

Government Policy Responses to Financial Crises: Identifying Patterns and Policy Origins in Developing Countries

EUNYOUNG HA^a and MYUNG-KOO KANG^{b,*}

^a *Claremont Graduate University, USA*

^b *Baruch College, City University of New York, USA*

Summary. — This paper investigates how three major political conditions—political constraint (imposed by veto players), government partisanship, and elections—have influenced the government responses to financial crises in 98 developing countries over the period 1976–2004. We find that governments experiencing financial crises generally tightened their monetary and fiscal policies, but the extent of the tightening was considerably moderated by the presence of large political constraint (large and strong veto players), strong leftist partisan power in government, and upcoming legislative or presidential elections. We also find that fiscal policies are more considerably constrained by political conditions than monetary policies.

© 2014 Elsevier Ltd. All rights reserved.

Key words — financial crisis, fiscal policy, monetary policy, veto players, government ideology, electoral competition

1. INTRODUCTION

Over the past four decades, since the breakdown of the Bretton Woods system, most countries have experienced financial crises of one kind or another (Laeven & Valencia, 2008; Reinhart & Rogoff, 2009). As financial crises have become increasingly frequent and damaging, debate has grown on the origins, management, and prevention of financial crises. Nonetheless, we still lack a systematic understanding of how governments' macroeconomic policies are determined in the course of coping with financial crises (Alesina & Giavazzi, 2013; Blanchard, Romer, Spence, & Stiglitz, 2012; Claessens, Kose, Laeven, & Valencia, 2013; Cottarelli, Gerson, & Senhadji, 2014).

What determines different government responses to financial crises? The discipline of economics tends to answer this question from a “market fundamentalism” perspective, predominantly focusing on the dynamics of markets in an effort to find the common causes of financial crises. This framework treats politics as an outcome of market dynamics: the severity and nature of a financial crisis determines the type of government intervention, not the other way around. Government intervention, at best, is therefore treated as a minor factor in determining the recovery pattern (Reinhart & Rogoff, 2009). On the other hand, political scientists consider domestic political conditions and institutions as significant factors shaping government fiscal and monetary policies (e.g., MacIntyre, 2001; Tsebelis, 1995, 2002). From this perspective, political conditions/institutions (e.g., regime type, veto players, electoral cycles, and policy making structure) play a major role in mediating the external shock on the domestic economy and in determining the recovery pattern.

This paper tries to bridge the gap between economics and political science by analyzing both economic and political factors that may shape government responses to financial crises. We argue that domestic political conditions – political constraints (imposed by veto players), government partisanship, and elections – have strongly influenced government responses to financial crises in developing countries. In existing studies, the policy responses of less developed countries (LDCs) are often assumed to employ only contractionary monetary and

fiscal policies, primarily due to the difficulty in providing liquidity in times of financial crises, and the constraints imposed by the International Monetary Fund (IMF) conditions (Dreher, 2006; Dreher & Walter, 2010; Pastor, 1987). Moreover, politics in LDCs has often been treated as a set of marginal or residual factors, as LDCs have weaker and less organized political parties and institutions. However, LDCs have responded with different combinations and degrees of policies, even under the pressure of the IMF conditionality (Dreher, 2006; Presbitero & Zazzaro, 2012). This variation in government responses to financial crises should be strongly influenced by policy makers' political interests and/or constraints given domestic political conditions. The core of our argument is that politics should be taken more seriously in understanding government policy responses to financial crises.

Using a pooled time series analysis of 98 developing countries and 348 financial crisis episodes from 1976 to 2004, we systematically investigate how government monetary and fiscal policies in response to financial crises were influenced by three major political conditions: political constraints (veto players), government partisanship, and elections. Based on our empirical analysis, we make the case for two main findings. First, governments facing financial crises do tend to significantly tighten both monetary and fiscal policies, but the strength of these tightening effects are moderated by large political constraints (imposed by large and strong veto players in the political system), strong leftist power in government, and upcoming legislative or presidential elections.

Second, financial crises and domestic political conditions tend to produce variations in policy response. Financial crises tend to generate a weaker influence on a nation's fiscal policy

* For help with various aspects of this article, we are grateful to Puspa Amri, Nicholas Cain, Heather Campbell, Pierre Englebert, In Song Kim, Brett Kocher, Amanda Krzyzanowski, David Leblang, Dong-wook Lee, Raul Madrid, Melissa Rogers, Cameron Shelton, George Tsebelis, the editors, and anonymous reviewers. We are highly indebted to Thomas Willett for his constructive comments on the development of this article. All remaining errors are our sole responsibility. Final revision accepted: December 4, 2014.

as compared to monetary policy. Governments in LDCs tend to tighten monetary policy in response to all three types of crisis—currency, bank, and debt—whereas governments tighten fiscal policy only when they confront a currency crisis. Moreover, the degree of fiscal policy tightening becomes smaller (and disappears more quickly) when governments face fewer political constraints (imposed by veto players).

Our empirical findings highlight that policy responses in LDCs are politicized by political constraints (imposed by veto players), government partisanship, and electoral interests, as observed in advanced countries. Policy makers' partisan and electoral interests do not necessarily correspond to national economic interests. Even if they do, policy makers may still be strongly constrained when there are large and strong veto players in the political system. Our results suggest that the constraints imposed by domestic political conditions may delay the adoption of necessary policy measures and impede recovery from financial crises.

This paper is organized into five parts. In Sections 2 and 3, we review the theoretical debates on proper government responses to financial crises, and then we address how domestic political institutions and conditions can constrain government policy choices. In Sections 4 and 5, we describe the variables and empirical models employed in our work, and present our findings based on the different measurements and empirical models. In Section 6, we conclude by discussing the implications of our results.

2. THE IMPACT OF MACROECONOMIC CONDITIONS

Existing studies on financial crises have predominantly focused on the *ex post* economic effects of monetary or fiscal policies. However, no conclusive consensus exists as to the usefulness of monetary and fiscal policies in recovering from financial crises, except for two cases: monetary tightening under a currency crisis, and fiscal tightening under a sovereign debt crisis (Alesina & Giavazzi, 2013; Blanchard *et al.*, 2012; Claessens *et al.*, 2013; Tagkalakis, 2013). Economists generally agree that during currency crises, a high interest rate policy is effective to contain capital flight and induce capital inflows, which reduces the depreciation of exchange rates and limits consumer price increases (Eichengreen & Rose, 1998; Goldstein, Kaminsky, & Reinhart, 2000). However, the natures of currency crises have varied over time and depending on domestic macroeconomic conditions. Currency crises are often accompanied by systemic banking crises, a phenomenon called a twin crisis (Hutchison & Noy, 2005; Kaminsky, 2006; Kaminsky & Reinhart, 1999). Under the conditions of a twin crisis, tight monetary policy can worsen banking sector problems, causing higher delinquency rates and more bank failures.

Economists also agree that fiscal tightening is a good remedy for sovereign debt crises (Manasse & Roubini, 2009; Roubini & Setser, 2004). In this type of crisis, because a government cannot pay its debt, the consensus is that cutting expenses is necessary to balance deficits in the short term. Still, the usefulness of monetary policy to address sovereign debt crises is more inconclusive, as sovereign defaults are often associated with high inflation (Reinhart & Rogoff, 2009). Under high inflation, governments are supposed to tighten the money supply by raising interest rates, but higher interest rates can cause more bank failures and damage growth, thus reducing government revenue flows. Indeed, existing studies have not reached consensus on the “right” monetary and fiscal policy measures for any financial crisis.

But of course, economic policy is never made in a vacuum—government response to financial crises, especially in LDCs, is often determined by external constraints. Financial crises often result from exogenous shocks, and LDCs usually lack the ability to quickly inject liquidity into markets. Under such circumstances, it often becomes critical for governments to restore their credibility with foreign creditors in regard to government commitments. Foreign creditors and the IMF, which is often the lender of the last resort for LDCs, have traditionally requested contractionary policy measures in the face of financial crisis, because these kinds of policies can help prevent capital outflows (or attract more inflows) and thus stabilize exchange rate markets. Given this, the monetary and fiscal responses of LDCs under IMF program participation tend to be highly contractionary (Abbott, Andersen, & Tarp, 2010).

The IMF, however, does not request similar stringent contractionary monetary and fiscal policy measures to all crisis-hit developing countries. For example, the IMF did not request as stringent contractionary measures from Brazil in 1998 and 2002, from Pakistan in 1998, and from the Ukraine in 1998 as it did toward South Korea, Indonesia, and Thailand during the Asian financial crisis in 1997–98 (Roubini & Setser, 2004). The IMF also renegotiated and changed its policy conditionality request. In the case of South Korea, the Kim Young-Sam government (Grand National Party) initially agreed with the stringent monetary and fiscal policy conditionality requested by the IMF on December 3, 1997. Yet, the Kim Dae-Jung government (Democratic Party), which was elected later that month (mainly with support from the middle and lower classes), renegotiated the government response with the IMF after inauguration on February 25, 1998. Thus, the new government did not follow the more extreme policies originally advocated by the IMF, and Korea's policies were far less stringent than those of Indonesia and Thailand, which made similar Stand-By Agreements (SBA) with the IMF (Coe & Kim, 2002).

Furthermore, the effects of the tightening monetary and fiscal policies recommended by the IMF varied across crisis-hit countries. For example, Russia (1998) and Argentina (2000–01) ended up defaulting, while South Korea (1997–98) and Mexico (1995) recovered from the crisis more rapidly (Roubini & Setser, 2004, pp. 16–72). On the other hand, countries without IMF support did not necessarily perform worse than those with the IMF program. For example, Malaysia in 1997–98 and Jamaica in 1995–96 could recover from financial crisis as successfully as those with the IMF program (Kirkpatrick & Tennant, 2002; Pepinsky, 2009).¹

These mixed outcomes and variations in policy adoptions highlight the fact that government policy choices under financial crises are determined not only by external pressures or macroeconomic conditions, but also by domestic political conditions. Citizens who are already suffering the extreme hardship of financial crisis are likely to suffer even more under contractionary government policies, which exacerbate the economic shock. Thus, adopting contractionary policies in the face of financial crisis can place mounting political pressures on incumbent governments. Indeed, regime change often occurs after financial crises, as the cases of South Korea (1997), Indonesia (1998), Venezuela (1998), Brazil (2003), and Argentina (2003) demonstrate. Given this, politicians make their policy choices not just to foster economic recovery, but also to ensure political survival. However, political and economic incentives do not necessarily correspond to each other, especially under crisis conditions. In fact several studies find that political conditions have significantly influenced the causes and outcomes of financial crises in LDCs (Angkinand

& Willett, 2008; Leblang, 2002; MacIntyre, 2001). However, existing debates among economists usually ignore the constraints imposed by political and institutional conditions. Few studies have systematically examined how political factors have shaped the policy responses of governments to financial crises in LDCs.

3. THE IMPACTS OF DOMESTIC POLITICAL CONDITIONS

To investigate the policy responses of governments to financial crises we examine three important domestic political conditions: political constraints (imposed by veto players), government partisanship, and elections.

