IMF survival instincts: risk exposure and the design of loan programs

Kathleen Brown
Leiden University*

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Abstract

When does the International Monetary Fund (IMF) play hardball? While some governments in distress are asked to make costly reforms in exchange for a bailout, others access emergency funds with ease. Previous work has attributed this variety to borrowing government characteristics; instead, I propose that the IMF's overall risk exposure determines the deal that each new borrower receives. As the global lender of last resort the goal of the IMF is to preserve financial stability, but it must also ensure its own solvency and survival. I argue that when a greater share of outstanding loans is owed by high-risk borrowers, the IMF mandates stricter policy conditions to protect itself from default. Using a new index of the IMF's risk exposure and several indicators of the design of loan conditions, I demonstrate that the IMF changes its lending behavior to protect its own balance sheet. During periods of high-risk exposure, the IMF requires that its borrowers complete more policy conditions across a broader scope of policy areas, increasing Fund control over repayment. These findings illustrate how the IMF's goal of self-preservation shapes emergency sovereign lending and contributes to ongoing debates about how bureaucratic interests influence the policy outputs of international organizations.

*k.j.brown@fsw.leidenuniv.nl

There are good times and bad times to for governments to turn to the International Monetary Fund (IMF). The global lender-of-last-resort has faced extraordinary demands on its resources in recent years as the COVID-19 pandemic, war in Ukraine, and rising global inflation have pushed many governments into debt distress, particularly among emerging markets (Volz et al., 2022). In 2022 the Fund had over $130 billion in outstanding loans to governments worldwide, an amount matched only at the peak of the global financial crisis in 2011. However, this may also be a particularly "bad" time for governments to request IMF financing, as borrowers are paying a heavy price for assistance.

In early 2023 Pakistan requested $1.1 billion in credit from the IMF to resolve a balance-of-payments crisis and avoid default on external creditors. The government faced several crises in 2022 when devastating floods displaced millions and inflation soared to historic highs, leaving the government on the brink of default (Bokhari and Reed, 2023). Amidst this and other political crises, negotiations for the IMF credit[1] stalled after the Fund added additional policy conditions, including significant spending cuts, reduced energy subsidies, and higher interest rates (Hussain, 2023). While strict conditions are not uncommon, the government of Pakistan and credit markets alike were surprised by the intensity of IMF policy demands (VOA, 2023). Prime Minister Shehbaz Sharif objected to the conditions, calling them strict "beyond our wildest dreams" (Express, 2023), and Fitch Ratings noted that the strict conditions were unexpected given that exogenous shocks had left Pakistan with "little room to manuver" to complete reforms (Ratings, 2023). The strength of the IMF's demands was also unprecedented in Pakistan, a country that has regularly borrowed from the Fund with more leniency (Vreeland, 2006) and also enjoys support from the United States within the Fund due to its strategic position as a nuclear power (Aklin and Kern, 2019; Lipscy and Lee, 2019).

[1]This was not an entirely new loan program, but rather the final tranche of a $7.5 billion IMF loan agreed in 2019.

What explains the unexpected severity of the IMF's offer? Rather than a direct response to Pakistan's economic situation, IMF demands may also have been driven by the circumstances of the Fund's *other* borrowers. The IMF's lending portfolio was uniquely high-risk in 2022. Over 60% of outstanding debt was held by Argentina, Ukraine, and Pakistan, countries with junk credit ratings and histories of going into arrears on IMF loans (Reinhart and Trebesch, 2016). The IMF always lends to high-risk borrowers, but compared to the Fund's last lending peak in 2011, the average S&P rating for the IMF's borrowers was nearly three rating levels lower in 2022.

This paper investigates how risk exposure across the IMF's entire lending portfolio alters how the Fund designs new loans. I argue that the IMF alters its lending decisions to protect itself from default risk. The Fund faces internal and external incentives to fund bureaucratic and strategic expansion and ensure its future solvency. This builds on "cyclical partial lender of last resort" logic put forward by Kaplan and Shim (2021) who argue that the Fund alternates between self-serving and global stability lending goals depending on levels of risk. To protect its balance sheet, the IMF may offer more risk-averse loans to new borrowers when there is a higher risk that ongoing loans will default. I expect that high portfolio risk exposure will lead to the issuance of loans with stricter policy conditions, as conditionality effectively acts as "collateral" to help guarantee that the IMF is repaid (Jensen, 2004).

I test my expectations by examining the effect of IMF risk exposure on the characteristics of 589 IMF loans issued between 1985 and 2015 to 123 borrowing countries. I first construct an original index of the IMF's annual risk exposure using government default risk ratings published bi-annually in the *Institutional Investor* magazine. This risk exposure index is regressed on loan-level indicators that capture risk aversion of IMF loan design. First, the number of policy conditions is used as a proxy for the overall burden of conditionality (Reinsberg and Abouharb, 2022; Stubbs et al., 2018; Lang, 2021). Second, I use the scope of conditions included in each loan, measured as the number of distinct policy areas covered

by conditionality. To implement stricter policy demands, the IMF both mandates more conditions and spreads these conditions across more diverse policy areas (Clark, 2022; Dreher et al., 2015).

I find that higher default risk across the IMF's loan portfolio is associated with the assignment of stricter new loans. When the IMF risk index increases by one point (on a 0 to 100 scale, with 0 representing high risk of default), new loans include 0.85 fewer loan conditions on average. This improvement in creditworthiness across the Fund's portfolio is also associated with a reduction in the scope of conditionality, meaning that the Fund intervenes in a larger number of borrowers' policy areas when its own risk exposure is high. Importantly, these estimates reflect the effect of IMF risk exposure when holding the borrower's own risk rating and economic fundamentals constant. This supports the risk exposure hypothesis as the IMF's overall loan portfolio has an effect on loan design, independent of the characteristics of each individual borrower. While confounding between global economic volatility and individual borrower risk remains a concern, I examine additional observable implications that provide further evidence of the IMF's self-preservation motive. First, I investigate the content of loan conditions, and find that the IMF is more likely to mandate revenue increases and greater reduction in fiscal deficits when the organization is exposed to higher risk. Next, I consider periods when the IMF may be more sensitive to default risk, and find that risk exposure has the strongest effect on loan design when the Fund's precautionary balances are low or when more time has passed since member state contributions were increased. Taken together, these results offer robust evidence that the IMF offsets its own risk by issuing stricter loans to new borrowers.

This work has implications for the study of the effects of IMF programs on a variety of economic and political quantities of interest. A wide literature has demonstrated that IMF conditionality can have negative effects like prolonging crises (Dreher and Walter, 2010), growing the shadow economy (Blanton et al., 2018), increasing inequality (Kentikelenis et al.,

2016; Lang, 2021; Stubbs et al., 2021), harming human rights (Abouharb and Cingranelli, 2009), and increasing civil unrest and conflict (Hartzell et al., 2010; Reinsberg et al., 2023). I offer evidence for effects beyond a borrower's control that may determine when they receive tougher loan programs, and are likely to suffer the consequences. When the Fund is exposed to more risk, new borrowers may also be more likely to fall into a "dependency trap" (Reinsberg et al., 2022) where they are unable to meet the strict conditions attached to IMF loans and subsequently lose investor confidence, increasing the likelihood that they will need a fresh round of IMF financing in the future. When it is a "bad time" to go to the IMF, borrowers in distress may face severe consequences when securing emergency financing.

In addition to implications for the study of the IMF specifically, this research also contributes to a larger literature on the agency and bureaucratic survival of international organizations (Barnett and Finnemore, 1999; Gray, 2018; Copelovitch, 2010). I offer a supply-side explanation for the Fund's lending decisions and emphasize the role of institutional agency in determining credit relief. While much of the literature on IMF lending focuses on characteristics of individual borrowing governments, I consider the overall structure of the Fund's lending portfolio, and theorize that the organization's interests in bureaucratic expansion and influence over the global financial system play an important role in policy outcomes. Along with other recent work by Lang (2021), this research takes a system-level approach to explaining the behavior of IOs. As emerging market governments are most frequently subject to IO interventions, these low-income countries bear the brunt of stricter policies when these organizations perceive their survival is under threat. Further, this offers important evidence for understanding of how the incentives faced by IOs shape their actions.

IMF self-preservation motive

Like any other bank, the Fund does not make lending decisions in isolation but rather adjusts its policy depending on the state of its own balance sheet. Vaubel (1996) argued

that while the IMF is made up of member nations the institution has developed its own intrinsic preferences and motivations for expansion and survival. For example, Lang (2021) demonstrates that the IMF engages in new, expansionary lending when the Fund's liquidity is high, but restricts its lending to more familiar, safer borrowers when resources are limited. This shift in institutional behavior has little to do with the characteristics of borrowers, or their relative need for emergency financing, but rather is driven by characteristics of the Fund's entire lending portfolio. Kaplan and Shim (2021) demonstrate that the IMF behaves much like a private investor and balances its risks across its entire portfolio to protect its bottom line. They point to Argentina in 1998, when a loan program was temporarily halted as the East Asian financial crisis increased the Fund's risk exposure and prompted a reallocation of resources.

