1.74)*	(0.83)	(5.59)***	(2.27)**
Loans to Banks	0.005	-0.011	-0.011	0.043	-0.011	0.014	-0.017	-0.028	-0.051	-0.033
	(0.03)	(0.85)	(0.20)	(0.27)	(0.78)	(0.18)	(1.80)*	(0.66)	(0.60)	(3.15)***
Fixed Assets	-1.045	-0.07	0.079	-0.188	0.004	-1.115	-0.039	-0.718	-0.529	0.045
	(1.76)*	(1.37)	(0.21)	(0.35)	(0.07)	(2.96)***	(0.84)	(3.47)***	(1.32)	(0.89)
Overhead Costs	-2.086	-0.25	1.821	-2.955	-0.379	-1.614	-0.18	2.162	-2.428	-0.492
	(2.27)**	(3.02)***	(6.86)***	(3.88)***	(4.49)***	(4.87)***	(4.39)***	(12.61)***	(6.95)***	(11.32)***
Constant	-0.362	-0.005	0.351	-0.27	-0.029	-0.322	-0.011	0.16	-0.378	-0.008
	(1.48)	(0.18)	(2.94)***	(0.94)	(1.06)	(1.78)*	(0.51)	(1.40)	(1.73)*	(0.30)
Observations	490	488	484	438	437	499	499	488	447	447
R-squared	0.28	0.29	0.39	0.33	0.31	0.40	0.28	0.50	0.58	0.45

Assets, Age and Branches are entered in logs. T-Statistics are reported in parentheses. *, **, *** significant at 10, 5 and 1 percent level, respectively. All models include year dummies.

Table 5: Privatization and Bank Performance: Alternative Estimation Techniques

	Clustered Regression					Fixed Effects				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	ROE	ROA	NPL	ROE- No Forex	ROA – No Forex	ROE	ROA	NPL	ROE- No Forex	ROA – No Forex
Assets	0.06	0.006	-0.03	0.058	0.007	-0.049	-0.004	-0.017	-0.052	0.001
	(1.98)*	(1.56)	(2.31)**	(1.72)*	(2.05)**	(1.48)	(1.54)	(1.51)	(1.48)	(0.28)
Eventually Privatized	-0.47	-0.024	0.166	-0.573	-0.023					
	(2.89)***	(1.94)*	(2.52)**	(2.71)***	(1.85)*					
Privatized	0.415	0.015	-0.146	0.578	0.023	0.354	0.011	-0.145	0.548	0.022
	(2.12)**	(1.34)	(1.93)*	(2.45)**	(1.66)	(2.58)**	(1.10)	(3.05)***	(4.08)***	(2.09)**
Time since Privatization	-0.002	-0.0003	-0.001	-0.008	-0.001	0.023	0.0004	0.002	0.01	0.0001
	(0.12)	(0.20)	(0.10)	(0.38)	(0.72)	(1.07)	(0.25)	(0.29)	(0.49)	(0.07)
State Control	0.029	-0.015	-0.082	-0.119	-0.006					
	(0.14)	(1.93)*	(1.10)	(1.98)*	(0.85)					
Merchant Bank State	-0.078	0.004	-0.022	-0.099	-0.005					
	(0.59)	(0.48)	(0.78)	(0.85)	(0.56)					
Merchant Bank Private	-0.049	0.004	0.007	-0.091	-0.003	-0.042	0.003	0.03	0.036	-0.001
	(0.58)	(0.55)	(0.19)	(1.05)	(0.34)	(0.39)	(0.41)	(0.84)	(0.31)	(0.15)
Commercial Bank State	0.064	-0.004	0.039	0.039	-0.001					
	(0.48)	(0.75)	(1.08)	(0.42)	(0.10)					
Age	-0.003	-0.0001	0.002	-0.003	-0.0002	-0.004	0.004	-0.032	-0.014	0.003
	(1.66)	(1.09)	(2.89)***	(1.57)	(1.37)	(0.06)	(0.76)	(1.49)	(0.21)	(0.52)
Branches	0.025	-0.004	0.008	0.0003	-0.006	0.116	0.004	0.018	0.091	0.002
	(0.62)	(1.07)	(0.57)	(0.01)	(1.44)	(2.47)**	(1.10)	(1.14)	(1.88)*	(0.50)
Fee Income	0.701	0.064	0.22	0.714	0.047	0.762	0.07	0.121	0.733	0.058
	(2.88)***	(3.29)***	(2.55)**	(3.06)***	(2.50)**	(4.74)***	(5.65)***	(2.24)**	(4.22)***	(4.13)***
Government Bonds	0.621	0.036	0.072	0.704	0.042	0.495	0.025	0.15	0.585	0.02
	(2.84)***	(2.28)**	(0.76)	(3.24)***	(2.63)**	(2.92)***	(1.93)*	(2.57)**	(3.33)***	(1.38)
Loans to Banks	0.005	-0.011	-0.011	0.043	-0.011	-0.171	-0.02	0.099	-0.097	-0.021
	(0.04)	(1.05)	(0.17)	(0.37)	(0.91)	(1.18)	(1.76)*	(2.00)**	(0.63)	(1.73)*
Fixed Assets	-1.045	-0.07	0.079	-0.188	0.004	-1.493	-0.074	-0.183	-0.367	0.009
	(1.68)*	(1.06)	(0.18)	(0.27)	(0.06)	(1.76)*	(1.11)	(0.64)	(0.40)	(0.12)
Overhead Costs	-2.086	-0.25	1.821	-2.955	-0.379	-1.932	-0.186	1.844	-2.321	-0.318
	(2.37)**	(4.07)***	(6.65)***	(4.62)***	(4.11)***	(2.56)**	(3.54)***	(9.08)***	(2.99)***	(5.36)***
Constant	-0.362	-0.005	0.351	-0.27	-0.029	0.519	-0.003	0.624	0.699	-0.026
	(1.07)	(0.13)	(2.35)**	(0.83)	(0.75)	(0.36)	(0.03)	(1.35)	(0.47)	(0.22)
Observations	490	488	484	438	437	490	488	484	438	437
R-squared	0.28	0.29	0.39	0.33	0.31	0.25	0.19	0.33	0.26	0.20
Number of banks						66	66	66	64	64

