

Politicians and banks: Political influences on government-owned banks in emerging markets[☆]

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Abstract

Government ownership of banks is very common in countries other than the United States. This paper provides cross-country, bank-level empirical evidence about political influences on these banks. It shows that government-owned banks increase their lending in election years relative to private banks. This effect is robust to controlling for country-specific macroeconomic and institutional factors as well as bank-specific factors. The increase in lending is about 11% of a government-owned bank's total loan portfolio or about 0.5% of the median country's GDP per election per government-owned bank.

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1. Introduction

Government ownership of banks is very common outside the United States.¹ When bank assets are directly controlled by the government, the government's role in finance is much broader than the regulation and enforcement functions to which it is generally limited in the U.S. In any discussion of financial systems in countries with government ownership of banks, therefore, it is imperative to take the government's control of financial resources into account.

It is commonly claimed that government ownership of banks facilitates the financing of projects that private banks are unable or unwilling to finance, particularly projects that could help economic development. However, [La Porta et al. \(2002\)](#) document that government ownership of banks is associated with lower subsequent economic growth and argue that politicians use government-owned banks to further their own political goals. [Barth et al. \(1999\)](#) provide further empirical evidence that government ownership of banks is associated with a low level of financial development and [Beck and Levine \(2002\)](#) also fail to find any positive effect of the government ownership of banks on growth. The negative effect on development is not the only cost of government ownership of banks. [Caprio and Peria \(2000\)](#) show that government ownership of banks is associated with a higher likelihood of banking crises. These negative effects are likely to persist because banking is one of the very few sectors in which privatization has made very few inroads around the world, as discussed by [Megginson and Netter \(2001\)](#).

Despite the accumulation of empirical evidence on the magnitude of bank ownership by the government and its negative effects, there has been no direct, cross-country empirical evidence of politically motivated actions by these banks. Nor is the literature that establishes the inefficiency of government-owned enterprises relative to private firms likely to be very helpful in this regard. Although political influences on government-owned enterprises have long been considered a major source of inefficiency,² direct, cross-country evidence of political influence on government-owned enterprises in nonfinancial sectors has been lacking as well. Moreover, the problem of political influence will be greater at banks than at other government-owned enterprises for several reasons. First, the asymmetric information between lending banks and outsiders about the quality of a specific loan makes it easy to disguise political motivation behind a loan. Second, revealing the costs of any politically motivated loan can be deferred until the loan maturity. Third, while a non-bank government-owned enterprise operates in a defined industry, which can limit the politicians' ability to transfer resources, banks operate across the whole economy, providing politicians with more opportunity to channel funds. Finally, the political elite can maintain and increase its power through the control of financial resources more easily than open entry barriers in other sectors ([Rajan and Zingales, 2003](#)).

¹ [La Porta et al. \(2002\)](#) study the 10 largest banks in 92 countries and find that 42% of their assets are controlled by the government-owned banks.

² See [Shleifer and Vishny \(1994\)](#) for a theory and [Shleifer \(1998\)](#) for a general discussion.

This paper studies a question that arises naturally from the government ownership of banks: Given that politicians control the government, are the actions of these banks motivated by political concerns? Elections, in particular, might tempt the politicians in power to use the government-owned banks for political purposes. Thus, do government-owned banks behave differently around elections? Do they increase their lending in election years? This paper studies these questions by comparing the actions of government-owned banks with the actions of private banks around general elections in major emerging markets over the period 1994–2000.

This paper provides the first cross-country, bank-level evidence of politically motivated lending at government-owned banks in emerging markets in the form of increased lending in election years relative to private banks. The increase is robust to controlling for macroeconomic factors and the level of development. Despite differences in efficiency and objectives between private banks and government-owned banks, the methodology used in this paper is able to isolate political influences from other confounding factors by focusing on a political event.

Although government-owned banks increase their lending in election years, the share of loans as a fraction of total assets is not any greater in government-owned banks across the electoral cycle on average. In fact, perhaps more strikingly, the share of government securities in bank assets is about 50% greater in government-owned banks in emerging markets than it is in private banks. One of the main arguments in favor of government ownership of banks has been their ability to finance viable projects that private banks cannot or will not finance. Yet the evidence suggests that government-owned banks in emerging markets finance the government itself to a greater degree than do private banks.

The evidence provided here extends the insights from single-country studies on banking. [Clarke and Cull \(2002\)](#) argue that governors who belonged to a fiscally conservative party were more likely to privatize banks in Argentina. [Sapienza \(2004\)](#) finds that the interest rates charged by government-owned banks in Italy reflect the local power of the party that controls the bank. [Mian \(2003a\)](#) compares private and government-owned banks in Pakistan and demonstrates the differences in incentives and supervision.

More generally, [Kane \(1996\)](#) and [Kroszner and Strahan \(1999\)](#) study the role of politics in designing bank regulation, while [Brown and Dinc \(2004\)](#) demonstrate that the implementation of existing regulation is also politically driven. [Perotti and von Thadden \(2003\)](#) show how the distribution of human and financial capital can affect the emergence of bank or market dominance through the political process. [Pagano and Volpin \(2004\)](#) examine the role of the electoral system in the level of minority protection.

Several recent papers study the role of political connections in finance. [Fisman \(2001\)](#) shows how the news about Suharto's deteriorating health adversely affected the value of firms with strong connections to him. [Johnson and Mitton \(2003\)](#) demonstrate that capital controls in Malaysia provided rents to politically connected firms. [Faccio \(2004\)](#) finds in a cross-country study that firms with political connections have easier access to debt financing and enjoy lower taxation. [Ramalho \(2003\)](#) shows that politically connected firms in Brazil lost value during the

impeachment of then-president Collor in 1992. Faccio et al. (2004) demonstrate the role of political connections in the government's decision to rescue a financially troubled company. The results in this paper show that politicians can reward their allies and punish their opponents by using their influence on government-owned banks.

The evidence provided in this paper has policy implications that go beyond economic development and financial stability. For example, international institutions, often led by the IMF, provide emergency funds to countries experiencing a crisis. These funds tend to be conditional on certain monetary and fiscal restrictions, often to prevent politicians from channeling them to political uses. Yet the financial accounts of government-owned banks are rarely part of the government's budget. The evidence about the political influences on these banks indicates that monetary and fiscal restrictions placed on the local politicians are unlikely to be sufficient.