The IMF also has organizational goals to not only survive, but to expand the scope of its lending and policy interventions. Between the advent of the Fund's policy conditionality in the 1950s to the era of structural adjustment in the 1990s, IMF interventions expanded from a set of "predictable" reforms grounded in deficit reduction and exchange rate devaluation to a wide range of policy areas including 'good governance' and social policy (Kentikelenis et al., 2016; Woods, 2014). Babb and Buira (2005) described this 'mission creep' as emblematic of an organization that seeks not just to exist, but to grow. In order to grow, the IMF must prioritize its own balance sheet alongside (or above) the balance sheets of crisis-hit countries.

Internal and external pressures may also push the IMF to adjust its lending decisions to reduce risk exposure. IMF decision-making is shaped by the contradictory demands of its various "masters": member states, internal staff, technocratic agendas, and public opinion, among others (Scott, 2013; Kentikelenis et al., 2016; Copelovitch, 2010). Faced with finite resources, the Fund must choose which goals to prioritize and when. Extensive scholarship has examined how the IMF acts as an agent for its shareholders, most notably the United States (Stone, 2011; Dang and Stone, 2021; Dreher et al., 2009; Clark and Dolan, 2021).

Dreher and Jensen (2007) ask whether the IMF is an 'independent actor' or a servant to its members, and find that IMF lending is determined by a combination of a borrower's economic fundamentals and by their relationship with the United States. Rather than operating purely based on need, the Fund bends to political interests.

These political interests are often conceived of as efforts to achieve specific foreign policy goals, for example when the United States pressures the IMF to offer favorable loan terms to allies (Aklin and Kern, 2019) or in exchange for UN votes (Dreher and Sturm, 2012; Barro and Lee, 2005; Moser and Sturm, 2011). However, major shareholders may also pressure the IMF to act in the interest of its own survival. Dominant member states benefit from the existence and growth of the IMF as a lender-of-last-resort. While domestic US support for the IMF ebbs and flows (Broz, 2011), the US government has strong incentives to maintain the IMF and US influence therein (Oatley and Yackee, 2004). The US may intervene to determine borrowers' access to resources, and at the same time exert influence to prevent the over-extension of IMF resources.

At the micro-level, IMF staff members also have incentives to protect the solvency of the organization. Staff play a key agenda-setting role at the Fund and shape lending and policy outcomes through their own personal preferences (Copelovitch, 2010). Chwieroth (2013) argues that political biases in IMF policy may not always be the direct result of member state influence, but rather reflect staff members' favor of larger stakeholders like the United States. Staff often support the IMF's 'globalizing mission' and are likely to prefer (and design) policy that grows the influence of the IMF by lending to new borrowing countries and expanding the scope of loan programs (Kentikelenis et al., 2016; Woods, 2014). Staff are also likely to shape policy that supports the long-term survival of the IMF for the simple reason that they want to keep their jobs. Independently from external policy goals, the internal bureaucracy of the IMF has vested interests to "grow simply because [it] exists" (Vaubel et al., 2007; Vaubel, 2006).

IMF risk exposure

As the global lender-of-last-resort the IMF caters to a relatively high-risk segment of the sovereign credit market. However, not all balance-of-payments crises are created equal, and there is still significant heterogeneity in the default risk of IMF borrowers. Governments may approach the IMF after a severe liquidity shock (as during the COVID-19 pandemic), or after imprudent macroeconomic and fiscal policy has eroded the economy to the point of crisis. As Stone (2011) describes, the IMF is exposed to very different risks when lending across different types of crises. He offers the example of South Korea in 1997 as a classic liquidity crisis where recovery required a large enough IMF loan to solve the government's short-term financing problem. Despite the unprecedented size of the bailout, there was little concern within the IMF that the loan would be repaid (Stone, 2011, p. 151). In contrast, Mexico approached the IMF in 1994 in the midst of a crisis caused by "unsound macroeconomic policies" (Stone, 2011, p. 150), and Fund staff were highly concerned that a large loan would pose substantial risks to the organization's future solvency. Both governments received loans of similar size (see Figure 1), but exposed the IMF to different degrees of risk.

The IMF is somewhat protected from outright default by its seniority status as borrowers are expected to repay the Fund before any other creditor (Wright et al., 2015). Default on the IMF is a desperate move, and yet Reinhart and Trebesch (2016) record 23 instances in the past 70 years when borrowing governments entered protracted arrears on an IMF loan. Past defaults have severely constrained the Fund's resources, notably Greece in 2013 and Argentina in 2001 when extended periods of non-payment threatened to deplete the IMF's precautionary balances and forced the suspension of other lending activity (Kaplan and Shim, 2021). Preventing default is a central priority for IMF management, particularly when the Fund is exposed to risk across different borrowers in its lending portfolio.

As default risk varies between IMF borrowers, the IMF will be exposed to varying degrees of risk depending on the composition of its lending portfolio. Figure 1 plots outstanding IMF

lending[2] and shows changes in the structure of the portfolio between 1985 and 2015. The red line represents total outstanding lending across all borrowing governments, while the colored regions represent the share of total loans owed by major borrowers. To examine default risk across these borrowers, I look to sovereign credit ratings reported by the *Institutional Investor* magazine, which assigns governments a default risk score between 0 (high risk) and 100 (low risk). *II* ratings have broader coverage but still correlate highly with credit ratings from the 'big three' ratings agencies; I discuss this further in the data section.

IMF lending peaked after the global financial crisis as the Fund injected huge sums of money into struggling European countries. At its maximum the IMF had lent out nearly $100 billion USD, mostly to Greece, Ireland, and Portugal. Despite the fact that liquidity was severely constrained during this period, the overall risk of the lending portfolio was relatively low. Greece was the Fund's largest and riskiest borrower in 2013, holding over 20% of outstanding credit and with an *II* rating of 21.7. Alongside this, however, the IMF issued large loans to Portugal and Ireland, lower-risk governments with *II* ratings at 47.5 and 56.0, respectively. While the Greek government did default on its IMF loans in 2015 (Reinhart and Trebesch, 2016), there was little fear at the Fund or across the wider credit market that Ireland or Portugal would miss a payment. Even Greek risk was limited; after missing two payments to the IMF, fellow Eurozone member states stepped in with enough credit for the Greek government to repay the IMF and avoid "full-fledged default" (Reinhart and Trebesch, 2016).

Compare this to earlier periods when the IMF had lower outstanding lending, but different risk exposure. In 2003 the Fund was still dealing with the hangover of the Asian financial crisis and had recently issued new loans in Latin America. Over 80% of the Fund's outstanding loans were held by four countries: Argentina, Brazil, Indonesia, and Turkey.

[2]Including lending via the IMF General Resource Account (GRA), Poverty Reduction and Growth Trust (PRGT), and Resilience and Stability Trust (RST).

Just as during the Eurozone crisis, IMF funds were concentrated in the hands of a few borrowers, but all borrowers were at risk of default. Argentina and Indonesia were rated 'junk' (*II* ratings 16.45 and 22.7, respectively) while ratings in Brazil and Turkey dropped to 10-year lows (*II* ratings 36.6 and 33.65, respectively). Not only were these governments inherently high risk, but they also lacked the implicit guarantee of Eurozone membership that limited losses to Greece in 2013. Argentina and Brazil both defaulted on their IMF loans in 2004, substantially constraining the Fund's resources (Beers and de Leon-Manlagnit, 2019).[3]

Across both of these periods IMF lending was substantial and its liquidity was severely constrained (Lang, 2021). However, the composition of the Fund's lending portfolio differed and exposed the Fund to different levels of risk. As a result, the strategies the IMF employs to limit its risk exposure are likely to vary across these periods as well.

Lending decisions to limit risk

What tools does the IMF use to protect itself from default risk? Within each individual loan the Fund can implement several strategies to limit exposure to default and strengthen the borrower's commitment to repayment.

Loan assignment

First, like any other bank, the Fund limits risk in its choice of borrowers. A wide literature explores the determinants of loan assignment and mainly focuses on demand-side factors that affect a government's willingness to request IMF intervention (Vreeland, 2003; Bauer et al., 2012; Nelson and Wallace, 2017). However, the Fund also exercises the ability to reject borrowers it deems *too* risky, and supply-side factors are important in determining which

[3]The IMF does not define these incidents as "default," but rather "protracted arrears," meaning that borrowing governments missed multiple payments but did not repudiate the IMF loan entirely. All cases are defined as defaults by Reinhart and Trebesch (2016).