A veto player is “an individual or collective actor whose agreement is required for a change in policy” (Tsebelis, 1995, p. 301).² Changes in government policies are often significantly limited by large numbers and/or powerful veto players. Other factors including the degree of congruence in the policy preferences among those veto players, and the degree of cohesion among the policy positions held by the constituents of those veto players also play a role in the effectiveness of veto players (Tsebelis, 1995, 1999, 2002; Ha, 2008). When there are veto players with policy preferences at odds with the sitting government, they can significantly constrain government responses to economic shocks or crises (Cox & McCubbins, 2001; MacIntyre, 2002). One common kind of veto player is a national legislature, which may block executive action in the face of a crisis—especially if the government is ideologically divided. Legislative or policy gridlock is found across political systems, from presidential to parliamentarian, and unicameral to bicameral (Epstein & O’Halloran, 1999; Laver & Shepsle, 1996). Several empirical studies find that political constraints imposed by larger and more powerful veto players significantly shape inflation rates (Treisman, 2000) and influence crisis outcomes in LDCs (Angkinand & Willett, 2008; MacIntyre, 2001).

We expect that large political constraints (imposed by larger and stronger veto players) are likely to impede policy changes under financial crisis. Given the enlarged economic hardship under financial crisis, governments with larger political constraints would confront more resistance against monetary and fiscal tightening than loosening. For example, the Turkish government had a SBA with the IMF in December 1999, and accordingly, it was supposed to take tightening monetary and fiscal policies to resolve the worsening budget deficits and inflation. However, the coalition government, established as a result of the general election in April of 1999, was split over the reform agendas and failed to develop strong political support for the reforms.³ Because of this, the IMF policy measures Turkey agreed to take were not properly implemented, and the Turkish economy plunged into a systemic banking crisis in 2001.

The ideological orientations of incumbent governments also create significant constraints on government policy options (Chu, Davoodi, & Gupta, 2000; Ha, 2012; Hibbs, 1977; Huber, Nielsen, Pribble, & Stephens, 2006; Huber & Stephens, 2001; Moon & Dixon, 1985) and influences government policy responses to financial crises (Campello, 2014). In the classical model of partisan politics, leftist governments are assumed to prefer Keynesian policies that aim to smooth the business cycle by stimulating demand in response to downturns, and thus leftist governments typically favor a larger government sector (Alesina & Roubini, 1992; Alesina, Roubini, & Cohen, 1997). By contrast, rightist governments are assumed to prefer low inflation and balanced budgets

and thus favor smaller government (Boix, 2000). Given these preferences, leftist governments usually adopt a counter-cyclical set of fiscal policies to reduce unemployment and stimulate growth in response to economic downturns, while rightist governments prefer a fiscal policy that ends up being pro-cyclical (Hibbs, 1977).

Several studies on LDCs have found that policymakers’ party affiliations and ideological orientations strongly influence their policies and political preferences on government spending (Moon & Dixon, 1985), income inequality (Ha, 2012; Huber *et al.*, 2006), monetary policy (Mukherjee & Singer, 2008), and tax policy (Chu *et al.*, 2000). In particular, Leblang (2002) finds that speculative attacks (and thus the likelihood of financial crisis) in LDCs are more likely under leftist governments than rightist ones.

Similarly, the ideological orientation of government is likely to affect the government responses to financial crisis. For example, the leftist Chávez government (1999–2013) in Venezuela, which took power after a series of economic crises in the 1990s, tried to promote the redistribution of wealth while also increasing social spending, thereby strengthening the class-based party politics system (Heath, 2009). The Lula government (2003–11) in Brazil, when it took power after the economic crisis in 2000–02, launched a series of social programs favoring lower income workers with less education. These programs included “Zero Hunger” (Fome Zero), “Family Allowance” (Bolsa Familia), and “School Allowance” (Bolsa Escola), and such policies helped Lula get reelected in 2006 despite the corruption scandals of his government (Hunter & Power, 2007). As such, we expect that under financial crises leftist governments in developing countries will be more likely to take expansionary (or, at a minimum, less contractionary) monetary, and fiscal policy steps than rightist governments.

Lastly, we expect that upcoming elections can have significant impacts on government policy responses, especially with regard to fiscal policies, as existing literature on political business cycles has highlighted (Canes-Wrone & Park, 2012; Drazen, 2001). As an older model, Nordhaus (1975) suggested that voters are likely to make their voting decision largely based on the recent performance of governments and predicted that incumbent governments are likely to adopt expansionary monetary and fiscal policies before elections in order to stimulate the economy. As Shi and Svensson (2006) highlight, politicians whose primary concern is reelection, tend to behave “opportunisticly” and adopt expansionary fiscal measures (which is labeled the opportunistic model hereafter). According to said scholars, although most voters are likely to know the government’s motivation for upcoming elections, some voters may not be properly informed about such election-motivated fiscal measures and fail to distinguish such expansionary fiscal manipulations from incumbent competence. Studies on the political budget cycles have confirmed this tendency in advanced economies (Persson & Tabellini, 2002, chap. 24; Rogoff & Sibert, 1988).

The opposite situation is also possible, however, where expansionary policies are checked and balanced via elections. Expansionary fiscal and monetary policies, particularly expansionary fiscal policies, can polarize political views and result in a backlash from voters who are unhappy with the prospect of higher taxes and public debt burdens. Under such circumstances, incumbent governments may try to avoid political risk by deferring action in the face of upcoming elections (which can be referred to as an accountability model) (Keefer, 2001, 2007). Recently Brender and Drazen (2008) reported, based on a sample of 74 countries, that voters are essentially fiscally conservative and punish politicians who support expansionary

fiscal policies. Indeed, the aggregate effect of a bad economy on vote choice is still ambiguous and related to macro-conditions in a non-linear way (Weschle, 2014).

We should note, however, that the conflicting predictions of the opportunistic model and the accountability model were primarily driven from the experiences of advanced economies that have established democratic institutions. However, many LDCs are young democracies, and they often have weak electoral accountability. Politicians are thus more tempted to hew to the opportunistic model as opposed to the accountability model. For example, expansionary monetary or fiscal policies in LDCs, which create asset or credit bubbles during the pre-crisis period, were often intensified by the election process (Leblang, 2002). In particular, compared to monetary policies, fiscal policies are likely to be more politicized because political parties in developing countries tend to provide particularistic benefits and rewards to secure votes during elections (Nichter, 2008; Remmer, 2007). Indeed, Schuknecht (1996, 2000) found that expansionary fiscal policies were more frequently adopted before elections, based on the experiences of 24 developing countries from 1973 to 1992. Likewise, Peters (2010) found similar results for Caribbean countries. Therefore, we expect that elections are likely to amplify the opportunistic behaviors of politicians and constrain tightening policies (or even loosen them) under financial crisis, particularly for fiscal policies.

4. VARIABLES AND MODELS

(a) *Dependent variables*

Our dependent variables measure government monetary and fiscal responses to financial crises. In operationalizing our measures, we follow much of the literature in using the discount rate and cyclically adjusted budget balance, as explained below.

(i) *Monetary policy*

Monetary policy is measured by the central bank discount rate. A falling discount rate signals the provision of more liquidity to financial markets; thus, increased discount rates are evidence of monetary tightening, while decreased rates indicate monetary loosening. Other indicators, such as the annual growth of M1, or short-term real interest rates, are used in other studies to operationalize monetary policy for advanced countries (Alesina & Roubini, 1992; Boix, 2000). However, following Hutchison, Noy, and Wang (2010), we use the discount rate as our measure of monetary policy, because it is the only interest rate measure widely available for developing and emerging-market countries. This rate also changes less frequently than other indicators, and thus provides a clearer signal of discrete policy shifts. The data on discount rates used in this paper are drawn from the IMF International Financial Statistics (IFS). To normalize the distribution of discount rates, we use the natural log of the values.⁴

(ii) *Fiscal policy*

Fiscal policy is measured by what is known as the cyclically adjusted government budget balance, measured as a share of gross domestic product (GDP). The cyclically adjusted government budget balance is designed to be a measure of government fiscal stance that is independent from the business cycle. That is, it gives a measure of government policy direction that is isolated from automatic fiscal policy responses to

the present state of the economy. In general, if a government tightens budgets by cutting its expenditures and/or expanding revenues, its budget balance improves (i.e., a negative number becomes less negative, or a positive number becomes more positive); if a government loosens its budget, the opposite happens. However, during an economic downturn, budget balances often grow larger, not because governments actively loosen fiscal policies, but because tax revenues drop due to a decline in output and/or because expenditures increase due to heightened spending on social insurance and related programs. Therefore, to measure the discretionary-only component of changes in fiscal policy, we need a measure of active fiscal policy that separates out the cyclical component of changes in the government budget balance.

Following Hutchison *et al.* (2010), we measure the discretionary component of fiscal policy with the following equation:

$$BB_t = \beta_0 + \alpha_1 y_t + \alpha_2 y_{t-1} + \beta_1 t + \mu_t$$

where BB_t is the total government budget balance as a share of GDP for a particular country, y is the real GDP growth rate for the country, t is the time trend, and μ_t is the random error term. The terms $\beta_0 + \alpha_1 y_t + \alpha_2 y_{t-1} + \beta_1 t$ explain the cyclical or non-discretionary component of the total government budget balance; the estimated residuals ($\hat{\mu}$) measure what is left over and thereby provide the estimate for the cyclically adjusted component of the budget balance.

(b) *Independent variables*

Our independent variables measure the type of financial crisis, various kinds of political factors (veto players, government ideology, and elections) and also include control variables, as we describe in detail below.

(i) *Financial crisis: currency, banking, and sovereign debt crises*

Given that the extant literature is still divided on the proper policy responses to financial crises, we first test how existence of any financial crisis has influenced monetary and fiscal policies. To indicate the presence of a financial crisis, we use a dichotomous variable and code the onset year of the financial crises and the subsequent two years (3 years total) as 1, and other years as 0. We classify the subsequent two years as years of financial crises because the impacts of financial crises on the real economy tend to last beyond just the year of initial onset.

Second, we also classify financial crises into three types—currency, banking, and sovereign debt—to pick up whether different types of financial crises have varying impacts on the monetary and fiscal policies of governments. For this classification, we adopt the definitions of each type of financial crisis used by Laeven and Valencia (2008) (hereafter, LV). LV adopt a fairly broad definition of a banking crisis, considering a banking crisis to be any systemic episode in which the corporate and financial sectors of a country experience a large number of defaults and financial institutions face difficulties repaying loans on time. LV exclude non-systemic episodes where bank failures are fairly isolated and contained. To cross-check their definitions of banking crises, LV checked if their designated crisis onset years coincided with the following events: (1) deposit runs; (2) introduction of deposit freezes/blanket guarantees; (3) extensive liquidity support; (4) bank interventions/bank takeovers; and (5) high percentages of non-performing loans that produced losses of substantial banking system capital.⁵ Regarding currency crises, following Frankel and Rose (1996), LV coded a currency crisis as a calendar year with (1) a nominal depreciation of the local

currency against the U.S. dollar of at least 30%, and (2) at least a 10% increase in the rate of currency depreciation compared with the year before. For example, if a currency loses 20% of its value against the U.S. dollar in year t and then loses an additional 40% of its value against the USD in year $t + 1$, then year $t + 1$ would be classified as a currency crisis year. Finally, LV constructed their sovereign debt crisis measure by identifying dates of sovereign debt defaults or restructuring, including years of default to private lenders and of debt rescheduling.

(ii) *Political constraints (veto players)*

When there is a greater dispersion of power (more veto players) in a political system, we expect that it will be more difficult for policy changes to be implemented. We use the “political constraints (POLCON)” dataset of Henisz (2002) to measure institutional constraints imposed by a veto player structure. To generate this data, Henisz (2002) first identified the number of independent branches of government (e.g., executive branch, lower and upper legislative chambers) having veto power over policy changes for 234 countries from 1800 to 2007. He then measured the extent of alignment across the identified branches of government using data on the party composition of the executive and legislative branches. Lastly, Henisz includes the extent of preference heterogeneity within each legislative branch, which increases decision costs of overturning policy for aligned executive branches. The resulting data points within POLCON range from 0 (no constraint) to 1 (greatest constraint).

