

Who Is Credible? Government Popularity and the Catalytic Effect of IMF Lending

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Abstract

In this paper, I explain variations in international investors' reactions to International Monetary Fund (IMF) programs. Investors react favorably if a borrowing government is credibly committed to implementing essential IMF conditionality. Instead of engaging complex information processing about economic reform, however, investors rely on a heuristic device to assess the borrower's domestic political conditions. I argue that a borrowing government's popularity is an important cue for investors to assess the prospect of the program. Investors associate higher government popularity with better implementation of the program and react more favorably to more popular borrowers. Using annual data from up to 52 emerging market economies from 1998 to 2017, I find robust statistical evidence supporting these claims: an IMF program alone does not restore investor confidence. Rather, an IMF program carried out by a strong government does. My findings have important implications for the study of global financial governance and credible commitment.

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When does an International Monetary Fund (IMF) program work? In May 2010, the Greek government agreed to implement extensive austerity measures and structural reforms in exchange for a three-year, €110 billion loan from the IMF, the European Commission, and the European Central Bank. Combining the largest loan in the IMF's history with an "ambitious" policy package, the bailout program was supposed to "restore market confidence" (IMF, 2010). The outcome was, however, disappointing. Throughout the 22 months of the program duration, investors became increasingly reluctant to lend to Greece. They asked the Greek government for an interest rate of 7% at the beginning of the program, and it spiked to a whopping 29% in February 2012 when the program was eventually canceled and replaced with a new program.

Why did the Greek bailout program fail to restore investor confidence despite the unprecedentedly large loan, coordinated support from the IMF and the European Union, and the government's overt commitment to extensive economic reforms? To use an IMF term, the Greek program failed to trigger "catalytic effects": it did not *catalyze* private financing. When private financing does not follow an IMF program, a borrower economy falls into a lengthened economic crisis, as was the case for Greece. Under what conditions can an IMF-participating government successfully attract international private financing?

A substantial body of literature explores this question, with many studies focusing on political and economic structural factors such as a borrower's macroeconomic fundamentals and political institutions. However, because structural factors tend to remain constant over a short period of time, they provide limited explanations for within-country variations, including the exacerbated investor reaction for Greece during 2010-2012. In this paper, I suggest that

explaining investors' reaction requires much more than an examination of a borrower's macroeconomic or political institutions. International investors reward borrowing governments that are credibly committed to implementing IMF conditionality. Investor reaction therefore depends on the domestic politics within which the government carries out the IMF-mandated reform.

Instead of processing all the information associated with complex austerity measures and economic reforms, however, investors rely on simple cues readily available for them. Specifically, I argue that a borrower's political popularity plays a critical role in shaping investors' perceptions about the credibility of IMF participants. Investors expect governments with lower levels of public support to have greater difficulty fully implementing IMF conditionality. Consequently, investors react favorably if a borrowing government gains public support.

My theoretical framework suggests that the terms of IMF programs as well as investors' reaction could depend on a borrower's popularity. IMF officials, for example, can grant more lenient programs to more popular borrowers because they appear more credible and thus more likely to make a program a success. In the interests of space, I focus only on investor reactions in this article, while I fully control for the terms of IMF programs in the empirical analysis.

To test my theory, I perform time-series regression analyses on the original annual dataset covering 52 emerging market economies during the period of 1998-2017. For the selection bias inherent in IMF participation, I use a compound instrumental variables approach applied in two-stage least square models. Note that because investors use government popularity

as a cue, government popularity has independent explanatory power even if it is not entirely independent of the underlying economic conditions. Nonetheless, to set aside endogeneity concerns about government popularity, I fully control for various economic and political conditions in all my analyses. Additionally, as a robustness check, I match countries based on similar economic and political conditions, and I test the effect of popular support on investors' reaction in the matched sample.

Throughout all my analyses, I find strong and supportive evidence that an IMF borrower's popularity is associated with international investors' reaction. I find that an IMF program *alone* does not restore international investors' confidence in the borrower's economy, consistent with the existing findings. Instead, I demonstrate that IMF programs restore confidence primarily when provided to strong governments. These findings contribute to the expanding literature on IMF programs' catalytic effects by explaining how investors update their beliefs about the same IMF participant's credibility at different points in time as well as why we observe variations in the success of catalytic financing across IMF participants.

Beyond explaining variations in catalytic financing, this article contributes to important areas of the literature on international relations. This research fills a crucial gap in our understanding of the relationship between public opinion and the outcome of IMF programs. I gather and investigate comprehensive data on government popularity for 52 emerging market economies and demonstrate how mass-level opinion has a substantial impact on international investors' pricing of an IMF participating government's debt. These findings suggest that a country's domestic political environment, especially public opinion, plays a more critical role in

international financial markets than commonly assumed. Relatedly, this research joins the IMF conditionality debate by highlighting that external conditionality triggers favorable investor reactions only when it is combined with local support. Last, my findings contribute to the abundant literature on credible commitment and international institutions by suggesting that domestic public opinion mediates international institutions' function as a commitment mechanism.

IMF Program and its Catalytic Effects

Every year, approximately 40 to 60 countries borrow from the IMF through conditional lending programs. Most of them approach the Fund because they cannot borrow from the international private market due to the lack of private investors' confidence in the country. In exchange for lending, the IMF demands that the borrowing state restructure its economy by implementing policy conditionality. Conditionality aims to instill confidence in creditors by tightening government spending and increasing government revenues. Theoretically, therefore, commitment through the Fund is to purchase a good housekeeping seal of approval. A borrowing state sends a costly signal about sound economic policies by partially giving up its monetary and fiscal autonomy. However, despite the costly signal, not every borrower successfully regains market confidence or catalyzes private financing ("the catalytic effect").

There is an expanding literature on the catalytic effect of IMF programs, although with decidedly inconclusive results. Regarding the question of whether catalytic effects exist, most studies have found null or negative results, while some recent studies have shown catalytic effects (Bird & Rowlands, 2002; Cottarelli & Giannini, 2002; Edwards, 2006; Van der Veer &

de Jong, 2010; Gehring & Lang, 2020). Findings on the impact of IMF loan size and conditionality also disagree (Eichengreen & Mody 2001; Corsetti et al., 2003; Mody & Saravia 2006; Díaz-Cassou 2006; Woo 2013; Chapman et al., 2015). One line of thought is that countries with “intermediate” economic fundamentals, such as foreign reserves and debt, are able to restore investors’ confidence (Eichengreen & Mody, 2001; Bird & Rowlands, 2002; Mody & Saravia, 2006; Aracaci & Ecer, 2014). This notion, however, provides little explanation for short-term within-country variation, as macroeconomic fundamentals tend to change slowly.

Recently, political economy scholarship has explicitly investigated IMF participants’ *credibility* to explain varying catalytic effects. Chapman, Fang, Li and Stone (2015) make a compelling argument that countries that are geopolitically important to the U.S. experience the smallest catalytic effects because they receive weak conditions and little enforcement from the Fund due to U.S. influence. Bauer, Cruz, and Graham (2012) maintain that democratic leaders are more credible than autocratic leaders because they have more flexible and fluid support coalitions. When a constituency opposes reform, a democratic executive has flexibility to build a new coalition of support, while a nondemocratic executive cannot easily do so. In addition, Cho (2014) finds that a left-wing government generates more credible signals about commitment to reform than a right-wing government because they are less likely to prefer to borrow from the IMF. All of the studies confirm that the key to successful catalytic effects is the borrowing government’s credible commitment to fixing the economic problems that have led them to borrow from the IMF in the first place.

However, there are still important empirical cases that remain to be explained. For

example, during the IMF programs for the Papandreou government in Greece between 2010 and 2012 and the Yeltsin government in Russia between 1996 and 1998, investor confidence increasingly deteriorated to the point of causing regional crises. However, the economic and political factors that existing studies identify as critical mostly remained constant in these periods. My research engages this gap by focusing on a borrower's domestic political environment and how it affects investors' perceptions about the borrower's credibility.