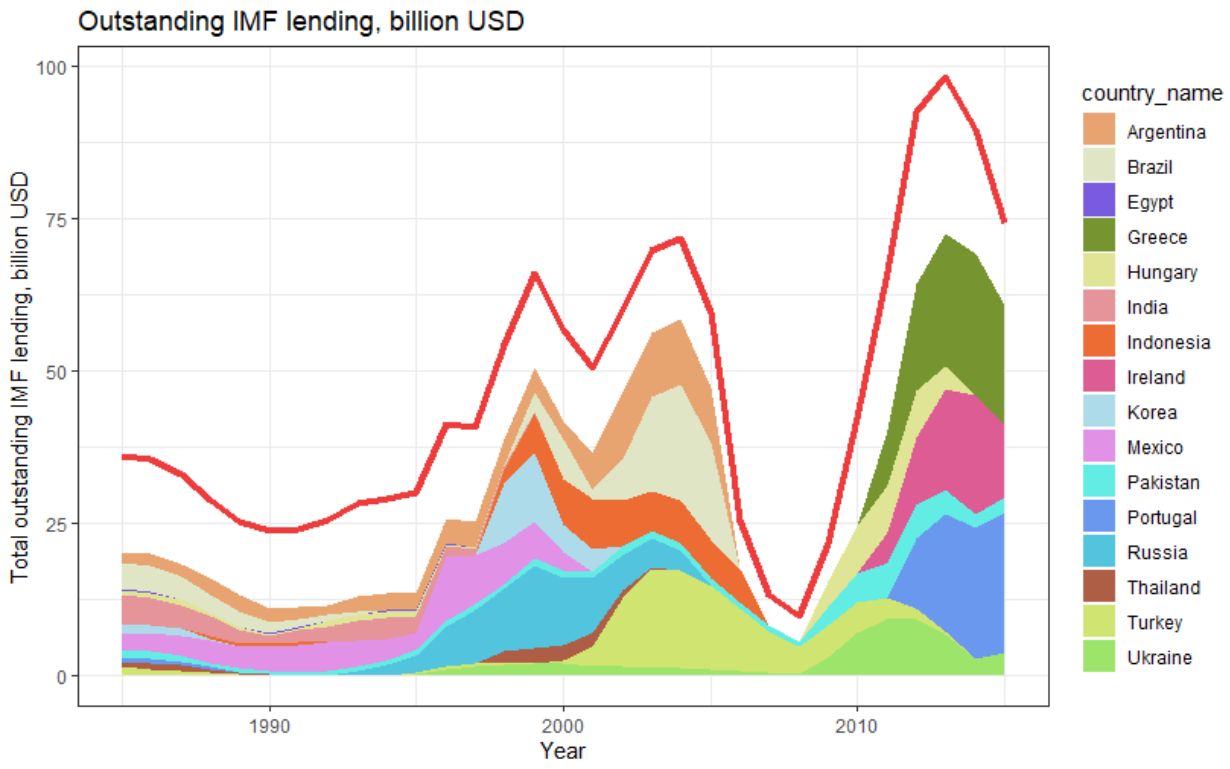

Figure 1: **Outstanding IMF loans by major borrowers, 1985 - 2015.** The red line plots total outstanding IMF lending across all borrowers, in billion USD (constant 2010 dollars). Colored regions show the share of total outstanding IMF lending to major borrowers. Borrowing countries are identified if they owed at least 5% of the Fund's total outstanding loans in each year. The blank area between the top colored region and the red line represents outstanding IMF loans that were spread across smaller borrowers. This figure was inspired by visualizations made by Brad Setser and published on Twitter (https://twitter.com/Brad_Setser).

governments can borrow. Bas and Stone (2014) theorize that the IMF faces an adverse selection problem as prospective borrowers are least likely to comply with conditionality, stabilize their economies, or repay their loans; the applicant pool is full of risky "lemons." When choosing where to allocate scare resources, the Fund screens out high-risk borrowers to reduce its overall risk exposure. The IMF is more likely to approve a program if a government has already begun to cut spending and raise taxes, signaling a higher chance of future repayment (Knight and Santaella, 1997). The IMF also selects borrowers based

on political characteristics, like the government's relationship with the United States (Barro and Lee, 2005), or if a government hosts a large, well-integrated IMF staff to assist in loan monitoring (Chwieroth, 2015; Copelovitch, 2010; Barro and Lee, 2005).

Importantly, this screening is more intense when IMF resources are more constrained. Przeworski and Vreeland (2000) first demonstrated that the IMF issues fewer loans when its own resources are limited as it seeks to hold a minimum level of reserves for future crises. When liquidity is low the Fund is more reluctant to lend to the highest risk governments and prefers instead to extend loans to a familiar, "regular clientele" of governments (Lang, 2021). While borrower characteristics are important in determining loan assignment, the IMF also makes lending decisions and assesses risk based on its own balance sheet.

Loan design

Borrower selection does not completely resolve the Fund's risk exposure. As discussed above, there is still variety in default risk among governments that are selected to receive IMF loans. As Bas and Stone (2014) demonstrate, it is difficult for the IMF to effectively screen out "bad" borrowers, and so loan design is an essential mechanism to protect the Fund against default.

Most directly, the IMF can simply offer risky borrowers less money. The IMF strives for 'political neutrality' in its lending practices (Pop-Eleches, 2009), for example by restricting loans to 300% of a borrower's IMF quota. However, Nelson (2014) shows that loans range from 15 to over 1,500% of quotas in practice which may indicate that IMF staff can exercise some discretion in the size of loans that they can propose and award.

The IMF can also require policy conditions that help guarantee future repayment. As Corsetti et al. (2020) describe, "conditionality measures are meant to safeguard IMF resources by ensuring that the countries implement policies that improve their ability to repay the IMF loans." Policy conditions are nominally intended to resolve the borrower's economic

crisis but also minimize the Fund's risk and to contain moral hazard (Marchesi and Thomas, 1999; Eichengreen, 2000; Dreher and Vaubel, 2004). While the IMF cannot demand collateral from its borrowers, Jensen (2004) theorizes that conditions essentially serve that purpose in multilateral loans. In interviews with IMF staff, Kaplan and Shim (2021) document how conditions are often applied for the express goal of ensuring that the Fund is repaid, rather than simply to guide borrowers to prudent economic policy. The IMF is regularly repaid in part because conditionality allows the Fund to both rebuild the borrower's economy and to set aside a stream of revenue for its own repayment. Conditions can include fiscal consolidation measures to cut government spending as well as external debt limitations which prevent the accumulation of additional liabilities (Stubbs et al., 2020). Conditions that specifically target government revenue are often the most effective tools in the IMF arsenal (Crivelli, 2017) and the Fund often requires dramatic increases in consumption taxes to boost short-term revenue (Reinsberg et al., 2020). Through tight fiscal conditions, the IMF can essentially build up the funds for its own repayment.

The design of conditionality is highly variable between loans, with some governments receiving stricter programs than others with a higher number (Reinsberg et al., 2022; Stubbs et al., 2018; Dreher and Vaubel, 2004) or broader scope (Stone, 2008; Dreher et al., 2015) of policy conditions. This allows the IMF to tailor conditionality to account for the risk of default. This is likely to happen not only at the individual loan level, but also across the Fund's entire lending portfolio. Just as Lang (2021) shows that the IMF adjusts loan assignment based on its overall liquidity, I argue that the Fund adjusts the design of new loans based on characteristics of its loan portfolio.

Testable hypotheses

I argue that the IMF alters the design of new loan programs when the default risk of its current lending portfolio increases. This behavior reflects the Fund's self-preservation motive. Instead of designing loans purely based on the characteristics of the borrower, the IMF sets its lending strategy across its entire portfolio and acts to reduce its own risk exposure.

The IMF is concerned with its future solvency. While outright default on IMF loans is uncommon, IMF loans do regularly enter arrears which can limit the Fund's liquidity for extended periods of time (Beers and de Leon-Manlagnit, 2019). These risks can prevent the IMF from having the funds to engage in activities that serve the interests of its major shareholders and staff, like expanding its internal bureaucracy or using lending for discretionary political goals. International organizations constantly face the threat of collapse or irrelevance ("zombie" organizations as Gray (2018) describes them) unless resources and bureaucratic effort are invested in survival. When allocating its scarce resources, the IMF acts to reduce its risk exposure.

This risk adjustment may occur at two points in the lending process; first, when choosing which governments to lend to. When selecting borrowers the IMF can assess the creditworthiness of governments and choose to lend to those above a certain risk threshold (Barro and Lee, 2005). Borrowers typically come to the IMF during periods when they are suffering from liquidity or macroeconomic crises that would exclude them from private or official credit. Within this clientele, there is still a wide variety in default risk.

Once the Fund has chosen to lend to these "customers," risk can be managed at a second point: during the design of the loan program. Policy conditions can be used to offset risk for the IMF (Corsetti et al., 2020) and are designed to fit the individual borrower, with more numerous, restrictive conditions serving to strengthen the guarantee that the Fund will be repaid (Jensen, 2004).

The Fund can control (to some extent) the risk on its new loans by selecting lower-risk borrowers and offering stricter loans. However, the Fund is still exposed to default risk in its existing loan portfolio. Governments often borrow from the IMF for several years at a time, and over the course of the lending period, exogenous shocks or imprudent policy may further erode fiscal stability. This necessitates that the Fund take the risk of its portfolio into account when making individual loan decisions.

Previous work has demonstrated that the IMF makes decisions across its entire loan portfolio to reduce its risk exposure; most notably, Przeworski and Vreeland (2000) find that the IMF offers fewer loans when it has lower liquidity. I argue that the IMF will further adjust its own risk exposure by changing the design of new loans. My argument builds on the theoretical framework developed by Kaplan and Shim (2021) that considers the IMF as a cyclical lender of partial resort. Under this logic, the Fund alternates between periods of risk-averse and risk-acceptant behavior (*cyclical*) which determine the Fund's willingness and ability to act as a (*partial*) lender of last resort. I expect that the IMF will include stricter loan conditions during periods of high risk exposure (H1). More numerous or restrictive conditions may deter debtor moral hazard and ensure that the borrower develops revenue streams sufficient to repay the IMF loan.