(iii) *Leftist power in government*

To measure the ideological orientation of incumbent governments, we use the government ideology dataset of Ha (2012), which built upon the World Bank’s *Database of Political Institutions* (DPI) by expanding its focus from just the three largest government parties to *all* government parties. Like the DPI, Ha (2012) codes government parties as left, center, or right, based on their names and positions on state control of the economy. In addition, if party names contain the terms “conservative” or “Christian democratic” or the label “right wing”, the parties are coded right. If party names include the terms “communist,” “socialist,” or “social democratic,” or the label “leftwing”, the parties are classified as left. When party names assert centrist affiliation, their policy position is classified as centrist.⁶

With these classifications, we can measure the strength of leftist power in government by the leftist parties’ share of total government portfolios or leftist parties’ share of total legislative seats. Unfortunately, such portfolio or non-government party data are unavailable for most developing countries. Alternatively, therefore, we measure the strength of leftist power in government by the number of seats held by leftist government parties in the legislature, as a share of all government parties’ seats of in the legislature. Leftist power in government ranges from 0 (no leftist power) to 100 (full leftist power).

(iv) *Electoral year*

An upcoming election may be positively associated with expansionary monetary and fiscal policies if incumbent parties try to minimize current shocks from financial crises to win the election (opportunistic model). On the other hand, an upcoming election may also be related to tightening of monetary and fiscal policies if incumbent parties try to avoid backlash from voters who are unhappy with prospective taxes and government debt burdens (accountability model). To test these

possibilities, we measure the effects of the electoral cycle by using an election-year dummy, where an election year is coded as 1 and 0 otherwise.

If an election is held early in a calendar year, a government may raise public spending in the previous year instead of the election year itself. To test for this possibility, we also included a second election-year dummy, coded 1 if there was an election held in the first half of the year after the financial crisis. This alternate definition of “election year” did not change the main results in this paper. Thus we report only the impact of elections taking place during the years of financial crises themselves.

To separate these political factors from larger macroeconomic patterns, we also include several control variables that are commonly used in the literature when investigating government monetary policy responses.

(v) *Monetary control variables*

For monetary policy responses, we control for IMF program participation, inflation rates, “output gap,” current account balance as a share of GDP, trade and capital market openness, and logged GDP per capita. First, IMF program participation is expected to be associated with tightening monetary policies. When a country receives emergency loans from the IMF, its government is typically required to adjust its macroeconomic policies along the lines of specific policy recommendations known as IMF conditionality, and the IMF monitors the compliance of loan-recipient governments regularly. Typically, the IMF has recommended both monetary and fiscal tightening policies for loan-recipients. Therefore, if a country participates in an IMF lending program, we expect such participation to significantly constrain moves to implement expansionary fiscal or monetary policies (Vreeland, 2007). Following Vreeland (2007), we code 1 for a country if it has a Stand By, Extended Fund Facility, or Structural Adjustment Facility agreement with the IMF in operation in a given calendar year, and 0 otherwise.

Second, according to the Taylor rule, which is widely seen as a successful simple account of the forces shaping central bank behavior (Clarida, Gali, & Gertler, 1997; Gerlach & Schnabel, 1999; Taylor, 1993, 1998), nominal interest rates are a function of inflation rates and the output gap. Because governments or economies facing high inflation will try to tighten money supplies, the inflation rate is expected to be positively associated with the discount rate. That is, as the inflation rate increases, it will tend to cause monetary authorities to raise discount rates in response. We use the annual percentage growth of consumer prices to measure country inflation rates.

On the other hand, the output gap, a measure of a country’s historical growth rate relative to its actual growth rate, is expected to be negatively related to the discount rate. A positive output gap indicates that the actual growth rate is lower than the expected growth rate based on historical trends, while a negative output gap means that growth rate outperforms anticipated government performance. Thus, when the output gap increases (becomes positive or less negative), monetary authorities are likely to adopt expansionary monetary policies and lower the discount rate to promote economic growth. To generate the output gap measure, we first calculate the deviation of growth in a given year from the average growth rate of GDP of each country from 1960 to 2010. Then, we used the Hodrick–Prescott (HP) high-pass filter to separate the trend and cyclical components of the time series and generate stochastic output gap trends (Hodrick & Prescott, 1997).

Third, the current account balance is expected to be positively related to the discount rate. That is, a higher current

account deficit (measured as a share of GDP) would lead to higher discount rates (tighter monetary policy) if governments want to encourage capital inflows to finance the current account deficit rather than allowing it to crowd out private investment (Eijffinger, Van Rooij, & Schaling, 1996; Kosekła & Viren, 1991).

On the other hand, trade and capital market openness may be either positively or negatively associated with expansionary monetary policies. During a country's initial stages of development, they tend to keep capital markets fairly repressed while setting effective interest rates high to attract more domestic savings to formal financial institutions and away from informal "curb markets." But as economic development proceeds and the informal financial sector shrinks, capital openness typically increases and interest rate levels adjust closer to parity with global levels. Therefore, we cannot predict a "clean" relationship between capital openness and monetary policies without making reference to a country's level of development.

Hence, to absorb the effects of trade and capital market openness, or lack thereof, we use the KOF Index of Globalization, which amalgamates measures of hidden import barriers, the mean tariff rate, taxes on international trade (as a percentage of current revenue), and capital account restrictions (see Dreher, 2006), but we do not make any *ex ante* predictions about the directions of its effects. The KOF Index ranges from 0 (perfectly closed market) to 1 (perfectly open market).

Lastly, we control for the wide variation in income level of countries in our sample. Too much variation in economic size may make it difficult to discern the influence of political factors. Thus, as is commonly done in the study of developing countries, we use the logged GDP per capita as an additional control.⁷

When testing the dependent variable of fiscal policy responses, we also control for the following independent control variables: IMF program participation, output gap, age dependency ratio, trade and capital market openness, and logged GDP per capita.

(vi) *Fiscal control variables*

First, as discussed earlier, IMF participation is expected to be associated with tightened fiscal policies. Second, we expect the output gap to be negatively associated with the cyclically adjusted budget balance. When the output gap increases, governments are likely to adopt expansionary fiscal policies to promote economic activity and growth, and will do the opposite when the gap declines.

Third, trade and capital market openness, measured using the KOF Index of Globalization, is expected to be associated with tightened fiscal policy. As national markets merge into the world market, it becomes harder for governments to impose taxes and to increase tax-financed public expenditures because of the competitiveness burden imposed upon domestically situated producers. Similarly, in a market of capital openness, business can simply flee if tax burdens grow excessively high (Allan & Scruggs, 2004; Aspinwall, 1996; Huber & Stephens, 2001). On the other hand, governments under globalization may face greater pressure to expand welfare expenditures (and thus loosen fiscal policies) to combat the increased social dislocation, economic insecurity, and inequality (Garrett, 1998; Ha, 2008).

Finally, the age dependency ratio, which is the population of the young and aged relative to the employed labor force, is expected to be associated with expansionary fiscal policy. A large population of either young or aged is likely to pressure governments to spend more on public expenditures, such as education and health care, as economic downturns caused

by financial crises may increase the social demands for such welfare spending, thus affecting fiscal policy. Please see the [Appendix](#) for a detailed description of the variables and data sources.

While not reported, we also examined the impact of other control variables, including external debt, budget deficits, central bank independence, exchange rate regime, and unemployment rate. However, we excluded most of these from our test models to avoid problems of multicollinearity and to enhance completeness of data coverage and clarity of our presentation. None of these excluded control variables altered the main findings in this paper. These results are available by request.

(c) *Model*

We build a series of regression estimates of monetary and fiscal policies during 1976–2004 for 98 countries to explain cross-national and longitudinal variation in government policies. As recommended by Beck and Katz (1995), a lagged dependent variable combined with country dummies and panel corrected standard errors has often been used in comparative studies on monetary and fiscal policies to correct for heteroscedasticity, contemporaneous spatial correlation and serial autocorrelation. However, several methodologists (e.g., Achen, 2000; Plümper, Troger, & Manow, 2005) find that the coefficients and standard errors of the lagged dependent variables are biased upward and downward respectively, while downsizing the effect of significant independent variables. Plümper *et al.* (2005) suggest that ordinary least squares with panel-corrected standard errors and a first order autocorrelation correction [AR(1)] are the most defensible for the time series analysis of government budgets.

Following the recommendation of Beck and Katz (1995) and Plümper *et al.* (2005), we use panel-corrected standard errors to correct for panel-level heteroskedasticity and contemporaneous spatial correlation, but also use an AR(1) process to adjust for serial correlation.⁸ We also report the results with lagged dependent variables to show that our regression results are robust to the different model specifications. Country dummies are also included to control for unmeasured country-specific effects, such as long-term political history, population size, and territory. The models to be tested can be written as follows:

$$\begin{aligned} \text{Government policy}_{i,t} = & \beta_1 \text{Financial crisis (bank, currency, and debt crisis)} \\ & + \beta_2 \text{Financial crisis} \times \text{Political constraints} \\ & + \beta_3 \text{Financial crisis} \times \text{Leftist government power} \\ & + \beta_4 \text{Financial crisis} \times \text{Election year} \\ & + \beta_5 \text{Political constraints (veto players)} \\ & + \beta_6 \text{Leftist government power} \\ & + \beta_7 \text{Election year} \\ & + \sum_j \beta_j \text{Controls} \\ & + \sum_k \beta_k \text{Country} + \mu_{i,t} \end{aligned}$$

The subscripts *i* and *t* denote, respectively, the country and the year of the observations. The *j* and *k* indicate, respectively, the controls and country dummies. In identifying the model, the intercept is suppressed. *Government policy* is measured via monetary policy (i.e., the logged discount rate) or fiscal policy (i.e., cyclically adjusted budget balance as a share of GDP). *Financial crisis* is a dummy variable for any type of financial crises—a currency crisis, a bank crisis, or a debt crisis. The interactive (multiplicative) terms (*Financial crisis* × *Political*

constraints (*veto players*), *Financial crisis* \times *Leftist power*, and *Financial crisis* \times *Election year*) examine how political conditions mediate the relationship between financial crisis and government response to it. As noted, the model will first test the impact of any financial crisis and its interaction with political institutions/conditions on government policy responses, and then test how the impacts are different under each type of crisis: bank, currency, and debt crises.

5. RESULTS OF POOLED TIME-SERIES REGRESSION ANALYSIS

Tables 1–3 summarize the results. Table 1 presents our results on the effects of financial crises on monetary policy (i.e., logged discount rate). Regressions [1] and [2] show the results from our main empirical models. Regressions [3] and

[4] test the robustness of the results with lagged dependent variables. Regression [1] first reports the empirical results without the interactive effects between financial crisis and the three major political conditions: political constraint, leftist power, and election year. In this regression, the existence of a financial crisis is positively and strongly associated with logged discount rates, which we interpret as a tighter monetary policy, whereas none of the variables for political conditions have significant effects. The results suggest that a financial crisis pressures developing countries to tighten monetary policy, while political conditions do not strongly affect monetary policy when there is no financial crisis.