A Theory of Government Popularity

My argument has two central components. First, international investors reward governments that are credibly committed to implementing IMF conditionality, which will help resolve the government's balance of payment (BOP) problems and stabilize the economy. Constrained by the costs of collecting and employing information, investors search for cues to predict the successful implementation of IMF conditionality. Second, I argue that a borrower government's popularity is a powerful and useful cue for international investors as an indicator of the government's political capacity to implement tough reforms. As a result, more popular governments receive more favorable investors' reactions under IMF programs.

International Investors and IMF Programs

Among the different types of lenders that can be catalyzed by IMF programs, private financial institutions have dramatically expanded their volume and importance since the 1980s (Gould, 2006). Currently, most catalytic effects depend on private financing. The focus of this paper is, therefore, private market participants such as investment banks, mutual and hedge funds, and

individual bond traders, which I aggregately call international investors in this article.

International investors have good reasons to be skeptical of a country under an IMF program. Investors want to maximize the real value of their investment; however, BOP problems foster significant threats to investors. BOP problems can easily translate into defaults on debts unless borrowers quickly acquire liquidity large enough for debt remuneration. Moreover, the real value of an investor's assets will diminish substantially if borrowers suggest debt restructuring.¹ Given that no legal institution guarantees debt service from foreign sovereign borrowers, international creditors are left with few protections. For example, creditors can join together to extend fresh funds to a cash-strapped government to prevent a default, but this requires effective coordination among international investors, which is challenging due to geographical dispersion and the large number of creditors. Creditors can also try to deter a default by refusing to lend again in the future. However, this strategy means that creditors lose along with debtors, giving their threat little credibility.

With few alternative tools available for creditors, IMF programs aim to shift the center of gravity among panicky creditors from skepticism to a belief in a borrower's recovery. By giving a borrower government guidance on "sound" economic policies through policy conditionality, the Fund tries to attenuate investors' concerns about sovereign default or debt restructuring. IMF conditionality does not exactly overlap with what investors want to demand from borrower governments.² Nonetheless, IMF conditionality does include essential reforms

¹ According to Reinhart and Trebesch (2016), there were 97 debt restructuring deals in the 35 economic crises during 1978-2010 and the average debt relief estimate is 36% of external debt.

² IMF conditionality has expanded to cover structural reforms that lead to improved competitiveness in the long run but that are not a strong selling point for portfolio investors who are mainly concerned about short-term returns

that creditors want to see, not only because the program's core objective is to catalyze private financing but also because private investors have direct contact with Fund officials and deliberately demand that certain conditions be included in Fund programs (Gould, 2006). IMF conditionality includes orthodox austerity measures that will strengthen borrowers' solvency, such as reducing government expenditure, selling off unprofitable state-owned enterprises, and raising government revenue. Despite the changing rhetoric about IMF conditionality over recent years, external debt management remains the single most frequent conditionality in IMF programs (Kentikelenis et al., 2016).

Key for investors, then, is whether the borrower government will successfully implement the conditionality. Investors are not interested in seeing every single condition delivered, but committing to essential reforms related to debt sustainability is a necessary condition to catalyze private financing. Unfortunately for investors, governments' conditionality promises are plagued by the time-inconsistency problem. After securing IMF loans, governments may defect from their commitments to austerity conditionality, catering domestic supporters with large government spending. In fact, "[the overall] compliance with IMF conditionality is rather low" (Dreher, 2009, 249).³ Given the low implementation records, investors react favorably only if an IMF borrower is credibly committed to implementing their program.

How do investors evaluate a borrower's credibility? While investors employ information to maximize their expected returns, they are constrained by the costs of collecting and processing

(Kentikelenis et al., 2016).

³ Although the exact implementation rates vary depending on how implementation is measured, one consensus in the literature is that the average implementation rate is not high. See Dreher (2009) for a review of IMF program's implementation records.

information.⁴ The costs associated with information processing are especially higher when investors deal with emerging market economies than developed economies because of questionable quality of information as well as difficulty in accessing them. Investors thus economize the use of information by relying on “a narrow set of indicators” or heuristics as a cognitive shortcut (Mosley, 2000, 2003; Gray 2009, 2013; Brooks, Cunha & Mosley 2015). Studies find that investors rely on a few macroeconomic indicators, such as inflation rates, fiscal balance, and bond defaults, to assess a country’s credit risk (Mosely 2000; Archer et al. 2007). Simultaneously, investors utilize noneconomic classifications such as a country’s membership in international organizations and geographic location as well as their views of similar “peer” countries as shortcuts in their estimation of a country’s credibility (Gray, 2009, 2013; Brooks, Cunha & Mosley 2015).

Importantly, these heuristics have a strong impact on investors’ perceptions even when they do not align well with the country’s actual policy choices (Gray 2009, 2013; Brooks, Cunha & Mosley 2015). That is, heuristics have an impact on investor reaction independent of the actual changes associated with the heuristics. This is due to investors’ incentive to gain short-term benefits and minimize relative loss (Mosley 2000; Gray 2013; Brooks, Cunha & Mosley 2015). Because investment returns depend not only on a country’s actual performance but also on other investors’ perception of the performance, investors can benefit in the short term by following market sentiment even when the cues that generate market sentiment do not necessarily correlate with policy changes on the ground.

The above discussion suggests that investors are likely to rely on a cue to identify

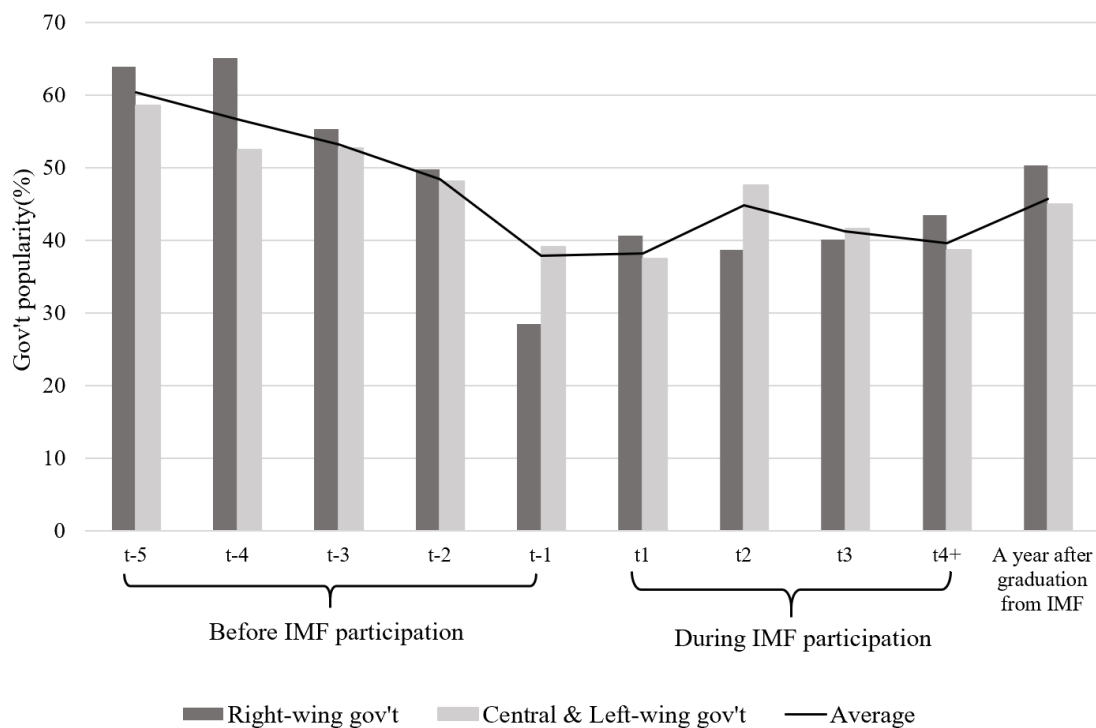
⁴ See Mosley 2000 for more discussion on the incentives and the costs to collect and employ information.

credible IMF borrowers. Instead of processing all the information associated with austerity measures and reforms in foreign countries, investors will make inferences based on an easily accessible measure. The cognitive shortcut shapes investors' perception, not necessarily because it exactly predicts the implementation of IMF programs but because it generates a satisfactory expectation among investors about the programs' implementation.