The paper is organized as follows. The next section discusses the methodology. Section 3 describes the data. The regression analysis is presented in Section 4, and robustness checks are discussed in Section 5. Concluding remarks follow in Section 6.

2. Methodology

There are three major issues to consider when isolating and studying politically motivated actions by government-owned banks. First, an event that induces politicians to use government-owned banks for their own political aims must be identified. Second, myriad institutional differences across countries must be controlled for. Third, previously documented differences in efficiencies between government-owned and private enterprises must be accounted for so that the politically motivated actions of government-owned banks can be distinguished from other differences between these two types of banks.

The general elections that determine the head of government are events that could motivate politicians to use government-owned banks to increase their chances of reelection. This does not rule out any politically motivated actions by government-owned banks at other times, but to the extent that the elections genuinely determine the head of government, the intensity of politicians' use of government-owned banks will be correlated with the electoral cycle. There is a large literature on the effect of the political economy in general and of the electoral cycle in particular on macroeconomic factors³ but this is the first cross-country study of electoral cycle effects at the firm level, to the best of my knowledge.

Controlling for many institutional differences across countries requires a firm-level, as opposed to a country-level, analysis. By comparing banks with each other in the same country, it is possible to control for many institutional differences across countries. As it is virtually impossible to account for all the institutional, historical, legal, and political differences across countries in a country-level cross-sectional

³See Alesina et al. (1997), Drazen (2000), and Persson and Tabellini (1999, 2003) for recent surveys.

regression analysis, a firm-level analysis prevents assigning a false significance to a country-specific factor, such as geography, due to an omitted variable.

Unfortunately, a firm-level analysis that can control for these country-level differences also has the potential to increase the problems related to the inefficiencies of government-owned enterprises in general. A mere cross-sectional comparison of government-owned banks with private banks might only reflect a multitude of differences between government-owned enterprises and private firms. Instead, this paper compares the actions of government-owned banks with those of private banks over time in a panel regression framework. More specifically, it compares the changes in the actions of government-owned banks with those of private banks around elections relative to other years. This ‘difference-in-differences’ methodology isolates the actions taken by government banks due to political motivations from other differences that also exist between government banks and private banks in other years. The time dimension also allows for the control of country-wide factors, such as macroeconomic factors, that change over time.

Once the time-independent and time-variant country-specific factors are controlled for, the cross-country nature of the analysis strengthens the tests. For example, elections occur in different years in different countries. In fact, countries have different election frequencies. This prevents a spurious correlation between the election year and some other one-time event in the world economy.

Although the focus of this study is very different from the literature on electoral cycles and macroeconomics, which studies the role of political actions in macroeconomics and business cycles in particular, this study’s methodology is similar in that it uses elections as events that motivate politicians. However, it is different in that it employs a firm-level analysis, rather than a country-level analysis.

3. Data

Emerging markets and developed countries covered weekly by *The Economist* in its data section form the starting sample. These countries are augmented by members of the OECD. Since elections play a central role in the analysis, only countries that have free or partially-free elections in the 1994–2000 sample period according to *Freedom House* are included. Three countries that did not—China, Egypt, and Indonesia—are dropped from the sample. The resulting initial sample contains 43 countries.

The ten largest banks in each country are identified based on their book value of assets as of 1994. Central banks and investment banks are excluded. As *Bankscope Online* might drop a bank two years after it ceases its operations or is acquired by another bank, previous CD-ROM editions of *Bankscope* are used in the identification problem to avoid survivorship bias. *Bankscope* carries data on only eight and four banks for Finland and Iceland, respectively; all those banks are included in the sample.

By far, the most time- and resource-consuming task was hand-collecting the data on the ultimate ownership of each bank for each year. Past editions of *Bankscope*

CD-ROMs and *Factiva* were used heavily in this process, complemented with other hard copy and Internet sources. Ambiguities in the ownership data were further checked with local practitioners. Following La Porta et al. (1999), the ultimate owner of each bank is identified and a bank is classified as government-owned if the government controls (directly or indirectly) at least 20% of the bank.

Table 1 reports the government ownership of banks as of 1994 and confirms that government ownership of banks is very common: 39% of all the banks in the world (163 out of 462) are at least 20%-owned by the government. This proportion is higher in emerging markets: 47% (99 out of 210, including India and Taiwan) of banks are government-owned at a 20% level or higher in emerging markets while only 30% of banks (64 out of 212) are so classified in developed economies. Overall, 42% of all the bank-years in the sample represent banks controlled by the government at the 20% level or higher. Government-owned banks include banks owned by local governments as well as by the central government, with the former being especially prevalent in the developed economies of Continental Europe.

Countries differ substantially in government ownership. For example, India and Taiwan have no private banks among their ten largest banks in 1994 while Canada, Denmark, Japan, the U.K., and the U.S. have no government-owned banks among the ten largest banks. As discussed in the previous section, this paper's methodology essentially compares the behavior of government-owned banks to private banks in the *same* country. Only countries with at least one bank of each ownership type are included in the main regression analysis, so these seven countries are dropped from the main analysis: The resulting sample contains 36 countries with 19 emerging markets and 17 developed economies.

Table 2 reports the number of bank-years available for regression analysis. The biggest loss of bank-years is due to mergers, acquisitions, and, to a lesser degree, bank closings. If *Bankscope* continues to use the accounts of the surviving bank for the new entity after a merger or acquisition, the surviving bank remains in the sample. If *Bankscope* starts a new account for the new entity, all the banks involved in that merger exit the sample (When the sample with replacement is constructed, as detailed in the Section 5, the new entity typically rejoins the sample as a new bank). On the other hand, the loss due to bank failures is relatively small, as the typical result of a large bank failure is the government takeover of the failing bank (Brown and Dinç, 2004). These banks continue their operations and remain in the sample as long as their balance sheet data are available. These banks are classified as government-owned after the takeover.

The second most important reduction in bank-years is simply due to missing data for the years before a bank joins the sample. The lag structure used in the regression analysis needs balance sheet data for two previous years. To avoid any possible selection bias, banks are included based on the magnitude of their assets in 1994 whether or not *Bankscope* has balance sheet data for their fiscal 1992 and 1993. This decrease in the number of bank-years available for the regression analysis is included in the Missing Data row in Table 2 and reflected in the final size of different samples.

