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Corporate Governance and Bank Performance: A Joint Analysis of the Static, Selection, and Dynamic Effects of Domestic, Foreign, and State Ownership

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Abstract

We jointly analyze the static, selection, and dynamic effects of domestic, foreign, and state ownership on bank performance. We argue that it is important to include indicators of all the relevant governance effects in the same model. "Nonrobustness" checks (which purposely exclude some indicators) support this argument. Using data from Argentina in the 1990s, our strongest and most robust results concern state ownership. State-owned banks have poor long-term performance (static effect), those undergoing privatization had particularly poor performance beforehand (selection effect), and these banks dramatically improved following privatization (dynamic effect). However, much of the measured improvement is likely due to placing nonperforming loans into residual entities, leaving "good" privatized banks.

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1. Introduction

Changes in bank ownership during the 1990s and early 2000s substantially altered the governance of the world's banking organizations. The developed nations of North America and Western Europe witnessed tremendous numbers of domestic bank mergers and acquisitions (M&As) and foreign acquisitions in response to deregulation, technological advances, and the globalization of nonfinancial economic activity. Ownership changes in other regions were even more dramatic. In the transition nations of Eastern Europe, the crisis nations of East Asia, many Latin American nations, and elsewhere, large shares of the banking systems had their ownership change from government control to private control and from domestic control to foreign control. These changes occurred as governments privatized many of their state-owned institutions and reduced entry barriers to foreign organizations, often in response to financial crises or to revisions in political philosophy.

These changes in the corporate governance of banks raise important policy and research questions. How do these changes affect bank performance? Are the changes permanent or do the banks tend to return to their previous conditions? How do banks that undergo governance changes reallocate their portfolios? To what extent do the dynamic changes following governance changes correspond to predicted effects: e.g., Do privatized banks tend to move closer to behaving like other privately-owned institutions? We address these questions using an econometric methodology that builds on some of the literature on the performance effects of various types of bank ownership in developed nations, and apply it to a unique data set on Argentine banks in the 1990s.

We refer to the different types of bank ownership – domestic ownership, foreign ownership, and state ownership – as forms of "governance." Studies of U.S. corporations typically use the governance term to refer to the methods shareholders use to reduce managerial agency costs, such as board composition, voting rules, or stakes held by managers. Studies of governance outside the U.S., particularly in developing nations, often focus on the role of ownership in reducing these agency problems because of weak legal infrastructures that often do not adequately protect investors (e.g., Shleifer and Vishny 1997). In addition, the usual assumption in the U.S. context that all shareholders agree on the goal of value maximization may not necessarily apply to foreign and state owners. Foreign owners may be concerned with the value of the entire international organization, rather than an individual bank in a foreign nation, and state owners may be concerned with advancing other social or political

goals. Governance in this context and as we use it here includes the effects of the goals of different ownership types, as well as the ability of the owners to minimize agency costs with management.

There is a wealth of research on bank governance and performance. Many studies assess the static effects of different types of bank ownership – the long-run performance effects associated with constant domestic, foreign, or state ownership – but typically do not consider more than one static difference at a time. Others address the dynamic effects of changes in bank ownership – the performance effects associated with domestic M&As, foreign acquisitions, or privatization – but typically do not consider more than one of these types of dynamic changes together. In some cases, these studies also examine the selection effects of which banks undergo these dynamic governance changes, but typically do not examine more than one of these types of selection effects together. The static, selection, and dynamic effects of any of the types of governance are typically not all examined in the same model.

We argue that it is important to account for the static, selection, and dynamic effects of all the major different types of governance that are important for a nation in the same model of bank performance. To the extent that any of the relevant effects are excluded, the model may be misspecified, and might give biased and misleading results. Consider the example of a nation with significant numbers of all three types of dynamic events – domestic M&As, foreign acquisitions, and privatization – in which all three types of events significantly improve bank performance. If only privatization is included in the model, the performance effect of privatization might mistakenly be measured as unfavorable simply because it raises performance less than the other two types of dynamic events. That is, the privatized banks might be measured as having negative effects on performance simply because they were not involved in domestic M&As or foreign acquisitions.

We test the effects of governance on bank performance using data from Argentina in the 1990s. We include the static, selection, and dynamic effects of all the major different types of governance that are relevant in Argentina –domestic ownership, foreign ownership, and state ownership – in the same model. The dynamic events analyzed include domestic M&As, foreign acquisitions, privatizations, and state restructurings, where the latter refer to events in which state-owned banks were restructured without privatization.

We also run some "nonrobustness" checks with various exclusions from our performance model. These allow us to examine the consequences of not specifying all of the important different types of governance or changes in governance in the same empirical model. Thus, the nonrobustness checks allow

us to see which of these potential problems from such exclusions appear to be empirically important.

In addition, we test for the effects of corporate governance on bank portfolio allocations of funds between loans and other assets, across types of loans, across industries, and across regions. The portfolio reallocations help us to analyze the sources of change in bank performance associated with governance changes, e.g., whether profits increased because of a shift into higher-return types of loans.

Our data set on Argentina in the 1990s provides an excellent laboratory for examining these research and policy issues. Argentine banks underwent significant dynamic changes of all types during this period, including the migration of more than one-third of the banking assets to foreign control and the movement of more than half of the credit in some provinces from provincial government control to private control. The data set includes quarterly information on virtually all Argentine banks from 1993:Q2 to 1999:Q4, avoiding the potential for significant sample selection biases. The data set allows us to employ multiple measures of bank performance and portfolio allocations to guard against the findings being driven by the choice of a single performance or portfolio measure.

Section 2 reviews some of the research literature on the performance effects of corporate governance in banking. Section 3 gives background information on the Argentine banking system in the 1990s. Section 4 shows our empirical models and variables, and Section 5 displays our empirical results. Section 6 concludes.

2. Literature on bank governance and performance

In this section, we briefly review some of the research literature on the performance effects of corporate governance in banking, including domestic ownership and M&As, foreign ownership and acquisitions, and state ownership and privatization.

2.1. Domestic ownership and M&As

Studies of domestic bank governance generally focus on the performance effects of bank scale or domestic M&As, and typically do not account for static differences in performance between domestically-owned banks and their foreign-owned or state-owned rivals, if any. Much of the research uses U.S. data. Research on bank cost scale efficiency using data on U.S. banks from the 1980s generally finds very little scale economies or diseconomies (e.g., Berger, Hanweck, and Humphrey 1987), although data from the 1990s suggests that there may be more cost scale economies than in the 1980s due to technological progress (e.g., Berger and Mester 1997). Some also find possible revenue benefits for large banks in the 1990s (e.g., Demsetz and Strahan 1997). Other research finds that large and small banks may serve

different groups of customers, use different technologies, and/or have different effects on competition (see DeYoung, Hunter, and Udell 2004 for a survey).

Turning to the dynamic performance effects associated with domestic M&As, the empirical evidence on U.S. bank M&As using data from the 1980s generally finds little or no cost efficiency improvement after consolidation on average, although some M&As yielded substantial gains and others yielded substantial losses (e.g., Berger and Humphrey 1992). The studies using U.S. data from the early 1990s are mixed, with some finding cost efficiency gains, and others finding little cost efficiency improvement (e.g., Rhoades 1998). Studies of European M&As also give mixed cost efficiency findings (e.g., Vander Vennet 1996).

Profit efficiency studies of U.S. bank M&As from the 1980s and early 1990s find that M&As improved profit efficiency, and that this improvement can be linked to portfolio shifts that generated higher revenues due to improved risk-expected return frontiers (e.g., Akhavein, Berger, and Humphrey 1997, Hughes, Lang, Mester, and Moon 1999). U.S. banks involved in M&As may also have improved the quality of their outputs in the 1990s in ways that increased costs, but still improved profit productivity by increasing revenues more than costs (Berger and Mester 2003). Other studies also find that large U.S. banks shift their portfolios away from SME lending after M&As, although other local banks tend to react by increasing their SME credit supplies (e.g., Berger, Saunders, Scalise, and Udell 1998).

2.2. Foreign ownership and acquisitions

Studies of the effects of foreign governance typically include static efficiency differences between foreign-owned and domestically-owned private institutions. Foreign-owned banks are usually part of large banking organizations, and so generally face the same scale economies and diseconomies as large, domestically-owned institutions. They may also have advantages in serving multinational customers by setting up offices in countries where their home-country customers have foreign affiliates (e.g., Goldberg and Saunders 1981). Foreign-owned banks may also have better access to capital markets, superior ability to diversify risks, and the ability to offer some services to multinational clients not easily provided by domestically-owned banks. In developing nations, foreign-owned institutions from developed nations may also have access to superior technologies, particularly information technologies for collecting and assessing "hard" quantitative information. However, foreign-owned banks may also have some disadvantages due to problems in managing from a distance, coping with multiple economic/regulatory environments, and accessing "soft" qualitative information about local

conditions (e.g., Berger, Dai, Ongena, and Smith 2003, Buch 2003).

Most of the efficiency studies of foreign-owned banks in developed countries find that the disadvantages outweigh the advantages. Foreign-owned banks are found to be less efficient than domestically-owned institutions with the possible exception of U.S. banks operating abroad (e.g., DeYoung and Nolle 1996, Berger, DeYoung, Genay, and Udell 2000), although a few studies find that foreign institutions are about equally efficient on average as domestic institutions (e.g., Vander Vennet 1996). In contrast, some research suggests that the advantages of foreign ownership may outweigh the disadvantages in developing nations (e.g., Claessens, Demirgüç-Kunt, and Huizinga 2001, Bonin, Hasan, and Wachtel 2004). This may be due to the superior access to capital markets or technologies or to problems of the domestically-owned institutions in these nations. Prior research on Argentina also supports the finding of better performance for foreign-owned banks in this developing nation (e.g., Clarke, Cull, D'Amato, and Molinari 2000, Dages, Goldberg, and Kinney 2000).

Some caveats are in order regarding analyses of foreign-owned banks. There may be cross-subsidies from the parent banking organization in another nation, including the ability to operate with very little financial capital, using the parent organization to absorb risks. As well, to the extent that foreign-owned banks serve multinational client bases in many nations, the booking location of the costs and revenues associated with these clients may be discretionary. Tax considerations may also shift revenues or costs.

Other research on the static effects of foreign ownership in developing nations finds that foreign ownership and entry and fewer restrictions on these banks are associated with more competitive national banking systems (e.g., Claessens and Laeven 2004, Martinez Peria and Mody 2004). Some also find positive effects of foreign ownership on business credit availability, either overall or for SMEs in particular (e.g., Clarke, Cull, and Martinez Peria 2002, Berger, Hasan, and Klapper 2004).

Studies of business lending in Argentina in particular find very different portfolio allocations for foreign- versus domestically-owned banks, with foreign-owned banks tending to specialize in lending to the Buenos Aires province and to large-scale projects in manufacturing and utilities (Clarke, Cull, D'Amato, and Molinari 2000). As well, studies on Argentina find foreign ownership is associated with greater overall credit availability (e.g., Dages, Goldberg, and Kinney 2000), but has ambiguous or negative effects on SME credit availability (e.g., Berger, Klapper, and Udell 2001, Clarke, Cull, Martinez Peria, and Sanchez, forthcoming).

Turning to dynamics, there is very little evidence on the effects of foreign acquisitions on bank performance. One study finds a negative selection effect in the U.S. – that foreign banks tend to acquire domestic banks with performance problems – and that the dynamic effect of these acquisitions is modestly positive but not enough to raise the acquired banks' performance up to the levels of their domestic peers (Peek, Rosengren, and Kasirye 1999).

2.3. State ownership and privatization

Studies of the effects of state ownership typically compare performance with domestically-owned banks. The main static questions regarding state ownership generally involve credit availability and portfolio allocation, as well as efficiency. This emphasis stems from the different objectives of state-owned banks, which often engage in directed lending or pursue objectives such as developing specific industries or regions, export expansion, and so forth. Portfolios may also be allocated for political advantage (e.g., Sapienza forthcoming). Even more so than for foreign-owned banks, caveats are in order when examining standard performance measures for state-owned institutions because the portfolio allocations are not designed to maximize profits, and they generally operate with government subsidies.