Government Popularity and Implementation of IMF Conditionality

I suggest that a borrower government's popularity is a useful shortcut for investors to assess the implementation likelihood of IMF programs. Government popularity is easily available information through polls and media reports, and it sends clear messages about the government's political capacity. Furthermore, government popularity is particularly relevant for investors because it can change day-to-day, being almost a real-time barometer for nationwide public sentiment. Although public sentiment may be reflected in other measures of power structures, such as the share of government seats in a legislative body and electoral results, institutional measures are not updated as frequently as government popularity. The real-time component is critical for international investors who quickly reallocate funds as new information about a government becomes available (Mosely, 2003; Ahlquist, 2006). For example, if a borrowing government wins in a legislative election but quickly loses popular support afterward, investors will react to the deteriorating public sentiment. Therefore, while other domestic political environments, such as a government's control of legislative bodies and divided versus unified governments, might affect investor behavior, public opinion captured by government popularity has an impact independent of these institutional factors.

Figure 1. Government popularity and IMF programs, 52 emerging market economies, 1998-2017.



In making this argument, I suggest that government popularity during IMF programs is not simply a reflection of underlying economic conditions but is an important concept on its own.⁵ Figure 1 shows the average development of government popularity before, during, and after conditional IMF programs for 52 emerging market economies. Several patterns are noticeable. First, government popularity consistently declines during the five years prior to IMF programs, and the average popularity is lowest a year before IMF participation, $t-1$. Note that government popularity during IMF programs is not significantly different from that at $t-1$, which suggests that, consistent with existing findings, government popularity does not invariably drop

⁵ In line with my argument, other studies empirically demonstrate that government popularity is not a mere reflection of underlying economic conditions when countries undertake economic reform. A variety of factors, such as the passage of time, globalization, and IMF programs, mediate any impact of economy on government popularity. See Przeworski, 1996; Laredo, 1996; Anderson and Hecht, 2014; Hellwig, 2001.

as an IMF program is announced (Dreher & Gassebner, 2012). Rather, the deteriorating economy that leads a country to pursue an IMF program seems to have already reduced popular support *before* the program is implemented. Importantly and second, once a country participates in IMF programs, government popularity does not move in a clear direction. This echoes the established idea that IMF programs did not produce negative public opinion about the government's economic policies (Imam, 2007; Beissinger & Sasse, 2014). Third, the average government popularity a year after graduation from IMF programs is not much different from that in the midst of the programs, which implies that the link between IMF programs and government popularity is weak. Last, all these patterns hold across government partisanship. Right-wing governments (dark gray bars) are not more or less popular than others (light gray bars) under IMF programs. Perusing the data, in summary, suggests that government popularity moves rather idiosyncratically during IMF programs.

In fact, notwithstanding the dire macroeconomic conditions, some IMF participants manage to build strong public support. The South Korean government during the Asian financial crisis illustrates how appealing to nationalism can be one way to obtain popular support. Upon signing a Stand-by Arrangement with the IMF in 1997, the Korean Minister of Finance and Economy said in a televised speech, "I have come here to beg the forgiveness of the Korean people... please understand the necessity of the economic pain we must bear and overcome."⁶ Major media described the day the government appealed to the Fund for financial assistance as a day of national shame, a nationalist framework that evoked public unity and support despite the

⁶ New York Times (1997) <https://www.nytimes.com/1997/12/04/business/crisis-south-korea-bailout-package-loans-worth-55-billion-set-for-korea.html>

bad economy. For example, in 1998, more than 3.5 million people nationwide voluntarily donated gold to the government, contributing 227 tons of gold worth approximately \$2.2 billion. As nationalist rallying continued, the government enjoyed strong nationwide support with approval ratings between 65 and 78% during the whole IMF program period.⁷ The South Korean case illustrates that not all IMF participants lose politically. While every IMF borrower wants a high level of public support, each government shows unique popularity dynamics as a result of their culture and history.⁸

Although cues investors use do not have to be entirely correct, it is plausible that high government popularity is associated with successful implementation of an IMF program because strong public endorsement facilitates *enactment of IMF conditionality* and generates better *public compliance* with the conditionality. First, higher government popularity leads to a higher bill-passage rate in legislatures because legislators take government popularity as a signal of a public preference for the government agenda and because popular leaders can alter citizens' positions (Ostrom and Simon, 1985; Calvo, 2007). This effect is particularly pronounced if the bill in question holds some degree of public salience and issue complexity (Canes-Wrone and de Marchi, 2002). As IMF programs are almost always salient and complex, a more popular government is more likely to receive legislative approval for IMF programs. For instance, in the early 2000s, the IMF consistently demanded tax system reform in Argentina. Multiple

⁷ According to polls conducted by Research N Research, one of the largest polls in South Korea, the average government approval ratings were 78% in 1998, 71% in 1999, and 65% in 2000. Interestingly, the approval ratings declined to 42% after the government successfully repaid the loan to the Fund in 2001. These numbers confirm that underlying economic conditions do not fully explain variations in government popularity, and external shocks such as the IMF intervention may bring the rally-around-the-flag effects.

⁸ For example, Kaplan (2013) shows that past inflation crises affect the society's willingness to embrace conservative macroeconomic policies, suggesting the impact of past economic crises on public support for austerity measures.

governments in Argentina with little public support had attempted such reforms but could not get these programs past the Congress. Only when there was a large upward surge in government popularity in 2003 was the tax reform bill successfully enacted.

Second, high government popularity can lead to public compliance because people tend to support government policies if they have a favorable opinion of the government. Meneguello (2005) finds that in Brazil, support for various economic reforms, such as currency reform, pension and tax policies, is highly dependent on the evaluation of the government. Support for a policy moves with government approval ratings over time and across different partisan administrations. Similarly, Franklin, van der Eijk, and Marsch (1995) show that referendum outcomes in Europe are tied to the popularity of the government in power, resulting in (un)favorable outcomes for (un)popular governments. The positive relationship between government popularity and public support of new government policies seems to remain strong under IMF programs. During the Eurozone crisis in 2011, the Portuguese parliament quickly passed a set of IMF conditionalities. However, the government with an approval rating below 20% could not enforce the reform, as the Portuguese public refused to comply with the reform package and held nationwide demonstrations against it. The theoretical speculation therefore suggests that government popularity may well be critical political capital for the successful implementation of IMF conditionality.

Note that my argument is centered around the public's support for the government, not for IMF programs. This focus is because the public's perception of their IMF programs reflects a wide range of factors that are not necessarily related to the specific IMF conditionality. For example, the Greek government held a referendum in 2015 to decide whether Greeks wanted to

accept the austerity measures attached to its loans, and the outcome was heavily influenced by whether they supported or opposed “Grexit” (Walter et al., 2018). Likewise, the South Korean example previously illustrated suggests that the public’s views of an IMF program can be shaped by the government and the media, which implies that the public’s view may have nothing to do with the IMF conditions. Thus, when investors are curious about whether the government can credibly commit to the program, the public’s views of the program do not necessarily provide helpful information. Investors take credibility cues not from how the public perceives the program but from how much the public is willing to support the government that is attempting to implement IMF conditionality.