Hypothesis 1. *The IMF implements stricter loan conditions when the organization is exposed to higher risk.*

This suggests that the IMF offers stricter loans to governments in distress in order to protect the organization from excess risk. Importantly, the IMF is also likely to apply risk-averse design features to adjust for the risk of each individual borrower. Several scholars have demonstrated that loan generosity and conditionality vary with a borrower's macroeconomic and political risk (Pop-Eleches, 2009; Vreeland, 2006, 2003; Stone, 2008). My argument is that IMF risk exposure has a *separate* effect on these loan features; that is, holding the

risk of the individual recipient country constant, the default risk across the portfolio of IMF borrowers determines the type of loan that a borrower receives.

Data and estimation

Independent variable

My goal is to test the effect of IMF risk exposure on the design of individual loan programs. To measure risk exposure I create an annual index of default risk of all current borrowers from the IMF between 1985 and 2015. I choose to measure borrowers' default risk via ratings reported in the *Institutional Investor* magazine. This financial news magazine polled investors twice a year asking about perceptions of default risk in 166 countries, and weighted responses by each respondent's investments in the country. This yields a biannual measure of country default risk, scaled from 0 (high risk) to 100 (low risk). This II rating is highly correlated with the 'big three' credit ratings from Standard & Poor, Moody's, and Fitch Ratings[4] but has the advantage of much broader coverage. Many low- and middle-income countries (which are a crucial part of the Fund's clientele) are unrated by the traditional agencies up through the 1990s, and even then, there is selection into ratings as they are assigned either based on the borrower's request or once the borrower has reached a threshold of external private debt. By using the *II* rating I am able to capture default risk in 90% of the IMF's borrowers between 1985 and 2015. For simplicity, I average the two biannual ratings to capture one, annual rating for each country.

The annual IMF risk exposure measure, $IMFRisk$, is generated using the following equation:

[4]See Appendix for a comparison of the four ratings. Where II and S&P ratings overlap, their correlation coefficient is 0.91

$$\text{IMF Risk}_t = \sum_{C=1}^{C} (II_{ct} * S_{ct}) \tag{1}$$

For all countries (c) borrowing from the IMF in each year (t), I multiply the country's default risk rating, II_{ct}, by the country's share of total outstanding debt to the IMF, S_{ct}. These weighted ratings are averaged across all of the IMF's current borrowers. Importantly, $IMFRisk$ does not measure the default risk of the IMF itself, but rather the risk that some loans to the IMF will not be repaid in full and on schedule.

Weighting this risk rating by outstanding debt is crucial to capture the true exposure of the Fund. Figure 2 plots the IMF's risk exposure from 1985 to 2015. The red line represents the raw average II rating across all of the Fund's borrowers, while the blue line represents the average II rating weighted by the size of each borrower's outstanding debt to the IMF. The ratings follow similar trends but the weighted measure offers a more accurate representation of the Fund's lending activity. For example, the sharp dip in the weighted rating between 1998 and 2002 reflects a shift towards riskier borrowers; Mexico and South Korea had just paid off substantial debts when the IMF extended large loans to Russia, Ukraine, and Indonesia, all three of which had II ratings below 25. This drop is not visible in the unweighted rating as during this same period the Fund lent small amounts (less than 5% of total outstanding debt) to relatively safer borrowers like Lithuania, Latvia, Tunisia, Thailand, and Uruguay with II ratings above 45. While the Fund was engaged with a large number of low-risk borrowers, it was more heavily exposed to a few, high-risk borrowers.

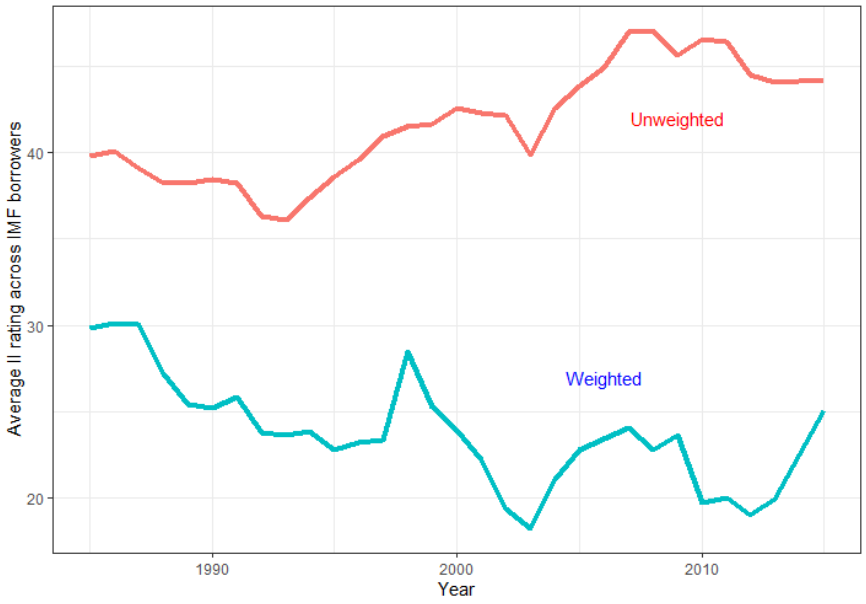

Figure 2: **Average *Institutional Investor* credit rating of IMF borrowers, unweighted and weighted by IMF loan size.** The red line plots the raw average of II credit ratings for all IMF borrowers. The blue line plots the average II score, weighted by the size of each borrower's debt to the IMF.

Dependent variables

I make use of two main dependent variables to capture the relative 'risk aversion' of loan programs, both using data from the IMF Monitor database[5] and extensions of that data coded by Reinsberg et al. (2022). By 'risk averse,' I refer to loan programs that are more heavily protected against default. The dependent variables cover 589 IMF loan programs issued to 123 countries between 1985 and 2015.

I measure two dimensions of the conditions applied in each loan program, the first of which is a simple count of the number of conditions attached to the loan. This is a commonly-used indicator for the overall burden of conditionality (Copelovitch, 2010; Reinsberg et al., 2022; Dreher and Jensen, 2007; Dreher and Vaubel, 2004; Gould, 2003; Clark, 2022) as a larger number of conditions requires more reforms from borrowing governments in exchange for credit. Previous work has demonstrated that the IMF assigns a higher number of conditions when it is engaged in a larger number of simultaneous loan programs (Dreher and Vaubel, 2004; Stubbs et al., 2018; Lang, 2021; Vreeland, 2003), indicating that the Fund uses additional conditions to balance increased demand on its finite resources. With regards to IMF risk exposure, the expectation is that new loans will have a higher number of conditions when the Fund's weighted credit rating is lower, meaning the IMF is exposed to more default risk. While the count measure is imperfect, several scholars have demonstrated that it is correlated with the economic and political costs that the IMF levies in exchange for access to credit (Kentikelenis et al., 2016; Clark, 2022).

The second dependent variable captures the scope of conditionality in each loan, measured as the number of policy areas covered by conditions. This was first used by Stone (2008) to capture the "intrusiveness" of a loan program and is another frequently-used measure of the stringency of conditionality (Clark, 2022; Dreher et al., 2015; Handlin et al., 2023). While loans always include some standard conditions, like access for Fund staff to

[5] www.imfmonitor.org

official government statistics, the scope of quantitative performance criteria and structural conditions can vary widely. For example, a loan issued to Pakistan in 2001 came with a total of 79 conditions, the most of any loan program between 1985 and 2015. However, the scope of this program was equal to 6 as a large number of individual conditions were applied to details of financial sector reform. In contrast, a loan issued to Zimbabwe in 1999 included only 30 conditions but had a scope value of 10 as conditions were applied to diverse policy areas including the privatization of state-owned enterprises, labor conditions, price liberalization, and external debt. I expect that the scope of conditionality will increase when the IMF is exposed to higher risk as the Fund attempts to lower the default risk on new loans by intervening more extensively in the borrowing government's fiscal and monetary policy.

Control variables

I include several variables that could jointly affect IMF risk exposure and the design of individual loan programs. First, I include several indicators that may affect IMF program size and design beyond IMF risk exposure. At the IMF-level I include the number of IMF loans in progress in year t. While I do not expect the number of loans to confound the effect of $IMFrisk$ on program design, its inclusion improves the precision of my estimates by estimating out variation in program design due to IMF capacity. IMF staff may have less time and resources to devote to monitoring when many loans are in progress, and so program design may be streamlined because of lack of administrative resources rather than exposure to risk.

At the IMF loan program-level I include the size of the loan (in SDR, log-transformed) and the duration of the loan program (as agreed in the loan contract ex ante). The former accounts for the fact that the IMF may allocate more resources (staff, time) to the design and implementation of larger loans. As Copelovitch (2010) notes, loan size is almost perfectly correlated with the size of the borrower's economy, and so also controls for large vs. small

borrowers. The duration of the loan program is included for similar reasons; first, longer loans are likely to be larger loans, and loan duration may be determined by borrower-specific characteristics (upcoming elections, for example) and can determine program design outcomes (longer programs allow for the completion of more conditions).

Next, I include an indicator for whether a country is a first-time borrower from the IMF. Loans to first-timers may be relatively riskier for the IMF as Fund staff have not yet established bureaucratic relationships to facilitate monitoring and may have less precise information on the country's national accounts (Lang, 2021; Dreher and Lang, 2019; Reinhart and Trebesch, 2016). The generosity of loans and design of conditionality may be systematically different for first-time borrowers.