Most of the static research literature on state ownership focuses on developing nations and nearly always finds unfavorable effects. Individual state-owned institutions have relatively low efficiency and high nonperforming loans, and large market shares for state-owned banks are associated with reduced access to credit, diminished financial system development, and slow economic growth (e.g., La Porta, Lopez-de-Silanes, and Shleifer 2002, Barth, Caprio, and Levine 2004, Beck, Demirgüç-Kunt, and Maksimovic 2004, Berger, Hasan, and Klapper 2004). Research on Argentina also suggests unfavorable effects of state ownership (e.g., Clarke and Cull 2002, Delfino 2003).

Several studies examine the dynamic effects of bank privatization in developed nations.[1] A cross-country study of privatization in OECD countries finds moderate performance improvements in terms of profitability ratios, fee income and capital adequacy (Verbrugge, Megginson, and Owens 2000). Another study finds post-privatization improvement in efficiency for the Commonwealth Bank of Australia (Otchere and Chan 2003). Results for Portugal also suggest that efficiency increases with privatization (Barros 2003). Finally, Italian bank privatizations are associated with cost reductions and improved profitability (Farabullini and Hester 2003).

[1] See Megginson and Netter (2001) for an extensive review of empirical studies on the general (i.e., nonbanking) impacts of privatization.

A number of studies examine privatization in developing nations. Some conduct cross-country analyses, using data from the transition nations of Eastern Europe (Bonin, Hasan, and Wachtel 2004, 2005) or the crisis nations of East Asia (Nguyen and Williams 2005). In many of the transition nations, control of many of the privatized banks was shifted from state ownership to foreign ownership. Others studies of individual nations – including Brazil (Beck, Crivelli, and Summerhill 2005, Nakane and Bauhmol-Weintraub 2005), Mexico (Haber 2005), Nigeria (Beck, Cull, and Jerome 2005), and Pakistan (Bonaccorsi di Patti and Hardy 2005) – generally find that at least one bank performance measure improved following privatization, although some measures show no change. Some of these studies also find signs of greater prudence in lending after privatization in the form of reduced nonperforming loans or lending (e.g. Beck, Cull, and Jerome 2005, Haber 2005). One study of Argentine privatization finds that cost efficiency improves following privatization (Delfino 2003).

3. The Argentine banking system in the 1990s

Ownership changes and other organizational restructuring significantly altered the Argentine banking system during the 1990s. The changes included domestic M&As, foreign acquisitions, privatization, and restructuring of state-owned banks without privatization. Most privatized banks were previously provincially-owned, although in some cases, they had been nationally- or municipally-owned. Between 1993 and 1999, assets held by provincially-owned banks fell from about 21.6% to 13.0% of total assets, while assets held by foreign-owned banks grew from 15.6% to 50.3% of total bank assets.

These governance changes were driven both by shifts in government policies and local and regional financial crises. In April 1991, in response to macroeconomic crisis, the Menem administration initiated a radical reform – known as the Convertibility Plan – that pegged the Argentine peso to the U.S. dollar, granted the central bank greater independence, privatized state-owned firms, and removed trade barriers. To address concerns about the country's banking system, in September 1992 the Argentine Congress restructured the Banco Central de la República Argentina (BCRA), the central bank of Argentina, in a way that had a significant impact on prudential regulation. The new legislation constrained the BCRA by: i) preventing it from guaranteeing commercial bank deposits, ii) preventing it from taking on any new financial assets, and iii) restricting its extension of credit to commercial banks to liquidity rediscounts for a period of 15 days (Dillinger and Webb 1999). This legislation threatened the sustainability of the provincially-owned banks, many of which were in relatively weak financial health as a result of the pursuit of various political and social objectives. The legislative constraints on the BCRA

– particularly the reduced extensions of credit through rediscounting – significantly reduced the ability of the provincially-owned banks to obtain easy and cheap access to credit (Dillinger and Webb 1999, Alston and Gallo 2000).

The Government of Argentina's effort to encourage the provincial governments to privatize intensified following the Tequila Crisis in December 1994. This crisis had a profound impact on Argentina and its banking system, since fears of an Argentine peso devaluation led to a run on dollar deposits at all Argentine banks, particularly at weak institutions such as the provincially-owned banks.[2] To minimize the risk that a banking system failure would jeopardize the success of the Convertibility Plan, the Menem administration gave priority to strengthening bank supervision and regulation, promoting foreign entry into Argentine banking, and pushing the provinces to privatize the weak and inefficient provincially-owned banks.

To accelerate privatization, the Argentine government (with assistance from World Bank and Inter-American Development Bank) created the Fondo Fiduciario, which facilitated the splitting of provincially-owned banks into "good" banks, with mostly the healthy assets of provincially-owned banks, and residual entities with most of the problem assets of the banks to act as vehicles for asset recovery and liquidation. This procedure made the "good" banks into cleaner institutions for privatization. The provinces were able to borrow on a long-term basis from the Fondo to allow them to meet the short-term obligations of the residual entities. This reduced pressure on the provinces by allowing them to cover the costs associated with resolving the residual entities over a long-term horizon. This was important, as a large share of the obligations in the residual entities was comprised of the short-term debt owed to other banks for the liquidity injections during the crisis. As a result of these efforts, 16 institutions (14 provincially-owned, 1 nationally-owned, and 1 municipally-owned) were privatized between 1995 and 1999. Our data sample below includes these 16 plus another 2 privatizations that were undertaken before 1995 without Fondo assistance.

The legislative reforms also encouraged foreign acquisition of Argentine banks by removing some of the implicit subsidies to domestically-owned institutions. Domestic M&As also occurred in response to policy changes. Many were between small, struggling banks under a World Bank lending

[2] Forced to rely on their own portfolio quality to retain and attract deposits, the provincially-owned banks suffered dramatic deposit outflows during the Tequila crisis. The BCRA and larger nationally-owned banks provided short-term liquidity assistance to the provincially-owned banks to forestall deposit outflows. Domestically-owned banks also lost deposits during the crisis. However, deposits increased by about 5% in foreign-owned banks, as depositors fled towards banks that were thought to be safer (Alston and Gallo 2000).

program that provided financial assistance, mostly in the form of low-interest, long-term loans to improve their balance sheets.

Despite the reforms, Argentina experienced a banking crisis in 2002. To a significant degree, the crisis was caused by the growing macroeconomic imbalances that faced Argentina. These imbalances led many observers to believe that the Argentine government might be forced to abandon the peg to the U.S. dollar and to renegotiate its debt obligations. Such actions raised concerns about the Argentine banking system, which was thought to be vulnerable to both actions. Several papers have discussed the causes and consequences of the Argentine crisis (e.g., Mussa 2002, Powell 2002, de La Torre, Levy Yeyati, and Schmukler 2003). Although there is disagreement about the exact causes, the changes in bank governance are not generally mentioned among them.

4. Empirical models and variables

We first show our main empirical model and variables for testing the effects of corporate governance on bank performance as measured by efficiency ranks and financial ratios. We then briefly describe some additional dependent variables on bank portfolio allocations, which we use to explore the sources of changes in bank performance and to test whether banks move their portfolios in predicted directions after governance changes.

4.1. Tests of the effects of corporate governance on bank performance

Our first set of tests is for the effects of corporate governance on bank performance. We evaluate the static effects of maintaining different types of governance over the long term, the selection effects associated with being chosen to have different types of governance change, and the dynamic effects of four types of governance changes. The basic regression model takes the form:

$$\begin{aligned}\text{Bank Performance Measure} = \alpha &+ \beta_1 * \text{Static Governance Indicators} \\ &+ \beta_2 * \text{Selection Governance Indicators} \\ &+ \beta_3 * \text{Dynamic Governance Indicators, Dummies} \\ &+ \beta_4 * \text{Dynamic Governance Indicators, Quarters Since} \\ &+ \beta_5 * \text{Control variables for bank size and market share} \\ &+ \beta_6 * \text{Year and quarter fixed effects} \\ &+ \quad \text{Error term.} \end{aligned} \tag{1}$$

The variables specified in (1) and their sample means are shown in Table 1. The five different

Bank Performance Measures specified as the dependent variable are *Profit Efficiency Rank*, *ROE*, *Cost Efficiency Rank*, *Costs/Assets*, and *NPL*.

Profit Efficiency Rank indicates how well a bank is predicted to perform in terms of profits relative to other banks in the same period for producing the same set of outputs. The variable is based on the residuals from profit functions estimated for each quarter that take into account the outputs produced by the bank. Specifically, profits are specified as a translog function of the quantities of five asset output categories – mortgages, consumer loans, public-sector loans, other loans, and securities.[3] We also include the proportion of assets that are denominated in pesos rather than foreign currency (usually U.S. dollars), since peso-denominated assets generally had higher income streams to compensate for devaluation risk. The profits and outputs are all normalized by the equity capital input. This procedure reduces heteroskedasticity, allows banks of any size to have comparable residuals, and puts the profit function in more meaningful economic terms – return on equity or *ROE* as a function of the allocation of equity to different asset categories.[4]

The residuals are put in rank order for a quarter and converted to a uniform scale over the [0,1] interval to make the ranks comparable across periods.[5] Thus, a bank's rank in a quarter is the proportion of sample banks in that quarter with lower efficiency, so a bank with a residual higher than 70% of other banks in the country has a rank that quarter of 0.70. The sample mean is 0.50 by construction.

Cost Efficiency Rank is computed in a similar fashion to *Profit Efficiency Rank*, except that the dependent variable in the cost function is the log of *Costs/Assets* and the order of residuals is reversed before transforming them into ranks (i.e., a higher cost function residual gives a lower *Cost Efficiency Rank*).[6] We consider *Profit Efficiency Rank* to be the more accurate indicator of the quality of the management of the institution, at least for privately-owned institutions. This is because management has some control over revenues as well as costs, because profit maximization is closer to the concept of value maximization, and because managerial goals are more likely achieved by higher profits than lower costs.

[3] The use of quantities, rather than prices is necessitated by the lack of accurate output price data. Other arguments also favor the use of this alternative profit function (see Berger and Mester 1997).
[4] A constant is added before logging to avoid taking the log of a negative number.
[5] The residuals are ranked in ascending order and converted to a uniform scale over [0,1] using the formula (*order* - 1)/(*n* - 1), where *order* is the place in ascending order of the banks residual in that quarter and *n* is the number of sample banks in the quarter. The bank with the highest residual has the best rank of 1 [(*n* - 1)/(*n* - 1)], and the bank with the lowest residual has the worst rank of 0 [(1 - 1)/(*n* - 1)].
[6] Assets is used as the denominator so that we can compare the *Cost Efficiency Rank* findings with those for *Costs/Assets* as a bank performance measure below. Both the *Profit Efficiency Rank* and *Cost Efficiency Rank* results are robust to the specification of either equity or assets as the normalizing variable.

When *Profit Efficiency Rank* and *Cost Efficiency Rank* are used as dependent variables, we use censored regressions that take into account that the dependent variables are truncated at 0 and 1.

We also include two standard financial ratios that are often used to measure profit and cost performance, *ROE* and *Costs/Assets*. The use of *ROE* is clearly analogous to *Profit Efficiency Rank*, given that the dependent variable in the profit function used to compute *Profit Efficiency Rank* is based on *ROE*. We argue that *ROE* is a less appealing measure of bank performance for two main reasons. First, *ROE* does not control for the bank's outputs, which may be very difficult to change, at least in the short run other than by a large governance change. Thus, one bank may be significantly more profitable than another due to its scale or output mix, rather than the quality of its management. Second, *ROE* is not adjusted for changes over time in the distribution of bank profitability. The year and quarter fixed effects in the model (discussed below) account for differences in the mean of profitability over time, but not for changes in the variability of profits. *Profit Efficiency Rank* is neutral with respect to changes in variability as rank ordering does not change for a mean-preserving spread.

As shown, the mean *ROE* across banks and time is -1.5%. The negative average return occurs in large part because of the inclusion of state-owned banks, which are shown below to have substantially lower average *ROE* than other banks.