Unfortunately, no loan-level data exist for these banks; hence, the analysis in this paper is based on bank balance sheets. Table 3 presents sample statistics for selected

Table 1

Bank ownership around the world in 1994

The table gives the ownership structure of the ten largest banks by assets as of 1994. *Private* denotes banks with government ownership of less than 20%. *GovtBank* denotes the banks that are owned, directly or indirectly, by the government at least at a 20% level.

	Private	GovtBank	Total
Emerging markets			
Argentina	6	4	10
Brazil	6	4	10
Chile	9	1	10
Colombia	5	5	10
Czech Republic	5	5	10
Hungary	2	8	10
Israel	4	6	10
South Korea	5	5	10
Malaysia	7	3	10
Mexico	6	4	10
Peru	8	2	10
Philippines	8	2	10
Poland	1	9	10
Russia	7	3	10
Singapore	8	2	10
South Africa	7	3	10
Thailand	5	5	10
Turkey	5	5	10
Venezuela	7	3	10
Total	111	79	190
Developed economies			
Australia	7	3	10
Austria	4	6	10
Belgium	8	2	10
Finland	5	3	8
France	8	2	10
Germany	6	4	10
Greece	5	5	10
Iceland	2	2	4
Ireland	8	2	10
Italy	5	5	10
Luxembourg	9	1	10
Netherlands	7	3	10
Norway	5	5	10
Portugal	3	7	10
Spain	5	5	10
Sweden	6	4	10
Switzerland	5	5	10
Total	98	64	162
Countries with only private or government banks among ten largest banks in 1994			
Emerging markets			
India	0	10	10
Taiwan	0	10	10
Total	0	20	20

Table 1 (continued)

	Private	GovtBank	Total
Developed economies			
Canada	10	0	10
Denmark	10	0	10
Japan	10	0	10
UK	10	0	10
USA	10	0	10
Total	50	0	50
Total (whole sample)	259	163	422

Table 2

The sample

The table gives the number of banks and bank-years available for regression analysis. The sample constructed with the ten largest banks in 1994 in each country that had at least one private and one government-owned bank among the ten largest banks in 1994. Each bank joins the sample in 1994 and is followed until it exits or until the end of 2000. *Unbalanced Panel* includes the banks that exit the sample before 2000 due to mergers, acquisitions, or closings. Banks that are taken over by the government due to their failure but that continue their operations under government management remain in the sample but are classified as government-owned banks after the take-over. If no balance sheet data are available for the two years before a bank joins the sample, the number of bank-years available for regression analysis decreases due to the lagged variables used. This loss is included in the *Missing Data* row and reflected in the final size of each panel.

	World (36 countries)		Emerging markets (19 countries)		Developed economies (17 countries)	
	Bank	Bank-year	Bank	Bank-year	Bank	Bank-year
Largest possible sample	360	2520	190	1330	170	1190
Ten banks in each country for seven years						
Lost due to fewer than ten banks in Finland and Iceland	8	56	—	—	8	56
Lost due to mergers, acquisitions, closings	—	296	—	170	—	126
Missing data		110	1	93	2	17
Remaining (unbalanced) panel	349	2058	189	1067	160	991

balance sheet items and reveals some interesting differences between private banks and government-owned banks, although the differences are not necessarily uniform between emerging markets and developed economies. In terms of the book value of assets, government-owned banks are about twice as large as private banks in emerging markets, on average, but they are smaller in developed economies. These differences are statistically significant at the 1% level.

Table 3

Sample statistics

Private denotes the banks with government ownership less than 20%. *GovtBank* denotes the banks that are owned, directly or indirectly, by the government at least at the 20% level. *Change in Loans (t)* is *Loans (t)–Loans (t–1)* and normalized by *Assets (t–1)*. *Capital ratio* is equity divided by total assets. All variables are book values. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively, in a two-sided test of the mean with the government-owned banks and the private banks.

		Emerging markets			Developed economies			World		
		Private	GovtBank	All	Private	GovtBank	All	Private	GovtBank	All
Assets (in \$B)	Mean	8.688	15.465***	11.355	79.000	49.552***	68.629	43.708	30.935***	38.935
	sd.	11.785	19.672	15.724	119.917	72.265	106.511	91.995	53.533	80.046
	N	647	420	1067	642	349	991	1289	769	2058
Loans/assets	Mean	0.564	0.548	0.558	0.519	0.549**	0.530	0.542	0.548	0.544
	sd.	0.161	0.204	0.179	0.203	0.221	0.210	0.184	0.212	0.195
	N	647	420	1067	642	349	991	1289	769	2058
Change in loans	Mean	0.064	0.024***	0.048	0.058	0.015***	0.043	0.061	0.020***	0.045
	sd.	0.166	0.146	0.159	0.141	0.092	0.128	0.154	0.124	0.145
	N	649	420	1067	642	349	991	1289	769	2058
Treasury securities/assets	Mean	0.091	0.133***	0.108	0.117	0.114	0.116	0.103	0.125***	0.111
	sd.	0.088	0.136	0.111	0.111	0.101	0.108	0.1	0.123	0.11
	N	476	314	790	428	217	645	904	531	1435
Deposits/assets	Mean	0.742	0.696***	0.724	0.726	0.644***	0.697	0.734	0.672***	0.711
	sd.	0.141	0.21	0.173	0.164	0.255	0.204	0.153	0.233	0.189
	N	644	414	1058	642	343	985	1286	757	2043
Operating income/assets	Mean	0.016	0.004***	0.012	0.008	0.004***	0.007	0.012	0.004***	0.009
	sd.	0.028	0.047	0.037	0.009	0.009	0.009	0.021	0.035	0.028
	N	638	412	1050	628	343	971	1266	755	2021
Capital ratio	Mean	0.101	0.095	0.098	0.052	0.051	0.051	0.076	0.075	0.076
	sd.	0.072	0.097	0.083	0.026	0.046	0.034	0.059	0.081	0.068
	N	647	420	1067	642	349	991	1289	769	2058

The reverse pattern exists with regard to the ratio of loans to total assets. While that ratio is lower for government-owned banks in emerging markets, it is higher in government-owned banks in developed economies, with the latter difference being statistically significant at the 5% level. Unfortunately, the data exist only at the bank level; in particular, no data on the industrial or geographic distribution of these loans are available.