An important source of potential confounding is global economic shocks that could determine the risk profile of all IMF borrowers, and the design of each new loan program for individual borrowing countries. However, controlling for global economic trends would also estimate out a substantial portion of the variation in IMF risk exposure that is precisely the focus of this empirical test. For example, the U.S. federal funds interest rate and $IMFRisk$ have a correlation coefficient of 0.75. I expect that IMF is exposed to more risk when the global economy is unstable, and so I need to preserve that variation to test how the Fund's risk exposure (from all sources) affects the size and design of new, individual loans. However, this threatens my analysis if default risk in individual borrowers is affected differently by volatility in the global economy.

If global economic trends affect individual program size and design, they likely do so through a country's economic fundamentals. The IMF tailors loan terms and conditionality to domestic economic circumstances (Clark, 2022; Lang, 2021; Chwieroth, 2013; Moser and Sturm, 2011). By controlling for these country-specific circumstances, I shut off the backdoor pathway between a borrower's economy and the global economy and ensure that my estimates reflect the effect of $IMFRisk$ that operates through the Fund's total risk

profile. All regressions include the borrowing government's *II* rating in year t as riskier governments likely receive smaller loans with more risk-averse conditions. Additional economic controls include debt service and the current account balance (both as a share of gross national income), GDP growth, trade balance, and GDP per capita (log-transformed) (Dreher and Vaubel, 2004; Reinsberg et al., 2022) using data from the World Development Indicators (Bank, 2022). I also include an indicator for financial crises from Laeven and Valencia (2020).

While these controls should help to address confounding between individual loan programs and overall IMF risk exposure, there are likely to be unobserved aspects of market volatility or global defaults that may affect both. All models include country fixed effects to address time-invariant unobserved country-level confounders. Year fixed effects cannot be included as the independent variable, $IMFRisk$, is constant across borrowing governments within each year. In an effort to address potential serial correlation, I estimate specifications including the average of the dependent variable across all newly agreed IMF loans, lagged by one period. By controlling for the condition count or scope assigned by the IMF in loans assigned in the previous year, these models more precisely estimate changes in loan design in response to a change in risk exposure, as opposed to the reverse. Despite these precautions, confounding remains a concern in the main estimations. To offer more insight into the direction of the effect, I later investigate other observable implications of my argument to show that changes in loan design are the result of portfolio risk adjustment.

Estimation

I test the effect of IMF risk exposure on conditionality via the following ordinary least-squares (OLS) estimation:

$$Y_{it} = IMFRisk_t\beta_1 + \boldsymbol{X\beta_{ict}} + \gamma + \epsilon_{it}$$

The dependent variable, Y, is alternatively the count of conditions or the scope index of conditions on loan program i agreed upon in year t. $IMFrisk$ is the index of annual IMF risk exposure. X represents a vector of controls at the program i, country c, or year t level. All regressions include country (γ) fixed effects to capture potential period- and country-invariant unobserved confounders. The sample period covers 589 IMF loan programs issued to 123 countries between 1985 and 2015.

Results

Table 1 presents the results from my main models estimating the effect of IMF risk exposure on the number and scope of loan conditions. For each dependent variable I first estimate regressions with only control variables and country fixed effects (columns 1 and 3) and then estimate models including the lagged dependent variable (averaged across all IMF programs in the previous year, columns 2 and 4).

Columns 1 and 2 estimate the effect of $IMFRisk$ on the number of conditions for loan i. $IMFRisk$ has a negative, significant effect on the number of conditions across both specifications, meaning that an increase in the creditworthiness of the Fund's portfolio is associated with fewer conditions in new loan programs. In the model including only country fixed effects and loan- and borrower- level controls, a 1-point increase in the weighted average II rating of all IMF borrowers is associated with 0.844 fewer policy conditions on average. Across the study period IMF programs included an average of 23 policy conditions. This effect increases to 0.850 conditions when including the average count of conditions across all IMF programs assigned in the previous year.

Next, columns 3 and 4 estimate the effect of $IMFRisk$ on the scope of conditionality. $IMFRisk$ has a significant and negative effect across both specifications, indicating that low risk exposure (again, a high $IMFRisk$ value) is associated with a more limited scope of

conditionality. When controlling for the average scope of IMF loans issued in the previous year, a 1-point increase in the $IMFRisk$ rating is associated with a 0.152 reduction in scope. The units on scope are policy areas, and so an improvement in the $IMFRisk$ rating is associated with loan conditions that cover 0.152 fewer policy areas on average. While a relatively small effect (representing 1/10th of a standard deviation in the scope measure), this still highlights how the Fund alters its lending strategy after an increase in its portfolio risk to place more extensive constraints on borrowers' domestic policy. This effect size decreases to 0.079 policy areas when the average scope in the previous period is taken into account.

Both of these conditionality findings are consistent with the risk exposure hypothesis. When the IMF is exposed to less risk via its current borrowers, new loans are issued with fewer conditions that constrain fewer areas of borrowers' fiscal and monetary policy. Higher risk exposure is associated with tighter conditionality, indicating that the IMF adjusts new loans to compensate for its own high risk on extant assets.

Table 1: Effect of IMF risk exposure on loan design

	Dependent variable:			
	Num. conditions		Scope conditions	
	(1)	(2)	(3)	(4)
IMF Risk	−0.844***	−0.850***	−0.152***	−0.079**
	(0.266)	(0.282)	(0.035)	(0.034)
Average num. conditions (lag)		0.166		
		(0.237)		
Average scope conditions (lag)				0.815***
				(0.097)
II rating	−0.180	−0.178	−0.018	−0.031*
	(0.137)	(0.150)	(0.018)	(0.017)
Loan size (log)	−0.959	−1.295	−0.141	0.093
	(0.986)	(1.084)	(0.131)	(0.129)
First-time borrower	−8.162**	−7.377**	−0.871*	−0.248
	(3.554)	(3.696)	(0.471)	(0.438)
Loan duration	0.071	0.045	0.010	−0.003
	(0.080)	(0.084)	(0.011)	(0.010)
CAB / GNI	0.077	0.036	0.007	−0.009
	(0.108)	(0.110)	(0.014)	(0.013)
Debt service / GNI	0.502***	0.533***	0.030	0.030
	(0.151)	(0.156)	(0.020)	(0.018)
GDP growth	−0.078	−0.012	−0.020	−0.006
	(0.167)	(0.183)	(0.022)	(0.021)
GDP per capita (log)	−13.473**	−17.344***	−1.438*	−0.912
	(5.745)	(6.339)	(0.762)	(0.750)
Financial crisis	−3.714*	−4.528**	0.078	−0.262
	(2.181)	(2.293)	(0.289)	(0.268)
Trade balance	−0.092	−0.092	−0.010	−0.012
	(0.065)	(0.069)	(0.009)	(0.008)
Country fixed effects	Yes	Yes	Yes	Yes
Observations	352	327	352	327

Note: *p<0.1; **p<0.05; ***p<0.01

Further analysis

I next consider several other observable implications of my argument. While the results above show plausible evidence that the IMF adjusts its loan design to offset its own portfolio risk, this effect may still be driven by the Fund's adjustment to a borrower's individual risk environment. Controlling for each borrower's credit rating and including country fixed effects should account for much of the domestic variation in risk, but may not completely estimate out individual borrower characteristics. In particular, certain borrowers may be more exposed than others to global economic fluctuations; however, as discussed above, volatility in the global economy is likely a key driver of IMF portfolio risk, and so cannot be included on the right-hand side of these estimations. Here, I examine other ways in which the IMF may limit default risk and isolate periods when the Fund should be particularly sensitive to this high risk.

Revenue conditions

If the IMF is indeed tightening its lending behavior to limit its own portfolio risk, then this effect should also be visible in the content of conditions that are assigned. The IMF may be best able to protect against default by mandating that borrowers build up solid revenue streams, both to shore up the government's fiscal situation but also to make funds available for the Fund's own repayment (Corsetti et al., 2020). I test this by regressing IMF risk on two measures of the fiscal burden mandated by loan conditions.

First, I use a binary indicator for whether a loan program includes any conditions that specifically mandate changes to tax revenue, structure, or the capacity of tax administration, using data from Reinsberg et al. (2020); nearly 60% of loans include revenue conditions. To control for a government's baseline tax revenue and collection capacity, this specification includes tax revenue as a share of GDP in the current and previous period (using data from the Government Revenue Dataset) as well as the government effectiveness score from

the World Bank World Governance Indicators (Kaufmann et al., 2011). Second, I use a measure of the level of fiscal consolidation required by each IMF program, developed by Ray et al. (2022). This indicator estimates the total fiscal adjustment (as a share of GDP) mandated by all quantitative performance criteria, the binding conditions that borrowers must fulfill to access the next tranche of an IMF loan. Here I also control for the government's current account balance in the year in which the IMF program was agreed upon. If the IMF is adjusting the design of individual loans in response to heightened risk across its entire portfolio, I would expect the incidence of revenue conditions and the size of fiscal adjustment to increase with growing IMF risk exposure.