The variable *Costs/Assets*, or total interest plus noninterest expenses divided by assets, is analogous to *Cost Efficiency Rank*, given that the log of *Costs/Assets* is the dependent variable in the cost function used to compute *Cost Efficiency Rank*. Both interest and noninterest expenses are included because bank management may substitute between providing depositor services and interest payments in attracting funds and because both contribute equally to the goals of the organization. Similar to the arguments regarding *ROE*, *Costs/Assets* does not control for the bank's outputs and may be significantly affected by changes in the cost distribution over time, making it less appealing than *Cost Efficiency Rank* in our view. The sample mean of 0.037 means that it costs 3.7 centavos on average to provide one peso of assets.

For our final bank performance variable, we include *NPL*, or nonperforming loans divided by total loans. Nonperforming loans are based on a complex set of guidelines of the central bank, and include loans with problems and deficient coverage, loans with high risk of borrower insolvency and recovery difficulty, and loans deemed unrecoverable. As discussed above, part of the process of privatization of state-owned banks in Argentina was to move many of the nonperforming loans into

residual entities. Therefore, it is important to see how the privatized banks respond and whether such loan performance problems reappear in the quarters following privatization. The mean of 0.196 suggests that almost 20% of the loans of the average bank in Argentina are nonperforming, due in part to very high levels for state-owned banks, as shown below.

The key exogenous variables in (1) are the Static, Selection, and Dynamic Governance Indicators. As argued, it is important to include all three types of indicators in order to determine the effects of changes in corporate governance. The static indicators, *Domestic – No Governance Change*, *Foreign – No Governance Change*, and *State – No Governance Change*, are dummies indicating domestically-owned banks, foreign-owned banks, and state-owned banks, respectively, that underwent no changes in governance over the entire 1993:Q2-1999:Q4 interval. These variables equal 1 for all periods for a bank that maintains the corresponding form of governance and 0 for all periods for all other banks.

As shown, a majority of the banks had no governance change – 41.8% remained domestically-owned banks, 17.8% remained foreign-owned banks, and 10.4% remained state-owned institutions. These are simple averages, which may be dominated by small institutions, and so may not necessarily reflect the importance of banks in these three categories. Weighted by assets, banks with 6.5%, 11.0%, and 41.0% of total national banking assets remained domestically-owned banks, foreign-owned banks, and state-owned institutions, respectively. Thus, a relatively small number of very large state-owned banks that control a large portion of Argentine banking assets did not change governance during the sample period.

In the regressions, the coefficients on the static indicators measure the effects associated with having a certain type of governance over the long term, i.e., the effects with no change in governance. The first static indicator, *Domestic – No Governance Change*, is excluded as the base case, so the coefficients on the other static indicators measure long-run performance differences from domestically-owned banks. For example, the coefficients on the *State – No Governance Change* variable are estimates of performance differences between state-owned and domestically-owned banks.

The Selection Governance Indicators, *Selected for Domestic M&A*, *Selected for Foreign Acquisition*, *Selected for Privatization, and Selected for State Restructuring*, are dummies indicating banks that underwent one or more changes in governance over the entire period and which of four types of change they underwent. Domestic M&As, foreign acquisitions, and privatization are common governance changes across the globe. State restructuring refers to some events in which state-owned

banks were restructured without privatization (e.g., the merger of Banco de Prevision and Social Banco de Mendoza prior to their failed privatization). In the cases of domestic M&As and foreign acquisitions, it is typically the owners of both banking organizations that do the "selecting," whereas the "selection" for privatization and state restructuring is made by government authorities.

In some cases, banks underwent more than one of these four types of governance changes. For these banks, we use the last change as the dominating event. Specifically, some of the banks that underwent domestic M&As were later acquired by foreign concerns, and some of the state-owned banks that underwent state restructurings were later privatized, and we treat these banks as selected for foreign acquisitions and privatization, respectively.

The selection variables equal 1 for all periods for a bank that had the corresponding governance change as its last event, and 0 for all periods for all other banks. As shown, a number of institutions were selected for each of the four types of corporate governance change: 6.4% were involved in domestic M&As as their last event, 11.7% were acquired by foreign organizations, 7.9% were state-owned institutions at the start of the sample interval and were privatized by end of the interval, and 4.1% were state-owned institutions that were restructured but not privatized. As shown, the means of the three static indicators plus the means of the four selection indicators sum to 100% (within rounding error) because all banks either have no governance change or are selected for one of the four changes.

Similar to the arguments above, the sample means may not accurately reflect the importance of the banks with governance changes. Weighted by assets, banks with 41.5% of national assets underwent one or more governance change, with banks representing 9.0%, 23.4%, 3.2%, and 5.9% of assets having undergone domestic M&As, foreign acquisitions, privatization, and state restructuring, respectively, as their last event. In all but one category, and particularly for foreign acquisitions, banks that underwent changes in corporate governance were larger than average, so that disproportionate shares of national assets were involved in governance change. In some cases, even the proportions of assets may significantly understate the importance of the banks involved. Many of the cases of privatization involved provincially-owned banks with very large shares of the credit in their provinces – more than half of the credit in 9 of the provinces (Clarke, Crivelli, and Cull 2004).

The coefficients on the selection indicators identify the performance effects associated with being chosen to have a certain type of governance change. For example, the coefficient on the *Selected for Privatization* variable measures the pre-privatization performance differences between state-owned banks

selected to be privatized and domestically-owned banks (the excluded base case).

The Dynamic Governance Indicator dummy variables, *Underwent Domestic M&A*, *Underwent Foreign Acquisition*, *Underwent Privatization*, and *Underwent State Restructuring*, indicate the quarters following a bank's governance changes and the type of change the bank underwent. Each dummy equals 0 prior to the bank's governance change and 1 starting in the second quarter following the change. Following common practice in the bank merger literature, we delete the observations in the quarter of and the quarter following the governance change to help mitigate some of the short term transitional costs of consummating the governance change. These may include any one-time legal expenses, consultant fees, and severance pay, costs of changing or integrating the management and banking systems, and any costs involved in climbing the learning curves to understand the local economic environment of the acquired institution. Each dummy equals 0 for all periods for banks that did not undergo that type of governance change.[7,8]

In some of the regressions, we also include four separate Quarters Since Governance Change variables – i.e., *Quarters Since Domestic M&A*, and so forth – that indicate the number of quarters since a particular type of governance change occurred. Since we delete observations in the quarters of and following the change, these variables start with 2 for the second quarter following the change. The variables equal 0 for all periods for banks that did not undergo the particular governance change. The purpose of these variables is to capture some of the differences between the short-term and long-term effects of the changes in corporate governance. Many of the transition costs of consummating the governance change may last beyond two quarters. As well, the Quarters Since indicators allow us to test whether the banks continue to evolve in predicted ways after governance change versus tend to return to prior behavior. For example, we can test whether privatized banks tend to move closer to the performance levels of domestic, privately-owned banks versus return toward the performance levels of state-owned institutions.

For our main regressions, we run the models two ways – with and without the Quarters Since indicators. When the Quarters Since indicators are excluded, the coefficients on the dynamic governance indicator dummies identify the average dynamic performance effects associated with the corresponding

[7] In the relatively few cases in which two governance changes occurred – domestic M&A and later foreign acquisition or state restructuring and later privatization – each appropriate dummy equals 1 starting in the second quarter after that event occurs (both equal 1 starting in the second quarter after the second event).

[8] The means of the dynamic indicators are less than the means for the corresponding selection indicators because the dynamic indicators only take the value 1 after the governance change.

governance change, i.e., the after- versus before- change in performance averaged over all the available quarters. When the Quarters Since indicators are included, the coefficients on the dynamic governance indicator dummies identify the short-run performance effect, and the coefficients on the Quarters Since indicators identify how the effect changes as time passes since the governance change. For example, a coefficient of -0.10 on the *Underwent Foreign Acquisition* dummy in the *Profit Efficiency Rank* regression with *Quarters Since Foreign Acquisition* excluded would indicate that foreign acquisitions are associated with a 10 percentage point drop in *Profit Efficiency Rank* on average in the quarters following such acquisitions (starting with the second quarter after), all else equal. Continuing this example, if the inclusion of *Quarters Since Foreign Acquisition* resulted in a coefficient of -0.20 on the *Underwent Foreign Acquisition* dummy and a coefficient of 0.04 on *Quarters Since Foreign Acquisition*, this would suggest that these acquisitions are associated with an initial 20 percentage point drop in *Profit Efficiency Rank*, but that over time this drop would be reversed at a rate of 4 percentage points per quarter.

The Control Variables include *Log of Lagged Assets* and *Lagged Market Share* to help account for differences in bank size and market power. We also include *Year Fixed Effects* and *Quarter Fixed Effects* to account for the many changes in market and regulatory conditions over time and across seasons.

4.2. Tests of the effects of corporate governance on bank portfolio allocations

We also test for the effects of corporate governance on bank portfolio allocations of funds between loans and other assets, across types of loans, across industries, and across regions. We use exactly the same regressors as in equation (1) above, and replace the dependent variables with the proportions of the banks' portfolios invested in different loan categories.

The Bank Portfolio Allocations and their sample means are shown as the second set of endogenous variables in Table 1. We measure the allocation of funds between loans and other assets by *Total Loans/Assets*. The variables that measure the allocation of the loan portfolio are the *Mortgages/Total Loans*, *Consumer Loans/Total Loans*, *Public-Sector Loans/Total Loans*, and *Peso Loans/Total Loans* ratios, all of which are taken from the banks' balance sheets. The variables measuring the allocations of funds across industries are *Manufacturing Loans/Total Loans* and *Agricultural Loans/Total Loans*. Finally, we use the variable *Buenos Aires Loans/Total Loans* – the proportion of all loans that are issued to borrowers in the most highly populated province with the largest metropolitan area – to indicate banks' regional allocations of credit.

The portfolio reallocations after governance changes may help us trace out the sources of changes

in bank performance from the governance changes, which are likely to occur in significant part through portfolio reallocations. These reallocations also allows us to test whether banks move their portfolios as predicted based on the static and selection effects. For example, static effects may predict that banks that underwent privatization might move from having typical state-owned bank portfolios toward having typical domestically-owned bank portfolios. Similarly, selection effects may predict that banks selected for privatization might move their portfolio allocation ratios from those typical of banks selected for privatization towards more generally representative levels. If the predicted dynamic effects do not occur, it may imply significant changes in organizational goals or changes in the ability to control agency costs that overwhelm the predicted effects.

5. Empirical results

We first show the results of main tests of the effects of corporate governance on our 5 bank performance measures. We then run our "nonrobustness" checks that examine the consequences of excluding some of the effects from the model. Finally, we briefly describe the findings of the effects of governance change on bank portfolio allocations.

5.1. Main findings for the effects of governance on bank performance

The main regression results are shown in Table 2. The first 5 columns report the results for our 5 bank performance measures with the Quarters Since indicators excluded, and the last 5 columns include these indicators. We run the *ROE*, *Costs/Assets*, and *NPL* regressions by OLS, and run the *Profit Efficiency Rank* and *Cost Efficiency Rank* regressions by censored regressions that take into account that the dependent variables are truncated at 0 and 1. For the standard errors used in computing t statistics, we employ a robust cluster method that accounts for both heteroskedasticity and correlation across multiple observations of the same bank.

The exogenous variables are arranged in Table 2 to first show the two static governance indicators, *Foreign – No Governance Change* and *State – No Governance Change* (*Domestic – No Governance Change* is excluded as the base case), followed by the four selection indicators, *Selected for Domestic M&A*, *Foreign Acquisition*, *Privatization,* and *State Restructuring*, and then the four dynamic indicator dummies, *Underwent Domestic M&A*, *Foreign Acquisition*, *Privatization*, and *State Restructuring*, along with the four *Quarters Since* variables. The table also shows the coefficients of two of the control variables, *Log of Lagged Assets* and *Lagged Market Share*. The coefficients of the *Year* and *Quarter Fixed Effects* variables are not shown to conserve space.