As expected, IMF program participation and inflation are strongly and positively related to tightened monetary policy, whereas trade and capital market openness, the output gap, and current account balance are significantly and negatively associated with it. The results are also substantively meaning-

Table 1. *The impact of financial crisis and political conditions on monetary policies*

	AR(1)		Lagged dependent variable	
	[1]	[2]	[3]	[4]
<i>Financial crisis and political conditions</i>				
Financial crisis	0.072 [*] (0.042)	0.182 ^{***} (0.060)	0.046 (0.037)	0.175 ^{***} (0.055)
Financial crisis \times political constraints		−0.227 (0.157)		−0.217 (0.152)
Financial crisis \times leftist government		−0.001 (0.001)		−0.001 [*] (0.001)
Financial crisis \times election year		−0.068 (0.064)		−0.092 (0.074)
Political constraints (<i>veto players</i>)	−0.118 (0.120)	−0.047 (0.120)	−0.134 (0.093)	−0.077 (0.089)
Leftist government power (0–100)	0.001 (0.001)	0.001 (0.001)	0.000 (0.000)	0.001 (0.000)
Election year (Election year = 1, otherwise = 0)	0.004 (0.021)	0.021 (0.019)	0.002 (0.025)	0.024 (0.023)
<i>Controls</i>				
IMF program participation	0.117 ^{***} (0.027)	0.116 ^{***} (0.027)	0.115 ^{***} (0.025)	0.112 ^{***} (0.025)
Trade and capital market openness	−0.009 ^{**} (0.004)	−0.009 ^{**} (0.004)	−0.008 ^{***} (0.002)	−0.008 ^{***} (0.002)
Logged GDP per capita	0.073 (0.069)	0.073 (0.069)	0.098 ^{***} (0.023)	0.096 ^{***} (0.024)
Output gap	−0.015 ^{***} (0.004)	−0.015 ^{***} (0.003)	−0.017 ^{***} (0.004)	−0.017 ^{***} (0.004)
Inflation rate	0.001 ^{***} (0.000)	0.001 ^{***} (0.000)	0.001 ^{***} (0.000)	0.001 ^{***} (0.000)
Current account balance (%GDP)	−0.004 [*] (0.002)	−0.004 (0.002)	−0.008 ^{***} (0.002)	−0.007 ^{***} (0.002)
Discount rate ($t - 1$)			0.592 ^{***} (0.068)	0.590 ^{***} (0.068)
Number of observations	1,728	1,728	1,695	1,695
Number of countries	98	98	98	98
R-squared	0.818	0.821	0.961	0.961
Probability < Chi-squared	0.000	0.000	0.000	0.000

Notes: 1. The dependent variable is monetary policies measured by the logged discount rate. The logged discount rate ranges from −3.00 to 16.09 with a mean = 2.22 and a standard deviation = 0.92. See Table 4 in Appendix for detailed variable descriptions. 2. The estimation is by least squares with standard errors corrected for panel heteroskedasticity. 3. The parentheses denote a panel-corrected standard error (adjusted for heteroskedasticity and contemporaneous correlation). Each regression also includes country dummies (not shown for space), and the constant variable is suppressed. 4. Statistical significance is based on two-tailed tests.

*** $P < 0.01$.

** $P < 0.05$.

* $P < 0.10$.

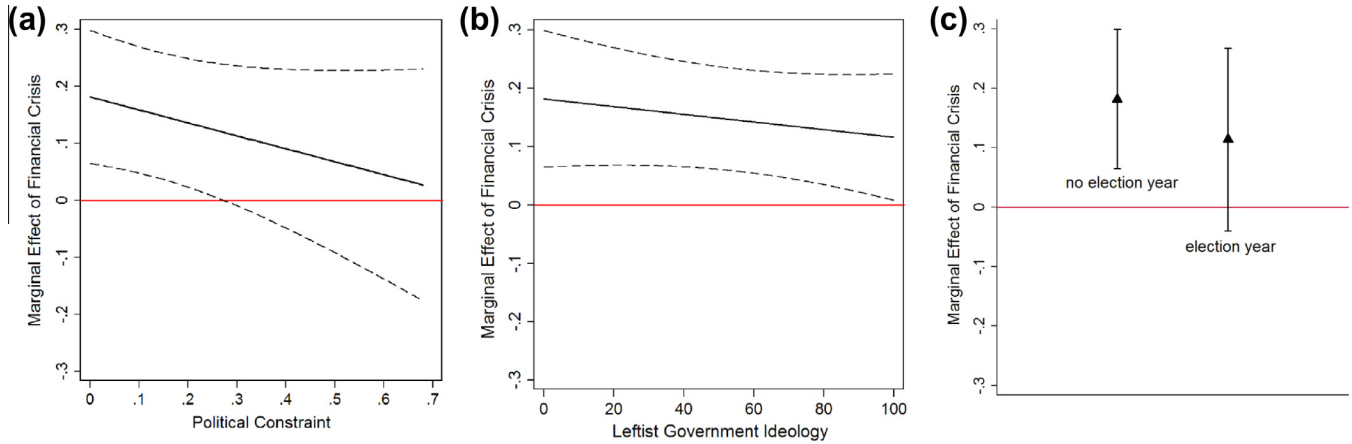


Figure 1. Marginal effect of financial crisis on monetary policies. (a). Marginal effect of financial crisis on logged discount rate as political constraint changes from low to high. (b). Marginal effect of financial crisis on logged discount rate as leftist power in government changes from low to high. (c). Marginal effect of financial crisis on logged discount rate in election year.

Table 2. The impact of financial crisis and political conditions on fiscal policies

	AR(1)		Lagged dependent variable	
	[5]	[6]	[7]	[8]
<i>Financial crisis and political conditions</i>				
Financial crisis	0.352 (0.237)	0.862** (0.386)	0.188 (0.218)	0.729** (0.350)
Financial crisis × political constraints		-1.457 (1.008)		-1.189 (0.917)
Financial crisis × leftist government		0.001 (0.005)		-0.002 (0.004)
Financial crisis × election year		-0.654* (0.355)		-0.686* (0.391)
Political constraints (veto players)	0.752 (0.742)	1.200 (0.769)	0.507 (0.598)	0.859 (0.607)
Leftist government power (0–100)	-0.011*** (0.003)	-0.012*** (0.004)	-0.008*** (0.003)	-0.008*** (0.003)
Election year (Election year = 1, otherwise = 0)	-0.488*** (0.144)	-0.330* (0.172)	-0.513*** (0.162)	-0.340* (0.187)
<i>Controls</i>				
IMF program participation	0.443** (0.212)	0.439** (0.213)	0.442** (0.200)	0.441** (0.200)
Trade and capital market openness	0.041** (0.017)	0.041** (0.017)	0.023* (0.012)	0.023* (0.012)
Logged GDP per capita	-0.274 (0.207)	-0.297 (0.206)	-0.108 (0.155)	-0.130 (0.155)
Output gap	-0.045** (0.020)	-0.043** (0.020)	-0.069*** (0.022)	-0.067*** (0.022)
Age dependency ratio	-0.009 (0.018)	-0.009 (0.018)	-0.007 (0.013)	-0.007 (0.013)
Budget balance ($t - 1$)			0.437*** (0.057)	0.434*** (0.057)
Number of observations	1,912	1,912	1,855	1,855
Number of countries	96	96	96	96
R-squared	0.248	0.249	0.503	0.503
Probability < Chi-squared	0.000	0.000	0.000	0.000

Notes: See notes in Table 1. The dependent variable is fiscal policies measured by the adjusted budget balance as a share of GDP. The budget balance (% GDP) ranges from -45.08 to 68.67 with a mean = -0.70 and a standard deviation = 5.04. Statistical significance is based on two-tailed tests.

*** $P < 0.01$.

** $P < 0.05$.

* $P < 0.10$.

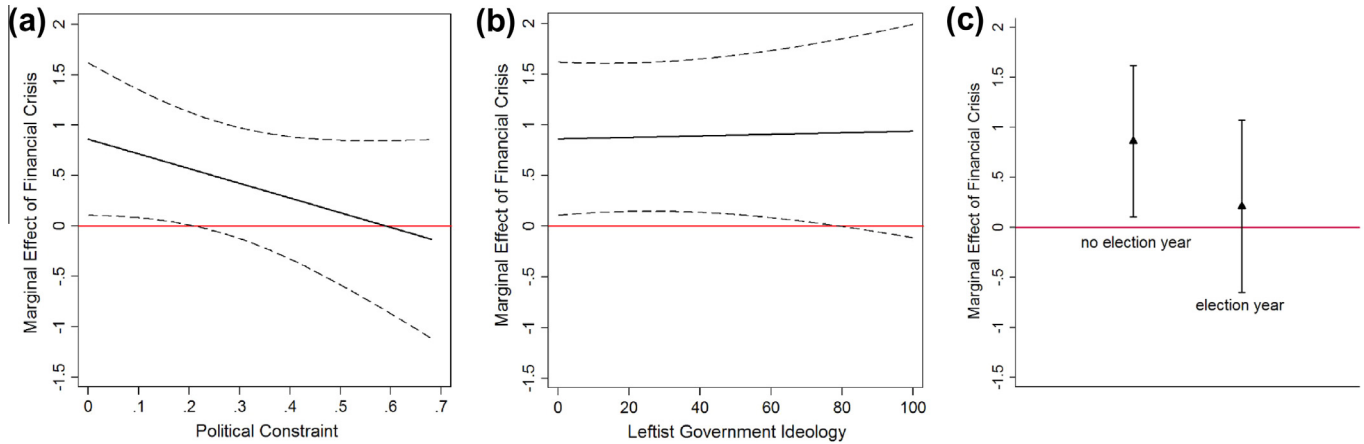


Figure 2. Marginal effect of financial crisis on fiscal policies. (a). Marginal effect of financial crisis on adjusted budget balance as political constraint changes from low to high. (b). Marginal effect of financial crisis on adjusted budget balance as leftist power in government changes from low to high. (c). Marginal effect of financial crisis on adjusted budget balance in election year.

Table 3. Government policies under currency, bank, and debt crisis

	Monetary policies			Fiscal Policies		
	[9]	[10]	[11]	[12]	[13]	[14]
Currency crisis	0.243*** (0.085)			1.072** (0.445)		
Currency crisis × political constraints	-0.420** (0.207)			-1.072 (1.164)		
Currency crisis × leftist government	-0.001 (0.001)			-0.001 (0.006)		
Currency crisis × election year	0.004 (0.084)			-1.238*** (0.419)		
Bank crisis		0.226** (0.107)			0.313 (0.484)	
Bank crisis × political constraints		-0.487** (0.242)			-0.546 (1.154)	
Bank crisis × leftist government		-0.001 (0.001)			0.005 (0.007)	
Bank crisis × election year		-0.095 (0.093)			-0.104 (0.445)	
Debt crisis			0.231* (0.134)			0.217 (0.683)
Debt crisis × political constraints			-0.303 (0.429)			0.783 (2.450)
Debt crisis × leftist government			-0.002 (0.002)			-0.011 (0.011)
Debt crisis × election year			-0.128 (0.124)			0.120 (0.638)
Number of observations	1,728	1,728	1,728	1,912	1,912	1,912
Number of countries	98	98	98	96	96	96
R-squared	0.821	0.821	0.823	0.250	0.247	0.250
Probability < Chi-squared	0.000	0.000	0.000	0.000	0.000	0.000

Notes: 1. See notes in Tables 1 and 2. The dependent variables are monetary policies measured by the logged discount rate and fiscal policies measured by the adjusted budget balance as a share of GDP. Statistical significance is based on two-tailed tests.

*** $P < 0.01$.

** $P < 0.05$.

* $P < 0.10$.

ful. For example, if a developing country participates in an IMF program, it becomes more likely to tighten monetary policy by 0.117 (a logged value of 112 basis points or 1.12 discount rates).⁹ IMF conditionality certainly imposes

considerable pressures for monetary tightening on loan-recipient countries. If the gap between long-term growth and short-term growth increases by 4.545 (one standard deviation of the output gap in the sample), a developing country reduces the

logged discount rate by 0.068 (107 basis points). If a developing country liberalizes its trade and capital market 19.64 (one standard deviation), it is likely to loosen monetary policy by 0.176 (119 basis points).