To summarize, my theoretical framework suggests that local support for government strengthens the government’s credibility and ultimately leads to favorable investors’ reactions. Before testing the theory, I clarify two theoretical scope conditions. First, my theory is about countries that actively participate in international financial markets. Low-income countries that rarely participate in international financial markets give little reason to international investors to react to their IMF programs. Second, my theory holds for nondemocracies as well as democracies. High government popularity in nondemocracies could suggest two different aspects of government capacity, both of which predict credibility in carrying out IMF conditionality. On the one hand, high approval ratings in nondemocracies could indicate genuine popularity, that is, strong government capacity validated by the people. On the other hand, high popularity may be the result of government management. In this circumstance, high popularity implies government competence and autonomy from public opinion. It signals that the government can get things done, and managing public opinion is another one of the things the government can do.

Therefore, for both cases, high popularity signals strong government credibility in carrying out economic reforms. Although dictators do not have electoral constraints, investors could still take an important cue regarding government capacity based on popularity.

Empirical Strategy

In this section, I base my argument on robust statistical tests and analyze 52 emerging market economies from 1998 to 2017. I rely on JP Morgan’s Emerging Market Bond Index (EMBI) dataset to define the population, which includes only countries that are active participants in the international financial market.⁹ The EMBI included 23 states in 1997, and the number increased to 67 in 2017, of which data availability limits my sample to 52 states. The launch of the EMBI coincides with the shift toward portfolio-market-based government financing in the developing world, and the termination of the EMBI coincides with a shift toward a developed world. Countries exit my sample when they ‘graduate’ from the EMBI by becoming a developed economy. A list of countries and years included in the EMBI and analyzed in the sample is available in the Appendix (Table A2).

⁹ Specifically, a government’s debt instruments must have a minimum outstanding face value of \$500 million.

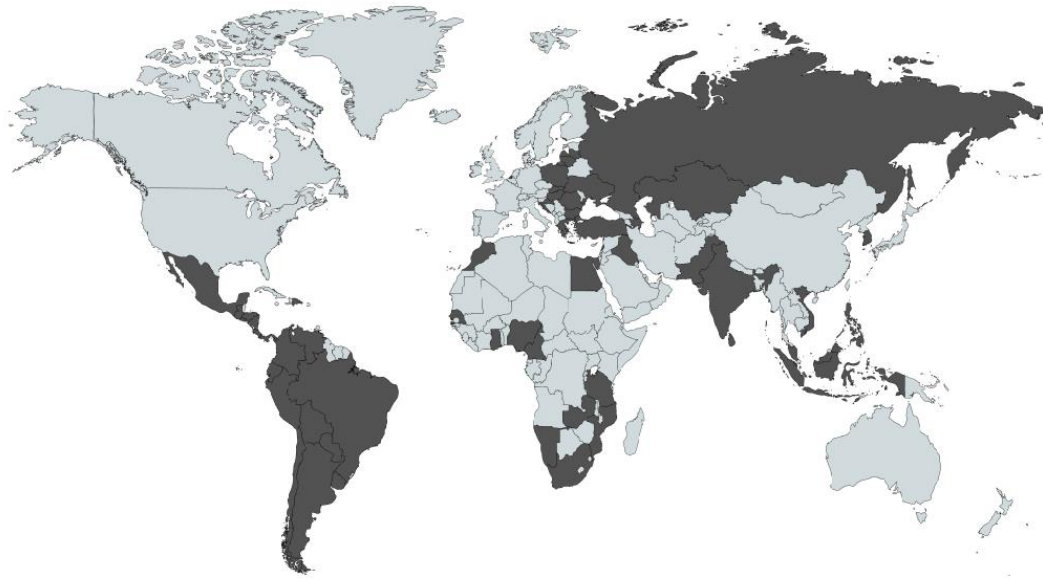


Figure 2. Sample countries (shaded)

The main outcome of interest is international investors' assessment of each country. Following previous studies, I use sovereign bond spreads to measure this outcome (Chapman et al., 2015; Mody and Saravia, 2006; Eichengreen and Mody, 2001). Specifically, I use yearly averages of sovereign bond spreads from the EMBI.¹⁰ Sovereign bond spreads show international investors' risk evaluation of each economy compared to the U.S. economy, with larger spreads reflecting investors' higher skepticism toward the issuing government. Sovereign bond spreads are a better measure of market confidence than capital flows because capital flows reflect numerous factors not related to market confidence, such as a government's external financing needs. Similarly, the recent literature shows that there is little relationship between actual FDI inflows and market confidence in the host country (Blanchard and Acalin, 2016). In contrast, sovereign bond spreads

¹⁰ The EMBI index aggregates differences in varying maturities, repayment guarantees and liquidities, making bond instruments comparable across countries. I take monthly spreads from the EMBI and annualize them. Source: JP Morgan.

are generated precisely by a group of people who have incentives to get the risk perception right: traders of sovereign bonds.

Independent Variables

Public Support for Government

I use a government's approval rating to measure the level of public support for the government.

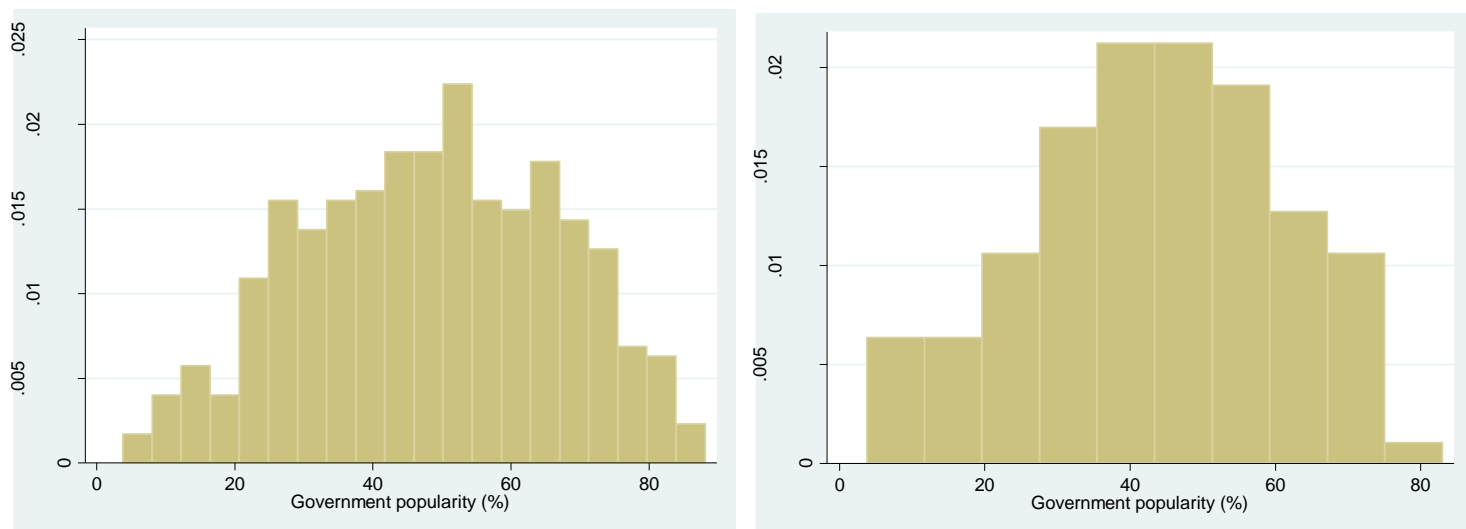
To cover all the countries in the sample, I assemble a comprehensive popularity dataset using various sources, including the Executive Approval Projects (Carlin et al., 2019) and regional and global polls such as Eurobarometer and Gallup polls as well as country-specific polls.¹¹ Most polls show reasonable distributions with mean approval ratings between 35 and 66%. Polls from Eurobarometer and Razumkov Center (Ukraine) show much lower average approval ratings, 24% and 13%, respectively. In the appendix, I provide descriptive statistics for each poll (Table A3). To alleviate concerns about bias that might arise from combining different polls, I limit my analysis to the variation within a poll by including country fixed effects. Government popularity in the full sample is roughly normally distributed, ranging from 3.8% (Ukraine, 2009) to 88.2% (Namibia, 2014), with a mean of 48.2% (Figure 3, left). Note that popularity for IMF participants is also normally spread out between 3.8% and 83%, with a mean of 40.9% (Figure 3, right).