Beginning with the static effects, the coefficients on *Foreign – No Governance Change* and *State – No Governance Change* measure the long-term effects of constant foreign and state ownership relative to constant domestic ownership. The data suggest that foreign ownership is associated with statistically significantly lower profit efficiency than domestic ownership, consistent with the empirical literature. Although the coefficients do not give precise estimates under ideal controlled conditions, the magnitude of the -0.06 coefficients on *Foreign – No Governance Change* in the two *Profit Efficiency Rank* regressions (with and without the Quarters Since indicators) suggests a substantial difference. To illustrate, consider a domestically-owned bank with exogenous variables that predict it to be more profit efficient than 70% of the banks in the country. The -0.06 coefficient suggests that a foreign-owned bank with the same values of all the other exogenous variables would be predicted to be more efficient than only 64% of the nation's banks. The only other statistically significant coefficient on *Foreign – No Governance Change* in Table 2 is on *Costs/Assets*, suggesting the foreign-owned institutions may spend less per peso of assets, but the *Profit Efficiency Rank* findings suggest that lower revenues may more than offset any cost savings. As a reminder, some of these findings may reflect the measurement issues discussed above (costs/revenues booked in other nations, etc.).

The static findings regarding state-owned banks are also indicative of poor performance relative to domestically-owned banks, and again, the findings are consistent with the literature. The coefficients suggest that state ownership is associated with a statistically significantly lower *Profit Efficiency Rank* of about 8 percentage points, a statistically significant lower *ROE* of about 8 percentage points, and statistically significant higher *NPL* of about 24 percentage points higher than domestic ownership. Although the goals of state-owned institutions generally differ from profit maximization, it is still striking that the predicted difference in nonperforming loans for these institutions is more than double the overall sample mean of about 20 percent of loans.

Turning next to the selection effects, the coefficients on *Selected for Domestic M&A*, *Selected for Foreign Acquisition*, *Selected for Privatization, and Selected for State Restructuring* measure the pre-governance change differences in performance between the banks selected to be changed and domestically-owned banks. The data suggest that banks involved in domestic M&As may have performed slightly poorer than average before the M&A events. Their *ROE*, *Cost Efficiency Rank*, and *Costs/Assets* are statistically significantly worse than average, although there are no statistically significant differences for *Profit Efficiency Rank* or *NPL*. The banks selected for foreign acquisitions are

generally not statistically distinguishable from the domestically-owned banks that were not acquired, except for slightly higher *Costs/Assets*.

The selection effects appear to be much stronger for the state-owned banks that underwent governance changes. Those selected for privatization and for state restructuring both had statistically significantly worse *ROE* and *NPL* than domestically-owned institutions, and those selected for state restructuring had statistically significantly worse cost performance measures as well. The magnitudes of *NPL* coefficients are particularly noteworthy. The state-owned banks selected for governance change had *NPL* on the order of 28 to 31 percentage points higher than domestically-owned banks, and even worse than the 24 additional percentage points for state-owned banks that did not undergo any governance changes.[9]

Turning to the dynamic effects of changes in corporate governance, we first note that all of the coefficients of *Underwent Domestic M&A* are statistically insignificant in the first 5 regressions that exclude the Quarters Since indicators. This suggests relatively little after- versus before- change in performance associated with domestic M&As averaged over all the available quarters. When the Quarters Since indicators are included in the last 5 regressions, the coefficient of the *Underwent Domestic M&A* dummy becomes statistically significantly positive in the *Cost Efficiency Rank* regression, suggesting a possible short-term performance gain. In this regression, the coefficient of the *Quarters Since Domestic M&A* variable is negative, although not statistically significant, suggesting that any short-term gain in cost efficiency may be reversed in the long run.

In evaluating the dynamic effects of foreign acquisitions, we note that the coefficient of *Underwent Foreign Acquisition* is statistically significant in only one of the regressions that exclude the Quarters Since indicators. The significant coefficient of -0.04 in the *ROE* regressions suggests a possible substantial decline in at least one type of performance associated with these acquisitions. When the Quarters Since indicators are included, the coefficients of the *Underwent Foreign Acquisition* dummy are statistically significantly negative in both the *ROE* and *Cost Efficiency Rank* regressions, suggesting some possible short-term performance deterioration. To some extent these declines may be offset over the long run, given that the coefficients of *Quarters Since Foreign Acquisition* are positive in both of these regressions, although not statistically significant. The coefficients of *Quarters Since Foreign Acquisition*

[9] These data are consistent with other findings that the weakest state-owned banks are often chosen for privatization (Clarke and Cull 2002, Beck, Crivelli, and Summerhill 2005, Beck, Cull, and Jerome 2005, Boehmer, Nash, and Netter 2005, Bonin, Hasan, and Wachtel 2005).

are negative and statistically significant for both *Costs/Assets* and *NPL*, suggesting more favorable long-term benefits.

The estimated dynamic effects of privatization are much larger and more definitive than those for the domestic M&As and foreign acquisitions. The coefficients of *Underwent Privatization* are statistically significant in the *Profit Efficiency Rank*, *ROE*, and *NPL* regressions that exclude the Quarters Since indicators, and all three have substantial magnitudes. The coefficient of -0.421 in the *NPL* regression is particularly dramatic, given that the selection effect was 0.309. Essentially, the data suggests that after privatization, nonperforming loans decline from levels much above those of privately-owned banks to below those of privately-owned banks. The main reason for this is almost surely the placing of most of the nonperforming loans into the residual entities managed by the provinces, leaving a cleaner institution for sale to investors, as discussed above. The removal of these problem loans may also help explain much of the improvement in *Profit Efficiency Rank* and *ROE*, since the remaining performing loans tend to produce higher revenues and lower costs for these banks.

The *Cost Efficiency Rank* and *Costs/Assets* regressions with the Quarters Since indicators excluded do not show improvements in spite of the removal of nonperforming loans that should reduce costs. In fact, the coefficients show relatively large deteriorations in cost performance, although they are not statistically significant. These findings are also contrary to cost efficiency results in Delfino (2003) noted above, which used a very different methodology. Two potential explanations of these seemingly unexpected results present themselves. First, under the terms of the privatization contracts, nearly all of the new owners faced restrictions on firing workers and/or closing branches, which inhibited their ability to improve cost performance. Second, as we will show below, banks that underwent privatization may have engaged in some portfolio reallocation. As discussed in the literature review above regarding U.S. bank M&As, it is quite possible to reallocate portfolios and change the quality of bank output in ways that increase costs, but still improve profit performance by increasing revenues more than costs.

We next turn to the estimated dynamic effects of privatization with the Quarters Since indicators included. For privatization, it is particularly important to distinguish the performance effects as time passes after the event from the short-term performance effects because the short-term effects may be dominated by the off-loading of the nonperforming loans into the residual entities. That is, we wish to investigate the extent to which these banks continue to keep their relatively low levels of nonperforming loans and high profits versus moving back towards their pre-privatization performance levels. When the

Quarters Since indicators are included, the coefficients of the *Underwent Privatization* dummy remain statistically significant and become larger in the *Profit Efficiency Rank* and *NPL* regressions, and the coefficient of the *Quarters Since Privatization* variable has the opposite sign in these regressions and is statistically significant in the *NPL* regression. These findings suggest that to some degree, the short-term beneficial effects of privatization are reversed as time passes after the event. However, the magnitudes of the *Quarters Since* coefficients are relatively small, suggesting that if trends continued, the privatized banks would tend to hold onto most of the gains and not tend to return to their poor pre-privatization performance levels for a long time. To illustrate, the data suggests a 53.6 percentage point initial drop in the nonperforming loans ratio from privatization, and that this drop would be reversed at a rate of just 1.4 percentage points per quarter thereafter.

The estimated dynamic effects of state restructuring are somewhat similar to those of privatization. The state-owned banks that underwent restructuring also had significant reductions in nonperforming loans, although the reductions are not as dramatic as for privatized institutions, and they do not appear to be reversed as time passes after the events. Similar to privatization, many of these state-owned banks went through the same portfolio cleaning as the privatized banks, except that the privatization was never consummated. However, in contrast to privatized banks, these institutions also appear to have more improvements in *Cost Efficiency Rank* than *Profit Efficiency Rank*.

Turning finally to the control variables, larger banks, as measured by *Log of Lagged Assets*, are generally associated with better performance than smaller banks (statistically significantly higher *Profit* and *Cost Efficiency Ranks*, lower *Costs/Assets*, lower *NPL*). This does not necessarily mean that larger banks perform better than smaller banks on average because the bank size variable is highly correlated with the governance indicators in the regressions. Banks with larger values of *Lagged Market Share* have more mixed performance results.

5.2. "Nonrobustness" checks of the bank performance results.

Most econometric research studies conduct robustness checks, altering the test specifications to determine whether the changes yield qualitative differences in the results. Here, the goal is essentially reversed. We check for "nonrobustness" by examining the consequences of practices in the literature of not specifying all the different types of governance and/or not accounting for the static, selection, and dynamic effects in the same empirical model. Misleading results could occur from such exclusions, and our nonrobustness checks allow us to observe which if any of these potential problems appear to be

important in our data set.

We test only specifications that either have been used in the literature or are natural extensions of those previously used. An example of a natural extension is applying a specification previously used to study foreign acquisitions to study privatization. We do not use specifications that would not be used by others. For example, we do not allow for the possibility of including only selection effects, which never occurs in the literature.

We employ a very simple standard for nonrobustness that can be applied to each coefficient. If either the full model or the model with exclusions yields a statistically significant coefficient, and the other model does not also yield a statistically significant coefficient with the same sign for the corresponding coefficient, then the finding is "nonrobust." These are the cases in which researchers using classic statistical inference looking at the results of the two models would reach different conclusions for rejecting the null in favor of a specific alternative hypothesis. For our application, we use the lowest significance level shown in the tables for rejecting the null hypothesis, the 10% level. When we analyze whether a particular set of exclusions from the model is likely to create problems, we evaluate the proportion of the relevant coefficients that are nonrobust.

We summarize the nonrobustness checks in Table 3, and show the more detailed discussion and regression tables in the Appendix. We use the same 5 bank performance measures as in the main results, and always include the Quarters Since indicators, the most complete specification. Thus, these specifications represent exclusions relative to the complete model on the right side of Table 2, and we evaluate the proportions of coefficients that would yield different conclusions from this model.

Panel A of Table 3 summarizes the results in Appendix Table A1 where we examine each type of governance in a separate model and exclude all of the other governance types. Because we have two different types of dynamic governance changes for state-owned banks, we measure the effects of state governance two separate times – once with the variables for privatization and once with the state restructuring variables. Each entry in the table gives the proportion of 5 coefficients that are nonrobust, where the 5 coefficients represent one regression each for the 5 performance measures used as the endogenous variables. Thus, in each case, we test for the nonrobustness of 5 static coefficients, 5 selection coefficients, 5 coefficients for undergoing dynamic governance changes, and 5 coefficients for the quarters since those dynamic changes. We follow the conventional practice of excluding the domestic static effects as the base case, so the domestic static effects are not applicable (n.a.).

Panel B includes static governance effects only, with each type of governance in a separate model. Panel C again includes static effects only, but includes foreign and state effects in the same model. Panel D analyzes each type of governance separately and excludes the selection effects. Panel E also excludes the selection effects, but includes all of the governance types in the same model.

Three conclusions may be drawn from the nonrobustness checks. First, the high proportion of nonrobust effects overall support our general argument that it is important to account for the relevant static, selection, and dynamic effects of all the major different types of governance in the same model of bank performance. Second, all of the main types of exclusions of governance effects result in nontrivial amounts of nonrobustness, suggesting that problems of potentially misleading findings may occur elsewhere in the literature from any of these types of exclusions. Third, some governance effects appear to be more robust than others. The state governance effects have lower proportions of nonrobust coefficients and the findings regarding privatization are particularly robust to our checks. None of the coefficients on *Underwent Privatization* or *Quarters Since Privatization* are nonrobust, whether or not the other types of governance are included and whether or not the selection effects are included.

5.3. The effects of governance on portfolio allocations.

The portfolio allocation regression results are shown in Table 4. Each column reports the findings for a variable measuring the allocation of funds between loans and other assets (*Total Loans/Assets*), the allocation of the loan portfolio (*Mortgages/Total Loans*, *Consumer Loans/Total Loans*, *Public-Sector Loans/Total Loans*, *Peso Loans/Total Loans*), the allocation across industries (*Manufacturing Loans/Total Loans*, *Agricultural Loans/Total Loans*), or the allocation across regions (*Buenos Aires Loans/Total Loans*). The exogenous variables are identical to those used for the main bank performance regressions in Table 2, except that we specify here only the most complete model with the Quarters Since indicators. All of the regressions are run by OLS, and standard errors used in computing t statistics are based on robust cluster methodology.