Assets, Age and Branches are entered in logs. T-Statistics are reported in parentheses. *, **, *** significant at 10, 5 and 1 percent level, respectively. All models include year dummies.

Table 6. Nature and Quality of Financial Intermediation

	OLS	OLS	OLS	OLS
	Overhead Costs/Assets	Govt. Bonds/Assets	Fixed Assets/Assets	Loans to Banks/Assets
	(1)	(2)	(3)	(4)
Assets	-0.014	0.013	-0.009	0.024
	(7.32)***	(2.23)**	(6.25)***	(3.12)***
Eventually Privatized	-0.004	-0.072	-0.010	0.068
	(0.45)	(2.50)**	(1.37)	(1.81)*
Privatized	0.025	0.059	0.004	-0.061
	(2.04)**	(1.56)	(0.38)	(1.21)
Time since Privatization	-0.003	-0.002	-0.0002	0.005
	(1.76)*	(0.29)	(0.15)	(0.69)
State Control	-0.007	-0.013	-0.010	-0.072
	(0.68)	(0.39)	(1.18)	(1.61)
Merchant Bank State	-0.017	0.001	-0.014	0.070
	(1.96)**	(0.03)	(2.04)**	(2.00)**
Merchant Bank Private	-0.015	-0.029	-0.006	0.036
	(3.22)***	(1.91)*	(1.49)	(1.87)*
Commercial Bank State	-0.002	-0.043	-0.001	-0.033
	(0.28)	(2.54)**	(0.19)	(1.51)
Age	0.0001	-0.001	0.0003	0.002
	(0.81)	(1.44)	(2.61)***	(4.24)***
Branches	0.006	0.001	0.005	-0.067
	(2.71)***	(0.12)	(3.02)***	(7.12)***
Constant	0.207	0.022	0.130	0.109
	(11.64)***	(0.39)	(9.44)***	(1.52)
Observations	570	553	570	570
R-squared	0.15	0.06	0.11	0.27

Assets, Age and Branches are entered in logs. T-Statistics are reported in parentheses. *, **, *** significant at 10, 5 and 1 percent level, respectively

Table 7. Income Broken Down by Source

	Foreign Exchange Income		
	as a share of total income	divided by assets	divided by equity
	(1)	(2)	(3)
Assets	-.004	-.0005	.004
	(1.81)*	(1.32)	(1.04)
Eventually Privatized	.040	.006	.062
	(3.26)***	(3.05)***	(3.20)***
Privatized	-.026	-.002	-.057
	(1.69)*	(0.68)	(2.24)**
Time since Privatization	-.003	-.001	-.001
	(1.26)	(2.02)**	(0.38)
State Control	-.015	-.003	-.027
	(1.50)	(1.46)	(1.43)
Merchant Bank State	.023	.005	.007
	(2.77)***	(3.06)***	(0.45)
Merchant Bank Private	.014	.003	.006
	(3.31)***	(4.21)***	(0.73)
Commercial Bank State	.008	.0004	.011
	(1.20)	-0.32	(1.01)
Age	.0003	.00002	.0005
	(2.42)***	(0.75)	(1.97)**
Constant	.047	0.008	-.041
	(1.40)	(1.29)	(0.67)
Observations	467	521	521
R-square	0.14	0.15	0.17