Results are shown in Table 2. $IMFRisk$ has a significant, negative effect on both indicators, suggesting that new loan programs have lighter revenue burdens when the Fund is exposed to relatively low risk. The sample size drops substantially in both tests as the content of policy conditions have not been coded for all IMF programs and the fiscal adjustment indicator is only estimated after 2000. Despite this, these findings offer further evidence that the Fund offers stricter loans to protect its own balance sheet.

IMF resource constraint

Another observable implication of my argument is that the Fund's "survival instinct" should be strongest when its resources are most constrained. As demonstrated by Lang (2021), the IMF is particularly sensitive to borrowers' risk when its liquidity is low. While I expect that increasing default risk in the Fund's portfolio will always lead to stricter terms on new IMF loans, this behavior should be strongest in periods when the Fund has a smaller cushion to absorb protracted arrears or outright default. I examine the effect of IMF risk exposure across two measures of the Fund's resource constraint: precautionary balances and the timing of quota increases.

First, I gather data on the Fund's annual precautionary balances between 1987 and 2016

Table 2: Effect of IMF risk exposure on the content of IMF loan conditions

	Dependent variable:	
	Revenue conditions	Fiscal adjustment indicator
	(1)	(2)
IMF risk	-0.031^{**}	-0.004^{**}
	(0.012)	(0.002)
II rating	-0.012^{***}	0.0003
	(0.005)	(0.001)
Govt. effectiveness	-0.040	
	(0.208)	
Tax revenue / GDP	-2.662	
	(3.242)	
Tax revenue / GDP (log)	3.430	
	(3.292)	
CAB / GNI		0.0003
		(0.001)
Country fixed effects	Yes	Yes
Observations	148	107
Note:		*p<0.1; **p<0.05; ***p<0.01

from the financial statements appendices of IMF annual reports.[6] These balances are the Fund's core reserves that serve as a loan-loss fund to cover non-payment, and are only drawn as a last resort when other IMF resources have been exhausted (most recently in 2009) (Kaplan and Shim, 2021). With low precautionary balances, the Fund is more vulnerable to a payment shock, and so may compensate by tightening the conditions applied to new loans. I investigate this by interacting $IMFRisk$ with the level of precautionary balances (billion SDR, log-transformed) in the same specification shown in Table 1. The marginal effects of IMF risk exposure for both the number and scope of conditions are plotted in Figure 3.[7] The positive, statistically significant effect across both dependent variables indicates that the effect of IMF risk exposure on loan design is indeed strongest when precautionary balances are low. With lower reserves, the IMF is more likely to assign stricter conditions in response to an increase in the default risk of its portfolio.

Second, I consider the timing of IMF quota increases. Each member state is assigned a quota by the Fund's Board of Governors that outlines the government's mandatory contributions to the IMF over the coming years. Quota levels are reviewed every few years[8] and adjusted up or down as needed to meet the Fund's financing needs. This results in discrete jumps in the Fund's total resources when a review is completed and new quotas come into effect. The Fund is relatively well-endowed immediately following a quota review, but this cushion shrinks as resources are depleted until the next review. To capture this, I create a count of years since the IMF completed a substantive quota review, defined as reviews that result in at least a 1% increase in the total member quota. This is again interacted

[6]Precautionary balances are listed as a single line-item in financial statements published after 2002. Precautionary balances are not listed prior to this, but according to the accounting definition in the 2001 annual report, they are obtained by adding the total reserves in the General Resource Account and the balances of the Special Contingent Accounts. The appendices of IMF annual reports can be accessed via the IMF Archives.

[7]The regression results that correspond with these plots can be found in the Appendix.

[8]While the IMF aims to review quotas at least every five years (International Monetary Fund, 2010), in practice reviews have been completed at irregular intervals of between one and eight years since 1983.

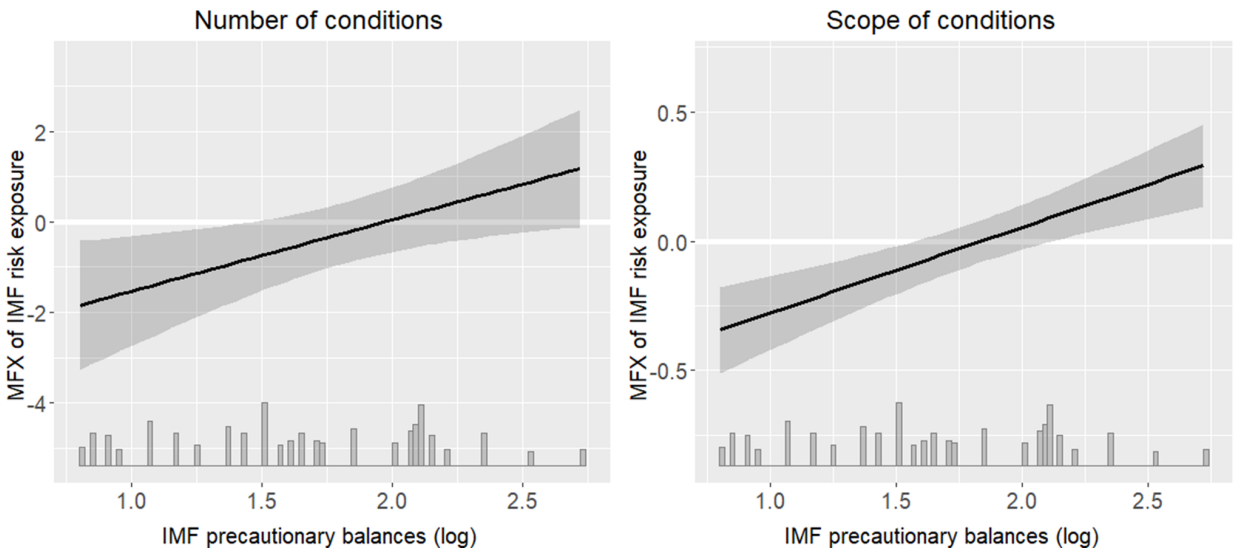

Figure 3: **Marginal effect of IMF risk exposure on loan conditionality, across IMF precautionary balances (billion SDR, log-transformed).** The left panel plots the marginal effect of IMF risk exposure on the number of conditions, while the right panel plots the marginal effect on the scope of conditions. Gray region indicates 95% confidence interval.

with $IMFRisk$, with marginal effects plotted in Figure 4. Here, a negative, significant effect supports the risk exposure argument. As time since the last quota review increases, the Fund's risk exposure has a greater effect on the number and scope of loan conditions.

Robustness checks

I conduct several tests to check the robustness of my findings, with results in the Appendix. First, I reconstruct the IMF risk exposure index using sovereign credit ratings from S&P Global Ratings agency. While ratings from *II* magazine have the advantage of broader coverage of emerging market governments and fewer selection issues, S&P ratings are powerful signals on the sovereign credit market and are carefully tracked by institutional and private investors. The results are similar in statistical significance and substantive effect size across both indices; note that the sample size drops by around 25%. A reduction in S&P-measured

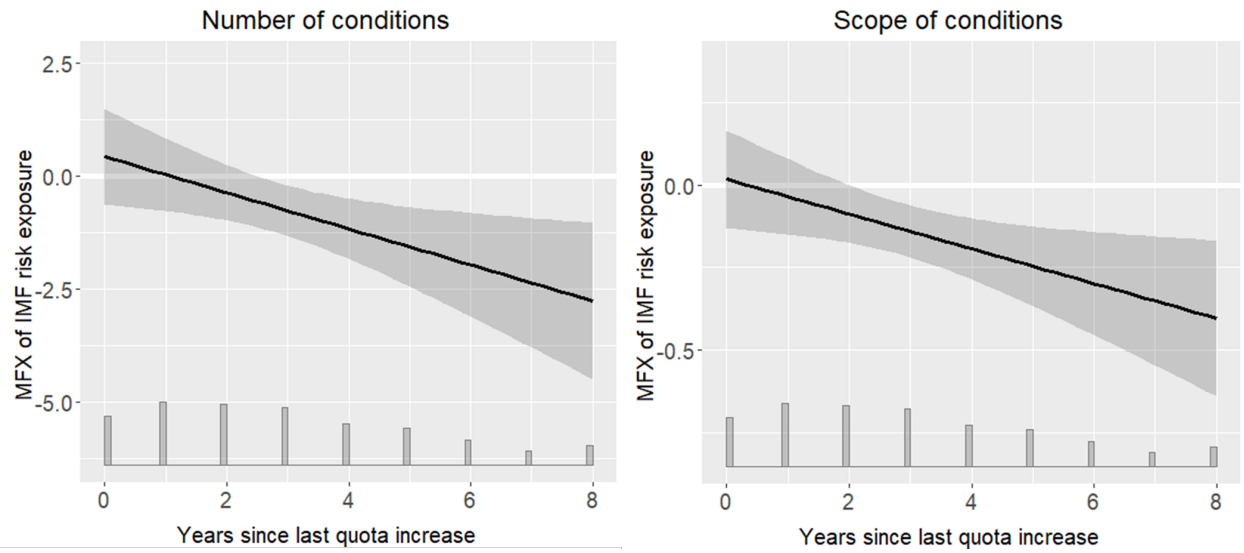

Figure 4: **Marginal effect of IMF risk exposure on loan conditionality, across the number of years since the last increase in IMF quotas** The left panel plots the marginal effect of IMF risk exposure on the number of conditions, while the right panel plots the marginal effect on the scope of conditions.