In terms of static differences in bank portfolio allocations, the coefficients on *Foreign – No Governance Change* suggest that foreign-owned institutions tend to allocate more of their loan portfolios to manufacturing loans and to loans in the Buenos Aires province, and fewer of their loans to mortgages relative to domestically-owned banks, consistent with the literature. The coefficients on *State – No Governance Change* are also consistent with expectations based on the literature. They suggest that state-owned banks tend to have higher proportions of their loan portfolios in public-sector loans and peso-

denominated loans, and lower proportions in manufacturing loans and loans in the Buenos Aires province. The coefficient of -0.49 in the *Buenos Aires Loans/Total Loans* regression likely reflects primarily the fact that by the end of our sample, very few of the remaining state-owned banks were located in Buenos Aires – only 1 of the 10 provincially-owned banks, 1 of the 3 municipally-owned banks, plus the two nationally-owned banks.

In terms of selection effects for bank portfolio allocations, the domestically-owned institutions that were chosen by market participants for domestic M&As and foreign acquisitions generally do not appear to differ greatly in their portfolios from those that had no governance change. However, the data suggest that the state-owned banks that were chosen for privatization by government authorities do have significantly different portfolios – statistically significantly higher *Total Loans/Assets*, *Public-Sector Loans/Total Loans*, *Peso Loans/Total Loans*, and *Agricultural Loans/Total Loans*, and statistically significantly lower *Buenos Aires Loans/Total Loans*. In all cases, the magnitudes of these coefficients exceed those on the *State – No Governance Change* variable, suggesting that the banks selected for privatization differed not just from domestically-owned banks with no governance change, but also from other state-owned banks that were not selected. The coefficient of -0.669 on *Buenos Aires Loans/Total Loans* suggests that state-owned institutions that were selected for privatization were even more orientated toward the less populated provinces than other state-owned banks. This is consistent with facts given above that a number of the privatized banks selected for privatization were provincially-owned institutions with more than half of the credit in some of the smaller provinces. Finally, the state-owned banks selected for restructuring share some characteristics with those selected for privatization – statistically significantly higher ratios of total loans, public-sector loans, and Peso loans, and statistically significantly lower Buenos Aires loan ratios.

Turning to the dynamic effects of changes in corporate governance on bank portfolio allocations, the coefficients of *Underwent Domestic M&A* and *Quarters Since Domestic M&A* suggest relatively little portfolio reallocation, except for a substantial movement of the loan portfolio away from the Buenos Aires province (statistically significant coefficient of -0.251). These dynamic findings are not very consistent with predictions of portfolio changes based on static characteristics of larger banks, given that the *Log of Lagged Assets* coefficients in Table 4 suggest several portfolio differences for large banks, and do not suggest that such banks are reluctant to lend in the Buenos Aires province. Some of the reduction in Buenos Aires lending may be due to a selection effect, given that banks selected for domestic M&As

tended to have higher Buenos Aires loan ratios (statistically insignificant coefficient of 0.134). However, most of the deviations from the static-based predictions likely reflect dynamic changes in the goals of the organizations, i.e., decisions to change lending directions.

Banks that were acquired by foreign organizations appear to have increased loans relative to other types of assets, and have more of their loan portfolios allocated to consumer loans and less to manufacturing loans. Again, the dynamic results are not very consistent with predictions based on static differences. The coefficients on *Foreign – No Governance Change* in Table 4 would have predicted significant dynamic shifts into manufacturing loans and into Buenos Aires loans that did not materialize after foreign acquisitions. The selection effects do not appear to explain much of the dynamic results, again suggesting substantial dynamic changes in organizational goals that overwhelm the predicted effects.

Banks that were privatized tend to have decreased loans relative to other assets, and have less of their loan portfolios allocated to mortgages, Peso loans, and agricultural loans. This is consistent with the possibility that banks lent more prudently after privatization, similar to findings in other studies of developing countries (e.g., Haber 2005). Some of these changes are also consistent with predictions based on static and selection effects. For example, the reduction in Peso loans when these banks become privatized might be predicted because state-owned banks with no change in governance tend to have high Peso loan ratios and those selected for privatization tend to have even higher Peso loan ratios. However, other dynamic changes, such as the steep reduction in the total loan ratio, would not be predicted based on static and selection effects. It is difficult to determine the extent to which these changes reflect changes in organizational goals and abilities versus the transferring of nonperforming loans to residual entities. Presumably, a significant portion of the short-term decline in *Total Loans/Assets* reflects this removal.

Finally, state-owned banks that were restructured tend to have decreased loans relative to other assets, similar to privatized banks, and also have less of their loan portfolios allocated to manufacturing loans and more to agricultural loans. Again, these dynamic effects may be difficult to interpret because of the stripping off of nonperforming loans at the time of restructuring.

6. Conclusions

We test the effects of corporate governance on bank performance using data from Argentina in the 1990s, although our principal contribution may be methodological. Our method represents an expansion of the existing research literature that might be usefully applied elsewhere. In particular, we

argue that our inclusion of the static, selection, and dynamic effects of all of the major types of bank ownership that are relevant for a nation in the same model is important to avoid potentially biased and misleading results. Our "nonrobustness" checks – in which we purposely exclude some of these governance indicators from the model – show that a researcher using classical statistical inference might often draw unwarranted conclusions as a result of the exclusions, supporting our argument.

To be specific, the checks reveal that a high proportion of the individual measured effects of governance are "nonrobust," giving general support for our argument to include all relevant types of governance and governance change when analyzing their performance effects. In addition, all of the major types of exclusions of governance indicators that are checked here appear to result in nontrivial amounts of nonrobustness, although some governance effects are more robust than others. The effects of state ownership are generally the most robust, and in particular, the findings regarding privatization are robust to all of our checks.

We also test the effects of bank governance on portfolio allocations between loans and other assets, across types of loans, across industries, and across regions. The portfolio reallocations after governance changes help trace the sources of changes in performance following governance changes and allow for tests of whether banks move their portfolios in the directions predicted by the static and selection effects.

The main findings regarding the static effects of bank ownership on performance suggest that state-owned banks tend to have poorer long-term performance on average than domestically-owned banks or foreign-owned banks, consistent with much of the literature. Most striking are the very high nonperforming loan ratios for state-owned banks, which may in part reflect the different goals and lending directives of these organizations. The data also suggest that foreign-owned banks may perform somewhat more poorly than domestically-owned banks, but the differences are small relative to the effects of state ownership.

The main selection effects suggest that banks involved in domestic M&As may have performed slightly poorer than average before the M&A events, and those selected for foreign acquisitions did not have particularly good or bad performance prior to the acquisitions. The strongest selection results belong to the state-owned banks that underwent privatization or state restructuring – both sets of state-owned banks had very poor performance in advance of the changes in governance.

The main dynamic results suggest relatively little performance improvement or deterioration

associated with either domestic M&As or foreign acquisitions. In contrast, privatization appears on the surface to improve bank performance tremendously. Nonperforming loans decline dramatically, and profit efficiency increases substantially as well. However, the main cause for these improvements is almost surely the placing of most of the nonperforming loans into residual entities. The cost performance does not appear to improve significantly, which may be due to the terms of the privatization contracts, which often placed restrictions on firing workers and/or closing branches. In part, the lack of cost improvement may also be related to portfolio reallocations that improved quality, but may have also increased costs. When we examine how performance changes as quarters pass after privatization, the data suggest some relatively minor deterioration, but that the privatized banks were holding onto most of the gains, at least prior to the subsequent crisis. State-owned banks that underwent restructuring but not privatization had significant, but somewhat less dramatic reductions in nonperforming loans. These reductions do not appear to be reversed as time passes after the events. In contrast to privatized banks, these institutions also appear to have more improvements in cost efficiency.

The portfolio allocation regressions suggest some reallocation of portfolios by banks involved in domestic M&As and foreign acquisitions, but the findings do not correspond closely to the predicted effects based on static and selection differences. In contrast, privatized banks tended to behave more prudently in terms of their loan portfolios, consistent with expectations and prior research. Again, much of this is due to the placing of problem loans in residual entities.

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TABLE 1
Variables Employed in Regression Models
Explaining Bank Performance and Portfolio Choices

Quarterly data on Argentine banks from 1993:Q2 - 1999:Q4
Total of 2290 Bank-Quarter Observations

Symbol	Definition	Mean
	Endogenous Variables	
Bank Performance Measures		
Profit Efficiency Rank	Based on the residuals from profit functions for each quarter. Put in rank order for a quarter and converted to a uniform scale over [0,1]. Sample mean is 0.50 by construction.	0.50
ROE	Return on equity.	-0.015
Cost Efficiency Rank	Based on the residuals from cost functions for each quarter. Put in rank order for a quarter and converted to a uniform scale over [0,1]. Sample mean is 0.50 by construction.	0.50
Costs/Assets	Total interest plus noninterest expenses divided by assets.	0.037
NPL	Nonperforming loans divided by total loans. Nonperforming corresponds to the worst three categories of loans according to central bank (BCRA) guidelines – loans with problems and deficient coverage, loans with high risk of borrower insolvency and recovery difficulty, and loans deemed unrecoverable.	0.196
Bank Portfolio Allocations		
Total Loans/Assets	Total loans divided by total assets.	0.611
Mortgages/Total Loans	Mortgages divided by total loans.	0.070
Consumer Loans/ Total Loans	Consumer loans divided by total loans.	0.208
Public-Sector Loans/Total Loans	Loans to the public sector divided by total loans.	0.049
Peso Loans/Total Loans	Total peso-denominated loans divided by total loans.	0.458
Manufacturing Loans/Total Loans	Loans to the manufacturing sector divided by total loans.	0.183
Agricultural Loans/ Total Loans	Loans to the agricultural sector divided by total loans.	0.078
Buenos Aires Loans/ Total Loans	Loans to individuals and businesses located in the province of Buenos Aires divided by total loans.	0.700

Exogenous Variables		
Static Governance Indicators		
Domestic – No Governance Change	Dummy indicating a domestically-owned bank that underwent no changes in governance over the entire 1993:Q2-1999:Q4 interval. Equals 1 or 0 for all periods for a bank. Excluded from regressions as the base case when all the other static and selection governance indicators are included.	0.418
Foreign – No Governance Change	Dummy indicating a foreign-owned bank that underwent no changes in governance over the entire 1993:Q2-1999:Q4 interval. Equals 1 or 0 for all periods for a bank.	0.178
State – No Governance Change	Dummy indicating a state-owned bank that underwent no changes in governance over the entire 1993:Q2-1999:Q4 interval. Equals 1 or 0 for all periods for a bank.	0.104
Selection Governance Indicators		
Selected for Domestic M&A	Dummy indicating a bank that underwent at least one domestic M&A as its final change in governance over the entire 1993:Q2-1999:Q4 interval. Equals 1 or 0 for all periods for a bank. If after the domestic M&A, the bank went through a foreign acquisition, the variable is set to 0, as a foreign acquisition is considered to be dominating event. (Note: No banks were selected for domestic M&As after other changes in governance during our sample period.)	0.064
Selected for Foreign Acquisition	Dummy indicating a bank that underwent at least one foreign acquisition over the entire 1993:Q2-1999:Q4 interval. Equals 1 or 0 for all periods for a bank.	0.117
Selected for Privatization	Dummy indicating a state-owned bank was privatized over the entire 1993:Q2-1999:Q4 interval. Equals 1 or 0 for all periods for a bank. (Note: No banks that were selected for privatization were also selected for foreign acquisition during our sample period.)	0.079
Selected for State Restructuring	Dummy indicating a state-owned bank that underwent at least one non-privatization restructuring as its final change in governance over the entire 1993:Q2-1999:Q4 interval (e.g., the merger of Banco de Prevision Social and Banco de Mendoza prior to their failed privatization). Equals 1 or 0 for all periods for a bank. If after a state restructuring, the bank went through a later privatization, the variable is set to 0, as the privatization is considered to be dominating event.	0.041