Regression [2] reports the interactive effects of financial crises with the political variables (*Financial crisis* \times *Political constraints*, *Financial crisis* \times *Leftist power in government*, and *Financial crisis* \times *Election year*) on monetary policy. Financial crises are strongly and positively related with tightened monetary policy. However, the interactive effects—financial crises interacted with political constraints (veto players), financial crises interacted with leftist power in government, and financial crises interacted with election year—are negatively associated with tightened monetary policy.

Although these interaction terms are not statistically significant at the conventional level, the appropriate way to interpret an interactive model is to investigate the specific shape of the 95% confidence interval (Brambor, William, & Golder, 2006). Figure 1(a–c) graphically depict these conditional effects of financial crises on monetary policy.¹⁰ Figure 1(a) illustrates that a country experiencing a financial crisis becomes more likely to increase the logged discount rate by 0.182. This tightening effect is substantively large given that 0.182 is a logged value of 120 basis points (or 1.2 discount rates). However, as political constraints by veto players increase, the tightening effect produced by financial crises declines. When political constraints change from 0 (no constraints) to 0.7 (the largest constraint measure in the sample), the tightening effects decrease by 0.16 (or 117 basis points). When the political constraints reach 0.25 (roughly the 58th percentile of the data), the tightening effect on monetary policy becomes statistically insignificant. Although political constraints can be ranged from 0 to 1, 58% of the political constraints data have a value below 0.25 in the sample of developing countries. A country with a political constraints value of 0.25 can hence be considered to have a relatively large veto player influence. Therefore, we can infer from the results that larger and stronger veto players in a given political system significantly constrain the government's ability to tighten monetary policy in response to financial crises.

Figure 1(b) also demonstrates that the tightening effect of financial crises on monetary policy declines as leftist influence in the government increases. As leftist power moves from none (0) to its largest value (100), the logged discount rate decreases by 0.082 (109 basis points), and the amount of monetary tightening becomes insignificant. Similarly, Figure 1(c) shows that monetary policy tends to significantly tighten in response to a financial crisis when there is no election, but the tightening effect becomes insignificant when there is an upcoming legislative and/or presidential election.

The crisis variable and its three interactive terms (political constraints, leftist power, and election year) are also jointly statistically significant ($P < 0.02$). At the extreme end, if a crisis-hit country has a strong leftist government (100), along with a strong veto player structure (0.20) and an upcoming election (1), the combined constraint effects are 0.328 (139 basis points). This effect is not only statistically meaningful but also substantively large because the tightening effect of the financial crisis (120 basis points) becomes statistically insignificant and ineffective (–19 basis points).

Altogether these results support the notion that governments are likely to adopt a tightened monetary policy in response to financial crises, but they also demonstrate that the extent of tightening is heavily constrained by veto players in a political system, ideological orientation of the incumbent government, and electoral cycles. Regressions [3] and [4] show

that the main results are robust even when lagged dependent variables are included in the models.

Table 2 reports the effects of financial crises on the cyclically adjusted budget balance as a share of GDP, which we use as an indicator of fiscal policy.¹¹ Again, regressions [5] and [6] show the results from our main empirical models, and regressions [7] and [8] check the results with lagged dependent variables. Regression [5] first reports the impact of financial crisis and three major political conditions on fiscal policies without the interaction terms. The financial crisis dummy variable is not significantly associated with the adjusted budget balance, while leftist power in the government and upcoming elections are strongly and positively related with the budget balance. The results imply that governments with stronger leftist power and upcoming elections tend to loosen fiscal policy regardless of the presence of financial crises.

As expected, participating in an IMF program, and having more trade and capital market openness, are both strongly associated with tightened fiscal policy. According to the coefficients, if a developing country participates in an IMF program, it is likely to increase its budget balance by 0.443 (%GDP), which is 1.14 (%GDP) higher than the average budget balance (–0.696%GDP) in the sample of developing countries. If a developing country liberalizes its trade and capital market 19.64 (one standard deviation in the sample), it is likely to increase its budget balance by 0.805 (%GDP), which is 1.506 (%GDP) higher than the average budget balance. These two external constraints seem to limit the ability of governments to loosen fiscal policy significantly. On the other hand, the existence of an output gap is strongly associated with the loosened fiscal policy. If a developing country has an output gap of 4.55 (one standard deviation), it is likely to reduce its budget balance by 0.20 (%GDP). Logged GDP per capita and the age dependency ratio have little impact on the fiscal policy of governments.

Regression [6] reports the interactive effects on the cyclically adjusted budget balance of financial crises with the three political conditions variables. Interestingly, after including the effects of political conditions, the financial crisis variable becomes statistically significant and positive with respect to budget balance, while its interaction terms with political constraints and upcoming elections have strong and negative effects. The results imply that governments under a financial crisis do in fact significantly tighten their budgets, but large political constraints and upcoming elections significantly moderate the degree of tightening.

Figure 2(a–c) graphically depicts the conditional effects of financial crises on the cyclically adjusted budget balance. Figure 2(a) illustrates that a country experiencing a financial crisis is likely to increase the budget balance by 0.862% of GDP. This result is substantively meaningful given that this change is about 1.56% of GDP higher than the average budget balance in the sample of developing countries (–0.696% of GDP). However, as political constraints get larger, the tightening effects quickly decline and become insignificant at the political constraint value of 0.2 (roughly 56th percentile of the data). Figure 2(c) also shows that fiscal policy tends to become significantly tighter in response to a financial crisis when there is no election, but the tightening effect becomes insignificant when there is a legislative or/and presidential election. According to the results, if a crisis-hit country has strong political constraints (0.7) and an upcoming election (1), the tightening effects of a financial crisis will become insignificant, and the combined effect of government fiscal responses will actually become even more expansionary (–0.812% of GDP). These results suggest that financial crises

in fact have pressured governments to cut budgets, but the degree of contraction is minimal and even turns expansionary when large and strong veto players or upcoming legislative and presidential elections are present.

On the other hand, Figure 2(b) shows that leftist power in the government has little effect on fiscal policy under financial crises. In fact, there is no significant interactive effect between financial crisis and leftist power. Nonetheless, leftist power in the government does independently have a strong expansionary effect on fiscal policies. This insignificant interactive effect implies that stronger leftist governments take more expansionary fiscal policies regardless of the existence of financial crises.

Taken together, the results suggest that the fiscal policies of governments are considerably affected by all three political factors. The results are also robust even when lagged dependent variables are included as shown in regressions [7] and [8].

From the above results, we find that governments have a tendency to tighten monetary and fiscal policies when confronted by a crisis. However, governments may respond to different kinds of crises with different policy tools. Table 3 reports the empirical results for the impact of three different types of financial crises (currency, banking, and debt) on monetary and fiscal policies. The results in regressions [9]–[11] show that the impact of financial crises and political conditions are, in general, consistent for monetary policies regardless of the type of financial crisis. All types of crises are positively and strongly associated with the logged discount rate, while their interactions with political constraints, leftist power in the government, and electoral cycles are negatively related with the logged discount rate (except electoral cycle for currency crisis). As discussed earlier, governments seem to tighten monetary policies in response to any type of financial crisis, but the degree of policy change is significantly constrained by the existence of larger numbers of veto players, leftist power in government, and upcoming elections.

However, the tightening effect on fiscal policy in response to a financial crisis is statistically significant only for a currency crisis. According to the results in regression [12], governments in developing countries significantly tighten their fiscal budget balance under currency crises, but the degree of tightening is significantly limited by large political constraints, strong leftist power in the government, and an upcoming election. While banking and debt crises have the expected positive coefficients, they are not statistically significant. The results confirm that it is easier for governments to use monetary policies as compared to fiscal crises to tackle financial crises. Only under a fast-developing currency crisis do governments in developing countries seem to respond fiscally to a financial crisis, while the fiscal policy response is still strongly constrained by the political conditions.¹²

We test the robustness of the empirical results in the following three ways. First, we test the impact of IMF program participation and its interaction with political conditions on monetary and fiscal policies (See Table 5 in Appendix). One may argue that developing countries under financial crisis are often under IMF bailout and supervision, and thus have less room to be influenced by political conditions. The empirical results show that IMF program participation is strongly associated with tightening monetary and fiscal policy (particularly for monetary policy), while the effects are still significantly moderated by the political conditions (mainly by political constraints with large and strong veto players).

Second, we test the empirical results with alternative monetary policy measures (See Table 6 in Appendix). Although the discount rate is typically used to capture monetary policies in developed economies, it may not be a good indicator of discre-

tionary monetary policies in developing countries because many developing countries use alternative measures, such as the control of credit growth. As such, we use three alternative monetary policy measures: (1) credit growth, which is measured by the deviation of real credit and its (Hodrick–Prescott (HP) high-pass filtered) trend (Amri, Chiu, Richey, & Willett, 2014); (2) money growth, which is measured by logged values of M1 (HP filtered); and (3) international reserves which is measured by total reserves minus gold (Hutchison *et al.*, 2010).

Higher (or lower) credit or money growth typically indicates the expansionary (or contractionary) monetary policy (Amri *et al.*, 2014). On the other hand, Hutchison *et al.* (2010) suggest that accumulating (unsterilized) international reserves is associated with an explanation of the monetary base and quantitative monetary easing, while declining (unsterilized) international reserves are related to a contraction of the monetary base and monetary tightening. The empirical results are generally consistent with our main results: financial crisis is strongly associated with lower credit growth, money growth, and international reserves (i.e., tightening monetary policy), whereas the effects are significantly constrained by the three political conditions (except leftist power for money growth).

Finally, we test the results with different statistical models and variable specifications (See Tables 7 and 8 in Appendix). We test the results with instrumental variable approaches for potential endogeneity issues, and regional dummies for regional specific financial crises such as the Asian financial crisis in 1997–98.¹³ The results were still robust to these different model specifications. We also test the results with separate openness variables: trade openness (imports and exports) as a share of GDP, and capital account openness index by Chinn and Ito (2006). Our main results remained consistent, but the market openness variables lost their significance (with the same positive coefficients) in the fiscal policy regression. We do not include democracy – which is popularly used in the literature for developing countries – in our model because the level of democracy is highly correlated with the political constraint (veto players) variable in developing countries ($r = 0.78$, $P < 0.0000$). This correlation is reasonable because most democracies in developing countries tend to have a larger number of political players and constraints compared to autocracies with only one veto player.¹⁴ Our analysis revealed that the democracy variable (and its interaction with financial crisis) is insignificant, while our main results held.

6. CONCLUSION

We have examined how governments in LDCs have used monetary and fiscal policies in response to financial crises for the past four decades, and how political conditions—political constraints (veto players), government partisanship, and elections—have affected those policy responses. Our results show two important patterns. First, when facing a financial crisis, governments in LDCs tend to tighten both their monetary and fiscal policies, but the tightening effect was significantly reduced by larger political constraints (veto players), stronger leftist power in government, and the existence of upcoming elections.

Second, financial crises and domestic political conditions tend to generate variations in policy response. Financial crises push governments to adopt more dramatic tightening effects on monetary policy (in response to all three types of crisis – currency, bank, and debt) than on fiscal policy. Governments only seem to reliably tighten fiscal policy when they confront a currency crisis, but even under a currency crisis, the degree of fiscal tight-

ening was considerably smaller when governments confronted significant political constraints and/or electoral pressures.