Some may raise concerns about the endogeneity of government popularity to the state of the economy because economic performance is critical for public evaluations of leaders (Lewis-Beck 1986). Importantly, key in my argument is that government popularity is used as a heuristic device by investors. Because heuristics are perception independent from reality on the ground,

¹¹ I thank Ryan Carlin and his team for providing me with the access to the raw data of various polls.

they have their own effect even if they are not entirely independent from the country’s economic conditions. Furthermore, most “economic voting” theory evidence has been found in advanced Western democracies during normal times.¹² Empirical studies focusing on reform periods consistently report that a bad economy does not necessarily reduce government popularity (Stokes, 1996; Przeworski, 1996; Laredo, 1996; Echegaray and Elordi, 2001). At the same time, other factors, including IMF programs and globalization, mediate any impact of the economy on government popularity (Przeworski, 1996; Laredo, 1996; Anderson and Hecht, 2014; Hellwig, 2001).¹³ Nonetheless, to account for potential endogeneity, I control for economic and political variables that could affect government popularity in all my main analyses. Additionally, I perform a matching analysis to pair countries with similar economic conditions but different levels of government popularity as a robustness check.

Figure 3. Histogram of government popularity: whole sample (left) and IMF participants (right)



¹² See Nannestad and Paldam (1994) for the summary of the literature.

¹³ Please see Appendix 4 for a detailed discussion on the endogeneity of government popularity on the underlying economic conditions for IMF participants.

IMF Participation and Selection Bias

Coding IMF participation to tease out the program effect is not a simple task because IMF-participating governments may be systematically different from nonparticipants. To adjust for any selection bias, I follow recommendations from Stubbs et al. (2020) and employ an instrumental variable approach with two-stage least square models. Borrowing the novel approach developed by Lang (2021),¹⁴ I construct the following instrumental variables for IMF participation:

$$\begin{aligned} IMF\ program_{i,t} &= \alpha_1(Past\ IMF\ participation_{i,t} \times IMF\ liquidity_t) \\ &+ \alpha_2(UN\ voting_{i,t} \times IMF\ liquidity_t) + X_{i,t} + \delta_i + \tau_t + \mu_{i,t} \end{aligned}$$

*IMF conditionality*_{*i,t*}

$$= \alpha_1(Past\ IMF\ conditionality_{i,t} \times IMF\ liquidity_t) + X_{i,t} + \delta_i + \tau_t + \mu_{i,t}$$

The *IMF program* is a binary variable, with a value of 1 if a country is under a conditional IMF program in a given year and zero otherwise (Dreher 2006, updated). *Past IMF participation* is the share of years a country has been under IMF programs between 1970 and year *t*. *IMF liquidity* is a (logged) ratio of IMF liquid resources over IMF liquid liabilities.¹⁵

The compound instrumental variable approach by Lang has been widely used in the

¹⁴ Drawing on the empirical strategy of Nunn and Qian (2014), Lang suggests that interacting the IMF's available resources in year *t* with each country's likelihood of participating in an IMF program in year *t* is a plausibly exogenous instrument for IMF participation.

¹⁵ I thank Valentin Lang for generously sharing his IMF liquidity measure.

recent literature.¹⁶ I suggest that $Past\ IMF\ participation_{i,t} \times IMF\ liquidity_t$ is a valid instrument in this study. The key feature of this approach is that only the isolated interaction effect is used as a source of exogenous variation. The constituent terms of the interaction are controlled in both stages.¹⁷ Thus, even if there was endogeneity between $IMF\ liquidity$ and bond spreads, the exclusion restriction would only be violated if the variables causing this endogeneity are affecting bond spreads differently depending on $Past\ IMF\ participation$. In the Appendix, I show that this is not the case by tracking temporal variations in IMF liquidity and the changes in bond spreads for frequent and infrequent IMF borrowers (Figure A1).

Another source of concern is whether $IMF\ liquidity$ indicates global economic conditions. If $Past\ IMF\ participation$ has a conditional effect on bond spreads because global economic conditions make investors more or less sensitive to countries with a history of IMF borrowing, then $Past\ IMF\ participation_{i,t} \times IMF\ liquidity_t$ violates the exclusion restriction. However, this is unlikely because IMF liquidity is determined by institutional rules rather than the donor country's willingness to contribute. According to the IMF's Article of Agreement, the Board of Governors reviews the amount of financial resources member countries commit to the IMF every five years. As the timing of the quota review is predetermined by institutional rules, the variation in the IMF liquidity ratio is plausibly exogenous to the states of the global economy.¹⁸ In fact, Lang (2021) empirically examines and finds little evidence that IMF liquidity is correlated with global economic cycles (global growth rates, global crises).

¹⁶ See, for example, Gehring and Lang (2020), Schneider and Tobin (2020), Stubbs et al. (2020), and Reinsberg et al. (2021).

¹⁷ Note that the year fixed effects control for the level effect of IMF liquidity.

¹⁸ IMF liquidity records jumps in the late 1970s, early 1980s, and late 1990s when member countries executed their respective payments of the 7th, 8th, and 11th General Review of Quotas (Lang, 2021).

UN voting is a proxy for a country's policy dissimilitude with the U.S. at year t , measured as the two countries' voting differences in the United Nations (Bailey et al., 2017). To increase the power of instrumentation, I add $UN\ voting_{i,t} \times IMF\ liquidity_t$ as another instrument.¹⁹ The logic for this interaction being a valid instrument is twofold. First, given the ample evidence of the U.S. influence on IMF lending decisions and the Fund's propensity to become generous when its liquidity is high, I propose that a country's policy dissimilitude with the U.S. discourages the country from seeking an IMF program and that the effect is greater in higher IMF liquidity years. Second, the interaction term should plausibly meet the exclusion criteria. It is highly unlikely that any endogeneity exists between an individual country's sovereign bond spreads and IMF liquidity, which is determined by the Fund's institutional rules. However, even if any endogeneity exists, violation would occur only when it works differently with levels of countries' affinity with the U.S. Put differently, exclusion criteria would be violated only if (a) international investors adjust individual countries' risk premiums based on IMF liquidity *and* (b) the adjustment differs by individual countries' policy dissimilitude with the U.S. In the Appendix (Figures A2 and A3), I demonstrate that neither (a) nor (b) seems to be the case by tracking variations in IMF liquidity and the average sovereign bond spreads for countries with high and low policy dissimilitude with the U.S.

A binary measure of the IMF program could mask substantial differences among IMF programs. Thus, I also use an alternative measure of IMF participation by focusing on the

¹⁹ Because my sample includes mostly emerging and developing economies, there is less-than-ideal variation in past IMF participation rates across countries. This makes *Past IMF participation rates* \times *IMF liquidity* a very weak instrument, which on its own does not pass under-identification tests. When I add $UN\ voting \times IMF\ liquidity$, the instruments collectively pass the under-identification tests and comfortably pass the Sargan over-identifying restrictions.

conditionality in each program. Utilizing data from Kentikelenis et al. (2016), I count the sum of binding conditions for each country in a given year and call it *IMF conditionality*. Following Stubbs et al. (2020), I instrument this variable with an interaction term between *Past IMF conditionality* -- a measure of the average IMF conditionality for a country between 1991 and year t -- and the IMF liquidity ratio. Data from Kentikelenis et al. (2016) extend to 2014; therefore, my analysis with *IMF conditionality* examines the period of 1998-2014. I include X , a set of controls that I describe below, as well as δ and τ , full sets of country and year fixed effects.