The annual increase in loans relative to bank size is much higher in private banks in both emerging markets and developed economies. In emerging markets, loans grow by about three times as fast in private banks as in government banks, and about 4 times as fast in developed economies. Both differences are statistically significant at the 1% level.

Government-owned banks in emerging markets hold a larger share of their assets in government securities. While private banks hold only 9% of their assets in government securities, this ratio is 13% for government-owned banks in those countries, on average; the difference is statistically significant at the 1% level. The government ownership of banks has sometimes been justified on the grounds that such banks can finance private projects that create positive externalities for the whole economy but are too large or unprofitable for private banks to finance. The evidence, however, suggests that government-owned banks take, instead, a more active role in financing the government itself relative to private banks.

The ratio of deposits to total assets is lower in government-owned banks in both emerging markets and developed economies, with the difference being statistically significant at the 1% level. Annual net operating income also tends to be lower in government banks. The ratio of income to assets is about 0.4% in government-owned banks in both emerging and developed markets while it is 1.6% and 0.8% in private banks in emerging markets and developed economies, respectively. The difference is statistically significant at the 1% level. On the other hand, there is no statistically significant difference in the capital ratio, defined as total equity divided by total assets, of both types of banks. The differences documented here between private and government-owned banks are, in general, consistent with Mian (2003b).

The analysis also requires the collection of political data. It is first determined whether the president or the prime minister is the head of government from the constitution of each country, as provided in Maddex (2001). Then, the dates of all the elections that decided the head of government during the sample period are recorded using the *Europa Yearbook*, *World Political Almanac*, and *Elections around the World*. Macroeconomic variables are obtained from IMF and other sources. A detailed description of all the variables and their sources is provided in the appendix.

4. Regression analysis

As discussed in the methodology section, the analysis compares changes in the actions of government banks around elections with changes in the actions of private

banks during the same period, controlling for country-level macroeconomic factors as well as bank-specific factors. Towards this aim, the analysis uses panel regressions covering the years 1994–2000.

One factor that complicates the econometrics of the analysis is that loans in a given year will affect the bank-specific factors of future years. In other words, the dependent variable for a given year—increase in loans—will be correlated with the bank-specific control variables for future years. For example, as an accounting matter, loans are part of bank assets, the typical measure of bank size. Hence, when bank size is controlled for by bank assets, this measure includes loans that were made in previous periods but had a maturity longer than a year. Furthermore, banks are likely to adjust their capital ratio based on their past lending. The regression structure given below takes that correlation into account:

$$y_{it} = \beta'x_{it} + \gamma'w_{it-1} + election_{it} + election_{it}*govtbank_{it} + \theta_t + \alpha_i + u_{it}, \quad (1)$$

where the dependent variable y_{it} is the change in loans normalized by the previous year's assets, namely, $(Loans(t) - Loans(t-1))/Total\ Assets(t-1)$; x_{it} is the vector of strictly exogenous variables such as macroeconomic variables; w_{it} is the vector of sequentially exogenous variables such as bank size and bank capital ratio; $election_{it}$ is a dummy variable that takes the value of one if it is an election year in the country of bank i ; $govtbank_{it}$ is a dummy variable that takes the value of one if bank i is controlled by the government at least at a 20% level; θ_t is a time dummy; α_i is the bank fixed effect; and u_{it} is the error term. The error structure is given by

$$E[u_{it} | x_{i1}, \dots, x_{iT}] = 0 \quad (2)$$

and

$$E[u_{it} | w_{i1}, \dots, w_{it-1}] = 0. \quad (3)$$

Notice that the error structure makes explicit the correlation between sequentially exogenous variables with future error terms, as required. All the regressions include bank fixed effects, which help control for time-independent differences between government-owned banks and private banks as well as country-specific time-independent factors. Due to sequentially exogenous variables, the usual within estimator, which relies on subtracting the (time-series) means of variables to eliminate the fixed effect, gives inconsistent estimates. Hence, the fixed effects are eliminated by first differencing and the resulting system is estimated by using the past values of sequentially exogenous variables as instruments.⁴ Finally, the standard errors are corrected for clustering at the country level—hence, at the bank level as well—to prevent possible bias in the standard errors while providing errors robust to bank-level autocorrelation; see Bertrand et al. (2004).

Main regressions use the unbalanced sample, which follows all the banks until 2000 or their early exit from the sample, and are reported in Table 4. The dependent

⁴See, e.g., Wooldridge (2002, pp. 299–307) for a textbook treatment.

[illegible]

variable is the change in loans normalized by the previous year's total assets. All the regressions include as explanatory variables *Total Assets/GDP*, equal to total assets of the bank normalized by the GDP of the country where the bank operates to control for bank size, and *Capital Ratio* as defined by the book value of equity divided by total assets. Both variables are as of year $t-1$ and assumed to be only sequentially exogenous; all other explanatory variables are assumed to be strictly exogenous and are as of year t .

The regressions are first performed for the whole sample, then for emerging markets and developed economies separately. The size variable *Total Assets/GDP* has a negative but statistically insignificant coefficient in the regressions for the whole sample. *Capital Ratio* has a positive coefficient and it is statistically significant in the regressions for the whole sample. This suggests that better-capitalized banks increase their lending more.

The second regression includes *Election*, a dummy variable that equals one in election years in the country where the bank is located; it is common to all the banks in that country regardless of bank ownership. It has a negative and statistically insignificant coefficient in the second regression. In other words, there seem to be no economy-wide shocks related to elections with a common effect to *all* the banks. This finding will strengthen the interpretation of any election effect due to the government ownership of banks.

The third regression adds an interaction term *Election*GovtBank*, where *GovtBank* is a dummy variable that equals one if the bank is at least 20%-owned by the government that year. If government-owned banks act differently in election years, this interaction term can capture those differences. The interaction term has a positive and statistically significant coefficient for whole sample, suggesting that government-owned banks increase their lending in election years more than private banks. However, when the sample is split between emerging markets and developed economies, the regression results show that this finding is driven mainly by government-owned banks in emerging markets. The interaction term *Election*GovtBank* has a positive and statistically significant coefficient for emerging markets but has a negative and insignificant coefficient for developed economies, although the negative sign of the interaction variable for developed economies is not very robust and changes to positive in regressions with different control variables.