IMF risk exposure (an increase in the index value) is still associated with the assignment of fewer loan conditions and across fewer policy areas.

Next, I compare results across alternate specifications. In addition to the OLS estimates shown here, I run regressions using a Poisson count model and generalized least squares model (GLS), both of which are commonly used in the literature on IMF loan design (Kang, 2007; Chwieroth, 2015; Clark, 2022). The Poisson estimator is applied given that both of the main dependent variables are count data, while the feasible GLS fixed-effects estimator corrects for potential auto-correlation between panels and includes heteroskedasticity-robust standard errors, following the specification in Dreher et al. (2015). The results across all three specifications are similar; higher IMF risk exposure is still associated with significantly more loan conditions with broader policy scope.

Conclusion

The International Monetary Fund modifies its lending behavior to protect itself from default risk. I demonstrate that the IMF issues loans with more numerous and wide-ranging policy conditions when the organization is exposed to higher risk of default across its lending portfolio. This was tested by examining variation in condition count and condition scope across 589 IMF loans issued between 1985 and 2015. Using an original index of IMF risk exposure, I find support for my hypothesis that the IMF issues more risk-averse loans when it is exposed to higher risk of default. A 1-point increase in the IMF's average credit rating (representing a reduction in default risk) is associated with 0.85 fewer conditions and a reduction in the number of policy areas covered by conditionality.

While concerns remain about potential confounding between global economic conditions and individual loan terms, I investigate additional observable implications of my argument and recover further evidence that IMF lending decisions are driven by a broader, self-preservation motive rather than in response to individual borrower risk. I first examine the content of loan conditions and find the IMF is more likely to mandate increased revenue and greater deficit reduction for new borrowers when the organization faces higher default risk from current borrowers. The effects of risk exposure on loan design are also strongest when the IMF holds lower precautionary balances, which is consistent with the argument that the Fund alters its lending behavior to protect its own balance sheet. When the Fund is exposed to high risk, a new borrower is more likely to face a heavier burden of conditionality. Importantly, these effects are estimated while holding the borrower's risk rating constant, meaning that they represent the effect of portfolio-level risk on loan outcomes, rather than borrower-level risk.

I interpret these effects as evidence that the IMF acts to protect its own bureaucratic interests and future solvency, sometimes at the expense of borrowing governments in dis-

tress. This work has several implications for the study of IMF lending and IO behavior more broadly. First, this may be one explanation for why countries fail out of to comply with IMF loan programs, despite the costs of non-compliance. Previous work has linked stricter conditionality with lower loan compliance (Reinsberg et al., 2022); my findings reveal important drivers of conditionality design, and imply that compliance and program success may be lower when the IMF is exposed to higher default risk. Future work could connect both pieces of this causal pathway, and investigate whether the Fund's own balance sheet plays a role in determining the success or failure of individual loan programs.

Second, these findings help to explain residual variation in the design of IMF loans. Most previous work focuses on how a government's domestic economic situation, policy choices, or international alliances determine the deal it receives from the IMF. Instead, these findings show that external factors beyond the borrower's influence, the state of the IMF's balance sheet, have a meaningful impact on its access to emergency credit. While Lang (2021) demonstrates how portfolio-level factors like IMF liquidity determine the selection of loans, I show that the IMF's total loan portfolio influences outcomes for governments even after they have selected into loans.

Finally, this work has broader implications for the study of institutional agency within international organizations and the role of bureaucratic survival incentives in IO policy outcomes. I demonstrate that survival motives can have a strong effect on IO behavior, separate from the organization's goals of fulfilling its mandate or pleasing its dominant member states. As argued by Kentikelenis and Stubbs (2023), these findings suggest that survival-minded IOs may be unwilling to part with the massive investments required to tackle long-term challenges like global inequality or climate change. Further work could investigate how the existential threats of a weak balance sheet or funding crisis could change an IO's priorities, as well as alter the organization's autonomy vis-a-vis its principals.

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Appendix A: Descriptive statistics

Table 3: Descriptive Statistics

Statistic	N	Mean	St. Dev.	Min	Max
Number IMF conditions	741	23.298	13.487	0	79
Scope IMF conditions	741	4.331	1.985	0	11
IMF risk exposure	589	24.125	3.174	18.229	30.140
II rating	466	25.712	11.834	4.950	78.200
CAB / GNI	634	−5.181	7.926	−61.553	28.712
Debt service / GNI	603	6.240	7.393	0.058	102.222
Financial crisis	741	0.152	0.360	0	1
Trade balance	696	52.235	26.324	9.606	177.860
GDP growth	695	2.628	5.436	−34.809	20.716
GDP per capita (log)	692	7.403	1.082	5.043	10.794
First IMF loan IMF loan	741	0.157	0.364	0	1
Duration	763	24.456	10.803	3	48
Loan size (log)	741	4.755	1.772	0.300	10.375
Average number IMF conditions (lag)	574	25.482	3.769	16.525	33.377
Average scope IMF conditions (lag)	705	4.327	1.245	2.296	6.952
Years since quota increase	669	2.795	2.261	0	8
Precautionary balances (log)	561	1.598	0.489	0.802	2.721
Revenue conditions	763	0.598	0.491	0	1
Fiscal adjustment indicator	130	0.007	0.041	−0.104	0.288
Govt effectiveness	272	−0.513	0.612	−2.064	1.822
Tax revenue / GDP	340	0.158	0.070	0.007	0.416
Tax revenue / GDP (lag)	317	0.158	0.074	0.003	0.421

Appendix B: IMF programs included in sample

Country	Count	Country	Count	Country	Count
Afghanistan	2	Gabon	8	Nicaragua	5
Albania	6	Gambia, The	6	Niger	9
Algeria	4	Georgia	7	Nigeria	4
Angola	1	Ghana	8	North Macedonia	6
Antigua and Barbuda	1	Greece	2	Pakistan	9
Argentina	8	Grenada	3	Panama	5
Armenia, Republic of	8	Guatemala	5	Papua New Guinea	4
Azerbaijan	3	Guinea	7	Paraguay	2
Bangladesh	5	Guinea-Bissau	5	Peru	7
Barbados	1	Guyana	4	Philippines	5
Belarus, Republic of	2	Haiti	7	Poland	4
Benin	6	Honduras	7	Portugal	1
Bolivia	5	Hungary	6	Romania	10
Bosnia and Herzegovina	4	Iceland	1	Russia	4
Brazil	4	India	1	Rwanda	4
Bulgaria	8	Indonesia	3	Sao Tome & Principe	6
Burkina Faso	8	Iraq	3	Senegal	8
Burundi	5	Ireland	1	Serbia	5
Cabo Verde	2	Jamaica	8	Seychelles	3
Cambodia	2	Jordan	7	Sierra Leone	6
Cameroon	7	Kazakhstan	4	Slovak Republic	1
Central African Republic	6	Kenya	9	Solomon Islands	3
Chad	6	Korea	2	Somalia	2
Chile	2	Kosovo	2	Sri Lanka	5
China	1	Kyrgyzstan	8	St. Kitts and Nevis	1
Colombia	3	Laos	3	Turkiye	4
Comoros	2	Latvia, Republic of	8	Tajikistan	4
Congo, Democratic Republic of	6	Lesotho	7	Tanzania	8
Congo, Republic of	6	Liberia	2	Thailand	2
Costa Rica	7	Lithuania	5	Togo	6
Cote d'Ivoire	10	Madagascar	8	Trinidad and Tobago	2
Croatia, Republic of	5	Malawi	8	Tunisia	3
Cyprus	1	Maldives	1	Uganda	5
Czech Republic	1	Mali	9	Ukraine	9
Djibouti	3	Mauritania	10	Uruguay	9
Dominica	3	Mauritius	1	Uzbekistan	1
Dominican Republic	6	Mexico	4	Venezuela	2
Ecuador	8	Moldova	6	Vietnam	3
Egypt	4	Mongolia	5	Yemen	4
El Salvador	8	Morocco	7	Yugoslavia	3
Equatorial Guinea	3	Mozambique	6	Zambia	5
Estonia	6	Nepal	4	Zimbabwe	3
Ethiopia	4				

Table 4: IMF loan programs included in sample, 1985 - 2015, by country

Appendix C: Interaction models full results

The following tables present the regression results that correspond to the marginal effects plots shown in Figures 3 and 4 in the main manuscript. Table 5 includes specifications where $IMFRisk$ is interacted with the precautionary balance held by the IMF (in billion SDR, log-transformed). Table 6 includes specifications where $IMFRisk$ is interacted with the count of years since the last substantive increase in the total quota of IMF contributions required of member states.