Assets, Age and Branches are entered in logs. T-Statistics are reported in parentheses.
*, **, *** significant at 10, 5 and 1 percent level, respectively.
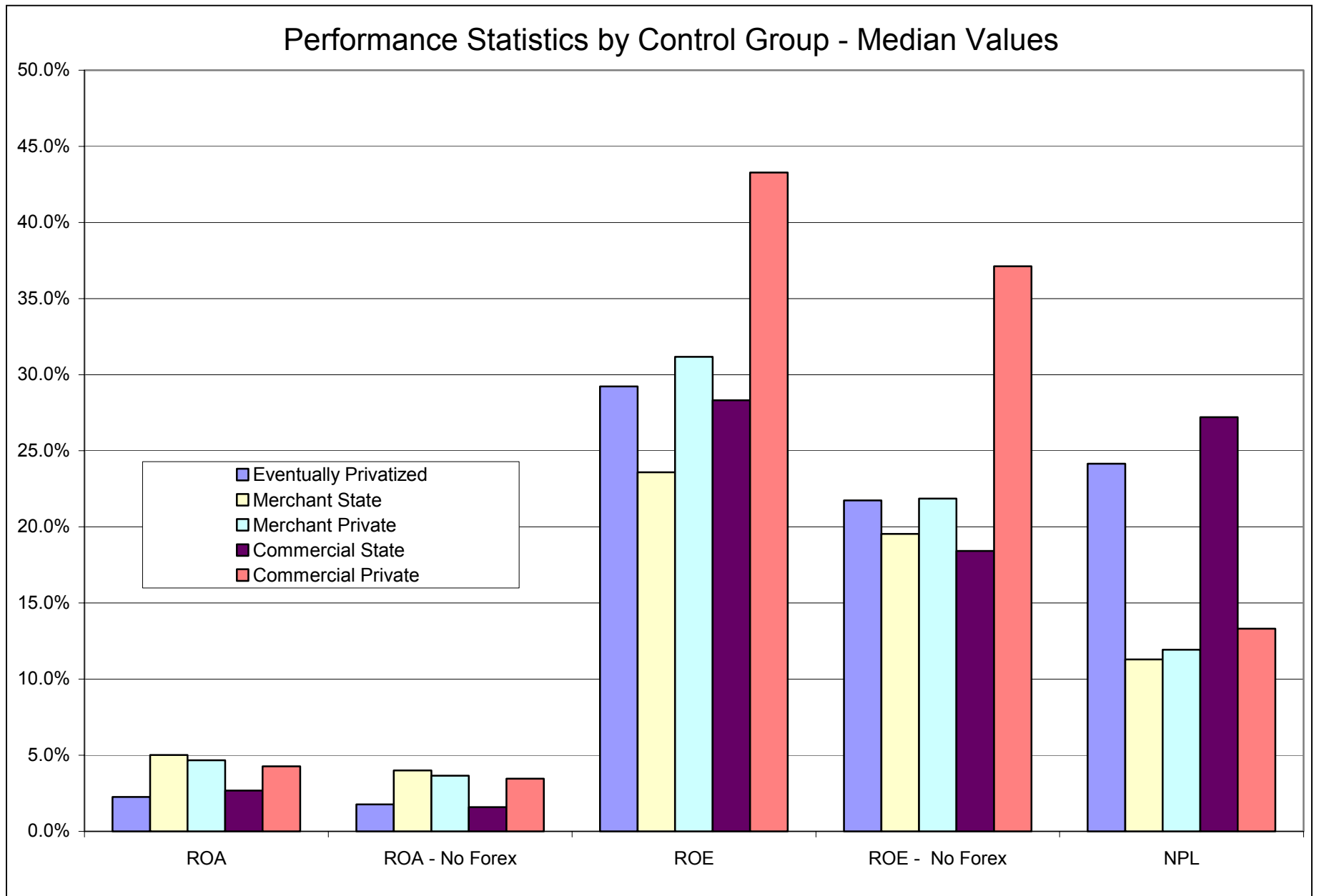All models are run via robust regression and include year dummies.

Figure 1

Performance Statistics by Control Group - Median Values

Legend:
- Eventually Privatized
- Merchant State
- Merchant Private
- Commercial State
- Commercial Private

Categories: ROA, ROA - No Forex, ROE, ROE - No Forex, NPL

Figure 2

Performance After and Before Privatization - Mean