Our results suggest that fiscal policies are generally more constrained by political conditions as compared to monetary policies. Central banks in LDCs do not make monetary policy independently, as those in advanced economies often do (Blanchard *et al.*, 2012). In fact, central banks in LDCs constantly monitor and react to the fiscal policy direction of the government. They do so even more keenly during a financial crisis, and thus the discount rate is often related to the fiscal debt burden of government. Although monetary policy (discount rate) seems to be more responsive to economic pressure (e.g., higher inflation), our empirical results reveal that it is not liberated from political concerns. Once political pressures intervene, contractionary monetary policies are quickly eased.

Studies in the future should address the interrelationship between monetary and fiscal policy under financial crises. For example, when and how do fiscal policies – which are more influenced by political concerns – interact with monetary policies, or vice versa? We also need further research on the effects of tightening *versus* loosening policy itself in response to financial crises on the recovery process. For example, as opposed to the general agreement on the tightening monetary policy under currency crisis, our results suggest that policy makers in LDCs significantly moderate contractionary policies when they confront political and institutional constraints. Similarly, although tightening fiscal policy is generally consid-

ered as a common remedy for sovereign debt crisis, our results show that policy makers in LDCs do not necessarily impose drastic contractionary fiscal policies once political interests are considered. In these cases the constraints imposed by political conditions would slow down the adoption of the necessary tightening policy measures and hinder the recovery of the economy.

We should note that policy makers do not necessarily have the same political interests as the national economic interests. When the political and economic interests conflict, they do not always choose the latter over the former either. Under certain conditions (in our example with strong partisan interests and upcoming elections) they can in fact choose the political interests over the national one. Even when policy makers want to prioritize the national economic interests, necessary policy adoptions can be significantly delayed confronting strong political constraints (imposed by larger and stronger veto players in the political system). Given the evidence we have found for the role of political factors in influencing national response to financial crisis, international policymakers must pay greater attention to encouraging the development of national institutional mechanisms that ensure the most rational response to financial crises. More concrete guidance on the design of national systems awaits both further economic research on the most effective policy tools to employ in handling financial crises, and more study of the role of national politics in adopting these policies.

NOTES

1. During the Asian financial crisis of 1997–98, governments in Indonesia, South Korea, and Thailand adopted contractionary monetary and fiscal measures following IMF conditionality, whereas the Malaysian government did not take tightening measures, as it did not apply for IMF funding. But the recovery of these four countries was similarly a V-shaped pattern—short-term economic contraction and a rapid rebound in two-to-three years (Gill, Kharas, & Bhattachali, 2007). The Jamaican government also did not participate in the IMF program when a banking crisis occurred in 1995 and 1996. It did not change its monetary policy but adopted expansionary fiscal policies, injecting fiscal money for bank bailouts and restructuring. However, Jamaica rapidly recovered from the crisis (Kirkpatrick & Tennant, 2002).

2. There can be institutional veto players such as the House, the Senate, and the President of the United States, and partisan veto players such as parties in a coalition government.

3. The Turkish coalition government of 1999 was composed of the left-nationalist Democratic Left Party (Demokratik Sol Parti), the radical-nationalist Nationalist Action Party (-Milliyet~Hi areket Partisi), and the right-of-center Motherland Party (Anavatan Partisi).

4. We normalize the discount rates with their logged values because a few developing countries in the sample have extremely large discount factors under the financial crises. For example, discount rates in Brazil were 6404.96 in 1989 and 4820.63 in 1994. Please note that using the unlogged numbers does not change the main results (See Table 6 in Appendix).

5. There is an alternative data source for banking crisis by Reinhart and Rogoff (RR). RR define banking crises as two types of events: (1) bank runs that lead to the closure, merger, or takeover by the public sector of one or more financial institutions, and (2) in the event of no bank runs, the closure, merger, or takeover of, or large-scale government assistance for, an important financial institution, marks the start of a string of similar outcomes for other financial institutions. Based on these defini-

tions, RR identify 66 episodes of banking crises from 1945 to 2007. By contrast, LV's definition is broader than that of RR. RR focus more on bank runs and bank takeover/government assistance, while LV focus on the loss of capital in the financial system and, correspondingly, the failure of financial institutions to repay their obligations. Because LV's bank crisis data cover a broader set of countries and times and are based on a more robust set of criteria, they have been widely used in the study of banking crises. Still, the two data sets are strongly correlated, and given this correlation, we decided to use LV's data on systemic banking crises.

6. Ha (2008) redefined government parties as those with cabinet portfolios and calculated government ideology values in each year based on cabinet-formation dates. She also recoded the ideology of Latin American parties based on Coppedge's (1997) "A Classification of Latin American Political Parties," and the ideology of central and east European political parties based on Klingemann, Volkens, Bara, Budge, and Macdonald (2006) party manifesto dataset. Please see Beck, Clarke, Groff, Keefer, and Walsh (2001), and Ha (2012) for detailed coding rules.

7. We are aware that the degree of central bank independence can have significant impacts on the monetary policy of the government. However, we do not include central bank independence as one of the control variables in our regressions because the data are not available for most developing countries. Yet, we note that the veto player variable (i.e., political constraints) indirectly captures the strength of central bank independence in developing countries by measuring the division of power in a political system.

8. The AR(1) process models the error term as following: $y_{it} = \alpha + \beta x_{it} + \varepsilon_{it}$ where $\varepsilon_{it} = \rho \varepsilon_{i,t-1} + \mu_{it}$ and μ_{it} is assumed to be white noise (Plümper *et al.*, 2005).

9. A basis point is a unit of measure used in finance to describe the percentage change in interest rates. A basis point is equivalent to 0.01% (1/100th of a percent).

10. The marginal effects graphs in this paper are generated from regressions with AR(1) (i.e., regressions [2] and [6]). While not reported, the marginal effect graphs with the lagged dependent variables (i.e., regressions [4] and [8]) provide similar but even stronger evidence for our argument.
11. *R*-squared seems to be lower in the regressions for fiscal policies because the adjusted budget balance data extract both trend and cyclical measures (e.g., GDP and GDP growth). The main results are robust and even stronger with higher *R*-squared values when we use the non-adjusted budget balance data.
12. We also examined the conditional effects of political variables under each type of financial crisis. We can provide the figures upon request.
13. Our panel model with least squared estimators can produce biased coefficients and invalid inferences if the independent variables are correlated with the error terms. To address the concern we first checked the impact of the previous three years of financial crisis and its interactions

with the three political conditions on monetary and fiscal policies. We found that none of them were significantly related with those government policies. We also use the instrumental variable approaches – i.e., two-stage least squares (2SLS). Conventionally, the instrumental variable approach is used to deal with endogeneity and to mitigate biases of the regression estimates. However, it is difficult to find good instrumental variables for each endogenous variable that only predict the endogenous variable in question and *not* the other endogenous variables (Hanushek & Jackson, 1977). Following Lewbel (1997), we therefore use higher moments of financial crisis and policy measures (discount rate or adjusted budget balance) as instruments for 2SLS regressions.

14. Veto player perspective is more useful to understand the varying degree of political constraints in crisis-experiencing developing countries than the popular classification of democratic *versus* authoritarian regime. For instance, democratic countries in general are more likely to have policy gridlock or political constraints (as they often have a larger number and stronger power of veto players) under financial crisis than authoritarian countries (as they have fewer and less powerful veto players against a dictator).

REFERENCES

- Abbott, P., Andersen, T. B., & Tarp, F. (2010). IMF and economic reform in developing countries. *The Quarterly Review of Economics and Finance*, 50(1), 17–26.
- Achen, C. H. (2000). Why lagged dependent variables can suppress the explanatory power of other independent variables. *Prepared for the APSA Political Methodology Meeting*, UCLA.
- Alesina, A., & Giavazzi, F. (Eds.) (2013). *Fiscal policy after the financial crisis*. University of Chicago Press.
- Alesina, A., & Roubini, N. (1992). Political cycles in OECD economies. *The Review of Economic Studies*, 59(4), 663–688.
- Alesina, A., Roubini, N., & Cohen, G. D. (1997). *Political cycles and the macroeconomy*. Cambridge, Mass.: MIT Press.
- Allan, J. P., & Scruggs, L. (2004). Political partisanship and welfare state reform in advanced industrial societies. *American Journal of Political Science*, 48(3), 496–512.
- Amri, P., Chiu, E., Richey, G., & Willett, T. (2014). Do financial crises discipline future credit growth? *Paper presented at the annual meeting of International Political Economy Society*, George Washington University, November 14–15, 2014.
- Angkinand, A. P., & Willett, T. D. (2008). Political influences on the costs of banking crises in emerging market economies: Testing the U-shaped veto player hypothesis. *Macroeconomics and Finance in Emerging Market Economies*, 1(2), 279–297.
- Aspinwall, M. (1996). The unholy social trinity: Modeling social dumping under conditions of capital mobility and free trade. *West European Politics*, 19(1), 125–150.
- Beck, T., Clarke, G., Groff, A., Keefer, P., & Walsh, P. (2001). New tools in comparative political economy: The database of political institutions. *World Bank Economic Review*, 15, 165–176.
- Beck, N., & Katz, J. N. (1995). What to do (and not to do) with time-series cross-section data. *American Political Science Review*, 89(3), 634–647.
- Blanchard, O., Romer, D., Spence, M., & Stiglitz, J. E. (Eds.) (2012). *In the wake of the crisis: Leading economists reassess economic policy*. Cambridge, Mass.: MIT Press.
- Boix, C. (2000). Partisan governments, the international economy, and macroeconomic policies in advanced nations, 1960–93. *World Politics*, 53(1), 38–73.
- Brender, A., & Drazen, A. (2008). How do budget deficits and economic growth affect reelection prospects? Evidence from a large cross-section of countries. *The American Economic Review*, 98(5), 2203–2220. <http://dx.doi.org/10.1257/aer.98.5.2203>.
- Brambor, T., William, R. C., & Golder, M. (2006). Understanding interaction models: Improving empirical analyses. *Political Analysis*, 14(1), 63–82.
- Campello, D. (2014). The politics of financial booms and crises. *Comparative Political Studies*, 47(2), 260–286. <http://dx.doi.org/10.1177/0010414013488539>.
- Canes-Wrone, B., & Park, J. K. (2012). Electoral business cycles in OECD countries. *American Political Science Review*, 106(1), 103–122.
- Chinn, M. D., & Ito, H. (2006). What matters for financial development? Capital controls, institutions, and interactions. *Journal of Development Economics*, 81(1), 163–192.
- Chu, K. Y., Davoodi, H. R., & Gupta, S. (2000). *Income distribution and tax and government social spending policies in developing countries*. International Monetary Fund.
- Claessens, S., Kose, M. A., Laeven, L., & Valencia, F. (Eds.) (2013). *Financial crises: Causes, consequences and policy responses*. Washington, DC: International Monetary Fund.
- Clarida, R., Gali, J., & Gertler, M. (1997). Monetary policy rules in practice: Some international evidence. *Working Paper No. W6254*. <http://dx.doi.org/10.3386/w6254>.
- Coe, D. T., & Kim, S. J. (Eds.) (2002). *Korean crisis and recovery*. Seoul: International Monetary Fund and Korea Institute for International Economic Policy.
- Coppedge, M. (1997). A classification of Latin American political parties. The Helen Kellogg Institute for International Studies. University of Notre Dame. *Working Paper No. #244*.
- Cottarelli, C., Gerson, P., & Senhadji, A. (Eds.) (2014). *Post-crisis fiscal policy*. Mass.: MIT Press.
- Cox, G. W., & McCubbins, M. D. (2001). The institutional determinants of economic policy outcomes. In S. Haggard, & M. D. McCubbins (Eds.), *Presidents, parliaments, and policy* (pp. 21–63). New York: Cambridge University Press.
- Drazen, A. (2001). The political business cycle after 25 years. In B. S. Bernanke, & K. Rogoff (Eds.), *NBER macroeconomics annual 2000* (Vol. 15, pp. 75–138). Mass.: MIT Press.
- Dreher, A. (2006). IMF and economic growth: The effects of programs, loans, and compliance with conditionality. *World Development*, 34(5), 769–788.
- Dreher, A., & Walter, S. (2010). Does the IMF help or hurt? The effect of IMF programs on the likelihood and outcome of currency crises. *World Development*, 38(1), 1–18.
- Eichengreen, B. J., & Rose, A. K. (1998). Staying afloat when the wind shifts: External factors and emerging-market banking crises. *Working Paper No. 6370*.
- Eijffinger, S., Van Rooij, M., & Schaling, E. (1996). Central bank independence: A panel data approach. *Public Choice*, 89(1–2), 163–182.
- Epstein, D., & O'Halloran, S. (1999). *Delegating powers: A transaction cost politics approach to policymaking under separate powers*. New York, NY: Cambridge University Press.
- Frankel, J. A., & Rose, A. K. (1996). Currency crashes in emerging markets: An empirical treatment. *Journal of International Economics*, 41(3), 351–366.
- Garrett, G. (1998). *Partisan politics in the global economy*. New York: Cambridge University Press.