Dynamic Governance Indicators		
Underwent Domestic M&A	Dummy indicating the quarters following a bank's domestic M&A. Equals 0 prior to the bank's M&A and 1 starting in the second quarter following the M&A. Observations in the quarter of and the quarter following the M&A are deleted. Equals 0 for all periods for banks that did not undergo a domestic M&A.	0.061
Underwent Foreign Acquisition	Dummy indicating the quarters following a bank's foreign acquisition. Equals 0 prior to the bank's acquisition and 1 starting in the second quarter following the acquisition. Observations in the quarter of and the quarter following the acquisition are deleted. Equals 0 for all periods for banks that did not undergo a acquisition.	0.045
Underwent Privatization	Dummy indicating the quarters following a bank's privatization. Equals 0 prior to the privatization and 1 starting in the second quarter following the privatization. Observations in the quarter of and the quarter following the privatization are deleted. Equals 0 for all periods for banks that did not undergo a privatization.	0.029
Underwent State Restructuring	Dummy indicating the quarters following a state-owned bank's restructuring. Equals 0 prior to the bank's restructuring and 1 starting in the second quarter following the restructuring. Observations in the quarter of and the quarter following the restructuring are deleted. Equals 0 for all periods for banks that did not undergo a restructuring.	0.021
Quarters Since Governance Change **(4 variables)**	Number of quarters since a domestic M&A, foreign acquisition, privatization, or state restructuring. Equals 0 for all periods prior to governance change for a bank and starts with 2 for the second quarter following the change. Observations in the quarter of and the quarter following the change are deleted. Equals 0 for all periods for banks that did not undergo that governance change.	—
Control Variables		
Log of Lagged Assets	Log of Total Assets in t-1 for each bank in real 1995 pesos. For banks involved in M&As in the prior quarter, equals the pro forma sum of assets of the pre-M&A banks.	11.9
Lagged Market Share	Log of market share in t-1 for each bank. For banks involved in M&As the prior quarter, based on the pro forma sum of shares of the pre-M&A banks.	0.007
Year Fixed Effects	Year dummies, with 1993 excluded as the base case.	—
Quarter Fixed Effects	Quarter dummies, with Q1 excluded as the base case.	—

Sources: Most of the bank balance sheet and income variables are constructed from a modified version of the Informacion de Entidades Financieras database published by the Banco Central de la República Argentina (BCRA), the central bank of Argentina. The exceptions are the industry and regional loan shares, *Manufacturing Loans/Total Loans, Agricultural Loans/Total Loans*, and *Buenos Aires Loans/Total Loans*, which are drawn from different BCRA databases with far fewer sample observations. For the governance variables, the original data was provided by the BCRA, cross-checked and verified with help from Roberto Domínguez Associates, Ciencias Económicas, a Buenos Aires consulting firm with local expertise, and updated and cross-checked using *Euromoney* magazine's ISI Emerging Markets website (www.securities.com) and the Bankscope database.

Table 2 – Bank Performance Regressions

	Models Excluding Quarters Since Governance Change Indicators					***Models Including Quarters Since Governance Change Indicators***				
	Profit Efficiency Rank	*ROE*	*Cost Efficiency Rank*	*Costs/Assets*	*NPL*	*Profit Efficiency Rank*	*ROE*	*Cost Efficiency Rank*	*Costs/Assets*	*NPL*
Constant term	0.222	-0.021	-0.067	0.103	0.678	0.221	-0.021	-0.067	0.104	0.677
	(2.95)***	(0.54)	(0.55)	(10.72)***	(5.74)***	(2.95)***	(0.55)	(0.55)	(10.82)***	(5.75)***
Static Governance Indicators										
Foreign – No Governance Change	-0.06	-0.013	-0.016	-0.007	0.003	-0.06	-0.012	-0.016	-0.007	0.003
	(2.43)**	(1.58)	(0.40)	(2.74)***	(0.06)	(2.44)**	(1.55)	(0.40)	(2.79)***	(0.06)
State – No Governance Change	-0.08	-0.082	-0.085	0.003	0.242	-0.08	-0.083	-0.085	0.003	0.242
	(1.84)*	(2.69)***	(1.38)	(1.16)	(4.31)***	(1.85)*	(2.69)***	(1.38)	(1.15)	(4.30)***
Selection Governance Indicators										
Selected for Domestic M&A	-0.041	-0.034	-0.137	0.007	-0.012	-0.056	-0.037	-0.147	0.007	-0.005
	(0.80)	(2.18)**	(1.76)*	(1.68)*	(0.32)	(1.08)	(2.25)**	(1.86)*	(1.74)*	(0.15)
Selected for Foreign Acquisition	0.02	-0.011	-0.054	0.01	0.034	0.02	-0.011	-0.054	0.01	0.034
	(0.49)	(0.65)	(1.12)	(2.26)**	(1.25)	(0.48)	(0.66)	(1.12)	(2.27)**	(1.25)
Selected for Privatization	-0.064	-0.139	-0.066	0.003	0.309	-0.064	-0.139	-0.066	0.003	0.309
	(1.38)	(2.97)***	(0.91)	(0.76)	(5.00)***	(1.39)	(2.97)***	(0.91)	(0.76)	(5.00)***
Selected for State Restructuring	-0.097	-0.056	-0.279	0.019	0.277	-0.097	-0.056	-0.278	0.019	0.277
	(1.05)	(2.65)***	(2.14)**	(4.85)***	(3.77)***	(1.05)	(2.66)***	(2.14)**	(4.84)***	(3.78)***
Dynamic Governance Indicators										
Underwent Domestic M&A	-0.0002	0.007	0.058	-0.002	0.044	0.098	-0.006	0.16	-0.004	-0.007
	(0.00)	(0.29)	(1.01)	(0.76)	(1.10)	(1.22)	(0.12)	(1.69)*	(-1.20)	(0.12)
Quarters Since Domestic M&A						-0.008	0.002	-0.009	0.0002	0.004
						(0.93)	(0.49)	(1.12)	(0.40)	(0.90)
Underwent Foreign Acquisition	-0.074	-0.04	-0.051	-0.007	-0.023	-0.165	-0.071	-0.151	0.001	0.052
	(1.34)	(1.86)*	(0.72)	(1.54)	(0.63)	(1.63)	(2.33)**	(1.77)*	(0.14)	(1.46)
Quarters Since Foreign Acquisition						0.012	0.004	0.013	-0.001	-0.01
						(0.98)	(1.36)	(0.89)	(2.77)***	(2.74)***
Underwent Privatization	0.112	0.13	-0.131	0.023	-0.421	0.226	0.11	-0.048	0.046	-0.536
	(1.73)*	(1.86)*	(1.18)	(0.99)	(6.24)***	(2.70)***	(1.11)	(0.25)	(0.95)	(8.62)***
Quarters Since Privatization						-0.013	0.002	-0.01	-0.003	0.014
						(1.23)	(0.54)	(0.84)	(0.92)	(2.20)**
Underwent State Restructuring	0.031	0.018	0.136	-0.011	-0.169	0.148	0.076	0.084	-0.009	-0.155
	(0.27)	(0.70)	(1.83)*	(3.14)***	(2.14)**	(1.05)	(1.56)	(1.01)	(2.34)**	(1.57)
Quarters Since State Restructuring						-0.013	-0.008	0.009	-0.0003	-0.003
						(1.11)	(1.26)	(0.91)	(0.70)	(0.40)
Control Variables										
Log of Lagged Assets	0.026	0.002	0.051	-0.006	-0.037	0.026	0.001	0.051	-0.006	-0.037
	(3.72)***	(0.46)	(4.49)***	(7.61)***	(3.66)***	(3.77)***	(0.43)	(4.50)***	(7.56)***	(3.66)***
Lagged Market Share	-1.016	0.712	0.127	0.11	-0.092	-1.032	0.724	0.119	0.107	-0.09
	(2.02)**	(2.75)***	(0.16)	(2.68)***	(0.14)	(2.07)**	(2.76)***	(0.15)	(2.62)***	(0.13)
Observations	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290
R-squared		0.08		0.20	0.34		0.08		0.21	0.34
Pseudo R-squared	0.05		0.20			0.05		0.21		

Notes: All specifications include year and quarter fixed effects (not shown).

*, **, *** indicate significance at 10, 5, and 1 percent levels, respectively.

Standard errors used in computing t statistics are corrected for both heteroskedasticity and correlation across multiple observations of the same bank using a robust cluster method.

The *ROE*, *Costs/Assets*, and *NPL* regressions are run by OLS, and the *Profit Efficiency Rank* and *Cost Efficiency Rank* regressions are run by censored regressions that take into account that the dependent variables are truncated at 0 and 1.

For the latter regressions, we report the pseudo-R^2 statistic, which measures the proportion of the log-likelihood value explained by the model's non-intercept independent variables, i.e., 1 - (log L_Ω)/(log L_ω), where L_Ω denotes the likelihood value of estimation with all the exogenous variables and L_ω denotes the likelihood value of estimation with only the intercept.

Table 3 – Summary of Bank Performance Nonrobustness Regressions
Proportions of Nonrobust Coefficients for Different Exclusions from the Complete Model

Panel A. (from Appendix Table A1)
Each Type of Governance in a Separate Model

	Domestic Governance Only	Foreign Governance Only	State Governance, Privatization Only	State Governance, Restructuring Only
Static Effects	n.a.	3/5	1/5	1/5
Selection Effects	2/5	3/5	0/5	1/5
Dynamic Effects				
Underwent Change	2/5	2/5	0/5	1/5
Quarters Since	2/5	0/5	0/5	1/5

Panel B. (from Appendix Table A2, first two sets of columns)
Static Effects Only, with Each Type of Governance in a Separate Model

		Foreign Governance Only	State Governance Only
Static Effects	n.a.	3/5	3/5

Panel C. (from Appendix Table A2, last set of columns)
Static Effects Only, with Foreign and State Governance in the Same Model

		Foreign Governance	State Governance
Static Effects	n.a.	2/5	2/5

Panel D. (from Appendix Table A3)
Each Type of Governance in a Separate Model, Excluding Selection Effects

	Domestic Governance Only	Foreign Governance Only	State Governance, Privatization Only	State Governance, Restructuring Only
Static Effects	n.a.	3/5	2/5	3/5
Dynamic Effects				
Underwent Change	2/5	3/5	0/5	2/5
Quarters Since	1/5	0/5	0/5	1/5

Panel E. (from Appendix Table A4)
All Types of Governance in the Same Model, Excluding Selection Effects

	Domestic Governance	Foreign Governance	State Governance, with Privatization	State Governance, with Restructuring
Static Effects	n.a.	2/5	0/5	
Dynamic Effects				
Underwent Change	1/5	3/5	0/5	3/5
Quarters Since	0/5	0/5	0/5	0/5

n.a. – not applicable because domestic static effects are always the excluded base case.
The proportions listed in the table indicate the ratio of possible coefficients that are nonrobust compared to the complete specification on the right side of Table 2.
A coefficient from the Appendix tables is nonrobust if it differs from the corresponding coefficient in the complete model, such that one is statistically significantly different from 0 at the 10% level, and the other is either not significant at the 10% level or is significant with the opposite sign.