Notice that all the regressions include bank fixed effects, which control for all the time-independent differences between private banks and government-owned banks, so the differences related to election years are unlikely to be due to the general differences between private enterprises and government-owned enterprises in operating efficiency or objectives. Bank fixed effects naturally control for institutional differences across countries as well.

The rest of the paper focuses on the emerging markets to test the robustness of the finding that government-owned banks in these countries increase their lending in election years relative to private banks. Possible reasons for the differences in the government bank behavior between emerging markets and developed economies are discussed in the concluding section.

5. Robustness

This section studies the robustness of the finding of increased lending in election year by government-owned banks in emerging markets. As no such effect is detected in developed economies, the tests in this section focus on emerging markets.

5.1. Macroeconomic factors

Given the literature on political macroeconomics, it is important to study the robustness of the results to potential macroeconomic changes in election years. Five different macroeconomic variables are studied: GDP per capita, GDP growth rate, government budget surplus (or deficit), inflation rate, and exchange rate. Table 5, Panel A, reports the results of regressions when macroeconomic variables are included. *Ln (GDP per capita)* and *GDP Growth* both have positive and statistically

Table 5

Elections and bank lending in emerging markets: controlling for macroeconomic factors

The dependent variable is the increase in the total loans that year normalized by total assets from the previous year, i.e., $(Loans(t) - Loans(t-1)) / Total Assets(t-1)$. *Total Assets/GDP* is the bank's total assets normalized by that country's GDP; *Capital Ratio* is total equity divided by total assets; both variables are as of year $t-1$ and instrumented with their lagged values ($t-2$). *Election* is a dummy variable that equals one in the year of elections; *Govtbank* is a dummy variable that equals one if the bank is owned, directly or indirectly, by the government at least at the 20% level that year. *Budget surplus* is the government budget surplus as a percentage of GDP and takes a negative value when the government runs a deficit. *Exchange rate change* is the change in the exchange rate of the domestic currency against the U.S. dollar from the previous year; it is negative if the currency depreciates against the dollar that year. Heteroskedasticity-robust standard errors, corrected for clustering at the country level, are in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively. *F-test* is a statistic to test the hypothesis that all the explanatory variables are jointly zero.

Panel A. Macroeconomic variables

Total assets/GDP	0.001*	0.000	0.001	-0.094	-0.000
	(0.001)	(0.000)	(0.001)	(0.118)	(0.001)
Capital ratio	0.112	-0.158	-0.249	-0.126	-0.146
	(0.387)	(0.328)	(0.274)	(0.332)	(0.334)
Election	-0.031*	-0.024	-0.008	-0.015	-0.020
	(0.015)	(0.015)	(0.020)	(0.018)	(0.018)
Election*Govtbank	0.055**	0.057**	0.048**	0.057**	0.058**
	(0.023)	(0.025)	(0.022)	(0.025)	(0.025)
Ln (Gdp per capita)	0.342***				
	(0.100)				
GDP growth		0.009***			
		(0.002)			
Budget surplus			0.873*		
			(0.460)		
Inflation rate				0.042	
				(0.155)	
Exchange rate change					0.015***
					(0.004)

Table 5 (continued)

<i>Panel A. Macroeconomic variables</i>					
Bank fixed effects	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Number of banks	189	189	185	189	189
Number of bank-years	1067	1067	988	1067	1061
<i>p</i> -value of <i>F</i> -test	0.000	0.000	0.000	0.000	0.000
<i>Panel B. Macroeconomic variables interacted with the Election dummy</i>					
Total assets/GDP	0.001 (0.001)	0.000 (0.000)	0.001 (0.001)	−0.162 (0.157)	0.001 (0.001)
Capital ratio	0.111 (0.385)	−0.155 (0.328)	−0.257 (0.276)	−0.249 (0.367)	−0.132 (0.331)
Election	−0.176 (0.142)	−0.027 (0.019)	−0.004 (0.022)	−0.033** (0.016)	2.142*** (0.709)
Election*Govtbank	0.055** (0.023)	0.056** (0.025)	0.050** (0.023)	0.056** (0.025)	0.062** (0.022)
Ln (Gdp per capita)	0.340*** (0.099)				
Ln (Gdp per capita)*Election	0.017 (0.016)				
GDP growth		0.008*** (0.002)			
GDP growth*Election		0.001 (0.004)			
Budget surplus			0.868* (0.452)		
Budget surplus*Election			0.220 (0.435)		
Inflation rate				0.123 (0.107)	
Inflation rate*Election				−0.462*** (0.149)	
Exchange rate change					0.092** (0.035)
Exchange rate change*Election					−0.081** (0.033)
Bank fixed effects	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Number of banks	189	189	185	189	189
Number of bank-years	1067	1067	988	1067	1061
<i>p</i> -value of <i>F</i> -test	0.000	0.000	0.000	0.000	0.000
<i>Panel C. Macroeconomic variables interacted with government ownership</i>					
Total assets/GDP	0.001* (0.001)	0.000 (0.000)	0.001 (0.001)	−0.086 (0.206)	0.000 (0.001)
Capital ratio	0.119 (0.384)	−0.138 (0.321)	−0.254 (0.280)	−0.127 (0.332)	−0.137 (0.331)

Table 5 (continued)

<i>Panel C. Macroeconomic variables interacted with government ownership</i>					
Election	−0.032** (0.015)	−0.025 (0.015)	−0.007 (0.020)	−0.015 (0.018)	−0.021 (0.018)
Election*Govtbank	0.057** (0.023)	0.058** (0.025)	0.045* (0.022)	0.057** (0.025)	0.060** (0.025)
Ln (Gdp per capita)	0.342*** (0.100)				
Ln (Gdp per capita)*Govtbank	−0.003 (0.004)				
GDP growth		0.010*** (0.003)			
GDP growth*Govtbank		−0.004 (0.002)			
Budget surplus			1.001* (0.549)		
Budget surplus*Govtbank			−0.410 (0.485)		
Inflation rate				0.042 (0.155)	
Inflation rate*Govtbank				−0.006 (0.009)	
Exchange rate change					0.015*** (0.004)
Exchange rate change*Govtbank					0.001 (0.014)
Bank fixed effects	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Number of banks	189	189	185	189	189
Number of bank-years	1067	1067	988	1067	1061
p-value of F-test	0.000	0.000	0.000	0.000	0.000

significant coefficients, which is consistent with banks increasing their lending with economic development and growth. *Budget Surplus* has a positive and significant coefficient, which suggests that banks increase their loans when the government does not have a deficit to finance. *Exchange Rate* also has a positive and statistically significant coefficient, which suggests that banks increase their lending as the local currency appreciates. *Inflation*, however, does not have a statistically significant coefficient. On the other hand, the coefficient of the interaction term *Election*GovtBank* remains positive and statistically significant at the 5% level, which indicates that the increased lending by the government banks in election years is robust to controlling for macroeconomic factors.