Controls

I include controls that, when excluded, could confound the relationship among the key variables. First, given the studies that find a relationship between terms in IMF programs and the catalytic effects (Corsetti et al., 2003; Woo, 2013; Chapman et al., 2015), I control for the number of binding quantitative conditionalities and the (logged) loan amount relative to the borrower's quota. I also take into account a borrower country's macroeconomic conditions by controlling for budget balance, GDP growth rate, sovereign default, and current account balance because these indicators are accessible to the public and could affect bond spreads.²⁰

Next, I control for geopolitical interests because close ties with the U.S. could affect government popularity, IMF program implementation rates (Stone, 2004), and investor behavior (Chapman et al., 2015). I include the ideal policy point difference between the U.S. and the borrower country in question to operationalize the affinity between the two by utilizing dyadic similarity in UN General Assembly voting (*UN voting*) (Bailey et al., 2017).

²⁰ Sovereign default data are from Reinhart and Rogoff (2011). Because the data span only until 2010, I complement it with Moody's data.

To account for the range of possible domestic political factors that might affect implementation and government popularity, I control for veto players using the Political Constraints Index (Henisz, 2002) and regime type (Polity2) as well as national elections with indicators from the Database of Political Institutions (Cruz et al., 2017). Additionally, I include a right-wing government dummy to account for the partisanship effect on IMF program implementation and market reaction (Beazer & Woo, 2015; Cho, 2014). Descriptive statistics for all variables are available in the Appendix.

Model Specification

Because every government has different baseline popularity, it is important to consider both the changes and the levels of government popularity. For example, investors might reward governments that experience rising popular support from a low baseline more than those that have declining support from a high baseline. To measure the impact of both the changes and the levels, I employ error correction models (ECMs) (De Boef & Keele, 2008). ECMs simultaneously model both short-term deviations (i.e., changes in popularity) and long-term equilibrium (i.e., levels of popularity). In doing so, ECMs also alleviate the concern about spurious regression that arises from the potential nonstationarity of bond spreads and government popularity (De Boef & Keele, 2008). This is important because regressing one nonstationary time series on another results in inconsistent estimates and leads to the use of inappropriate tests for statistical significance.

Utilizing ECMs, I regress a first-differenced sovereign bond spread on (i) its lagged level, (ii) the lagged levels of all covariates, and (iii) the first differences of all (nondummy)

covariates. The theory in this paper suggests that the effect of IMF programs on sovereign bond spreads is conditional on a country's government approval ratings. I use the following ECM specification to estimate these interactive effects:

$$\Delta Y_t = \alpha + \alpha_0 Y_{t-1} + \beta_0 \Delta X_t + \beta_1 X_{t-1} + \beta_2 Z_{t-1} + \beta_3 X_{t-1} Z_{t-1} + \beta_4 \Delta X_t Z_{t-1} + \beta_5 \Delta \varphi_t + \beta_6 \varphi_{t-1} + \beta \epsilon_t$$

where X is approval ratings and Z is the measure of IMF participation. The coefficients of interest are β_3 and β_4 , which show the long-term and short-term effects, respectively, of government approval ratings during IMF programs. I include a vector of additional variables, φ , including country and year fixed effects. The use of country dummies restricts my analysis to within-country effects, which, along with ECMs and robust standard errors, generate very conservative results. However, the use of fixed effects is particularly important for my purposes, as I wish to set aside country-specific legacies that may affect government popularity during IMF programs, such as past experiences with the IMF. In addition, although the conservative estimation strategy carries the risk of prematurely abandoning true hypotheses, it increases my confidence for the coefficients that do emerge as statistically significant.

Results

Table 1 displays the results showing the relationship among IMF programs, government popularity and sovereign bond spreads with controls.²¹ Country and year fixed effects are included but not reported for the sake of brevity. The test statistics along with the first-stage

²¹ Replication materials and code can be found at Shim (2021).

results (Tables A4 and A5) suggest that the instruments are relevant, albeit weak.²² Model (1) estimates the IMF program as a binary variable, and model (2) measures the effect of IMF conditionality, controlling for IMF participation.

My results suggest that an IMF program *alone* does not have consistent effects on bond spreads across different models, in line with the mixed results in the literature. Likewise, the coefficients of IMF loan size and the number of IMF conditionalities do not show consistent results. However, when the IMF program interacts with government popularity, a completely different picture emerges.

Let me first focus on the short-term effects, or the effect of the *changes* in government popularity. The first differences of the X variables estimate whether short-term changes in X bring changes in Y. I find that changes in government popularity during IMF programs bring significant short-term changes in the government's bond spreads. A 1% increase in government popularity leads to an immediate 28.5 basis point (bp) decrease and a further 2.3 bp decrease in the next year (see model (1)). Considering the sample mean of bond spreads, this is a 6.5% decrease in bond spreads within a year. The results are similar when IMF programs are measured as conditionality. The results from model (2) indicate that more IMF conditionality with an

²² Note that because the measures of participation in IMF program (e.g., *IMF*) are endogenous, the interaction terms between them and *Gov't popularity* are also endogenous. The F-test statistics in Table 1 fall below 7.7, the critical value suggested in Stock and Yogo (2005) for detecting weak instruments. This is partly due to (1) relatively small sample and (2) that all the endogenous variables are instrumented with the same set of instruments: for instance, *IMF* is instrumented with *Past IMF participation X IMF liquidity*, *UN Voting X IMF liquidity*, *Past IMF participation X IMF liquidity X Gov't popularity*, *UN Voting X IMF liquidity X Gov't popularity*, *Past IMF participation X IMF liquidity X Δ Gov't popularity*, and *UN Voting X IMF liquidity X Δ Gov't popularity*, although theoretically only the first two instruments are relevant to predict *IMF program*. Unfortunately, the current statistical software does not seem to have solutions for this problem unless I calculate the predicted values for endogenous variables individually, which carries significant risks of mis-specifying the relevant matrices.

increase in government popularity is systematically associated with lower spreads.