Table 4 – Bank Portfolio Allocation Regressions

	Total Loans/ Total Assets	*Mortgages/ Total Loans*	*Consumer/ Total Loans*	*Public-Sector Loans/ Total Loans*	*Peso Loans/ Total Loans*	*Manufacturing Loans/ Total Loans*	*Agricultural Loans/ Total Loans*	*Buenos Aires Loans/ Total Loans*
Constant term	1.086	0.027	0.734	-0.05	1.015	0.023	-0.066	0.604
	(8.46)***	(0.45)	(4.69)***	(0.86)	(5.29)***	(0.10)	(0.90)	(1.97)*
Static Governance Indicators								
Foreign – No Governance Change	0.021	-0.051	-0.074	-0.01	-0.022	0.231	-0.041	0.206
	(0.35)	(2.12)**	(0.97)	(0.86)	(0.35)	(3.81)***	(1.19)	(2.84)***
State – No Governance Change	0.041	0.009	0.035	0.135	0.275	-0.093	-0.037	-0.49
	(0.69)	(0.35)	(0.69)	(3.41)***	(3.74)***	(2.71)***	(1.15)	(3.64)***
Selection Governance Indicators								
Selected for Domestic M&A	0.073	-0.028	-0.019	-0.004	0.098	-0.013	-0.025	0.134
	(1.68)*	(1.10)	(0.29)	(0.26)	(1.54)	(0.21)	(0.75)	(1.11)
Selected for Foreign Acquisition	0.077	-0.044	0.118	-0.014	0.121	0.057	-0.046	0.081
	(1.32)	(2.09)**	(1.31)	(0.92)	(1.72)*	(1.36)	(1.42)	(1.05)
Selected for Privatization	0.13	-0.009	-0.049	0.20	0.51	-0.063	0.068	-0.669
	(2.38)**	(0.30)	(0.88)	(2.44)**	(10.79)***	(1.13)	(1.79)*	(8.53)***
Selected for State Restructuring	0.233	-0.026	0.088	0.076	0.341	-0.042	0.021	-0.609
	(3.97)***	(0.96)	(1.24)	(2.16)**	(6.86)***	(0.91)	(0.53)	(3.15)***
Dynamic Governance Indicators								
Underwent Domestic M&A	-0.013	-0.023	-0.083	-0.011	0.024	0.011	-0.049	-0.251
	(0.31)	(0.88)	(1.09)	(0.42)	(0.29)	(0.18)	(1.56)	(1.86)*
Quarters Since Domestic M&A	0.001	0.003	-0.001	0	-0.007	0.005	0.007	0.009
	(0.15)	(1.30)	(0.10)	(0.04)	(0.98)	(1.11)	(2.26)**	(0.79)
Underwent Foreign Acquisition	0.145	0.014	0.144	-0.026	0.162	-0.096	-0.02	0.027
	(2.25)**	(0.59)	(1.68)*	(0.60)	(1.59)	(2.06)**	(0.67)	(0.44)
Quarters Since Foreign Acquisition	-0.032	-0.004	-0.025	0.005	-0.032	0.003	0.0001	0.002
	(5.46)***	(2.04)**	(2.33)**	(0.77)	(3.12)***	(0.94)	(0.03)	(0.53)
Underwent Privatization	-0.199	-0.09	-0.008	0.003	-0.204	-0.008	-0.111	-0.15
	(2.39)**	(4.04)***	(0.09)	(0.03)	(2.16)**	(0.22)	(2.87)***	(1.52)
Quarters Since Privatization	0.003	0.006	0.005	-0.012	0.004	0.006	0.006	0.027
	(0.57)	(3.43)***	(0.67)	(1.60)	(0.44)	(1.34)	(2.62)**	(1.51)
Underwent State Restructuring	-0.21	0.034	0.002	-0.022	-0.003	-0.083	0.119	0.197
	(3.27)***	(0.94)	(0.03)	(0.68)	(0.00)	(1.73)*	(2.29)**	(1.22)
Quarters Since State Restructuring	0.003	0.005	-0.001	-0.001	-0.015	-0.005	-0.001	0.004
	(0.54)	(1.87)*	(0.11)	(0.16)	(2.17)**	(0.98)	(0.22)	(0.03)
Control Variables								
Log of Lagged Assets	-0.043	0.006	-0.039	0.008	-0.048	0.007	0.009	0.012
	(3.67)***	(1.31)	(2.86)***	(1.42)	(3.05)***	(0.36)	(1.17)	(0.45)
Lagged Market Share	2.199	0.779	0.386	0.202	-0.457	0.431	1.111	3.60
	(2.41)**	(1.54)	(0.52)	(0.26)	(0.38)	(0.53)	(1.65)	(1.66)*
Observations	2290	2290	2290	2290	2290	769	769	1704
R-squared	0.16	0.12	0.12	0.36	0.29	0.48	0.49	0.42

Notes: All specifications include year and quarter fixed effects (not shown).
*, **, *** indicate significance at 10, 5, and 1 percent levels, respectively.

Standard errors used in computing t statistics are corrected for both heteroskedasticity and correlation across multiple observations of the same bank using a robust cluster method.

All regressions are run by OLS.

Appendix. Details of nonrobustness checks

Table A1 gives the regressions for the nonrobustness checks in which we examine each of the types of governance separately, summarized above in Table 3, Panel A. The first set of 5 columns analyzes domestic governance only, the second set examines foreign governance only, the third set looks at state governance and privatization only, and the final set focuses on state governance and restructuring only. Shading indicates a "nonrobust" result – one in which the coefficient shown here and the corresponding coefficient in the full model on the right side of Table 2 differ such that one is statistically significantly different from 0 at the 10% level, and the other is either not significant or is significant with the opposite sign.[10]

Table A2 includes static governance effects only. The first two sets of columns specify each type of governance (foreign and state) separately, summarized in Table 3, Panel B above. The last set of columns includes foreign and state static effects in the same model, summarized in Table 3, Panel C. Again, we follow conventional practice to leave domestic static effects as the excluded base case. Because selection effects are excluded, we measure the static effects as they are often measured in the literature with the variables *Currently Foreign Owned* and *Currently State Owned*. These variables do not distinguish whether the institutions are foreign- or state-owned for the entire sample period versus those selected to be acquired, privatized, or restructured.

Tables A3 and A4 show the effects of excluding the selection effects, keeping the static and dynamic effects. Table A3 analyzes each type of governance separately (summarized in Table 3, Panel D) and Table A4 includes all of the governance types in the same model (Table 3, Panel E).

[10] Note that although all of the governance indicators shown explicitly in Table A1 are identical to those on the right side of Table 2, the implicit base case that is incorporated in the constant term is quite different across these equations. The base case in each specification implicitly includes all of the static, selection, and dynamic governance indicators that are not specified. For example, consider the analysis of foreign governance only in the second set of columns. Since there are no separate indicators for domestic or state governance, the excluded base case includes all the domestic and state static, selection, and dynamic effects, which are at least implicitly assumed to be equal to each other.

Table A1: Bank Performance Nonrobustness Regressions, Each Type of Governance in a Separate Model

	Domestic Governance Only					Foreign Governance Only					State Governance and Privatization Only					State Governance and Restructuring Only				
	Profit Efficiency Rank	*ROE*	*Cost Efficiency Rank*	*Costs/Assets*	*NPL*	*Profit Efficiency Rank*	*ROE*	*Cost Efficiency Rank*	*Costs/Assets*	*NPL*	*Profit Efficiency Rank*	*ROE*	*Cost Efficiency Rank*	*Costs/Assets*	*NPL*	*Profit Efficiency Rank*	*ROE*	*Cost Efficiency Rank*	*Costs/Assets*	*NPL*
Constant term	0.279	0.047	0.049	0.100	0.512	0.282	0.065	0.059	0.097	0.438	0.281	0.012	0.032	0.098	0.591	0.269	0.042	0.006	0.102	0.560
	(4.07)***	(1.08)	(0.42)	(11.26)***	(4.36)***	(3.87)***	(1.42)	(0.49)	(10.76)***	(3.50)***	(4.01)***	(0.36)	(0.28)	(10.64)***	(5.34)***	(3.94)***	(0.98)	(0.06)	(11.66)***	(4.95)***
Static Governance Indicators																				
Foreign – No Governance Change						-0.033	0.020	0.041	-0.011	-0.076										
						(1.60)	(2.04)**	(1.31)	(4.66)***	(1.82)*										
State – No Governance Change											-0.053	-0.067	-0.038	0.001	0.216	-0.057	-0.061	-0.044	0.001	0.216
											(1.33)	(2.28)**	(0.70)	(0.61)	(3.92)***	(1.45)	(2.04)**	(0.83)	(0.65)	(4.00)***
Selection Governance Indicators																				
Selected for Domestic M&A	-0.019	-0.008	-0.085	0.009	0.040															
	(0.36)	(0.53)	(1.13)	(3.38)***	(1.01)															
Selected for Foreign Acquisition						0.053	0.033	0.009	0.006	-0.077										
						(1.42)	(2.14)**	(0.23)	(1.51)	(3.53)***										
Selected for Privatization											-0.036	-0.125	-0.026	0.001	0.284					
											(0.83)	(2.74)***	(0.39)	(0.38)	(4.92)***					
Selected for State Restructuring																-0.069	-0.026	-0.231	0.017	0.229
																(0.77)	(1.29)	(1.83)*	(5.12)***	(3.32)***
Dynamic Governance Indicators																				
Underwent Domestic M&A	0.101	0.001	0.115	-0.005	-0.121															
	(1.15)	(0.02)	(1.42)	(1.41)	(1.93)*															
Quarters Since Domestic M&A	-0.009	0.000	-0.008	-0.000	0.009															
	(1.68)*	(0.06)	(1.22)	(0.02)	(2.01)**															
Underwent Foreign Acquisition						-0.144	-0.071	-0.103	-0.002	0.071										
						(1.34)	(1.95)*	(1.15)	(0.42)	(1.69)*										
Quarters Since Foreign Acquisition						0.010	0.004	0.011	-0.001	-0.010										
						(0.82)	(1.13)	(0.70)	(3.18)***	(2.11)**										
Underwent Privatization											0.221	0.108	-0.057	0.048	-0.526					
											(2.63)***	(1.09)	(0.29)	(0.99)	(8.43)***					
Quarters Since Privatization											-0.013	0.003	-0.009	-0.003	0.014					
											(1.18)	(0.60)	(0.81)	(0.91)	(2.12)**					
Underwent State Restructuring																0.183	0.063	0.128	-0.009	-0.151
																(1.29)	(1.41)	(1.92)*	(2.36)**	(1.46)
Quarters Since State Restructuring																-0.018	-0.006	0.005	-0.0003	0.004
																(3.20)***	(1.28)	(0.83)	(1.48)	(0.91)
Control Variables																				
Log of Lagged Assets	0.019	-0.006	0.038	-0.005	-0.023	0.019	-0.007	0.036	-0.005	-0.014	0.019	-0.002	0.040	-0.005	-0.029	0.021	-0.005	0.042	-0.006	-0.027
	(3.36)***	(1.60)	(3.78)***	(7.95)***	(2.39)**	(3.01)***	(1.96)*	(3.33)***	(6.81)***	(1.30)	(3.18)***	(0.88)	(4.04)***	(7.78)***	(3.25)***	(3.51)***	(1.37)	(4.40)***	(8.25)***	(3.05)***
Lagged Market Share	-1.119	0.595	0.188	0.124	0.724	-1.199	0.711	0.375	0.070	0.205	-0.740	0.779	0.218	0.130	-0.232	-0.777	0.957	0.333	0.120	-0.501
	(2.26)**	(2.41)**	(0.29)	(2.79)***	(1.38)	(2.45)**	(2.69)***	(0.53)	(1.64)	(0.36)	(1.43)	(2.99)***	(0.28)	(2.49)**	(0.36)	(1.51)	(3.32)***	(0.45)	(2.59)**	(0.78)
Observations	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290
R-squared		0.02		0.15	0.09		0.03		0.17	0.12		0.07		0.17	0.29		0.04		0.15	0.21
Pseudo R-squared	0.02		0.14			0.03		0.14			0.03		0.15			0.03		0.016		

Notes: All specifications include year and quarter fixed effects (not shown).
*, **, *** indicate significance at 10, 5, and 1 percent levels, respectively.
Standard errors used in computing t statistics are corrected for both heteroskedasticity and correlation across multiple observations of the same bank using a robust cluster method.
The *ROE*, *Costs/Assets*, and *NPL* regressions are run by OLS, and the *Profit Efficiency Rank* and *Cost Efficiency Rank* regressions are run by censored regressions that take into account that the dependent variables are truncated at 0 and 1.The pseudo-R^2 statistic reported for the efficiency rank regressions is defined in the notes to Table2. Shading indicates a "nonrobust" result – one in which the coefficient shown here and the corresponding coefficient in the full model on the right side of Table 2 differ such that one is statistically significantly different from 0 at the 10% level, and the other is either not significant at the 10% level or is significant with the opposite sign.