It is possible that macroeconomic variables have a different effect in election years. Regressions are repeated with the macroeconomic variables interacted with the *Election* dummy variable. The results are reported in Table 5, Panel B. The coefficient of the interaction term *Election*GovtBank* is again positive and

statistically significant at the 5% level, which indicates that increased lending by government-owned banks is not just a reflection of macroeconomic variables having different effects in election years.

Finally, it is also desirable to verify that the results reported in the previous section are not just a reflection of different responses by government banks to common macroeconomic shocks that are correlated with the electoral cycle. Macroeconomic variables interacted with the *GovtBank* dummy variable are included in the regressions. If election-year lending increases are just a reflection of a different response by government banks to common macroeconomic shocks, the interactions of macroeconomic variables with the *GovtBank* dummy variable would have a significant coefficient while the coefficient of *Election*GovtBank* would be insignificant. The results are reported in Table 5, Panel C. The coefficient of the interaction term *Election*GovtBank* is still positive and statistically significant at the 10% level or better. Hence, increased lending by government-owned banks in election years does not appear to be merely a reflection of macroeconomic factors but instead represents a secular increase in lending by these banks.

5.2. Different slopes for government-owned banks

Bank fixed effects control for the difference in the *levels* between private banks and government banks. However, the main variable of interest is the interaction term *Election*GovtBank*, which effectively allows the *Election* dummy variable to have a different *slope* for government banks. Since bank fixed effects cannot capture differences in slopes, one concern is whether the *Election*GovtBank* interaction term is capturing these differences as it is the only variable allowed to have a different slope for government banks.

To investigate this concern, each bank-level explanatory variable included in the regressions in the previous section is allowed to have a different coefficient for government banks. The results are reported in Table 6. Only Capital Ratio has a statistically different (and negative) slope for government-owned banks, which suggests that capitalization does not play as important role for these banks as for private banks. However, *Election*GovtBank*, the main variable of interest, continues to have a positive coefficient and is statistically significant at the 5% level. In other words, the results reported in the previous section do not reflect any different role of size or capital ratio in the lending of government banks but instead indicate a secular increase in the loans by government banks in election years.

5.3. Timing of elections

The main analysis takes the calendar year in which the elections take place as the election year. However, if elections take place early in the calendar year, the election-related increase in lending by government-owned banks might occur in the previous calendar year. Ideally, we would need quarterly data on bank lending. Without those data, we have to rely on different definitions of the ‘election year.’

Table 6

Elections and bank lending in emerging markets: controlling for different slopes

The dependent variable is the increase in the total loans that year normalized by total assets from the previous year, i.e., $(Loans(t) - Loans(t-1))/Total\ Assets(t-1)$. *Total Assets/GDP* is the bank's total assets normalized by that country's GDP; *Capital Ratio* is total equity divided by total assets; both variables are as of year $t-1$ and instrumented with their lagged values ($t-2$). *Election* is a dummy variable that equals one in the year of elections; *Govtbank* is a dummy variable that equals one if the bank is owned, directly or indirectly, by the government at least at the 20% level that year. Heteroskedasticity-robust standard errors, corrected for clustering at the country level, are in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively. *F-test* is a statistic to test the hypothesis that all the explanatory variables are jointly zero.

Total assets/GDP	0.005 (0.003)	0.004 (0.004)	0.002 (0.004)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
(Total assets/GDP)*Govtbank	-0.004 (0.003)	-0.004 (0.003)	-0.001 (0.003)			
Capital ratio	0.084 (0.408)	0.075 (0.409)	0.109 (0.396)	1.524** (0.619)	1.516** (0.617)	1.533** (0.603)
Capital ratio*Govtbank				-1.790*** (0.551)	-1.788*** (0.554)	-1.782*** (0.547)
Election		-0.009 (0.014)	-0.031* (0.016)		-0.005 (0.014)	-0.026 (0.016)
Election*Govtbank			0.055** (0.023)			0.051** (0.024)
Ln (GDP per capita)	0.338*** (0.107)	0.348*** (0.101)	0.343*** (0.101)	0.299** (0.114)	0.305** (0.109)	0.301** (0.109)
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of banks	189	189	189	189	189	189
Number of bank-years	1067	1067	1067	1067	1067	1067
Prob>F	0.000	0.000	0.000	0.000	0.000	0.000

Table 7

Elections and bank lending in emerging markets: timing of elections

The dependent variable is the increase in the total loans that year normalized by total assets from the previous year, i.e., $(Loans(t) - Loans(t-1))/Total\ Assets(t-1)$. $Total\ Assets/GDP$ is the bank's total assets normalized by that country's GDP; $Capital\ Ratio$ is total equity divided by total assets; both variables are as of year $t-1$ and instrumented with their lagged values ($t-2$). *Election* is a dummy variable that equals one in the year of elections; *Govtbank* is a dummy variable that equals one if the bank is owned, directly or indirectly, by the government at least at the 20% level that year. With the *April–March Election Year* convention, year t is an election year if the election takes place between April of year t and March of year $t+1$. With the *July–June Election Year* convention, year t is an election year if the election takes place between July of year t and June of year $t+1$. Heteroskedasticity-robust standard errors, corrected for clustering at the country level, are in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively. *F-test* is a statistic to test the hypothesis that all the explanatory variables are jointly zero.