Table 5: Interaction of IMF risk exposure and precautionary balance

	Dependent variable:	
	Num. conditions	Scope conditions
	(1)	(2)
IMF risk	−3.110***	−0.611***
	(1.108)	(0.138)
Precautionary balance (log)	−31.027*	−6.223***
	(15.903)	(1.979)
IMF risk x Precautionary balance (log)	1.577**	0.332***
	(0.625)	(0.078)
II rating	−0.247*	−0.036*
	(0.146)	(0.018)
Loan size (log)	−1.079	−0.128
	(1.030)	(0.128)
First IMF loan	−4.450	−0.091
	(3.850)	(0.479)
Duration	−0.006	−0.005
	(0.086)	(0.011)
CAB / GDP	0.045	−0.028*
	(0.130)	(0.016)
Debt service / GNI	0.524***	0.043**
	(0.163)	(0.020)
GDP growth	0.032	0.005
	(0.173)	(0.022)
GDP per capita (log)	−19.878***	−3.043***
	(7.075)	(0.880)
Financial crisis	−4.905**	0.048
	(2.359)	(0.293)
Trade balance	−0.150**	−0.023***
	(0.070)	(0.009)
Country fixed effects	Yes	Yes
Observations	329	329

Note: *p<0.1; **p<0.05; ***p<0.01

Table 6: Interaction of IMF risk exposure and years since quota increase

	Dependent variable:	
	Num. conditions	Scope conditions
	(1)	(2)
IMF risk	0.437	0.018
	(0.598)	(0.079)
Years since quota increase	10.168**	1.333**
	(3.976)	(0.528)
IMF risk x Years since quota increase	−0.399**	−0.053**
	(0.163)	(0.022)
II rating	−0.210	−0.022
	(0.137)	(0.018)
Loan size (log)	−0.666	−0.106
	(0.984)	(0.131)
First IMF loan	−8.133**	−0.862*
	(3.521)	(0.468)
Duration	0.074	0.010
	(0.079)	(0.011)
CAB / GDP	0.037	0.002
	(0.108)	(0.014)
Debt service / GNI	0.443***	0.022
	(0.151)	(0.020)
GDP growth	−0.110	−0.024
	(0.166)	(0.022)
GDP per capita (log)	−11.645**	−1.189
	(5.759)	(0.765)
Financial crisis	−3.520	0.108
	(2.166)	(0.288)
Trade balance	−0.065	−0.006
	(0.065)	(0.009)
Country fixed effects	Yes	Yes
Observations	352	352
Note:	*p<0.1; **p<0.05; ***p<0.01	

Appendix D: Alternate credit ratings

I choose to measure government default risk using ratings from the *Institutional Investor* magazine. This publication polled investors twice annually for their evaluations of the creditworthiness of sovereign governments and weighted each evaluation by the size of the investor's own investments in that country. This results in a biannual sovereign credit rating ranging from 0 (low creditworthiness, high default risk) to 100 (high creditworthiness, low default risk). As in previous work using *II* ratings (Brown et al., 2023), the two biannual ratings are averaged within each year to yield a single annual rating.

There are two advantages to using *II* ratings to capture sovereign credit risk over traditional sovereign credit ratings assigned by the "big three" credit rating agencies (CRAs): Standard & Poor's, Fitch, and Moody's. First, *II* offers broader temporal coverage of emerging market governments, which is convenient given that these countries frequently engage with the IMF. While the CRAs rate more middle and high income countries and often wait to rate governments until after they have entered the sovereign bond market, *II* compiles ratings of governments irrespective of their credit market interactions. As a result, *II* offers an additional twenty years of risk ratings for emerging market governments that only recently received S&P ratings. Second, there is less potential for selection bias when using the *II* ratings. Ratings from CRAs must be requested by sovereigns and are first awarded at the discretion of the agency following negotiations with little transparency. In contrast, *II* ratings have been awarded consistently to emerging market and advanced economy countries for over 50 years without strategic interaction with governments.

II ratings offer extended coverage, but still capture the same underlying default risk as CRA ratings. Table 7 shows the Pearson's correlation coefficients between *II* ratings and the credit ratings assigned by the "big three," with p-values shown in parentheses. All three have high, positive correlations with *II* ratings.

Table 7: Pearson's correlation between *II* and "big three" credit ratings

	S&P	Fitch	Moody's
II rating	0.913***	0.897***	0.910***
	(0.000)	(0.000)	(0.000)
Note:		*p<0.1; **p<0.05; ***p<0.01	

To test the robustness of my results, I replicate the main analyses shown in Table 1 in the manuscript using an IMF risk exposure index created using S&P ratings in place of *II* ratings. The sample size drops by about 30% when using the S&P measure as many low-income countries were unrated while engaged in an IMF program, particularly early on in the study period. Despite this, the results still mirror those found using the II measure: lower risk exposure at the IMF is associated with fewer policy conditions with more limited scope.

Table 8: IMF risk exposure and loan design: S&P risk ratings

	Dependent variable:			
	Num. conditions		Scope conditions	
	(1)	(2)	(3)	(4)
IMF risk (S&P)	-0.134^{**}	-0.153^{**}	-0.031^{***}	-0.031^{***}
	(0.062)	(0.063)	(0.007)	(0.007)
II rating	-0.407^{**}	-0.405^{**}	-0.042^{**}	-0.042^{**}
	(0.170)	(0.178)	(0.021)	(0.021)
Loan size (log)	−1.594	−1.228	−0.095	−0.095
	(1.214)	(1.309)	(0.156)	(0.156)
First IMF loan	−3.653	−3.296	0.024	0.024
	(6.785)	(6.536)	(0.772)	(0.772)
Duration	−0.017	−0.055	−0.012	−0.012
	(0.100)	(0.099)	(0.012)	(0.012)
CAB / GNI	0.016	−0.060	-0.035^{**}	-0.035^{**}
	(0.154)	(0.151)	(0.018)	(0.018)
Debt service / GNI	0.615^{***}	0.591^{***}	0.063^{***}	0.063^{***}
	(0.196)	(0.196)	(0.023)	(0.023)
GDP growth	−0.056	0.083	0.002	0.002
	(0.213)	(0.233)	(0.027)	(0.027)
GDP per capita (log)	-25.092^{***}	−15.183	-3.068^{***}	-3.068^{***}
	(7.938)	(9.505)	(1.087)	(1.087)
Financial crisis	-5.913^{*}	-7.967^{***}	0.006	0.006
	(3.059)	(3.032)	(0.359)	(0.359)
Trade balance	−0.110	−0.070	−0.010	−0.010
	(0.090)	(0.091)	(0.011)	(0.011)
Country fixed effects	Yes	Yes	Yes	Yes
Observations	259	241	241	241

Note: *p<0.1; **p<0.05; ***p<0.01

Appendix E: Alternate specifications

I test the robustness of the main findings by testing alternate specifications, namely a Poisson count model and a generalized least squares (GLS) model that are commonly used in the literature on the design of IMF conditionality (Dreher et al., 2015). Table 9 shows the results of the original OLS (columns 1 and 3), Poisson (columns 2 and 4), and GLS (columns 3 and 6) specifications. The results are broadly robust across all three models; a reduction in IMF risk exposure is associated with significantly fewer conditions with more limited scope. Although both number and scope of conditions are discrete variables, they are close to normally distributed, suggesting the Poisson estimation should not produce substantively different results to the OLS estimates.

Table 9: IMF risk exposure and loan design: alternate specifications

	Dependent variable:					
	Num. conditions			Scope conditions		
	OLS	*Poisson*	*GLS*	*OLS*	*Poisson*	*GLS*
	(1)	(2)	(3)	(4)	(5)	(6)
IMF risk	−0.865***	−0.036***	−0.910***	−0.155***	−0.034***	−0.169***
	(0.271)	(0.005)	(0.290)	(0.036)	(0.011)	(0.045)
II rating	−0.155	−0.005**	−0.174	−0.018	−0.004	−0.029*
	(0.137)	(0.002)	(0.131)	(0.018)	(0.005)	(0.017)
Loan size (log)	−0.792	−0.036**	−0.441	−0.132	−0.031	−0.070
	(1.004)	(0.018)	(0.952)	(0.133)	(0.040)	(0.128)
First IMF loan IMF loan	−8.170**	−0.356***	−7.547**	−0.873*	−0.191	−0.638
	(3.575)	(0.065)	(3.238)	(0.475)	(0.142)	(0.448)
Duration	0.060	0.002*	0.041	0.009	0.002	0.004
	(0.080)	(0.001)	(0.077)	(0.011)	(0.003)	(0.010)
CAB / GNI	0.083	0.004*	0.050	0.005	0.001	−0.007
	(0.110)	(0.002)	(0.103)	(0.015)	(0.004)	(0.014)
Debt service / GNI	0.512***	0.021***	0.531***	0.030	0.006	0.030
	(0.153)	(0.003)	(0.153)	(0.020)	(0.006)	(0.020)
GDP growth	−0.057	−0.001	−0.027	−0.019	−0.004	−0.010
	(0.168)	(0.003)	(0.162)	(0.022)	(0.007)	(0.021)
GDP per capita (log)	−13.622**	−0.617***	−9.998*	−1.419*	−0.291	−1.061
	(5.716)	(0.102)	(5.256)	(0.759)	(0.228)	(0.735)
Financial crisis	−3.750*	−0.165***	−3.919*	0.075	0.014	−0.085
	(2.196)	(0.039)	(2.019)	(0.292)	(0.088)	(0.271)
Trade balance	−0.100	−0.004***	−0.125**	−0.010	−0.002	−0.016*
	(0.065)	(0.001)	(0.062)	(0.009)	(0.003)	(0.008)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	346	346	346	346	346	346
Note:						*p<0.1; **p<0.05; ***p<0.01