- Gerlach, S., & Schnabel, G. (1999). The Taylor rule and interest rates in the EMU area: A note. *Working Paper No. 73*.
- Gill, I. S., Kharas, H. J., & Bhattasali, D. (2007). *An east asian renaissance: Ideas for economic growth*. Washington, DC: World Bank.
- Goldstein, M., Kaminsky, G. L., & Reinhart, C. M. (2000). *Assessing financial vulnerability: An early warning system for emerging markets*. Washington, DC: Institute for International Economics.
- Ha, E. (2008). Globalization, veto players, and welfare spending. *Comparative Political Studies*, 48(6), 783–813.
- Ha, E. (2012). Globalization, government ideology, and income inequality in developing countries. *Journal of Politics*, 74(2), 541–557.
- Hanushek, E. A., & Jackson, J. E. (1977). *Statistical methods for social sciences*. New York: Academic Press.
- Heath, O. (2009). Economic crisis, party system change, and the dynamics of class voting in Venezuela, 1973–2003. *Electoral Studies*, 28, 467–479.
- Henisz, W. J. (2002). The institutional environment for infrastructure investment. *Industrial and Corporate Change*, 11(2), 355–389.
- Hibbs, D. A. (1977). Political parties and macroeconomic policy. *American Political Science Review*, 71(4), 1467–1487.
- Hodrick, R. J., & Prescott, E. C. (1997). Postwar U.S. business cycles: An empirical investigation. *Journal of Money, Credit, and Banking*, 29(1), 1–16.
- Huber, E., Nielsen, F., Pribble, J., & Stephens, J. D. (2006). Politics and inequality in Latin America and the Caribbean. *American Sociological Review*, 71(6), 943–963.
- Huber, E., & Stephens, J. D. (2001). *Development and crisis of the welfare state: Parties and policies in global markets*. Chicago, IL: University of Chicago Press.
- Hunter, W., & Power, T. J. (2007). Reward Lula: Executive power, social policy, and the Brazilian elections of 2006. *Latin American Politics & Society*, 49(1), 1–30.
- Hutchison, M. M., & Noy, I. (2005). How bad are twins? Output costs of currency and banking crises. *Journal of Money, Credit and Banking*, 37(4), 725–752.
- Hutchison, M. M., Noy, I., & Wang, L. (2010). Fiscal and monetary policies and the cost of sudden stops. *Journal of International Money and Finance*, 29(6), 973–987.
- Kaminsky, G. L. (2006). Currency crises: Are they all the same?. *Journal of International Money and Finance*, 25(3), 503–527.
- Kaminsky, G. L., & Reinhart, C. M. (1999). The twin crises: The causes of banking and balance-of-payments problems. *The American Economic Review*, 89(3), 473–500. <http://dx.doi.org/10.1257/aer.89.3.473>.
- Keefer, P. (2001). When do special interests run rampant? Disentangling the role of elections, incomplete information and checks and balances in banking crises. *Working Paper No. 2543*.
- Keefer, P. (2007). Elections, special interests, and financial crisis. *International Organization*, 61(3), 607–641.
- Kirkpatrick, C., & Tennant, D. (2002). Responding to financial crisis: The case of Jamaica. *World Development*, 30(11), 1933–1950.
- Klingemann, H.-D., Volkens, A., Bara, J., Budge, I., & Macdonald, M. (2006). *Mapping policy preference II: estimates for parties, electors and governments in Eastern Europe, the European Union and the OECD, 1990–2003*. Oxford: Oxford University Press.
- Kosekla, E., & Viren, M. (1991). Monetary policy reaction functions and saving–investment correlations: Some cross-country evidence. *Weltwirtschaftliches Archiv*, 127(3), 452–471.
- Laeven, L., & Valencia, F. (2008). Systemic banking crises: a new database. *Working Paper No. WP/08/224*.
- Laver, M., & Shepsle, K. A. (1996). *Making and breaking governments: Cabinets and legislatures in parliamentary democracies*. New York, NY: Cambridge University Press.
- Leblang, D. A. (2002). The political economy of speculative attacks in the developing world. *International Studies Quarterly*, 46(1), 69–91.
- Lewbel, A. (1997). Constructing instruments for regressions with measurement error when no additional data are available, with an application to patents and R&D. *Econometrica*, 65, 1201–1213.
- MacIntyre, A. (2001). Institutions and investors: The politics of the economic crisis in Southeast Asia. *International Organization*, 55(1), 81–122.
- Manasse, P., & Roubini, N. (2009). Rules of thumb: For sovereign debt crises. *Journal of International Economics*, 78(2), 192–205.
- Moon, B. E., & Dixon, W. J. (1985). Politics, the state, and basic human needs: A cross-national study. *American Journal of Political Science*, 29(4), 661–694.
- Mukherjee, B., & Singer, D. A. (2008). Monetary institutions, partisanship, and inflation targeting. *International Organization*, 62(2), 323–358.
- Nichter, S. (2008). Vote buying or turnout buying? Machine politics and the secret ballot. *American Political Science Review*, 102(1), 19–31.
- Nordhaus, W. D. (1975). The political business cycle. *The Review of Economic Studies*, 169–190.
- Pastor, M. Jr., (1987). The effects of IMF programs in the third world: Debate and evidence from Latin America. *World Development*, 15(2), 249–262.
- Pepinsky, T. B. (2009). *Economic crises and the breakdown of authoritarian regimes, Indonesia and Malaysia in comparative perspective*. New York, NY: Cambridge University Press.
- Persson, T., & Tabellini, G. (2002). Political economics and public finance. In A. J. Auerbach, & F. Martin (Eds.). *Handbook of public economics* (Vol. 3, pp. 1549–1659). Elsevier.
- Peters, A. C. (2010). Election induced fiscal and monetary cycles: Evidence from the Caribbean. *The Journal of Developing Areas*, 44(1), 287–302.
- Plümper, T., Troger, V., & Manow, P. (2005). Panel data analysis in comparative politics: Linking method to theory. *European Journal of Political Research*, 44(2), 327–354.
- Presbitero, A. F., & Zazzaro, A. (2012). IMF lending in times of crisis: Political influences and crisis prevention. *World Development*, 40(10), 1944–1969.
- Reinhart, C. M., & Rogoff, K. S. (2009). *This time is different: Eight centuries of financial folly*. Princeton, NJ: Princeton University Press.
- Remmer, K. L. (2007). The political economy of patronage: Expenditure patterns in the Argentine provinces, 1983–2003. *Journal of Politics*, 69(2), 363–377.
- Rogoff, K., & Sibert, A. (1988). Elections and macroeconomic policy cycles. *The Review of Economic Studies*, 55(1), 1–16. <http://dx.doi.org/10.2307/2297526>.
- Roubini, N., & Setser, B. (2004). *Bailouts or bail-ins: Responding to financial crises in emerging economies*. Washington, DC: Institute for International Economics.
- Schuknecht, L. (1996). Political business cycles and fiscal policies in developing countries. *Kyklos*, 49(2), 155–170. <http://dx.doi.org/10.1111/j.1467-6435.1996.tb01390.x>.
- Schuknecht, L. (2000). Fiscal policy cycles and public expenditure in developing countries. *Public Choice*, 102(1–2), 113–128. <http://dx.doi.org/10.1023/A:1005026806998>.
- Shi, M., & Svensson, J. (2006). Political budget cycles: Do they differ across countries and why?. *Journal of Public Economics*, 90(8–9), 1367–1389.
- Tagkalakis, A. (2013). The effects of financial crisis on fiscal positions. *European Journal of Political Economy*, 29, 197–213.
- Taylor, J. B. (1993). Discretion versus policy rules in practice. *Carnegie-Rochester Conference Series on Public Policy*, 39, 195–214.
- Taylor, J. B. (1998). A historical analysis of monetary policy rules. *Working Paper No. 6768*.
- Treisman, D. (2000). Decentralization and inflation: Commitment, collective action, or continuity?. *American Political Science Review*, 94(4), 837–857.
- Tsebelis, G. (1995). Decision making in political systems: Veto players in presidentialism, parliamentarism, multicameralism and multipartyism. *British Journal of Political Science*, 25(3), 289–325.
- Tsebelis, G. (1999). Veto players and law production in parliamentary democracies: An empirical analysis. *The American Political Science Review*, 93(3), 591–608.
- Tsebelis, G. (2002). *Veto players: How political institutions work*. Princeton, NJ: Princeton University Press.
- Vreeland, J. R. (2007). *The international monetary fund: Politics of conditional lending*. New York, NY: Routledge.
- Weschle, S. (2014). Two types of economic voting: How economic conditions jointly affect vote choice and turnout. *Electoral Studies*, 34, 39–53.