	April–March Election Year		July–June Election Year	
Total assets/GDP	0.001 (0.001)	0.001* (0.001)	0.001** (0.001)	0.002** (0.001)
Capital ratio	0.085 (0.396)	0.093 (0.385)	0.085 (0.400)	0.042 (0.408)
Election	–0.008 (0.012)	–0.037** (0.014)	0.008 (0.013)	–0.009 (0.014)
Election*Govtbank		0.070** (0.026)		0.040* (0.023)
Ln (GDP per capita)	0.344*** (0.103)	0.341*** (0.102)	0.333*** (0.103)	0.339*** (0.103)
Bank fixed effects	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Number of banks	189	189	189	189
Number of bank-years	1067	1067	1067	1067
<i>p</i> -value of <i>F</i> -test	0.000	0.000	0.000	0.000

The main regressions are first repeated for the April–March election year, which defines year t as an election year if the elections take place between April of year t and March of year $t+1$. The results are reported in the first two regressions of Table 7. The interaction term *Election*GovtBank* continues to have a positive coefficient and is statistically significant at the 5% level. The magnitude of this coefficient is higher than that reported in Table 4 using the calendar year definition, which suggests that this adjustment strengthens the results.

The main regressions are then repeated for the July–June election year, which defines year t as an election year if the elections take place between July of year t and June of year $t+1$. This is a more important modification because more elections take place in the second quarter of the year than in any other quarter. The results are reported in the last two regressions of Table 7. The interaction term *Election*GovtBank* continues to have a positive coefficient and is statistically significant at the 10% level. The magnitude of the coefficient is lower than the calendar-year definition, however. This suggests that government banks concentrate

their election-year lending fairly close to the elections. Although the politicians who control the government banks do not need to wait until the campaign season to start election-year lending, this result is consistent with accounts of political campaigns in emerging markets suggesting that the campaign seasons in those countries are short relative to the U.S. presidential elections.⁵

5.4. Different samples

The analysis presented in the previous section uses the unbalanced panel, which follows all the banks until 2000 or their early exit from the sample, with mergers and acquisitions being the most important reason for an early exit. It is desirable to check the robustness of these results to the sample construction.

A sample with replacement is constructed by replacing each exiting bank with the largest bank that operates in the same country but is not already in the sample. This procedure is repeated for every exiting bank except for those that survive through 1999 but exit before the end of their 2000 fiscal year; including a bank for only one year would not allow a panel analysis. This method has the advantage of increasing the sample size even though the theoretical limit is not attained because the lagged variables in the regressions require data from the two years before a bank joins the sample; those data are not always available. The main disadvantage of this method is that it decreases the average number of years spent by each bank in the sample, which, in turn, decreases the power of a panel analysis that relies on time-series variation. The main regressions are repeated using this sample and reported as the first three regressions of Table 8. The interaction term *Election*GovtBank* again has a positive coefficient but the *p*-value is only 0.13. This is probably due to the lower power of the panel analysis in this sample. Indeed, when the analysis is repeated with the balanced sample, the coefficient of *Election*GovtBank* is even higher than the one with the unbalanced panel used in Table 4 and is significant at the 5% level. This balanced sample contains only the banks that survive to 2000 so its advantages and disadvantages are exactly the opposite of those of the sample with replacement: the sample size is smaller but the time series are longer on average.

The number of government-owned banks varies greatly from country to country so the regressions are repeated with the same number of each type of bank for each country. The five largest private banks and five largest government-owned banks as of 1994 are selected. India and Taiwan are included in this sample. Not every country had five banks of each type so the highest equal number of banks is chosen for those countries. This method has the advantage of equal representation by each type. Its main disadvantage is that some of the banks are much smaller, more regional, and more specialized than the other banks from the same country. The interaction term *Election*GovtBank* again has a positive coefficient but has a *p*-value of only 0.16. These tests suggest that the main findings are not driven by some banks or country but the power of the differences-in-differences methodology used in the

⁵See Callahan (2000, pp. 19–37) for Thailand, Jomo (1996, p. 110) for Malaysia, and Bustani (2001) for Brazil.

analysis is weaker when the banks do not stay in the sample long enough or are not very similar in size and scope.

5.5. Non-election years

Main regressions are repeated for the year immediately before and after the elections. The results are reported in Table 9. The variables of interests are *Pre-election* and *Post-election*, which are dummy variables that equal one in the year preceding and following the elections, respectively. These variables, alone or when interacted with the *GovtBank* dummy variable, do not have a statistically significant coefficient. This implies that the election-year increase in government-owned banks is not a reflection of a change that takes place in non-election years. In particular, there is no evidence that private banks defer their lending until after elections due to the uncertainties about the election results. That would imply an increase in the year

Table 9

Bank lending in emerging markets: before and after elections

The dependent variable is the increase in the total loans that year normalized by total assets from the previous year, i.e., $(Loans(t) - Loans(t-1))/Total\ Assets(t-1)$. *Total Assets/GDP* is the bank's total assets normalized by that country's GDP; *Capital Ratio* is total equity divided by total assets; both variables are as of year $t-1$ and instrumented with their lagged values ($t-2$). *Pre-election* and *Post-election* are dummy variables that take 1 in the year preceding and following the elections, respectively. *Govtbank* is a dummy variable that equals one if the bank is owned, directly or indirectly, by the government at least at the 20% level that year. Heteroskedasticity-robust standard errors, corrected for clustering at the country level, are in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively. *F-test* is a statistic to test the hypothesis that all the explanatory variables are jointly zero.

	Pre-election		Post-election	
Total assets/GDP	0.001 (0.001)	0.001 (0.001)	-0.006 (0.122)	-0.006 (0.122)
Capital ratio	0.105 (0.401)	0.127 (0.395)	0.159 (0.288)	0.151 (0.289)
Pre-election	0.014 (0.012)	0.024 (0.016)		
Pre-election*Govtbank		-0.021 (0.023)		
Post-election			-0.007 (0.012)	-0.001 (0.013)
Post-election*Govtbank				-0.013 (0.019)
Ln (GDP per capita)	0.343*** (0.104)	0.340*** (0.103)	0.331*** (0.103)	0.331*** (0.103)
Bank fixed effects	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Number of banks	189	189	189	189
Number of bank-years	1063	1063	1067	1067
p-value of F-test	0.000	0.000	0.000	0.000

following the elections, but regressions 3 and 4 in [Table 9](#) do not provide any evidence of a post-election increase.

6. Conclusion

This paper provides empirical evidence about the political influences on government-owned banks in major emerging markets in the 1990s. The paper focuses on political events—elections—and studies their effects on bank lending across both government-owned banks and private banks. By comparing the different reactions of both types of bank to a political event, the analysis isolates political influences from many other differences between private banks and government-owned banks. It shows that government-owned banks increase their lending in election years relative to private banks. These effects are robust to controlling for macroeconomic and bank-specific factors. The results indicate that political motivations influence the actions taken by government-owned banks and cannot be attributed to other differences between private banks and government-owned banks in efficiency and objective.