Table A2: Bank Performance Nonrobustness Regressions, Static Effects Only, Each Type of Governance in a Separate Model (First Two Sets of Columns) and in the Same Model (Third Set of Columns)

	Foreign Static Governance Only					***State Static Governance Only***					***State and Foreign Static Governance***				
	Profit Efficiency Rank	*ROE*	*Cost Efficiency Rank*	*Costs/Assets*	*NPL*	*Profit Efficiency Rank*	*ROE*	*Cost Efficiency Rank*	*Costs/Assets*	*NPL*	*Profit Efficiency Rank*	*ROE*	*Cost Efficiency Rank*	*Costs/Assets*	*NPL*
Constant term	0.277	0.065	0.067	0.094	0.437	0.268	0.013	0.004	0.103	0.604	0.233	0.001	-0.011	0.099	0.611
	(3.76)***	(1.44)	(0.57)	(10.16)***	(3.45)***	(3.77)***	(0.35)	(0.03)	(11.60)***	(5.65)***	(2.94)***	(0.02)	(0.09)	(10.25)***	(5.08)***
Static Governance Indicators															
Currently Foreign Owned	-0.010	0.019	0.026	-0.006	-0.076						-0.031	-0.011	-0.013	-0.003	0.006
	(0.48)	(1.95)*	(0.85)	(2.04)**	(2.39)**						(1.30)	(1.25)	(0.36)	(0.96)	(0.18)
Currently State Owned						-0.034	-0.065	-0.084	0.008	0.189	-0.050	-0.071	-0.091	0.006	0.192
						(1.21)	(3.69)***	(2.30)**	(2.13)**	(5.96)***	(1.56)	(3.72)***	(2.04)**	(1.51)	(5.39)***
Control Variables															
Log of Lagged Assets	0.020	-0.008	0.036	-0.005	-0.014	0.021	-0.002	0.043	-0.006	-0.033	0.025	-0.0002	0.045	-0.005	-0.034
	(3.04)***	(2.03)**	(3.30)***	(6.29)***	(1.30)	(3.39)***	(0.56)	(4.43)***	(8.10)***	(3.95)***	(3.38)***	(0.06)	(3.98)***	(6.34)***	(3.36)***
Lagged Market Share	-1.122	0.707	0.323	0.086	0.221	-0.988	0.749	0.381	0.100	0.217	-1.122	0.700	0.324	0.087	0.241
	(2.10)**	(2.72)***	(0.45)	(1.66)	(0.40)	(2.08)**	(3.43)***	(0.57)	(1.80)*	(0.44)	(2.31)**	(3.12)***	(0.45)	(1.55)	(0.46)
Observations	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290
R-squared		0.03		0.15	0.12		0.05		0.15	0.24		0.06		0.15	0.24
Pseudo R-squared	0.02		0.13			0.02		0.16			0.03		0.16		

Notes: All specifications include year and quarter fixed effects (not shown).

*, **, *** indicate significance at 10, 5, and 1 percent levels, respectively.

Standard errors used in computing t statistics are corrected for both heteroskedasticity and correlation across multiple observations of the same bank using a robust cluster method.

The *ROE*, *Costs/Assets*, and *NPL* regressions are run by OLS, and the *Profit Efficiency Rank* and *Cost Efficiency Rank* regressions are run by censored regressions that take into account that the dependent variables are truncated at 0 and 1.

The pseudo-R^2 statistic reported for the efficiency rank regressions is defined in the notes to Table2.

Shading indicates a "nonrobust" result – one in which the coefficient shown here and the corresponding coefficient in the full model on the right side of Table 2 differ such that one is statistically significantly different from 0 at the 10% level, and the other is either not significant at the 10% level or is significant with the opposite sign.

Table A3: Bank Performance Nonrobustness Regressions, Each Type of Governance in a Separate Model, Excluding Selection Effects

	Domestic Governance Only					*Foreign Governance Only*					*State Governance and Privatization Only*					*State Governance and Restructuring Only*				
	Profit Efficiency Rank	*ROE*	*Cost Efficiency Rank*	*Costs/ Assets*	*NPL*	*Profit Efficiency Rank*	*ROE*	*Cost Efficiency Rank*	*Costs/ Assets*	*NPL*	*Profit Efficiency Rank*	*ROE*	*Cost Efficiency Rank*	*Costs/ Assets*	*NPL*	*Profit Efficiency Rank*	*ROE*	*Cost Efficiency Rank*	*Costs/ Assets*	*NPL*
Constant term	0.277	0.048	0.039	0.098	0.504	0.278	0.062	0.061	0.094	0.438	0.264	0.003	0.004	0.100	0.648	0.266	0.017	0.005	0.103	0.600
	(4.00)***	(1.14)	(0.34)	(11.20)***	(4.28)***	(3.81)***	(1.38)	(0.50)	(10.27)***	(3.47)***	(3.76)***	(0.08)	(0.04)	(11.08)***	(6.21)***	(3.77)***	(0.44)	(0.04)	(11.63)***	(5.62)***
Static Governance Indicators																				
Currently Foreign Owned						-0.009	0.024	0.032	-0.006	-0.076										
						(0.41)	(2.34)**	(1.08)	(2.21)**	(2.26)**										
Currently State Owned											-0.052	-0.077	-0.070	0.004	0.241	-0.034	-0.070	-0.085	0.008	0.195
											(1.77)*	(3.67)***	(1.65)*	(2.30)**	(7.03)***	(1.17)	(3.74)***	(2.32)**	(1.98)*	(5.64)***
Dynamic Governance Indicators																				
Underwent Domestic M&A	0.081	-0.005	0.026	0.002	-0.091															
	(1.12)	(0.13)	(0.29)	(0.66)	(1.69)*															
Quarters Since Domestic M&A	-0.009	0.000	-0.004	0.000	0.009															
	(1.50)	(0.05)	(0.72)	(0.06)	(2.06)**															
Underwent Foreign Acquisition						-0.084	-0.061	-0.124	0.011	0.070										
						(0.78)	(1.62)	(1.41)	(2.49)**	(1.43)										
Quarters Since Foreign Acquisition						0.010	0.004	0.011	-0.001	-0.010										
						(0.82)	(1.15)	(0.70)	(3.05)***	(2.11)**										
Underwent Privatization											0.233	0.057	-0.022	0.045	-0.473					
											(2.47)**	(0.68)	(0.13)	(0.95)	(9.20)***					
Quarters Since Privatization											-0.013	0.003	-0.009	-0.003	0.014					
											(1.19)	(0.56)	(0.82)	(0.91)	(2.23)**					
Underwent State Restructuring																0.1481	0.098	-0.027	0.002	-0.101
																(1.20)	(1.76)*	(0.28)	(0.29)	(1.20)
Quarters Since State Restructuring																-0.018	-0.006	0.005	-0.0003	0.005
																(3.20)***	(1.30)	(0.82)	(1.40)	(1.02)
Control Variables																				
Log of Lagged Assets	0.020	-0.006	0.039	-0.005	-0.022	0.020	-0.007	0.036	-0.005	-0.014	0.021	-0.001	0.043	-0.006	-0.035	0.021	-0.002	0.043	-0.006	-0.032
	(3.35)***	(1.67)*	(3.85)***	(7.80)***	(2.32)**	(3.05)***	(1.94)*	(3.32)***	(6.39)***	(1.29)	(3.47)***	(0.45)	(4.45)***	(8.18)***	(4.22)***	(3.44)***	(0.68)	(4.41)***	(8.14)***	(3.89)***
Lagged Market Share	-1.128	0.600	0.146	0.118	0.698	-1.103	0.721	0.340	0.084	0.204	-0.841	0.834	0.248	0.123	-0.158	-0.999	0.801	0.394	0.099	0.148
	(2.29)**	(2.47)**	(0.22)	(2.57)**	(1.36)	(2.03)**	(2.68)***	(0.48)	(1.66)	(0.36)	(1.77)*	(3.38)***	(0.35)	(2.34)**	(0.30)	(2.09)**	(3.52)***	(0.58)	(1.72)*	(0.29)
Observations	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290	2290
R-squared		0.02		0.14	0.09		0.03		0.15	0.12		0.06		0.17	0.32		0.06		0.15	0.24
Pseudo R-squared	0.02		0.13			0.02		0.14			0.03		0.16			0.02		0.16		

Notes: All specifications include year and quarter fixed effects (not shown).

*, **, *** indicate significance at 10, 5, and 1 percent levels, respectively.

Standard errors used in computing t statistics are corrected for both heteroskedasticity and correlation across multiple observations of the same bank using a robust cluster method.

The *ROE*, *Costs/Assets*, and *NPL* regressions are run by OLS, and the *Profit Efficiency Rank* and *Cost Efficiency Rank* regressions are run by censored regressions that take into account that the dependent variables are truncated at 0 and 1.

The pseudo-R^2 statistic reported for the efficiency rank regressions is defined in the notes to Table2.

Shading indicates a "nonrobust" result – one in which the coefficient shown here and the corresponding coefficient in the full model on the right side of Table 2 differ such that one is statistically significantly different from 0 at the 10% level, and the other is either not significant at the 10% level or is significant with the opposite sign.

Table A4: Bank Performance Nonrobustness Regressions, All Types of Governance in the Same Model, Excluding Selection Effects

	Profit Efficiency Rank	*ROE*	*Cost Efficiency Rank*	*Costs/Assets*	*NPL*
Constant term	0.222	-0.013	-0.027	0.097	0.659
	(2.89)***	(0.35)	(0.22)	(10.11)***	(5.70)***
Static Governance Indicators					
Currently Foreign Owned	-0.033	-0.009	-0.009	-0.004	0.011
	(1.32)	(1.03)	(0.23)	(1.19)	(0.33)
Currently State Owned	-0.073	-0.094	-0.081	0.003	0.266
	(2.16)**	(3.97)***	(1.60)	(1.13)	(6.64)***
Dynamic Governance Indicators					
Underwent Domestic M&A	0.044	-0.043	0.025	0.002	-0.010
	(0.56)	(1.10)	(0.28)	(0.62)	(0.15)
Quarters Since	-0.006	0.003	-0.005	0.000	0.004
Domestic M&A	(0.72)	(0.77)	(0.75)	(0.07)	(0.89)
Underwent Foreign	-0.089	-0.060	-0.126	0.011	0.080
Acquisition	(0.87)	(1.87)*	(1.39)	(2.23)**	(1.75)*
Quarters Since	0.011	0.003	0.010	-0.001	-0.010
Foreign Acquisition	(0.87)	(1.10)	(0.67)	(2.23)**	(2.64)***
Underwent Privatization	0.239	0.067	-0.019	0.046	-0.491
	(2.58)***	(0.79)	(0.11)	(0.97)	(9.15)***
Quarters Since	-0.013	0.003	-0.009	-0.003	0.014
Privatization	(1.22)	(0.54)	(0.83)	(0.91)	(2.21)**
Underwent State	0.140	0.123	-0.065	0.005	-0.142
Restructuring	(1.03)	(1.98)*	(0.63)	(1.56)	(1.69)*
Quarters Since	-0.012	-0.007	0.011	-0.0004	-0.003
State Restructuring	(1.05)	(1.18)	(1.15)	(1.01)	(0.39)
Control Variables					
Log of Lagged Assets	0.026	0.001	0.046	-0.005	-0.036
	(3.64)***	(0.20)	(4.01)***	(6.66)***	(3.67)***
Lagged Market Share	-0.967	0.884	0.188	0.110	-0.296
	(1.96)**	(3.25)***	(0.25)	(2.13)**	(0.51)
Observations	2290	2290	2290	2290	2290
R-squared		0.07		0.18	0.34
Pseudo R-squared	0.17		0.04		

Notes: All specifications include year and quarter fixed effects (not shown).

*, **, *** indicate significance at 10, 5, and 1 percent levels, respectively.

Standard errors used in computing t statistics are corrected for both heteroskedasticity and correlation across multiple observations of the same bank using a robust cluster method.

The *ROE*, *Costs/Assets*, and *NPL* regressions are run by OLS, and the *Profit Efficiency Rank* and *Cost Efficiency Rank* regressions are run by censored regressions that take into account that the dependent variables are truncated at 0 and 1.

The pseudo-R^2 statistic reported for the efficiency rank regressions is defined in the notes to Table2.

Shading indicates a "nonrobust" result – one in which the coefficient shown here and the corresponding coefficient in the full model on the right side of Table 2 differ such that one is statistically significantly different from 0 at the 10% level, and the other is either not significant at the 10% level or is significant with the opposite sign.