Table 4. *Variables used to predict government policy responses to financial crisis, 1976–2004*

Categories	Variables	Description	Mean	Std. Dev.	Min	Max	Sources
Monetary policy	Discount rate	Naturally logged central bank discount rate	2.223	0.922	−2.996	16.088	IMF-IFS
Fiscal policy	Budget balance	Discretionary budget balance as a share of real GDP which extracts trend and cyclical measures	−0.696	5.04	−45.076	68.666	IMF-IFS
International institutions	IMF program participation	Dummy variable where 1 is indicated if the country has an agreement with the IMF such as Stand By, Extended Fund Facility, or Structural Adjustment Facility agreement. If none of these agreements are present they are given a 0	0.286	0.452	0	1	Vreeland (2007)
Financial crisis	Financial crisis	The three years following any type of financial crisis are coded as 1, and all other years are coded as 0	0.133	0.340	0	1	Laeven and Valencia (2008)
	Banking	A systematic banking crisis, which include any systemic episode of large defaults by corporate and financial sectors while financial institutions struggle to repay loans	0.051	0.220	0	1	
	Currency	A calendar year with a nominal depreciation of the local currency against the USD of at least 30% and at least 10% increase in the rate of depreciation increase from the previous year	0.084	0.277	0	1	
	Sovereign debt	Sovereign debt defaults or restructuring, including years of default to private lenders and debt rescheduling	0.027	0.163	0	1	
Political conditions	Political constraints (Veto players)	Henisz's measure of political constraints. It ranges from 0 for no constraint to 1 for largest constraint. The measure considers the number of veto players, the alignment and the cost of using veto power	0.164	0.201	0.000	0.726	Henisz (2002)
	Leftist power in government	Leftist government parties' seats in legislature as a share of all government parties' seats in legislature. The measure ranges from 0 for no leftist power to 100 for full leftist power	53.897	47.047	0	100	DPI (2010) and Ha (2012)
	Election year	Dummy variable where a year with a legislative or presidential election is coded as 1 and others as 0.	0.199	0.400	0	1	DPI (2010)
Macro and demographic controls	Output gap	GDP growth rate over the long-term measured as the annual average rate from 1960 to 2010 minus the growth rate each year, which extracts trend and cyclical measures	−1.87e-09	4.545	−46.680	70.836	WDI
	Trade and capital market openness	KOF globalization policy index that uses taxes on international trade, capital account restrictions, mean tariff rate, and hidden import barriers	42.692	19.645	5.387	96.101	Dreher (2006)
	Logged GDP per capita	Naturally logged real GDP per capita (PPP) in constant 2005 dollars	7.014	1.531	3.566	12.212	WDI
	Inflation	Percentage growth change of consumer prices annually	41.43	550.94	−100	24411	WDI
	Age dependency ratio	Annual change in the ratio of dependent to working population. dependent populations are those under age 15 or over age 64	68.286	21.685	15.948	112.381	WDI

Table 5. *The impact of IMF program participation and political conditions on government policies*

	Monetary policy [15]	Fiscal policy [16]
<i>IMF participation and Political conditions</i>		
IMF program participation	0.224*** (0.057)	0.671* (-0.386)
IMF × political constraints	-0.276** (0.126)	-0.797 (-0.904)
IMF × leftist government	-0.001 (0.001)	0.001 (-0.004)
IMF × election year	0.003 (0.048)	-0.126 (-0.300)
Political constraints (veto players)	0.053 (0.129)	1.188 (-0.832)
Leftist government power (0–100)	0.001 (0.001)	-0.012*** (-0.004)
Election year (Election year = 1, otherwise = 0)	0.001 (0.020)	-0.440** (-0.196)
<i>Controls</i>		
Trade and capital market openness	-0.010*** (0.004)	0.040** (-0.017)
Logged GDP per capita	0.077 (0.069)	-0.289 (-0.208)
Output gap	-0.016*** (0.004)	-0.046** (-0.020)
Inflation rate	0.001*** (0.000)	
Current account balance (%GDP)	-0.003 (0.002)	
Age dependency ratio		-0.008 (-0.018)
Number of observations	1,728	1,912
Number of countries	98	96
R-squared	0.824	0.248
Probability < Chi-squared	0.000	0.000

Notes: See notes in Tables 1 and 2. The dependent variables are monetary policies measured by the logged discount rate and fiscal policies measured by the adjusted budget balance as a share of GDP. Statistical significance is based on two-tailed tests.

*** $P < 0.01$.

** $P < 0.05$.

* $P < 0.10$.

Table 6. *Robustness tests with different monetary policy measures*

	Credit growth [17]	Money growth [18]	Foreign reserves [19]	Discount factor (not logged) [20]
<i>Financial crisis and political conditions</i>				
Financial crisis	-0.187*** (0.064)	-0.075* (0.042)	-8.796** (4.165)	57,720.536** (25,229.641)
Financial crisis × political constraints	0.053 (0.137)	0.194* (0.110)	17.327** (8.592)	-100,991.536 (79,200.622)
Financial crisis × leftist government	0.0004 (0.001)	-0.001* (0.000)	0.069 (0.085)	-233.562 (325.201)
Financial crisis × election year	0.001 (0.049)	0.056* (0.032)	5.137 (4.495)	-73,104.271 (48,403.472)
Political constraints (veto players)	-0.285** (0.118)	-0.063 (0.078)	-60.947*** (12.153)	-29,708.202 (34,167.632)
Leftist government power (0–100)	-0.001 (0.001)	-0.001** (0.000)	-0.057* (0.034)	-18.038 (121.203)
Election year (Election year = 1, otherwise = 0)	0.006 (0.019)	-0.010 (0.011)	-2.028 (2.422)	-2,080.284 (12,298.126)
<i>Controls</i>				
IMF program participation	-0.169*** (0.041)	-0.006 (0.017)	8.276*** (2.276)	7,996.949 (5,641.355)
Trade and capital market openness	0.001 (0.004)	0.001** (0.001)	1.015*** (0.243)	-813.845 (972.237)

Table 6 (continued)

	Credit growth [17]	Money growth [18]	Foreign reserves [19]	Discount factor (not logged) [20]
Logged GDP per capita	−2.134*** (0.196)	−0.009 (0.010)	−5.418** (2.559)	10,756.761 (6,973.297)
Output gap	0.018*** (0.004)	0.005*** (0.002)	0.252 (0.199)	−2,238.247 (2,206.655)
Inflation rate	0.00002 (0.000)	0.0002*** (0.000)	0.005 (0.004)	192.458*** (57.504)
Current account balance (%GDP)	0.001 (0.003)	−0.004*** (0.001)	−0.062 (0.124)	864.709 (756.078)
Number of observations	1,808	714	175	1,728
Number of countries	93	66	18	98
R-squared	0.998	0.334	0.510	0.076
Probability < Chi-squared	0.000	0.000	0.000	0.000

Notes: 1. See notes in Table 1. 2. Credit growth is measured by the deviation from trend measured by the difference between log of real credit and its (HP filtered) trend, which is ranged from −34.50 to −16.85 with a mean = −24.87. 3. Money growth is measured by log of M1 (HP filtered), which is ranged from −1.29 to 1.89 with a mean = −1.03e-10. M1 is the total amount of M0 (cash/coin) outside of the private banking system plus the amount of demand deposits, travelers checks, and other checkable deposits. 4. Foreign reserves are total reserves minus gold (in 100 billions), which comprise special drawing rights, reserves of IMF members held by the IMF, and holdings of foreign exchange under the control of monetary authorities (excluding gold holdings) are excluded. 5. Statistical significance is based on two-tailed tests.

*** $P < 0.01$.

** $P < 0.05$.

* $P < 0.10$.

Table 7. Robustness tests for monetary policies

	IV approach [21]	Regional dummy [22]	Trade + capital openness [23]	POLITY [24]
<i>Financial crisis and political conditions</i>				
Financial crisis	0.264*** (0.089)	0.119** (0.058)	0.141*** (0.053)	0.195*** (0.064)
Financial crisis × political constraints	−0.018 (0.205)	−0.195 (0.154)	−0.195 (0.155)	−0.253 (0.160)
Financial crisis × leftist government	−0.001* (0.001)	−0.000 (0.001)	−0.000 (0.001)	−0.001 (0.001)
Financial crisis × election year	−0.062 (0.107)	−0.060 (0.062)	−0.098 (0.060)	−0.070 (0.066)
Political constraints (veto players)	−0.129 (0.113)	−0.101 (0.119)	−0.090 (0.115)	−0.075 (0.134)
Leftist government power (0–100)	−0.001 (0.001)	0.000 (0.001)	0.001 (0.001)	0.001 (0.001)
Election year	0.034 (0.033)	0.019 (0.019)	0.018 (0.019)	0.018 (0.021)
Polity (−10 autocracy ~ 10 democracy)				0.004 (0.006)
<i>Controls</i>				
IMF program participation	0.099*** (0.035)	0.071*** (0.026)	0.086*** (0.025)	0.117*** (0.028)
Trade and capital market openness	−0.006*** (0.002)	−0.006* (0.003)		−0.010** (0.004)
Import and export (%GDP)			0.001 (0.001)	
Capital openness index			−0.062** (0.030)	
Logged GDP per capita	−0.331*** (0.046)	−0.425*** (0.084)	0.002 (0.068)	0.085 (0.071)
Output gap	−0.014*** (0.005)	−0.012*** (0.003)	−0.013*** (0.003)	−0.016*** (0.004)
Inflation rate	0.001*** (0.001)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)
Current account balance (%GDP)	−0.003 (0.003)	−0.003 (0.002)	−0.002 (0.002)	−0.004 (0.002)
Number of observations	1,728	1,728	1,783	1,604
Number of countries	98	98	110	93

(continued on next page)

Table 7 (*continued*)

	IV approach [21]	Regional dummy [22]	Trade + capital openness [23]	POLITY [24]
<i>R</i> -squared	0.950	0.830	0.831	0.818
Probability < Chi-squared	0.000	0.000	0.000	0.000

Notes: See notes in Table 1. The dependent variables are monetary policies measured by the logged discount rate. IV approach (regression [21]) is two-stage least squares (2SLS) regression analysis. Following Lewbel (1997), higher moments of currency crisis and logged discount rate are used as instruments. Regression [22] includes regional dummies (not shown for space). Regression [23] includes the separate variables for trade openness (imports and exports as a share of GDP) and capital market openness index by Chinn and Ito (2006). Regression [24] includes a measure of democracy, POLITY, ranged from −10 (the most autocratic regime) to 10 (the most democratic regime). Statistical significance is based on two-tailed tests.

*** $P < 0.01$.

** $P < 0.05$.

* $P < 0.10$.

Table 8. *Robustness tests for fiscal policies*

	IV approach [25]	Regional dummy [26]	Trade + capital openness [27]	POLITY [28]
<i>Financial crisis and political conditions</i>				
Financial crisis	0.964** (0.399)	0.882** (0.385)	1.144*** (0.371)	0.798** (0.397)
Financial crisis × political constraints	−1.555 (1.006)	−1.464 (1.007)	−1.983** (0.981)	−1.157 (1.038)
Financial crisis × leftist government	−0.003 (0.005)	0.001 (0.005)	0.001 (0.005)	0.001 (0.005)
Financial crisis × election year	−0.859* (0.498)	−0.653* (0.355)	−0.789** (0.348)	−0.714** (0.359)
Political constraints (veto players)	0.919 (0.624)	1.226 (0.773)	1.843** (0.779)	1.623** (0.811)
Leftist government power (0–100)	−0.010*** (0.003)	−0.011*** (0.004)	−0.010*** (0.003)	−0.012*** (0.004)
Election year (Election year = 1, otherwise = 0)	−0.316 (0.206)	−0.329* (0.172)	−0.278* (0.160)	−0.307* (0.177)
Polity (−10 autocracy ~ 10 democracy)				−0.043 (0.036)
<i>Controls</i>				
IMF program participation	0.527** (0.230)	0.451** (0.215)	0.348* (0.200)	0.464** (0.214)
Trade and capital market openness	0.040*** (0.013)	0.042** (0.016)		0.041** (0.018)
Import and export (%GDP)			0.013 (0.012)	
Capital openness index			0.201 (0.126)	
Logged GDP per capita	−0.127 (0.313)	−0.157 (0.387)	−0.190 (0.171)	−0.253 (0.218)
Output gap	−0.044* (0.026)	−0.044** (0.020)	−0.033* (0.018)	−0.043** (0.021)
Age dependency ratio	−0.006 (0.016)	−0.002 (0.024)	−0.017 (0.015)	−0.016 (0.019)
Number of observations	1,912	1,912	1,897	1,826
Number of countries	96	96	109	91
<i>R</i> -squared	0.385	0.248	0.279	0.233
Probability < Chi-squared	0.000	0.000	0.000	0.000

Notes: See notes in Table 2 and Table 7 in Appendix. The dependent variables are fiscal policies measured by the adjusted budget balance as a share of GDP. Statistical significance is based on two-tailed tests.

*** $P < 0.01$.

** $P < 0.05$.

* $P < 0.10$.