Table 1. Government popularity, IMF programs and sovereign bond spreads

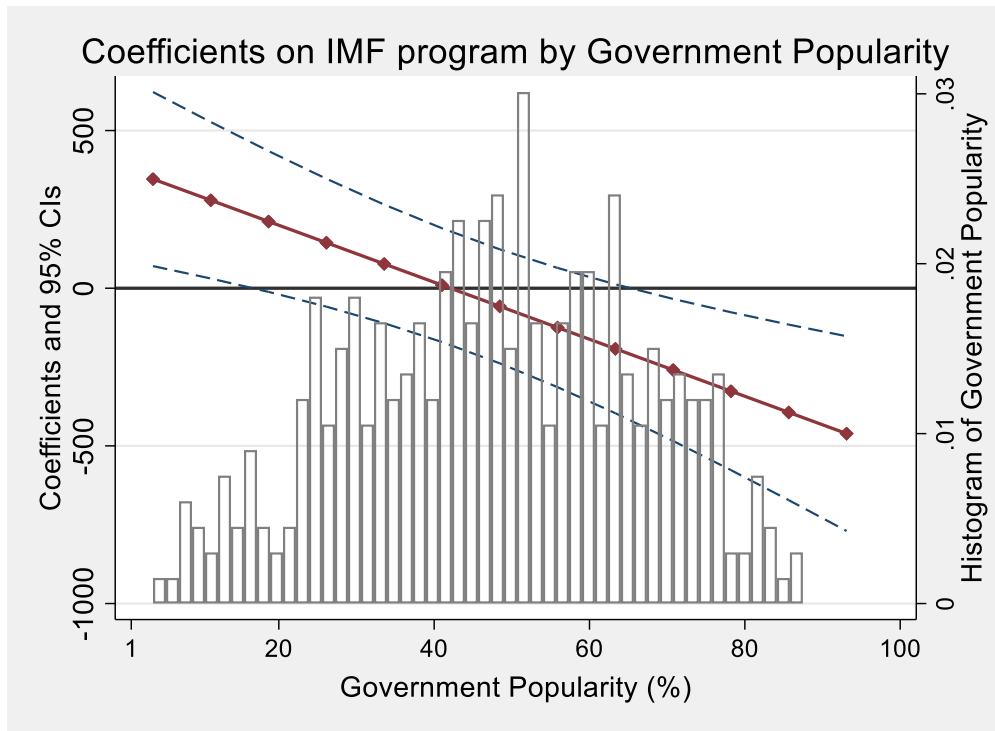
DV: Δ bond spreads	Coef.	<u>1</u> S.E.	Coef.	<u>2</u> S.E.
l. Bond spread	-0.255**	0.112	-0.296**	0.121
l. IMF	2173.2***	768.3	-350.9	405.2
l. Gov't popularity	2.499	3.889	1.163	3.543
Δ Gov't popularity	0.935	2.594	0.0524	2.438
l. IMF x l. Gov't popularity	-30.85**	15.66		
l. IMF x Δ Gov't popularity	-28.54***	10.21		
l. IMF Conditionality x l. Gov't popularity			-0.539	0.398
l. IMF Conditionality x Δ Gov't popularity			-0.605**	0.285
l. IMF loan size	-17.64	97.03	52.10	168.5
Δ IMF loan size	279.7**	115.1	76.16	80.66
l. IMF conditionality	-324.2	213.7	44.64*	23.10
Δ IMF conditionality	-190.1**	74.53		
l. sovereign default	-6.121	167.1	64.25	184.0
l. fiscal balance	-24.81**	12.29	-13.37	12.80
Δ fiscal balance	-14.73	14.48	-0.389	14.30
l. GDP growth	-32.17*	17.75	-51.60***	19.61
Δ GDP growth	-26.14*	13.91	-38.07***	13.58
l. Election year	18.49	41.11	31.75	38.05
l. Veto player	-286.7*	152.5	-245.0	162.3
Δ Veto player	-77.83	168.9	-278.9	208.6
l. Polity2	2.016	17.03	18.83	27.97
Δ Polity2	-40.23	25.94	-9.656	22.24
l. Right-wing government	-77.60	95.12	-57.96	79.24
l. Current account balance	7.608	7.836	4.982	5.67
Δ Current account balance	8.728	10.97	8.349	11.22
l. UN voting	-244.2	165.1	-55.25	181.6
Δ UN voting	-343.9*	196.3	-43.79	197.2
l. Past IMF participation	409.1	459.3	561.0	409.1
_cons	760.0	573.9	215.7	823.1
<i>Kleibergen-Paap F statistics</i>	1.3		.6	
<i>N</i>	413		387	

* $p < .10$, ** $p < .05$, *** $p < .01$

Next, I examine how the effect of IMF programs varies across different *levels* of a borrower's government popularity. The coefficient of lagged independent variables indicates the

long-term equilibrium relationship between those variables and sovereign bond spreads. The magnitude of the relationship, however, depends not only on those coefficients but also on the coefficient of the lagged dependent variable (1. Bond spread), which captures the rate at which changes in Y return to equilibrium. Specifically, the parameter calculating the long-term effect (long-term multiplier) is defined as $-\frac{\beta_3}{\alpha_0}$. Thus, the analysis indicates that the long-term total effect of a 1% increase in government popularity is, on average, a 121 bp decrease (see model (1)). Figure 4 further illustrates how the effect of IMF programs is conditional on the level of a borrower's popularity. For governments with approval ratings above 60%, IMF programs decrease sovereign bond spreads. For borrowers without strong public support, however, IMF programs do not yield a meaningful change in sovereign bond spreads. Rather, for those with extremely low approval ratings, IMF programs widen bond spreads. The results from model (2) indicate that the level of government popularity does not have a statistically significant effect when IMF programs are measured as the conditionality in them, which suggests that given the IMF conditionality, investors pay more attention to changes rather than the baseline of popularity. These results shed light on the lingering puzzle about whether IMF programs spark a catalytic effect on private bond investment by demonstrating that the effect of IMF programs is conditional on a borrower's domestic political environment: investors restore confidence only when the government tasked with implementing IMF conditionality enjoys sufficient political support.

Figure 4. Marginal effect of IMF program on sovereign bond spreads across different levels of government popularity.



The control variables show the expected signs. Existing studies consistently find that domestic political factors affect international investor behavior not during normal periods but during periods of financial stress (Archer et al, 2007; Baldacci et al., 2011; Ballard-Rosa et al., 2021). My analysis indeed finds that government popularity does not have a systematic impact on investors' risk perception of a country during non-IMF periods. I believe this is both because investors pay little attention to domestic politics during non-IMF periods and because investors have a fuzzy picture of the policy changes enabled by strong government popularity for non-IMF participants. Consistent with existing findings, various political variables, including government partisanship, level of democracy, and elections do not affect sovereign bond spreads for emerging market economies (Brooks, Cunha & Mosley, 2019). Among other controls, GDP

growth rates consistently achieve statistical significance with the expected signs.

Robustness Check and Empirical Extension

I perform a series of robustness checks and empirical extensions to increase confidence in my results. All of the results discussed in this section are available in the Appendix. First, as an alternative way to control for the endogeneity of government popularity, I perform regression on a “matched” sample. This approach is designed to allow for more reliable causal inferences in observational studies for which randomization is not possible. The crux of the method is as follows: Based on a number of observed background conditions captured in the ‘propensity score’, those in a treatment group are matched to a group of similar others in a nontreatment group. Matching thus creates two relatively similar groups, one exposed to a treatment and the other not. After matching, outcome analysis can proceed using the matched sample as if those samples had been generated through randomization (Stuart, 2010). Regressions on the matched sample therefore can yield more accurate estimates of treatment effects, although they do not remove all the difficulties associated with endogeneity in the estimation of the treatment effect.

Borrowing this approach, I first identify a treatment group, or the borrowers that enjoy high levels of public support. Given the earlier findings that governments with approval ratings above 60% experience the catalytic effect (see Figure 4), I designate observations with approval ratings above 60% as a treatment group and those below 60% as a control group, thereby making a binary indicator of treatment. Then, I match “popular borrowers (treated group)” to “unpopular borrowers (control group)” whose underlying economic and political conditions are closest to the treated observation. Following the recommendation from Stuart (2010), I include a battery of

political and economic variables to calculate the propensity score.²³ Based on the propensity score, I use the nearest matching method with replacement while keeping all ties.²⁴²⁵ During this process, each observation in the control group (unpopular borrowers) receives a frequency weight that reflects the number of times they are selected as a match. Those that do not get matched automatically drop, resulting in a matched sample with 113 treatment observations and 204 control observations. The diagnoses indicate that the matching significantly reduces bias for all covariates and yields a much more balanced sample (Figures A4 and A5). I replicate my main analysis on the matched sample, while incorporating weights generated during the matching. The results (Table A6) are very similar to the main findings in Table 1. Having strong public support during IMF programs makes a statistically significant difference in a borrower's bond spreads, leading to, on average, a 16% spread reduction.

Second, I examine whether my findings hold across different regime types by interacting the main independent variables with a democracy dummy. I have argued that high government popularity leads to favorable investor reactions in nondemocracies as well as democracies because it signals strong government capacity. The results (Figure A6) support the theoretical argument: An increase in government popularity is negatively associated with sovereign bond spreads for both democracies and nondemocracies, and the effect is larger for nondemocracies.

²³ I include GDP growth rates, current account balance, fiscal balance, (log) GDP per capita, polity2, election year dummy, veto player, UN voting, right-wing government dummy, and US 10-year bond yields.