The results provided in this paper do not depend on the reasons why the government owns banks in the first place. They are also independent from other (real or perceived) benefits and costs of government ownership of banks, and from macroeconomic factors that politicians might try to affect before the elections. While the political influences on government-owned enterprises have long been thought to be a potentially important source of distortion in the economy, these findings are the first cross-country, firm-level evidence about the political influences on government-owned enterprises, financial or otherwise. By demonstrating a channel through which the negative effects of government ownership take place, this paper also complements the findings in [La Porta et al. \(2002\)](#) about the association between government ownership of banks and subsequent low economic growth in that country.

Political influences documented in this paper also indicate how politicians can use government-owned banks to distribute these rents to their supporters. This paper can provide an estimate of political lending due to the elections. The election-year lending increase per government-owned bank per election is about 11% of the total loans of a government-owned bank, on average, or 0.5% of GDP of the median country in 1996. However, it should be emphasized that this is very likely to be an underestimate of the political influences on government-owned banks. First, the analysis relies on the differences between election years and non-election years. To the extent that politicians use their influence on these banks in non-election years, our estimates are biased towards zero. Second, this paper focuses only on government ownership but politicians can also use the power of government to influence private banks. To the extent that politicians can also influence private banks, our estimates of the differences between private and government-owned banks are again biased towards zero. Quantifying the total cost of political influences

on government-owned banks, which are rarely publicly traded, will be an important future research topic.

The analysis fails to detect a similar election-year increase in developed economies. While these countries often have better legal and political institutions, their importance is not detected in an (unreported) regression analysis in which the election-year effect in government-owned banks is interacted with measures of institutional quality. Instead, the lack of an election-year effect in developed economies could be due to several other factors. First, many government-owned banks in developed countries are owned by regional or local governments and operate locally. The private banks in those countries, on the other hand, are often multinational banks. Hence, the power of our tests, which relies on the comparison of private and government-owned banks, is likely to be diminished in developed countries. Second, banks that are owned by the local governments in developed countries would be more inclined to increase their lending not before national elections but before local elections. Finally, most of the developed economies are members of the European Union where there are also elections for the European Parliament. While those elections may not be as important as the national elections, they blur the differences between the years national elections take place and other years.

The findings reported in this paper also have implications for studies on financial systems and the role of banks. They demonstrate that the ownership of banks matters in financial systems. They also suggest that the comparison of financial systems in general and the role of banks in those systems in particular cannot be fully understood without due regard to the political environment in which these financial systems operate, as in Aoki (2002), who provides a general approach to comparative institutional analysis that also incorporates the incentives of politicians and bureaucrats.

Appendix. Data description

Variable	Description
Ownership variables	
GovtBank	Dummy variable that is equal to one if a bank is owned by the government, directly or indirectly, at least at the 20% level. Data are collected for each bank and for each year between 1994 and 2000 Sources: <i>Bankscope Online</i> , <i>Bankscope</i> CD-ROMs (previous editions), <i>Factiva</i> , Internet sources, various individual sources
Private	Dummy variable that is equal to one if a bank is owned by the government, directly or indirectly, at a level less than 20% that year. Data are collected for each bank and for each year between 1994 and 2000

Sources: *Bankscope Online*, *Bankscope* CD-ROMs (previous editions), *Factiva*, Internet sources, various individual sources

Balance sheet variables

Total Assets	Total assets of a bank in that particular year Sources: <i>Bankscope Online</i> , <i>Bankscope</i> CD-ROMs (previous editions)
Total Loans	Total loans of a bank in that particular year Sources: <i>Bankscope Online</i> , <i>Bankscope</i> CD-ROMs (previous editions)
Change in Loans	Change in the total loans normalized by total assets from the previous year, i.e., $(Loans(t) - Loans(t-1)) / Total\ Assets(t-1)$
Treasury Securities	Domestic Treasury bond and bill holdings of a bank in that particular year Sources: <i>Bankscope Online</i> , <i>Bankscope</i> CD-ROMs (previous editions)
Total deposits	Total deposits of a bank in that particular year Sources: <i>Bankscope Online</i> , <i>Bankscope</i> CD-ROMs (previous editions)
Operating Income	Net operating income of a bank in that particular year Sources: <i>Bankscope Online</i> , <i>Bankscope</i> CD-ROMs (previous editions)
Capital ratio	Equity divided by total assets of a bank in that particular year Sources: <i>Bankscope Online</i> , <i>Bankscope</i> CD-ROMs (previous editions)

Election variables

Election	Dummy variable that is equal to one if elections that determine the head of government take place in that country that year. Sources: <i>Europa World Year Book</i> , <i>CIA World Factbook</i> , <i>World Political Almanac</i> , and <i>Elections Around The World</i> (www.electionworld.org)
Pre-Election	Dummy variable that is equal to one if elections that determine the head of government take place in that country in the immediately following year. Sources: <i>Europa World Year Book</i> , <i>CIA World Factbook</i> , <i>World Political Almanac</i> , and <i>Elections Around The World</i> (www.electionworld.org)
Post-Election	Dummy variable that is equal to one if elections that determine the head of government take place in that country in the immediately preceding year. Sources: <i>Europa World Year Book</i> , <i>CIA World Factbook</i> ,

World Political Almanac, and *Elections Around The World* (www.electionworld.org)

Macroeconomic variables

GDP per capita	Gross Domestic Product (GDP) per capita in U.S. dollars Source: <i>IMF International Financial Statistics</i>
GDP Growth	Gross Domestic Product (GDP) change (in percentage points) Source: <i>IMF International Financial Statistics</i>
Inflation rate	$\ln(1 + \text{Rate of wholesale price increase})$ Source: <i>IMF International Financial Statistics</i>
Budget surplus	Central government receipts minus government outlays as a percentage of GDP (in percentage points). It is negative when the government runs a deficit. Sources: <i>IMF International Financial Statistics</i> , <i>World Bank</i> , and <i>Central Bank Sources</i> .
Exchange rate change	Change in the exchange rate of the domestic currency against the U.S. dollar from the previous year; it is negative if the currency depreciates against the dollar that year Source: <i>IMF International Financial Statistics</i>

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