²⁴ There is an ongoing debate about the validity of propensity score (PS) matching method. King and Nielson (2019) notes that PS matching can *increase* the bias between treatment and control group because it prunes observations randomly. However, others advocate PS matching by finding that the random pruning is avoided when kernel or nearest-matching algorithm is used (Jann, 2017).

²⁵ Among different matching algorithms, Stuart (2010) notes that nearest-matching method is “generally the most effective method for settings where the goal is to select individuals for follow-up”, which is consistent with my goal to develop a balanced sample for outcome analysis.

This result, however, should be interpreted with caution because of the small number of observations (121 obs.) for nondemocracies.

Additionally, I test whether the effect of government popularity varies by different political systems within democracies – presidential vs. parliamentary. I find that a higher level of popularity reduces sovereign bond spreads in presidential systems, but not in parliamentary systems. However, an increase in popularity is strongly associated with reduced bond spreads in both systems, and the effect of government popularity is larger in presidential systems than in parliamentary systems (Table A7). This is because unlike executives in the parliamentary system, presidents are directly elected by the public and are not controlled by a major party, which makes them more susceptible to public opinion. Considering my analyses on different regime types, the results altogether suggest that political and electoral institutions do not significantly mediate the impact of government popularity as a heuristic device on investors' perception. In other words, although investors exploit government popularity as a cue, they care much less about *how* government popularity brings actual reforms.

Next, I test for an alternative mechanism in which a new government temporarily enjoys higher popularity while investors allow them a grace period with lower bond spreads. To see whether this is driving the results, I replicate my analysis excluding all new governments, which occupy 16% of the sample. Alternatively, I run the analysis with the whole sample while controlling for the years a government is in office. In both analyses, I find strong and consistent short-term effects, but I do not find long-term effects when new governments are excluded (Table A8). The results indicate that changes in government popularity bring significant *short-term* changes in bond spreads regardless of government turnover, but they do not affect the *long-*

term equilibrium bond spread relationship unless there is government turnover.

Another alternative explanation for my finding is that government popularity could be a proxy measure of the government's seat share in a legislative body, and therefore, it could be merely a seat share or majority control of government, rather than popular support, that investors react to. To examine this possibility, I replace government popularity with the share of seats held by all government parties in a legislative body.²⁶ I do not find a significant effect of government seat share on bond spreads (model (1) in Table A9). Alternatively, model (2) estimated in Table A9 includes the measure of government seat share as a control, and the main findings remain consistent and strong. Altogether, these analyses squarely reject the alternative explanation.

Furthermore, because IMF programs often produce uneven distributional consequences, I control for distributional consequences with Gini coefficients for each county-year. Central bank independence, which may mediate the impact of public opinion on economic policy, is also controlled. Additionally, I control for a borrower's debt sustainability by including its total reserve (% total debt) or government's long-term debt in the model. As expected, none of these changes affected my results in any substantial way (Tables A10 and A11). In fact, incorporating distributional consequences and debt sustainability strengthens the main results.

A final question is whether government popularity has a different impact on investors depending on IMF conditionality. Recall that I use the sum of quantitative performance criteria (QPCs) and structural performance criteria (SPCs) in my main analysis (Table 1, model (2)). However, it is possible that investors pay more attention to one condition than another. For example, international investors might care mostly about QPCs in the wake of IMF programs

²⁶ I use *MAJ* from the Database of Political Institutions as a measure of the share of government seats.

because QPCs include targets regarding fiscal and monetary policies that are directly relevant to government debt-service capacity and that are relatively easy to implement. In contrast, SPCs include a wide range of reforms, ranging from appointing external panels on a certain issue to central bank reform, which may not be directly relevant to debt service. SPCs are also politically more contested and take longer to implement (Reinsberg et al., 2021).

Thus, Table A12 replicates the primary analysis, with counts of QPCs and SPCs included as separate covariates. QPCs show results very similar to the main findings: QPCs themselves are positively associated with bond spreads, yet when they interact with changes in government popularity, QPCs are highly statistically significant, with the coefficient signed in the negative direction. On the other hand, neither SPCs nor the interaction term between SPCs and government popularity show statistical significance. These results indicate that investors put more weight on QPCs than on SPCs. Investors care most about whether a borrowing government will improve its debt-sustainability by adjusting quick fixes rather than correcting deep structural fundamentals.

Conclusion

When does an IMF program successfully restore international investors' confidence in a borrower's economy? I identify public opinion as a key driver of credibility that explains both within- and across-country variation in investors' reaction to IMF programs and determines when and where IMF lending generates the desired catalytic effect among private international investors. I present robust evidence from statistical tests that a rise in borrower governments' approval ratings leads to a favorable investor reaction.

The findings have an important policy implication. A well-planned IMF program will do

little good if the government tasked with implementing it has weak domestic political support. This will be critical during the current COVID-19 crisis, when many governments have received or planned to receive IMF funding while the pandemic has dramatically swayed their approval ratings. For those whose approval ratings have surged, such as Colombia's president, Ivan Duque, this is a window of opportunity because "improved popularity for Colombia's president Ivan Duque through coronavirus crisis could help the government pass difficult reforms," as Fitch, a major credit rating agency, concisely noted.²⁷ However, for many others whose popularity has plummeted during the pandemic, the Fund must be aware that overcoming the current health and economic crisis will be extra challenging.

I also join the conditionality debate by underscoring that conditionality triggers favorable investor reactions only when it is combined with local support. In other words, IMF conditionality does not have a linear effect on investors' reactions. Extra conditionality means more credible debt service only to the point where extra conditionality does not hurt the borrower's political capacity. IMF economists and borrower government representatives should consider the trade-off between reforms and political costs to maximize the catalytic effect.

This research also speaks to an important area of the political science literature. There is a large and growing literature on public opinion in the international political economy, most of which focuses on variations in public opinion as the dependent variables. Building on the literature, I use the variations as a key explanatory variable and demonstrate why such variations matter for international financial outcomes and what signals international investors take from

²⁷ Cited in Emerging Sovereign Debt Market NEWS. p.23. Available at: http://www.publicdebt.net/export/sites/pdm/pdm/newsletter/weekly-newsletter/attachment/Emerging-Sovereign-Debt-Markets-News_week_18-24_July_2020.pdf

them. In doing so, my findings contribute to the political economy literature on IMF lending and international finance. With regard to IMF lending, this research identifies the conditions under which IMF lending leads to favorable investor reaction. I demonstrate that government popularity during IMF programs varies both across and within countries and, more importantly, that varying public support has a significant impact on the consequences of Fund programs. My results therefore provide concrete evidence on why IMF bureaucrats and government representatives should take into account mass reaction while they embark on a new program: maintaining strong public endorsement is necessary not only for the survival of the government and the reputation of the IMF but also for a quick recovery of the borrower's economy.

For scholars of international finance, this research joins the literature on investor behavior and clarifies how investors make inferences about an IMF participant's credibility. I show how the terms in the external commitments, such as IMF loan size and the stringency of conditionality, are less important than the domestic political context within which the commitment is implemented. Neither the factors that lead governments to sign on to IMF programs nor the macroeconomic conditions before and during IMF programs should be dismissed in explaining investors' response. I demonstrate that the level of political support for a borrower has substantial effects. Since government popularity varies in a short period of time, unlike macroeconomic conditions or structural political factors, this finding makes a strong statement about why investors' response varies over time.

Finally, this research contributes to the literature on credible commitment and international institutions by suggesting that domestic public opinion mediates international organizations' function as a commitment mechanism. While many studies have focused on

political institutions and power structures to explain the credibility of a state's external commitment,²⁸ I suggest that a state's credibility is subject to change in a short period of time depending on domestic public opinion. It would be fruitful for future studies to examine whether the role of public opinion as a "credibility cue" has similar effects for various policies that need domestic enactment and compliance.

²⁸ See, for example, Leeds 1999; Simmons 2000; Simmons and Danner 2010

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